The Impact of Military Engagement on the Economies of the U.S.A., Russia, and Canada

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My research theme offered a broad scope for investigation. However, when I began the project I did not realize the breadth of my chosen topic. It was only because of the helpful direction and professional support of Dr. Marcel-Cristian Voia, my Essay Supervisor, that I managed to cover the material and analyze it as much as I was able. I thank him for his thoughtful concern for my work. From him, I learned that even an apparent research deadlock has a way of being solved.

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Introduction

"War is the process that ruins those who win it"
(Pier Buast)

Laws of the development, internally intrinsic to the imperialism,[1] and race for power over the world already plunged human race into bloody world wars twice and caused numerous local hostilities. Privatization of public resources is a strategic purpose and way of achievement of the political, social, economic and cultural control over developed or least developed countries for strengthening process of imperial structure (Petras, 2005). Thus, economically influential countries such as the U.S.A. and Russia are considered to be powerful countries according to statistics of armed forces, military expenditures and arms trade.

Two world wars have shown that the success of warfare has a great dependency on the quantity and quality of economic resources, and efficiency of their mobilization and utilization. Moreover, according to the military history, the increase in the absolute and relative sizes of military expenses occurs in process of development of productive forces and perfection of combatant devices (Faramazyan, 1983). Thus, country with well-developed military industry must have a high rate of military expenditures. However, the size of military expenditures is determined by the economic and social factors as well as by the degree of involvement of the country in war.

The old fellow Marx, political economist and revolutionary had noted in one of his opuses: "Nothing depends on economy so mightily as army and fleet. Arms, military organization, military strategy depend first of all on the stage that is already reached in production and communication" Thus, regarding the participation in war, the country with the well developed infrastructure and stable economy has an advantage over those countries that experience lag or recession in economic and technological development.

On the other hand, the stage of economy and its expansion also depend on the factor of involvement of a country in war. There is one of the most enduring myths in Western society about a positive effect of war on the economy of a country. Many people see a great

[1] A system in which a country rules other countries, sometimes having used force to obtain power over them.

deal of evidence to support this myth, after all World War II came directly after the Great Depression.

Are Wars Good for the Economy? Do they really give the economy a boost or make it worst? How strong is the influence of the war-participation factor on the essential economic indexes of the country that is engaged in war?

This paper is analyzing the effect of military engagement on the economic variables of three countries: the U.S.A., Canada, and Russia. We consider these three countries because each has been involved in war at different levels; it is also interesting to compare the effect of war on countries that differ both in population size and level of development. Data were collected from extensive literature on military conflict and the impact of war on the economy of participants. It should be noted that some sources give significantly different data on the same material. Regarding the Russian economy in the transition years 1992–1998 when the country made a series of monetary and fiscal reforms, which caused high inflation and the devaluation of local currency. Therefore, the analysis of the literature and media articles of that period reveals some contradictions between North American and Eurasian sources. Moreover, some data were randomly chosen from Internet sources due to the absence of official data for some years or to large variation in its values, for example the data for the interest rate in Russia during the 1990s.

Subjective approach was taken to generate the dummy variable for participation in war and involved rating the weight of ineluctability of being involved in a war and the degree of informed concern within each participant nation.

Canada as a part of United Nations Peacekeeping is an active participant in many missions around the world. However, the percent of involvement in hostilities is very small compared to Russia and the U.S.A. In view of the above, we take into consideration only the war in Afghanistan, where Canada's participation is sufficient for our analysis.

Russia has been involved in many military conflicts both on its territory and in the territories of the former Soviet Union and the number of hostilities for the last fifteen years is quite significant and number of Russia casualties should not be ignored. However, there were some years that seem to be less dramatic in Russian military life.

U.S.A.-participation in war was chosen relying on official sources such the CIA and SIPRI. The most important fact was the attention of the world media and national concern about U.S. involvement in international conflicts in particular years.

Description of the data:

1. To analyze the relationship between war participation and the economy of the participant countries, we collected the available information on the following economic variables: GDP, unemployment rate, exchange rate, interest rate, oil price, military expenditure, consumption price index and arm exports (App. A).

2. The Collected data represents variables within the fifteen years, from 1992 to 2006. The base year 1992 is the reference year because Russia became a state at the end of 1991. Moreover, 1991 represents the official ending of the Cold War between the U.S.A. and Russia and was also the end of the Second Gulf War, where the U.S.A. and Canada were involved. Thus, in order to prevent miscalculations and not to mislead the analysis, the base year for the data is considered 1992.

3. There are two dummy variables included in the data: participation in war (WAR) and political direction of government (PARTY). These variables were created to test the effect of war participation on the variables collected and to test the effect of a given political direction on the decision regarding military expenditures and military engagement.

4. To have a comparable data, GDP, oil prices and military expenditures were transformed into equivalent 1992 U.S.-dollar amounts. There are graphs that refer to current values and to standardized 1992 values. These graphs should be viewed accordingly (App. B).

5. To determine the effect of war on the economy six hypotheses were tested. These hypotheses were tested by using models selected based on correlations between variables and the significance of each model. The models are estimated using OLS regressions.

6. Data were collected from the official web sites of Statistics of Canada, U.S.A. and Russia, web sites of the Central Bank of these three countries, the world fact book CIA, official energy statistics from the U.S. government, the UN Association in Canada, the website of the Russian Ministry of Finance, the website of Financial Trend Forecaster®, Military Expenditure Database (SIPRI).

U.S.A.: summary statistics report

Variable	Obs	Mean	Std. Dev.	Min	Max
YEAR	15	1999	4.472136	1992	2006
ER	15	1	0	1	1
GDP	15	9357.507	2132.605	6337.8	13152.7
UE	15	5.433333	0.9521905	4	7.5
INFL	15	2.52	0.5321117	1.5	3.4
R	15	3.859722	1.660656	1.104167	6.270833
OIL	15	23.20467	11.77175	10.16	55.9
ME	15	344.9597	92.14928	271.417	546.018
ME %GDP	15	3.733333	0.5433582	3.1	4.9
CPI	15	168.76	18.82593	140.3	201.6
AE	15	9988.867	3662.297	5009	15388
PARTY	15	0.4666667	0.5163978	0	1
WAR	15	0.66667	0.48795	0	1
CPI 1992	15	120.29	13.418	100	143.69
OIL 1992	15	17.32	5.5647	8.2555	31.476
ME 1992	15	265.22	31.772	228.3	307.45
GDP 1992	15	7192.7	451.84	6337.8	7669

The table shows that 67 percent of the period under investigation, the U.S.A. was a participant in a war. There was also a fluctuation in the administration of the country. All variables considered have some variation.

Observing the graphs (Appendix B) we may notice positive growth of real GDP (Fig. 1) over the years with a slight decline in the latest period after 2004. There is a strong positive relationship between the time and CPI (Fig. 8). The unemployment rate has a strong negative trend until 2000 when it reaches its minimum, after which a sharp increase occurs for several years with a subsequent decline (Fig. 4). The interest rate has a positive trend after 1993 reaching one maximum in 1995 and another one in 2000 (Fig. 5). After 2000 the interest rate drops sharply hitting its minimum in 2004, after which a positive trend recurs. Oil prices in the U.S.A. as well as in Canada and in Russia have a salutatory trend with a minimum in 1999; and the trend remains positive even now (Fig. 6). Military expenditures

decrease sharply in real terms until 2001 and show a sharp increase after that date (Fig. 11). Military exports from the U.S.A. decline from 1992, but in 1998 have a sudden jump followed by a recession. In 2002 military exports begin slowly increase again (Fig. 7).

Correlation Table

	YEAR	GDP	UE	OIL	ME	INFL	AE	CPI	R	ME %GDP	WAR	PARTY	
YEAR	1	**0.8919**	-0.4697	0.57945	0.22628	-0.3392	**-0.898**	**0.997**	-0.4769	-0.2998	0.16366	**0.866**	**YEAR**
GDP	**0.8919**	1	**-0.708**	0.25245	-0.1599	-0.3562	**-0.82**	**0.859**	-0.244	-0.6288	-0.1571	0.74961	**GDP**
UE	-0.4697	-0.7077	1	-4.18E-02	0.63577	0.21992	0.36086	-0.4459	-0.4754	**0.8744**	0.64056	-0.2373	**UE**
OIL	0.57945	0.25245	-4.18E-02	1	0.54959	0.12275	-0.4564	0.62973	-0.305	0.24741	0.3072	0.58284	**OIL**
ME	0.22628	-0.1599	0.63577	0.54959	1	0.13009	-0.1512	0.26698	-0.681	**0.8588**	0.73232	0.2925	**ME**
INFL	-0.3392	-0.3562	0.21992	0.12275	0.13009	1	0.12255	-0.3178	0.24186	0.30634	8.25E-02	-0.0364	**INFL**
AE	**-0.898**	**-0.82**	0.36086	-0.4564	-0.1512	0.12255	1	**-0.89**	0.49337	0.32135	-0.2957	**-0.933**	**AE**
CPI	**0.997**	**0.859**	-0.4459	0.62973	0.26698	-0.3178	**-0.89**	1	-0.4763	-0.2568	0.19128	**0.8646**	**CPI**
R	-0.4769	-0.244	-0.4754	-0.305	-0.681	0.24186	0.49337	-0.4763	1	-0.4153	-0.7083	-0.5637	**R**
ME %GDP	-0.2998	-0.6288	**0.8744**	0.24741	**0.8588**	0.30634	0.32135	-0.2568	-0.4153	1	0.6376	-0.1612	**ME %GDP**
WAR	0.16366	-0.1571	**0.6406**	0.3072	**0.7323**	8.25E-02	-0.2957	0.19128	**-0.708**	0.6376	1	0.37796	**WAR**
PARTY	**0.866**	0.74961	-0.2373	0.58284	0.2925	-0.0364	**-0.933**	**0.8646**	-0.5637	-0.1612	0.37796	1	**PARTY**
	YEAR	**GDP**	**UE**	**OIL**	**ME**	**INFL**	**AE**	**CPI**	**R**	**ME %GDP**	**WAR**	**PARTY**	

For the U.S.A., the data is normalized into 1992 dollar values. The correlation table above shows there is a strong positive trend for the GDP variable and a strong negative trend for military exports. Other variables have more moderate trends (see the graphs Appendix B).

As opposed to Canada, in the case of the U.S.A., the war variable is positively correlated to unemployment and negatively correlated to GDP. Therefore, for the U.S.A. war has a negative impact on its GDP and increases the unemployment rate that has an overall negative effect on the economy. This may be also due to the huge war cost that U.S.A. has incurred during the war on Iraq and Afghanistan as opposed to Canada, which has used a limited amount of resources on its military operations. War is also negatively correlated with the interest rate and to arms export and is positively correlated to oil prices and military expenditures. The variable of political policy (republican government) is positively correlated to war but in a very moderate way.

To see which variables to use for the hypothesis we look at the correlation of the other variables. Therefore, the unemployment in the U.S.A. besides being positively correlated to war variables is also positively correlated to military expenditures and negatively correlated to GDP. As opposed to the Canadian case, there are more positive correlations for the unemployment variable.

Inflation is not significantly correlated to any of the variables. Normalizing the data removes the impact of inflation and we are not using the variable in the analysis. The more interesting variable is the interest rate, which again is mostly negatively correlated with all variables excepting arms export for the U.S.A. data. As opposed to Canadian data, U.S.A.

unemployment is moderately negatively correlated to the interest rate. The interest rate is strongly negatively correlated with war and military expenditures in the U.S.A.

For the U.S.A., arms exports are important for the economy, but affect the economy in a negative way. There is strong negative correlation with GDP and with political policy, which means that during the Democrat administration there was a surge in arms export while there was a reduction in military expenditures. It is hard to explain why arms exports do not contribute to GDP. It is evident that while arms exports were decreasing over time the GDP was increasing. As opposed to Canada's case, the exportation of arms decreases when the U.S.A. is at war.

The variation in the political administration (PARTY) is also important for the U.S.A. case. There is moderate negative correlation with the interest rate (when Republicans are in power, the monetary policies are relaxed, the interest rate is reduced). Republican government also seems to have a positive effect on GDP (strong positive correlation). In the case of the U.S.A. oil prices do not play a strong role in the economy as in Canadian.

There is a moderate positive correlation between a Republican government and military expenditures. Military expenditures have a negative impact on the unemployment. In fact, there is a positive correlation, which means that military expenditures increase unemployment. However, there is a negative impact on the interest rate and a strong impact on participation in war.

Hypothesis #1:

Is the GDP influenced by war when we control for oil price and the government in the country?

Regression GDP = f(WAR, OIL, PARTY)

OLS command we have next result:

$$\widehat{GDP}_t = 7365.1 + 928.07(PARTY)_t - 17.425(OIL)_t \mathbf{-455.62(WAR)_t} \qquad t = 1,2\ldots15$$

se	(204.8)	(143.3)	(12.93)	(129.5)
t	(35.96)	(6.478)	(–1.347)	**(–3.519)**
p	(0.000)	(0.000)	(0.205)	(0.005)

$R^2 = 0.8182$ df = 11 $F_{3,11} = 16.500$ (Prob > F = 0.00)

The model is not rejected, and according to R^2 value, the variation in real GDP level is explained by variations in the chosen variables by about 82 percent.

From the obtained results we may conclude that all variables are statistically significant except the variable for oil prices that has a slightly negative influence on GDP level. The participation in war is negatively related to GDP. Thus, the version of controlling all other variable and being involved in hostilities at the same time decreases American GDP by $U.S. 455.62 billion.

1992 was a year of economic recession in the U.S.A. It also was a year of the Democratic change in United States and selected the model above shows the significance of this fact. A new government brought some fresh ideas to a business relationship with Eurasia, opening up new opportunities for long-term investment. Moreover, a series of reforms in the social programs accompanied a healthy recovery of the economy after the recession.

Ascension in the economy with an increasing the GDP level every year was happening in the background of the U.S. invasion of Somalia 1992–1994 by 28,000 American troops.[2] Another event in the military life of the U.S.A. than was its intervention in

[2] Source: Los Angeles Times January 18, 1993 http://www.netnomad.com/fineman.html.

Bosnia in 1995 with 20,000 American troops; the U.S.A. cooperated with the NATO-led peacekeeping contingent and conducted air strikes and bombing attacks there. The end of the 1990s is notable for the growing political heat in the Middle East with the following intensive air strikes accomplished by NATO in 1998. The Yugoslavian conflict took another turn in 1999 when NATO occupied Kosovo.

These facts seem to be controversial regarding the negative relationship between military engagement of a country and the growth in GDP. Even the massive mobilization of U.S. Forces in Afghanistan since the beginning of the war against terror in 2001 and the occupation of IRAQ since 2003 does not show a major recession in GDP during that period. Therefore, going back to the result of our test, we conclude that there are some errors in the hypothetical assertion for the case of the U.S.A.

Hypothesis #2:

Is the Unemployment rate influenced by war when we control for the interest rate and administration in the country?

Regression UE = f(WAR, R, PARTY)

Using the OLS command we have next result:

$\hat{UE}_t = 6.3482 - 0.27104(R)_t + \mathbf{1.1296(WAR)_t} - 1.3323\ (PARTY)_t$ $\quad t = 1,2\ldots15$

se	(0.791)	(0.137)	(0.403)	(0.325)
t	(8.022)	(–2.044)	**(2.806)**	(–4.097)
p	(0.000)	(0.066)	(0.017)	(0.002)

$R^2 = 0.7669$ $\quad df = 11$ $\quad F_{3,11} = 12.066$ (Prob > F = 0.001)

The model is not rejected, and according to R^2 value, the variation in unemployment rate is explained by variations in the chosen variables by about 77 percent.

All of the coefficients in this model are statistically significant and any alteration in any of these valuables notably changes the level of the unemployment rate. Unlike the model for Canadian unemployment, this one shows an increase in the unemployment rate when the country becomes involved in war. The model shows that war participation increases unemployment by 1.13 percent when we control for the interest rate and party variable. The Republican policy has a significant and positive influence on employment (reduces the unemployment by 1.33 percent).

Regarding period under consideration, unemployment in the U.S.A. went down very markedly within eight years between 1992 and 2000 (A: Table 3). Even considering the immigration flow at that period from Latin America, Asia and the republics of the former Soviet Union that increased the populating of the U.S.A. by 26,978,000 (U.S. Census Bureau), there is the obvious fact of a sharp decline in unemployment over this time. As it was mentioned before, U.S.A. was involved in minimum three conflicts during these years. However, this fact seems to be insignificant for some reasons.

Looking at the years after 2000 we notice an increase in the unemployment rate by 50 percent during the three years from 2001 to 2003. The year 2001 was a year of a change in the political course with the Republican administration under President George Bush. It was also a tragic year for the citizens of the U.S.A. when, on September 11, 2,974 people died as an immediate result of the suicide attacks coordinated by al-Qaeda.[3] This day is assumed to be the beginning date for War on Terrorism initiated by the new U.S. government and followed by many countries around the world. Afghanistan became a foothold for the military operations against the Taliban regime and al-Qaeda. On March 20, 2003, the United States, the United Kingdom, and a coalition expanded the campaign into Iraq, seeking to topple Saddam Hussein[4] for his alleged possession of weapons of mass destruction and state sponsorship of terrorism. Since 2001, the U.S. military has deployed more than 1 million troops for its wars in Iraq and Afghanistan, with 341,000 or nearly a third, serving two or more overseas tours (Bennis & Leaver, 2005).

The interesting finding of a decreasing unemployment rate until 2000 with a sudden increase after is also supported by studies of Dean Backer, in which he presents the model of negative influence of military spending on employment. According to Mr. Backer, military spending diverts resources from productive uses, such as consumption and investment, and ultimately reduces employment. His research on this issue predicts 464,000 job losses in 10 years after high military expenditure and increases this number to 668,100 in 20 years (Baker, 2007).

[3] International alliance of Islamic militant organizations founded in 1988.
[4] President of Iraq from July 16, 1979, until April 9, 2003.

Hypothesis #3:

Is Military Expenditure influenced by war when we control for oil price and arms export?

Regression ME = f(OIL, WAR, AE)

Using the OLS command we have next result:

$$\widehat{ME}_t = 174.000 + 1.9955\,(AE)_t + \mathbf{43.383}(WAR)_t + 2.6380\,(OIL)_t \qquad t = 1,2\ldots15$$

se	(27.16)	(1.461)	(11.44)	(1.077)
t	(6.407	(1.366)	(**3.793**)	(2.450)
p	(0.048)	(0.199)	(0.003)	(0.032)

$R^2 = 0.7030$ df = 11 $F_{3,11} = 8.681$ (Prob > F = 0.003)

The model is not rejected, and according to R^2 value, the variation in military expenditure is explained by variations in the chosen variables by about 70 percent.

All of the variables of this model have a positive influence on the change in military expenditure and their significance is quite strong except the variable of arms export. War coefficient is the most significant among other coefficients that supports the results of the correlation table.

After 1992 the world experienced a decrease in military expenditures until 2000th year. According to the events of that time and media sources, this fact is explained by the ending of the Cold War between the U.S.A. and Russia with the following disarmament. Before the decline in defense budget both countries rated as the biggest spenders on defense programs and weapon production. At the end of 1990s there was a new period of moderate growth in military spending and rapid increase between 2001 and 2005. At 2006 military expenditure of U.S.A. had the same index as it had during the Cold War time (SIPRI).

The main reason for the strong increase in the U.S. military spending is the massive supplementary appropriations under the heading of The Global War on Terrorism, which includes military operations in Afghanistan and Iraq. The war in Iraq is considered to be the

most expensive military effort within the last 60 years. In 2003 former Deputy Secretary of Defense Paul Wolfowitz predicted $50–$100 billion profitability from the Iraq oil over the next two-to-three years. That optimistic prediction was estimated as $235,500,000 that was spent on permanent military construction projects in Iraq.[5] Due to the expensive anti-terror campaign, The United States made up 47 of the total world military spending.

In view of the above we may conclude that military participation of U.S.A. in armed conflicts before the 2000 does not reflect any positive changes in the military expenditure of the country. Moreover, there is an evidential decrease in the defense budget. However, this fact might be explained by the accumulation of the military ammunition over the years of Cold War, which was ready to be used but fortunately, did not have a chance for its utilization. The massive involvement in armed conflicts after the 2000 seems to be very expensive and global by its significance. This fact supports the result of the obtained model.

[5] **Sources:** Department of Defense, "FY 2005 Supplemental Request for Operation Iraqi Freedom, Operation Enduring Freedom, and Operation Unified Assistance," Department of Defense, February 2005; and, "Conference Report on H.R. 126," U.S. House of Representatives, May 2005.

Hypothesis #4:

Is Arms Export influenced by war when we control for oil price and GDP?

Regression AE = f(OIL, WAR, GDP)

Using the OLS command we have next result:

$$\widehat{AE}_t = 66.397 - 0.0077\,(GDP)_t - 0.8893(OIL)_t - \mathbf{3.2838}(WAR)_t \qquad t = 1,2\ldots15$$

se	(7.417)	(0.001)	(0.089)	(0.994)
t	(9.087)	(–7.288)	(–0.100)	(**–3.303**)
p	(0.000)	(0.000)	(0.339)	(0.007)

$R^2 = 0.8687$ df = 11 $F_{3,11} = 24.268$ (Prob > F = 0.00)

The model is not rejected, and according to R^2 value, the variation in arms export is explained by variations in the chosen variables by 87 percent.

Almost all of the variables have significant meaning and adverse impact on arms export. The oil price hypothetically does not change the level of arms export for the U.S.A., however, the correlations between these variables equals –0.46 that is more than correlation between participation in war and arms exports (–0.30).

According to the Arms Export database, the U.S.A. is on the leading position in the world (A: Table 2). There are 40 companies with arms sales of 182.5 billion U.S. dollars that makes 62.9 percent of a total arms export.[6] It is obvious that arms production is a very profitable business for the country. Looking at the data and the graph we see that there is a decline in arms sales between 1992 and 1996. However, in the 1998 the U.S.A. exported its produced conventional weapons for more than 15 billion dollars that is the biggest sale for the whole time of U.S. arms export. The data for all of the recipients of the U.S.A. have a different dynamic in a quantity value. However, it is noticeably that the U.S.A. was a major

[6] **Sources:** SIPRI Arms Transfers Database http://www.sipri.org.

arms exporter at that time for Egypt, South Korean, Turkey and Israel. All of the listed countries had and some of them still have armed conflicts on their territories.[7]

At the same time in 1998, American President Bill Clinton expressed his concern about Iraq's failure to disarm and Iraq announced its refusal to cooperate with United Nations weapons inspectors.

Since 1998 there is a decrease in arms export that slowed down after 2002. Some of the recipients decreased their orders for the deliveries, some of them signed new long-term contracts, and some of them switched to another arms exporter. Considering the fact of involvement of U.S.A. in anti-terror campaign since 2001 we may presume that the reduction in export was due to utilizing the weapon in U.S. own disposal. Following this assumption, we come to the conclusion that participation in war decreases arms export for the next reasons: accumulated stock of weaponry in country-recipients; decrease in a weapon production; and increase in utilization by the country-producer.

[7] **Source:** www.onwar.com.

Hypothesis #5:

Is oil price influenced by war when we control for political administration of the U.S.A. in the country and military export?

Regression OIL = f(PARTY, WAR, ME)

Using the OLS command we have next result:

$\hat{}$

$OIL_t = -14.046 + 0.119\,(ME)_t + 5.733\,(PARTY)_t \mathbf{-4.4859}(WAR)_t$ $\quad t = 1,2\ldots15$

se	(12.10)	(0.051)	(2.318)	(3.445)
t	(–1.161)	(2.332)	(2.474)	**(–1.302)**
p	(0.270)	(0.040)	(0.031)	(0.219)

$R^2 = 0.5641$ $\quad$ df = 11 $\quad$ $F_{3,11} = 4.745$ $\quad$ (Prob > F = 0.023)

The model is not rejected, however, according to R^2 value, the variation in oil price is explained by variations in the chosen variables by only 56 percent.

The significance of the political administration and military expenditure variables is obvious. However, the variable of participation in war has a negative but not significant role in this model. This fact also does not contradict with the result of the correlation table where the percentage of correlation between these two factors is 30 percent.

There is an identical similarity in the oil price between Canada and the U.S.A. It is explained by the strong partnership with Canada, which is the main oil supplier of the U.S.A. Moreover, the geographical factor and NAFTA[8] signed in 1994 make the business connection even stronger. However, looking for the reasons of sudden jumps and an increase in oil prices in the world we should look at some historical facts.

First, we need to recall The Cold War times and a strong tension between the U.S.A. and Soviet Union. Expecting the long protracted conflict with U.S.S.R., U.S. military

[8] **NAFTA** is the trade bloc in North America created by the North American Free Trade Agreement (NAFTA) and its two supplements, the North American Agreement on Environmental Cooperation (NAAEC) and The North American Agreement on Labor Cooperation (NAALC), whose members are Canada, Mexico, and the United States. It came into effect on 1 January 1994.

planners believed in the essentiality of the security of Middle East oil fields. The Soviet deployment in Afghanistan in December 25, 1979, caused deep concern about the presence of enemy in an area of strategic significance for the U.S. President Jimmy Carter ordered the protection of the Gulf with immediate mobilization of U.S. Forces in Afghanistan and this has been kept up over the years. The U.S. spends a great deal of money protecting these oil interests. One source estimates that the U.S. spends, on average, $304.9 billion annually in "hidden" costs due to imported oil, which includes military expenditures specifically tied to defending Persian Gulf oil, the cost of lost employment and investment resulting from the diversion of financial resources, and the cost of periodic "oil shocks" (Copulos, 2003).

In the 1990th, Saddam Hussein's invasion of Kuwait posed an imminent threat to Saudi Arabia, which is one of the main oil suppliers for the U.S.A. In response of this the U.S.A. deployed 950,000 troops in order to liberate Kuwait.[9] These historical events are direct evidence of the fact that oil plays a great role for U.S.A. and to protect its interest U.S. government put significant effort both financially and militarily. It is obvious that disturbance in the security imposes additional cost for the producer. This fact tells on the oil price in the world. The fluctuation of the price is influenced by the size of the destructions, loss in human resources and the risk of transportation of the product to the recipient.

Thus, going back to the graph and data we may see that the oil price becomes extremely high after U.S.A. invasion in Afghanistan and Iraq (Fig. 6). Since June 2003, there have been at least 255 attacks on Iraq's oil infrastructure with approximate estimation of damages $11.35 billion to oil sector. Iraq's oil production decreased since U.S.A. invasion from 2.04 to 1.33 million barrels per day. Moreover, the media news of those years is full of announcement regarding the oil price influenced by the events happening in Iraq. Thus, long time before the invasion we can find such announcements as "oil prices plunge on speculation that Iraq will accept U.N. missile test site inspections and receive approval to resume oil exports" dated July 1993 (Oil Warld Market Events). Another example from the time of the invasion the U.S.A. in Iraq: "Oil prices fall 4 percent on the news that U.S. military forces capture Saddam Hussein near his hometown of Tikrit, Iraq. (CBS, WMRC)" dated December 15, 2003.

All of the above supports the result of the selected model that shows the negative influence of war participation factor on oil price.

[9] **Source:** Frontline Chronology (PDF). Public Broadcasting Service. Retrieved on 2007-03-20.

Hypothesis #6:

Is monetary policy in U.S.A. influenced by war when we control for GDP and military expenditure?

Regression R = f(GDP, WAR, ME)

Using the OLS command we have next result:

$\hat{R}_t = 20.424 \quad -0.02023(ME)_t \quad -1.1404(GDP)_t \quad \mathbf{-1.6501}(WAR)_t \qquad t = 1,2\ldots15$

se	(5.561)	(1.012)	(0.0006)	(0.8266)
t	(3.672)	(–1.593)	(–2.280)	**(–1.996)**
p	(0.004)	(0.014)	(0.044)	(0.071)

$R^2 = 0.7001$ df = 11 $F_{3,11} = 8.561$ (Prob > F = 0.003)

The model is not rejected, and according to R^2 value, the variation in interest rate is explained by variations in the chosen variables by about 70 percent.

According to our model the war has a negative effect on the interest rate (the war variable is significant at 7 percent). The model shows a 1.65 percent reduction of interest rate when the U.S.A. participates in war and when we control for GDP and military expenditures. During military engagement, especially for long time participation, the confidence of consumers is reducing. In order to keep the economy running and to increase the consumption, U.S. government decreased the interest rate after 2000. Therefore, in absence of good news the only way to make people to consume is to lower the interest rate. The other variables in the model are also significant for the interest rate. An increase in GDP and in military expenditures has also a negative impact on the interest rate.

The causality in the model may be two ways, as when we control for war, the GDP may increase only due to a decrease in interest rate. As we pointed out above, the increase in consumption can be done by a decrease in interest rate, and an increase in consumption may

lead to an increase in production. However, the model was chosen based on the significance of the F-statistic. An increase in military expenditures reduces very little the interest rate, but the significance of the result shows that the effect is not that negligible.

RUSSIA: summary statistics report

Variable	Obs	Mean	Std. Dev.	Min	Max
Y	15	1999	4.472136	1992	2006
ER	15	0.0220726	0.0182324	0.0001754	0.0416667
UE	15	8.74	2.148687	5.2	12.9
INFL	15	226.56	474.9112	9	1734.7
R	15	48.29778	66.11949	2.675	210
WAR	15	0.5333333		0	1
OIL'92	15	17.07562	4.949924	8.198569	30.23735
GDP'92	15	85.52	30.64153	60.7	154.6
ME'92	15	2.820401	0.9116877	1.72995	4.4092
AE'92	15	3.23064	0.8460708	1.433468	4.23925

Over the past 15 years Russia was involved in wars more than half of the time (8 years, 53.33 percent of the time). During the same time Russian economy suffered a lot from transformations, moving from a state dominated economy to a more private one. During this process, Russia experienced a very high inflation (the maximum observed inflation over the past 15 years was 1,734.7 percent). In order to tackle the high inflation, the government increased the interest rate that reached 210 percent. Also, the Ruble depreciated to very low level, valuing only 0.0001754 of the U.S. dollar.

During these trouble times when the economy was doing poorly, the GDP reached the lowest level in 1998 (Fig. 2), an equivalent to 60.7 billions of 1992 U.S. dollars (in the analysis the money values for all the variables were normalized to the 1992 U.S.-dollar value). The low value of the GDP can also be associated with a very low price of the oil that reached in 1999 the lowest value, 8.12 normalized dollars per barrel. The unemployment (Fig. 4) also reached its highest level in 1999 (12.9%). Despite the fact that Russia was going through a period of instability and wars, military expenditures were not increased (Fig. 12).

Once the price of oil started to increase, the Russian economy started to stabilize and GDP started to increase steadily until it reached the maximum of 154.60 normalized U.S. dollars in 2006. The dependency of Russia on the prices of natural resources is obvious (Fig. 6). Thus, having a stable world price of oil ensures the security of the Russian economy. However, sudden drops in the price for oil may generate the similar turmoil of the 1990s.

Correlation Table

	Y	ER	UE	INFL	R	WAR	OIL	GDP'92	ME'92	AE'92	
Y	1	0.8079	0.1635	-0.6589	-0.7655	-0.6804	0.5425	0.6983	0.2928	0.6475	**Y**
ER	0.8079	1	0.4055	-0.5093	-0.6818	-0.4745	0.1507	0.3811	-0.0068	0.3961	**ER**
UE	0.1635	0.4055	1	-0.6254	-0.4696	-0.0721	-0.3307	-0.4436	-0.7756	-0.1923	**UE**
INFL	-0.6589	-0.5093	-0.6254	1	0.5416	0.4317	-0.1438	-0.092	0.3348	-0.2529	**INFL**
R	-0.7655	-0.6818	-0.4696	0.5416	1	0.5129	-0.3688	-0.3226	0.0931	-0.5215	**R**
WAR	-0.6804	-0.4745	-0.0721	0.4317	0.5129	1	-0.4851	-0.5433	-0.2917	-0.2395	**WAR**
OIL	0.5425	0.1507	-0.3307	-0.1438	-0.3688	-0.4851	1	0.7242	0.5774	0.4134	**OIL**
GDP'92	0.6983	0.3811	-0.4436	-0.092	-0.3226	-0.5433	0.7242	1	0.8639	0.5035	**GDP'92**
ME'92	0.2928	-0.0068	-0.7756	0.3348	0.0931	-0.2917	0.5774	0.8639	1	0.2659	**ME'92**
AE'92	0.6475	0.3961	-0.1923	-0.2529	-0.5215	-0.2395	0.4134	0.5035	0.2659	1	**AE'92**
	Y	**ER**	**UE**	**INFL**	**R**	**WAR**	**OIL**	**GDP'92**	**ME'92**	**AE'92**	

For Russia, the data are normalized into 1992 dollar values. The correlation table shows that there is a strong positive trend for the exchange rate as a result of more stable currency, after the years of high inflation. GDP, arms export and oil price have also a positive trend. There is a noticeable negative trend of interest rate and inflation due to stabilization in the economy.

Normalization of the data removes the impact of inflation. Therefore there is a moderate positive correlation with GDP. As in the U.S.A. case, war variable is negatively correlated to GDP. Therefore, for Russia as for the U.S.A., war has a negative impact on its GDP. As a result, the cost of war is an important factor that reduces the GDP. The unemployment rate does not appear to be correlated to war. In Russia, due to high inflation after the collapse of U.S.S.R., the variables that are associated to the inflation (interest rate and exchange rate) have an opposite effect compared to the U.S.A. and Canada's cases. Therefore, participation in war is positively correlated with the interest rate and negatively correlated with the exchange rate.

In the Russia's case oil price plays an important role in the economy. As for the Canadian case and opposed to the U.S.A. case, it has a strong positive correlation to GDP. Also, oil price is in positive correlation to military expenditures.

War is in negative relation with the military expenditures, oil price, and arms export. For Russia, like for the U.S.A., arms export is important factor for the economy, and it affects the economy in a positive way. It is evidently that the arms export was growing significantly over time and helped GDP to grow. As in the U.S.A. case, and opposed to Canada's case, the arms export is decreasing when Russia is at war.

Military expenditures, as opposed to the U.S.A. case, have a strong positive impact on unemployment (negative correlation, which means that military expenditures decrease

unemployment). Also, as opposed to the U.S.A.'s and Canada's cases, military expenditures are in strong positive correlation to GDP, and in moderate positive correlation to oil price and arms exports.

In order to see what variables should be used for the hypotheses we need to have a look at the other correlations. Thus, for the unemployment we have negative correlations to all variables excepting the exchange rate. The interest rate is mostly negative correlated with all variables excepting the war variable.

Hypothesis #1:

Is the GDP influenced by war when we control for arms export, military expenditure, and oil price?

Regression GDP = f(OIL, ME, AE, WAR)

OLS command we have next result:

$\hat{}$

GDP_t =	–9.759	+0.90$(OIL)_t$	+22.045$(ME)_t$	+7.746$(AE)_t$	**–13.66**$(WAR)_t$	t= 1,2…15
se	(16.881)	(0.846)	(4.022)	(3.890)	(6.633)	
t	(–0.58)	(1.06)	(5.48)	(1.99)	**(–2.06)**	
p	(0.576)	(0.312)	(0.000)	(0.074)	(0.066)	

R^2 = 0.9047 df = 10 $F_{4,10}$ = 23.73 (Prob > F = 0.00)

The model is not rejected, and according to R^2 value, the variation in real GDP level is explained by variations in chosen variables by about 91 percent.

The result of the test provides us with the significant value of war variable that has a negative influence on GDP of Russia. It means that the more country is involved in war, the lower level of GDP it has. However, military expenditure has an opposite relationship with the growth in GDP. Thus, the more country spends on defense budget, the more it gains financially.

The recession in Russia's economy began in the middle of the 1980s, when the government of the Soviet Union had its budget deficit with 2.4 percent of GDP for the first time since World War II. The reforms by the former General Secretary of the Communist Party of the Soviet Union, Gorbachev did not work well for the economy. Moreover, the budget deficit grew each year and by 1991 it was already 31.9 percent.

Following the dissolution of the Soviet Union in December 1991, Russia, in 1992, became a Federation, called the Russian Federation. The growing chaos in the country

brought about by "perestroika"[10] was the background to the internal conflicts among the former republics of the U.S.S.R.

The Armenian-Azerbaijanian conflict between 1988 and 1994 was the first wave of a major cyclone of conflicts regarding the formation of new states in the former Soviet Union. Thus, in the beginning of the 1990s Russia was already involved in the series of military conflicts that followed the collapse of the U.S.S.R. The Caucasian conflict between the Abkhazian and Georgian nations, (1992–1993) coming shortly after the South Ossetian Rebellion (1990–1992) and parallel developing conflicts in other south regions of Russia, required human and capital investment for the "peacekeeping" campaign (Table 1). However, the military involvement of Russia in conflicts into Transcaucasia could not be supported by the necessary economic resources and political will due to the general economic weakness of the country. Moreover, the conflicts that developed afterward on the southern boundaries of Russia—the Tajikistan Civil War between 1992 and 1997 and the Georgian Civil War in 1993–94—were a direct threat to Russia's safety (Kortunov, 2002).

Putting together these events and the GDP recession, we find a negative correlation between the involvement of Russia in armed conflict and the recession in GDP during that time. Russian troops were present in these conflicts in a peacekeeping role. However, the degree of involvement in hostilities was very extensive for the country which was responsible for tens of thousand troops and the expenses incurred in its military operations.

In the first Chechen War between 1994 and 1996 and the second Chechen War II from 1999 to the present, during which Russia maintained 100,000 troops, including 40,000 active soldiers and 60,000 support and logistics personnel, there were 12,000 to 13,000 casualties on the Russian side. By November 1999, Russia had spent 8 billion U.S. dollars on war and now considers investing more in its post-war programs.

Looking at the graph of the GDP trend in Russia, we notice the critical point of the recession in the economy takes place in 1998. The complete collapse of Russia's economy that year saw industrial and agricultural output drop sharply. Investment in Russia continued to suffer as the flight of capital crippled the private sector. As a result, privatization generated the class of so-called "oligarchs" or business magnates, such as owners of private investment

[10] Perestroika is the Russian term for the economic reforms introduced in June 1985 by the Soviet leader Mikhail Gorbachev. Its literal meaning is "restructuring," referring to the restructuring of the Soviet economy.

companies, presidents of petroleum companies, bankers, new-Russian[11] businessmen, politicians, and members of large Russian conglomerates with interests in aluminum, oil, energy, telecom and a variety of other sectors (Hoffman, 2003). At the same time, there was an enormous mass of people living below the poverty line. However, after 1998 there is a first sign of stabilization in the Russian economy supported by slow industrial growth and development in economic relations among former Soviet republics.[12] Since devaluation in August, 1998, the competitiveness of imported goods has sharply decreased due to the pressure of increased demand for domestic goods in the food-processing industry and other sectors. The major factor leading to economic growth was growth in the production capacity in all enterprises in the oil and energy complex.

Since 1998 there has been one armed conflict that is considered to be ongoing in Russia and that is the second Chechen War. However, already in 2004 Defense Minister Sergei Ivanov announced the withdrawal plans at a meeting of the Military Council of the North Caucasus military district.

As we can see, Russia has experienced confident growth in the level of GDP despite the involvement in the second Chechen War. Regarding this issue there are many disputes about murky sources of financing the war and about illegal arms sales during the conflict; furthermore, complaints have arisen regarding unfair government policies toward disabled Russian soldiers who have been ignored financially and socially. Too, the oil issue has made the Chechen wars more personal for Russia as a country with a metropolitan power. Therefore, we may assume the there are other factors in the economy that offset the negative influence of war.

[11] New-Russian (novyi russkiy) is a term denoting a stereotypical caricature of the newly rich business class in post-Soviet Russia. According to the stereotype, New Russians achieved rapid wealth by using semi-criminal methods during Russia's chaotic transition to a market economy.
[12] **Source:** The World Bank in Russia: Economic Report http://www.worldbank.org.ru.

Hypothesis #2:

Is the Unemployment rate influenced by war when we control GDP, military expenditure, and arms export?

Regression UE = f(AE, ME, GDP, WAR)

Using the OLS command we have next result:

$$\widehat{UE}_t = 15.816 - 0.942(AE)_t - 4.279(ME)_t + 0.093(GDP)_t + \mathbf{1.1296}(WAR)_t \qquad t = 1,2\ldots15$$

se	(1.183)	(0.349)	(0.612)	(0.023)	(0.600)
t	(13.36)	(–2.70)	(–7.00)	(–4.097)	**(0.220)**
p	(0.000)	(0.022)	(0.000)	(0.002)	(0.832)

$R^2 = 0.89$ df = 10 $F_{4,10} = 19.79$ (Prob > F= 0.00)

The model is not rejected, and according to R^2 value, the variation in the unemployment rate is explained by variations in the chosen variables by about 89 percent.

This model shows a positive but insignificant role of the war variable on the growth of the unemployment level in Russia. However, arms exports and military expenditures have a significant influence on a reduction in the unemployment rate. It is also surprising that an increase in the GDP increases the unemployment also.

Between 1992 and 1999, the Russian economy contracted 25 percent. In 1999, 12.9 percent of the 73.6 million citizens of working age were officially unemployed, compared with only 5.2 percent in 1992. Rampant corruption slashed government revenues and diverted government expenditures. Russia's failure to create a working free enterprise system stalled the conversion of the hypertrophic military sector of the economy. The only industry in which Russia enjoyed a true comparative advantage in global markets (military hardware, weaponry, and related technologies) suffered after the reduction in military spending that started in 1992 with an 80 percent cut in procurement, ordered by Yegor Gaidar, one of the Russian reformers. Documentary evidence shows that scientists who worked in the

strategically important industries had a salary below the level of standard of living, even considering the Russian scale of its measurement (Tenet, 2000). Reforms directed at the free market left many people cast adrift due to the severe reduction in employment possibilities and inability of government organizations to pay their employees.

However, there is another side of the story that is impossible to find among statistical data. In the middle of the 1990s, under the terrorist threat, Moscow, and then other large Russian cities, introduced new rules of registration for newcomers from any former republics of the Soviet Union and other regions of the Russian Federation. In big cities such as Moscow or Saint Petersburg these rules prohibit registered companies to employ people who don't have the correct police registration Moreover, if a person does not have the proper registration, he or she can be seized by the police and be held three days in custody. For an individual, the steps to obtain the requisite registration form are very complicated and painful because of bureaucracy and the insufficient work of the law. Moreover, police corruption is so big that people are forced by the conditions to get a false registration forms to avoid being refused permission to work. The employers, knowing well the regulations, gain by offering jobs to unregistered employees for lower wages.

All of the above is mentioned in order to correct assumptions about the hard-and-fast unemployment increase during this period, when the population was declining. As mentioned before, a slow stabilization in the economy had its start after 1998. Recovery began to happen in the industrial complexes that had recently closed or had slowed down production. The revival in the regional economy brought back those who had lost their jobs in the recession. Those who were unregistered found their own way to obtain a permanent residence in Russia.

Hypothesis #3:

Is Military Expenditure influenced by war when we control for the unemployment rate and GDP?

Regression ME = f(UE, GDP WAR)

Using the OLS command we have next result:

$$\widehat{ME}_t = 2.807 \quad -0.2\,(UE)_t \quad +0.02(GDP)_t + \mathbf{0.075}(WAR)_t \qquad t = 1,2\ldots15$$

se	(0.61)	(0.039)	(0.003)	(0.172)
t	(4.61)	(–5.16)	(6.24)	**(0.43)**
p	(0.001)	(0.000)	(0.000)	(0.673)

$R^2 = 0.939$ df = 11 $F_{3,11} = 56.44$ (Prob > F= 0.00)

The model is not rejected, and according to R^2 value, the variation in military expenditure is explained by variations in chosen variables by about 94 percent.

According to the result obtained from the test, the war variable is not significant in its influence on military expenditure. However, there is a positive correlation between these two variables. GDP and employment are much more significant and carry positive impact on military spending in Russia.

In 1992 the Prime Minister of Russia, Yegor Gaidar, signed the order to cut both military procurement and industrial subsidies in order to reduce the budget deficit. Thus, production in the military industry fell sharply and by the end of 1997 it was less than 10 percent of the level in 1991. Any analysis of Soviet and Russian military expenditures encounters a number of methodological problems (Salo, 1997). First of all, there are numerous chapters that cover military spending differently every year. Second, there are some programs of clearly military purpose that are devoted to civilian programs. Third, in the middle of the 1990s only a small proportion of the modest volume of planned expenditures

had actually been disbursed. Fourth, there is a discrepancy in the reported amounts of planned and actual spending that points out additional budgetary allocations.

SIPRI research emphasizes the fact that prices of weapons rise more slowly than those of most other industrial goods. If this is so, the real trend of arms procurement may not be reflected reliably in the data on military expenditure. There is an example that Julian Cooper brings up in the SIPRI 1998 Yearbook: "Comparing the 1991 average with the 1996 average, industrial prices for Russian industry as a whole increased by 5,498 percent, prices for the production of weapons and other military hardware by 2,142 percent, and prices for the civilian output of the defense industry by 1,683 percent."

Analysis of the trend of actual spending on defense in recent years shows that, while expenditure appears to have increased quite rapidly in nominal terms, the rate of growth has been broadly in line with the rate of growth of GDP (Cooper, 2007). It means that world opinion about the rapid increase in military expenditure in Russia is exaggerated. Moreover, the facts above support the reality of the insignificant influence on Russian military expenditure of participation in war for Russia in the last fifteen years (Fig. 15).

Hypothesis #4:

Is Arms Export influenced by war when we control for military expenditure, GDP level, interest rate and unemployment?

Regression AE = f(ME, GDP, R, UE, WAR)

Using the OLS command we have next result:

$$\widehat{AE}_t = 8.8306 - 1.848\,(ME)_t + 0.046\,(GDP)_t - 0.0064(R)_t - 0.048(UE)_t + \mathbf{0.408}(WAR)_t$$

t=1,2…15

se	(2.23)	(0.706)	(0.018)	(0.004)	(0.153)	(0.371)
t	(3.96)	(–2.62)	(2.55)	(–1.72)	(–3.15)	**(1.10)**
p	(0.003)	(0.028)	(0.031)	(0.120)	(0.012)	(0.301)

$R^2 = 0.7415$ df = 9 $F_{5,9} = 5.16$ (Prob > F = 0.0165)

The model is not rejected, and according to R^2 value, the variation in arms export is explained by variations in the chosen variables by 74 percent.

The t-ratio of the war coefficient is insignificant for this model and means Russian war participation does not influence the arms sales of the country. However, other variables play a significant role for arms exports. Thus, we can see that a decrease in unemployment and military expenditure increases arms sales. GDP has also positive influence on the estimated variable.

The trend in arms exports looks very inconsistent according to the graph (Fig. 7). Nevertheless, tracing the maximums and minimums of sales we notice that 1993 was a good year for arms exports despite the 80 percent cut in procurement in the 1992 defense budget. The sudden decrease in arms sales in 1994 occurs the same year the first Chechen War begins. The sale of military weapons goes up during the war years until 1996, and after it decreases considerably. Since 1999, and the beginning of the second Chechen War, there has been a positive development in arms sales that seems to be relatively stable nowadays.

1993 saw conflicts in many republics of the former Soviet Union. Russia as a peacekeeper is involved in all of them. From one perspective, as a "big brother," Russia assisted in resolving the conflicts in hot spots by providing its army and necessary military techniques. From another point of view, since each newborn independent country had its own treasure house, each bought military equipment and conventional weapon from Russia and so increased the level of arms sales. Besides this, Russia made a deal with Serbia and Montenegro to provide these countries with conventional weapons when they were under the UN embargo. What is the most interesting is the deals with Slovenia, Hungary, Croatia and the Czech Republic for large amounts that none of these counties had contracted erenow. According to the SIPRI Arms Transfers Database, these deals were made as a payment of Russian debt to these countries.[13]

In 1994, China, the biggest recipient of Russian arms, cut its usual order by almost a third that noticeably influenced the average export of arms. The following two years saw an increase in the orders for the export of armaments. Looking at the character of those deals we find a similar reason to that noted above—that is payment for debt. An interesting fact is that these countries, which made arms deals in these years, did not have any armed conflicts on their territories.

Thus, drawing an analogy between the involvement of Russia in the first Chechen War (1994–1996) and the trend in arms exports at that time, we notice that it was a good time for Russian exports. The next years 1995–1996 show a big decline in arms sales while in the U.S.A. it reaches its maximum. Besides Russia's constant customers, India and China, Russia made arms deals with Ethiopia and Eritrea. These countries were at war with each other that year[14].

After the second Chechnya conflict started in 1999, Russia experienced an increase in its arms exports and in 2002 it reached the level where it sold more than the U.S.A. It is noted by Tenet, the Director of Central Intelligence, that the continuing failure of the Russian economy in the beginning of the 1990s created a nearly irresistible attraction to the hard capital generated by the export of advanced conventional weapons systems. Thus, Russian earnings, based upon the foreign sales of arms have increased by 58.3 percent from $2.8

[13] **Source:** SIPRI Arms Transfers Database
[14] **Source:** http://www.ploughshares.ca/.

billion to $4.8 billion (Tenet, 2000). At the end of the 1990s, Russia was looking for new customers and in 1999 Russia's customer became Iraq, which signed a contract on valuable missile technology.

Hypothesis #5:

Is oil price influenced by war when we control for GDP?

Regression OIL = f(GDP, WAR)

Using the OLS command we have next result:

$$\widehat{OIL}_t = 8.7106 + 0.1056\,(GDP)_t \mathbf{-1.2459}(WAR)_t \qquad t = 1,2\ldots15$$

se	(4.121)	(0.038)	(2.244)
t	(2.11)	(2.79)	**(–0.56)**
p	(0.056)	(0.016)	(0.589)

$R^2 = 0.5364$ df = 12 $F_{2,12} = 6.94$ (Prob > F = 0.0099)

The model is not rejected, however, according to R^2 value, the variation in oil price is explained by variations in chosen variables by only 54 percent.

According to the result, participation in war has a negative but insignificant influence on the price of oil. Change in the GDP level has a much stronger significance for the determination of oil prices.

Once again we notice an almost mirror reflection in the oil price trend among the countries under consideration. It emphasizes the fact of a strong dependency of the economy on the world oil market. However, Russia wins the 8th place among the countries with the greatest oil reserves and the 2nd place among oil producers and exporters. Thus, Russia, as a country which can also influence oil prices in the world, has a certain responsibility for the factors causing the change and fluctuation in the price.

On the other hand, Russia's economy is heavily dependent on oil and natural gas exports, making it vulnerable to fluctuations in world oil prices. The recession in the economy at the end of the 1990s is a clear example of this dependency. At the time when the price of oil began to decrease, Russia was involved in peacekeeping over its former territory. Conflict zones became a sphere of rivalry and collision of interests in military, political, and

oil issues. Russia lost its position in these regions, and its economic partners and competitors—Turkey, the U.S.A., and countries of the European Union—took advantage of it, dynamically, and peacefully, winning economic and political space in Central Asia and the Southern Caucasus (Kortunov, 2002).

The promising economic prospects of these regions, especially in the field of crude resources, determined the U.S.A. to cooperate with these countries. Thus, there was a competitive tension between Russia and the U.S.A. regarding participation in the mining and extraction of natural resources. The U.S.A., which had a long-term experience of investments in the mining industries of developing countries, was interested in enhancing its influence among former republics of the U.S.S.R. by creating a favorable investment climate in those areas. However, in the first years after the U.S.S.R. collapsed, Central Asia had a secondary place in the scale of priorities in Russian foreign policy. The war in the Chechen Republic (1994–1996), and acts of sabotage all over the country, turned Russia's attention and all available forces to its anti-terror campaign (Bosin, 2000).

The desire of the Chechen Republic for independence was refused by the Russian government. The main reason for this decision is the economic considerations of Russia regarding the oil pipeline in Chechnya. Grozny, the capital city of Chechnya, is a key oil pipeline juncture, because of its importance as an oil refining center supplying consumers in the North Caucasus and supplying specialty lubricants and paraffin to the country as a whole. Grozny is also a juncture for natural gas from gas fields in Russia and from Central Asia. The media in 1995 noted that oil production in Chechnya had dropped drastically by some 71 percent since 1991. To secure the region became the main task of the Russian government at that time. Interestingly, during the war the price of oil went up, when the result of the model and the correlation table suggests a negative relationship between these variables.

At the same time Russia managed to build a new pipeline in Dagestan, the neighbor of Chechnya, and in 1996 the first Chechen War ended with more than 100,000 casualties from both sides. However, in December 1999 a new armed conflict between Russia and Chechnya began when breakaway Islamic rebels of the Chechen republic invaded the neighboring republic of Dagestan.

1999 was the year when the oil price reached its minimum. Nevertheless, since that time the trend in the price of oil has been positive; at the end of 2006 it reached its maximum level.

Considering the discussion above, no clear conclusion was reached in this analysis about the military participation of Russia in recent wars because the price of oil takes a different direction in each case of involvement.

Hypothesis #6:

Is monetary policy influenced by war when we control for arms export and unemployment rate?

Regression R = f(AE, WAR, UE)

Using the OLS command we have next result:

$\hat{R}_t = 310.35 \quad -42.59\,(AE)_t \quad -16.91\,(UE)_t \quad \mathbf{+43.89}(WAR)_t \qquad t = 1,2\ldots15$

se	(72.077)	(13.196)	(5.058)	(21.272)
t	(4.31)	(–3.23)	(–3.34)	**(2.06)**
p	(0.001)	(0.008)	(0.007)	(0.064)

$R^2 = 0.7182$ df = 11 $F_{3,11} = 9.34$ (Prob > F = 0.0023)

The model is not rejected, and according to R^2 value, the variation in interest rate is explained by variations in the chosen variables by about 72 percent.

According to the result, war plays a crucial role in fluctuations of the interest rate. Thus, if the country is involved in war the interest rate goes up. Other variables in this model have a significant but negative weight on the change in interest rates in Russia.

The monetary policy in the early years of the Russian Federation was driven by corrections due to credit expansions at explosive rates that led directly to high inflation and to deterioration in the exchange rate of the ruble. Domestic credit determined by the state enterprises was increased about nine times between the end of 1991 and 1992. The government restricted financing the state enterprises after it lifted controls on prices in January 1992 (Kortunov, 2002). At the same time, state enterprises faced cash shortages because the decontrol of prices cut demand for their products. Instead of curtailing production, most of the firms chose to build up inventories. To keep up production, state companies relied on loans from other companies, which generated a blockage of the

economy when the unpaid loans reached about U.S. $20 billion.[15] In order to solve the situation, the government froze unpaid debt. This restraint generated more inflation, and once the debt control became policy, the unemployment rate started to increase and the interest rate was increased to control the inflation. At the same time, conflicts exploded in the former states of the Soviet Union, and Russia became involved as a peacekeeping force in all of them, as well as engaging in military combat in some. Participation in war puts a lot of pressure on an economy in crisis, and looking at the model we see that military engagement of Russia predicts negative impact on the interest rate (engagement in war contributed to a 43.8 percent increase in the interest rate).[16] Luckily, during these times, arms exports were increased and helped the Russian economy to recover; it also contributed to a decrease in the interest rate. Thus, according to the model equation, a 1-billion-dollar increase in arms exports contributed to a decrease in the interest rate by 42.59 percent.

[15] **Source:** *"Russia budget crisis"* Journal "Economic questions" 1998, № 9, 10.
[16] **Source:** *"Russian enterprises are in crisis conditions"* Journal "The Economist" 1998, № 9.

CANADA: Summary Statistics Report

Variables		Mean	Std. Dev.	Min	Max
YEAR	15	1999	4.472136	1992	2006
ER	15	0.7343723	0.0703472	0.6367968	0.8817614
GDP	15	742.4573	197.7511	563.94	1161.94
UE	15	8.526667	1.548947	6.9	11.4
CPI	15	94.88	8.270447	84	109.1
INFL	15	1.786667	0.6885457	0.2	2.7
R	15	4.291444	1.632092	2.25	7.3075
OIL	15	16.372	6.911902	6.01	31.33
ME	15	13210.2	1549.052	11001	16677
ME %GDP	15	1.34	0.2746426	1.1	1.9
AE	15	162.4667	87.67543	34	326
PARTY	15	0.0666667	0.2581989	0	1
WAR	15	0.4	0.5070926	0	1
CPI 1992	15	112.9524	9.84577	100	129.881
GDP 1992	15	629.0727	88.55472	553.1834	814.7412
ME 1992	15	11392.53	929.9163	10162.83	13041

The table shows that 40 percent of the time under investigation, Canada was a participant in a war. Also, there is one change in the government in 2006. All other variables have some variation.

Looking at the graphs (Appendix B) we may observe that over the years CPI goes up (Fig. 8). The real GDP shows a slightly increasing trend until the beginning of 2000 and a sharp increase after 2003 (Fig. 3). Unemployment rate has a strong negative trend during the period of consideration; only at the beginning of 2000 it increases (Fig. 4). Interest rate has a negative trend with an increase in 1995 and 2000 (Fig. 5). Military expenditures are decreasing sharply in real terms before 1997 and start to increase after (Fig. 13). Exchange rate fluctuates a lot over time, which shows that the U.S. and Canadian currencies are not converging (Table 4).

Correlation Table

	Y	ER	UE	INFL	R	PARTY	WAR	CPI'92	GDP'92	ME'92	OIL'92	AE'92
Y	1	0.0892	-0.9126	0.3085	-0.827	-0.2315	0.8504	0.989	0.8446	-0.5415	0.5602	0.1418
ER	0.0892	1	0.2053	-0.3417	-0.103	0.6838	0.1309	0.2074	0.5928	0.5446	0.4983	0.2492
UE	-0.913	0.2053	1	-0.4001	0.6243	0.4477	-0.6602	-0.851	-0.6351	0.7095	-0.3888	-0.0094
INFL	0.3085	-0.3417	-0.4001	1	-0.145	-0.2405	0.3437	0.2976	0.0972	-0.3742	0.2536	0.2144
R	-0.827	-0.1033	0.6243	-0.1454	1	0.1363	-0.7838	-0.831	-0.6931	0.5126	-0.4981	-0.006
PARTY	-0.232	0.6838	0.4477	-0.2405	0.1363	1	-0.068	-0.124	0.1183	0.6591	0.1699	-0.0522
WAR	0.8504	0.1309	-0.6602	0.3437	-0.784	-0.068	1	0.8877	0.7334	-0.2506	0.4963	0.3389
CPI'92	0.989	0.2074	-0.8511	0.2976	-0.831	-0.1239	0.8877	1	0.8967	-0.4324	0.6166	0.2071
GDP'92	0.8446	0.5928	-0.6351	0.0972	-0.693	0.1183	0.7334	0.8967	1	-0.148	0.7203	0.2653
ME'92	-0.542	0.5446	0.7095	-0.3742	0.5126	0.6591	-0.2506	-0.432	-0.148	1	-0.1885	0.274
OIL'92	0.5602	0.4983	-0.3888	0.2536	-0.498	0.1699	0.4963	0.6166	0.7203	-0.1885	1	0.2901
AE'92	0.1418	0.2492	-0.0094	0.2144	-0.006	-0.0522	0.3389	0.2071	0.2653	0.274	0.2901	1

The correlation table shows more or a less trend among variables. Surveyed unemployment rate and interest rate have strong negative trends and GDP variable have a strong positive trend. Concentrating the attention of analysis on the effect of war on the other variables, we may observe that in the case of Canada, war is negatively correlated with unemployment and interest rate and positively correlated with GDP, arms export and oil. The party variable (conservator government) is not correlated to war.

In order to see which variables to use for the hypothesis we look at the correlation of the other variables. Therefore, the exchange rate is positively correlated with almost all variables except inflation and interest rate. The correlations are not strong, only some of them are relatively significant: party, GDP, and military expenditures.

Unemployment rate has mostly negative correlations, except the correlation with the interest rate and military expenditures. The positive correlations are significant in this case.

Inflation is not significantly correlated to any of the variables. It is due to the correction to inflation that was done for dollar-amount variables. Therefore, the focus of the research will be on interest rate, which is mostly negatively correlated with all variables except the unemployment (strongly positive correlation), military expenditures (moderate positive correlation) and party (no correlation). The interest rate has a strong negatively correlation with war and GDP.

Arms export is not important for the economy; there is no significant correlation between arms export and any other variables. Surprisingly, the military exports are increasing

during war participation (moderate to small positive correlation) and with the increase in the price of oil (moderate to small positive correlation).

The party variable (1 for conservators) is in positive correlation to the exchange rate, military expenditures and the unemployment. Therefore, during the time of the conservator government the expenses on military expenditures are probably done to import military equipment and not to produce jobs in the economy.

In Canada, resources are playing an important role in the economy and observation of a strong positive correlation between the price of oil and GDP confirm this fact. The strong positive correlation between war and GDP can be linked to the increase in the price of natural resources.

Military expenditures as previously presented have a negative impact on the unemployment rate (strong positive correlation, the unemployment is increasing) and positive correlation with the exchange rate, interest rate and party.

Hypothesis #1:

Is the GDP influenced by war when we control for interest rate, exchange rate, and unemployment?

Regression GDP = f(WAR, R, ER, UE)

OLS command we have next result:

$\hat{}$

$GDP_t = 311.20 + 857.78(ER)_t - 7.647(R)_t + \mathbf{24.82}(WAR)_t - 33.91(UE)_t \quad t = 1,2\ldots15$

se	(44.84)	(57.91)	(3.77)	(12.89)	(3.57)
t	(6.94)	(14.81)	(–2.03)	**(1.93)**	(–9.51)
p	(0.000)	(0.000)	(0.070)	(0.083)	(0.000)

$R^2 = 0.9826$ df = 10 $F_{4,10} = 140.98$ (Prob > F = 0)

The model is not rejected, and according to R^2 value, the variation in real GDP level is explained by variations in the chosen variables by about 98 percent.

From the obtained results we may conclude that all variables are statistically significant (war variable and interest rate being significant at 10 percent). Thus, the military engagement of Canada positively changes GDP when all other variables are kept constant. The level of the coefficient suggested that when we control for other economic variables, war involvement does help Canadian GDP. This may be due to the high correlation between the price of resources and war.

Since 1992 Canada's GDP increased in two times (A: Table 5). According to the results that we have got from correlation table there are many contributors to the fact of increase in gross domestic product. Canada is a peaceful country that is committed to multilateralism that assumes military involvement as a part of large coalition. After entering UN in 1956, Canada has become a strong supporter of a peacekeeping, and has participated in almost every mission since its inception. In the yearly 1990s Canada, as a part of NATO,

had participated in Gulf War II (1991) and Yugoslavian Conflict[17] (1993) where the country fortunately did not have any casualties (Desmond, 1999). In 2001 Canada joined U.S.-led coalition in 2001 Attack on Afghanistan. Since that time Canada is involved in War against terrorism.

Going back to the discussion of change in GDP level over time, we may notice that there were two big recessions for the fifteen years. One recession is in 1998, another one is in 2001 (Fig. 3).

In 1998 Canada has participated and does participate nowadays in peacekeeping missions in more than ten countries, according to the fact sheets of UNA-Canada.[18]

However, talking about military participation, we cannot consider peacekeeping involvement of Canadian Army at that time. The reason of this rejection is comparably small number of military persons in these actions, absence of casualties as a result of absence of battles, relatively small cost of peacekeeping operations on the background of the cost of a big involvement in war. Therefore, we can assume that recession in 1998 happened due to other circumstances.

The second recession of GDP happened in 2001, when Canada made a decision to enter The Anti-Terror War in alliance with the U.S.A. Considering the fact of close relationship with the U.S.A. that officially declared itself as a militant against terror that year, we may assume the economic connection of this event and decline in GDP level. However, since 2001 GDP was extremely going up and according to results of correlation, participation in was has a positive influence on GDP. So, we can theoretically conclude that GDP had a slight recession in the year of the beginning the war in Afghanistan, in which Canada became active participant, and later on GDP went up holding the high level for the whole history of Canada. According to data from Statistics of Canada, the real GDP is increased by 2.5 percent from 2006 to 2007.

[17] Croatia. Operation Medak Pocket within 9-17 September, 1993.
[18] **Source:** official website UNA-Canada http://www.unac.org/peacekeeping/en/un-peacekeeping/fact-sheets/canadian-participation-in-un-peacekeepinga-chro/

Hypothesis #2:

Is the Unemployment rate influenced by war when we control for oil price, interest rate, military expenditures, political system, and GDP?

Regression UE = f(OIL, WAR, R, ME, PARTY, GDP)

Using the OLS command we have next result:

$$\widehat{UE}_t = 6.145 - 0.48(R)_t + 0.002(ME)_t \mathbf{-1.15}(WAR)_t + 0.10(OIL)_t - 0.99(PARTY)_t - 0.02(GDP)_t$$

t= 1,2…15

se	(0.955)	(0.134)	(0.00015)	(0.365)	(0.053)	(0.586)	(0.003)
t	(6.44)	(–3.58)	(9.85)	**(–3.15)**	(1.85)	(–1.69)	(–6.18)
p	(0.000)	(0.007)	(0.000)	(0.013)	(0.101)	(0.130)	(0.000)

$R^2 = 0.96$ df = 8 $F_{6,8} = 31.97$ (Prob > F = 0)

The model is not rejected, and according to R^2 value, the variation in real GDP level is explained by variations in the chosen variables by about 96 percent.

Once again, we have the result where all of the coefficients in the model are statistically significant and any alteration in any of these valuables significantly changes the level of unemployment rate. The coefficient of participation in war for Canada is more statistically significant here than in the previous model with GDP relationship. Thus, war participation decreases unemployment in the country. The t-ratio for military expenditure shows that it is the most significant coefficient in the model and has a positive influence on changing the unemployment rate. Because defense budget has a logical connection to financing the army and providing more jobs for those who directly and indirectly serve to the country supporting its war involvement, we should not ignore this variable as well.

War effect on labor market seems to be strong according to this model; even we have a relatively moderate correlation between these variables. Analyzing the data we may stress the points with recession in unemployment rate and its growth.

1992 was a time of high unemployment in Canada that had tendency to decrease. Slowly but surely it reached the point of 6.9 in 2000 year that is the minimum point considering fifteen years of Canada. Canada sent its first troops to Afghanistan in 2001 and still conduct the military operations there, increasing the number of troops. Thus, nowadays there are 2.500 Canadian Forces personnel participate in hostilities against terror.[19] We need to stress one fact that in the beginning of the Anti-Terror war Canada had less then 1.000 personnel serving under the NATO jurisdiction on the territory of Afghanistan, and the increase in strength was happening over the recent years. Scrutinizing the trend of unemployment rate we may notice its growth during two years after the war in Afghanistan took the place. Slow decline began after 2003. There are some contradictions between our result and general conception that war creates additional jobs and decreases the level of unemployment (Fig. 4). Our case seems to be opposite, perhaps for the reason of fewer Canadian Military Forces. However, according to The Conservative Party of Canada Federal Election Platform 2006, by 2010 there are 13 000 new, full-time soldiers and another 10,000 reservists will be recruited by Canadian Forces. It is also should be mentioned that Canadian troops will stay in Afghanistan until 2011, according to the government plan. Today Canada's rate of unemployment is 5.8, which is the lowest index for the last seven years.

[19] An Interim Report of the Standing Senate Committee on National Security and Defense "Canadian Troops in Afghanistan: Taking a Hard Look at a Hard Mission," Feb, 2007 http://www.parl.gc.ca/39/1/parlbus/commbus/senate/com-e/defe-e/rep-e/repfeb07-e.pdf.

Hypothesis #3:

Is Military Expenditure influenced by war when we control for oil price, unemployment rate, and GDP?

Regression ME = f(OIL, WAR, UE, GDP)

Using the OLS command we have next result:

$$\widehat{ME}_t = -2{,}733.9 + 12.9972\,(GDP)_t + \mathbf{17.8502}(WAR)_t - 71.565(OIL)_t + 681.458(UE)_t$$

t= 1,2…15

se	(1212.487)	(2.3449)	(376.2051)	(58.82)	(109.422)
t	(–2.25)	(5.540)	(**0.050**)	(–1.22)	(6.230)
p	(0.048)	(0.000)	(0.963)	(0.252)	(0.000)

$R^2 = 0.9067$ df = 10 $F_{4,10} = 24.28$ (Prob > F = 0)

The model is not rejected, and according to R^2 value, the variation in military expenditure is explained by variations in the chosen variables by about 91 percent.

Here we have the result where coefficients of GDP and unemployment rate are statistically significant and adversely influential regarding the military expenditure. Thus, increase in GDP and unemployment causes a decrease in military expenditure. The war coefficient is not significant and according to the result, the military involvement of Canada doesn't really tell on the defense budget within the last fifteen years.

There are many debates about increasing of military expenditure in the world since 1996 (SIPRI). Looking at our data we see that Canada was decreasing its military spending until 1997 and since 1998 it has tendency to increase its defense budget. However, military expenditure as a percent of GDP looks very stable over the time, so Canada manage to stay within the index of 1.1 to 1.2 percent since 1998. This fact once again confirms the result of the model.

Nevertheless, hodiernal proponents of the idea of runaway defense expenditure in Canada calculate the expenditure in a dollar value putting Canada on the 6th place among 26 NATO countries (Staples & Robinson, 2007). Military expenditure as the percentage of GDP places Canada in the 13th position in the NATO list and in the 15th position in the world. According to Steven Staples and Bill Robinson from CCPA[20] the increase in the military spending in 2007–2008 will be 27 percent higher than it was before September 11, 2001. Moreover, after the next two years of planned increases, it will be 37 percent higher than it was in 2001. This prediction is based on the fact of involvement of Canada in military operations in Afghanistan. The full cost for 2006–2007 is assumed to be 2,008.9 million U.S. dollars and 1,600.7 million U.S. dollars for 2007–2008. The total cost for military operations in Afghanistan since 2001 is assumed to be $7.2 billion at 2008.

Moreover, according to the election platform 2006, by 2010, conservative government is going to increase spending on the Canadian Forces by $5.3 billion over the next five years, beyond the currently projected levels of defense spending. There was also mentioned about necessity to acquire equipment needed to support a multi-role, combat-capable maritime, land, and air force.

Therefore, by testing the model we may conclude that Canada was quite stable in its defense spending over year despite its involvement in the Anti-Terror war in 2001. However, recent information shows that continuous participation in the war demands financial support and increase in defense budget.

[20] CCPA – Canadian Centre for Policy Alternatives is independent, non-partisan research institute concerned with issues of social and economic justice. Founded in 1980, the CCPA is one of Canada's leading progressive voices in public policy debates.

Hypothesis #4:

Is Arms Export influenced by war when we control for oil price, political system in the country, and exchange rate?

Regression AE = f(OIL, WAR, PARTY, ER)

Using the OLS command we have next result:

$$\widehat{AE}_t = -135.55 + 309.628\,(ER)_t - 74.099(PARTY)_t + 4.0492(OIL)_t + \mathbf{85.1924}(WAR)_t \qquad t = 1,2\ldots15$$

se	(301.195)	(468.448)	(114.136)	(9.524)	(52.090)
t	(–0.45)	(0.66)	(–0.65)	(0.43)	(**1.64**)
p	(0.662)	(0.524)	(0.531)	(0.68)	(0.133)

$R^2 = 0.3823$ df = 10 $F_{4,10} = 1.55$ (Prob > F = 0.2618)

The model is not rejected, but according to R^2 value, the variation in arms export is explained by variations in the chosen variables only by 38 percent.

The result of this model shows insignificance of chosen variables regarding the changes in arms export. However, there is some significance in war coefficient. Thus, we may tell that participation in war increases the arms export of the country by 85.19 million U.S. dollars.

Analyzing the records from SIPRI Yearbooks the following information was found: 1995 was the year with maximum of arms sales. The major recipients of Canada the U.S.A. purchased 153 Canadian helicopters and transport aircraft for 132 million U.S. dollars in total. It was one of the greatest deals ever in the Canadian military business; another big purchase was made in 2003 by the U.S.A. as well. It should be noted that according to the statistical data from SIPRI, 1995 was the year of a big decline in the world military expenditure. However, at that time Yugoslavian conflict was on its peak, and that year NATO launched a series of air strikes on Bosnian Serb artillery and other military targets.

After 1995 the military export of Canada went down until it reached the level of 1998 when the arms sale had its minimum—34 U.S. million dollars. Interestingly, that in 1998 Canada was on the 10th place among leading suppliers of major conventional weapons compared to 2004 when Canada had the second maximum in its arms sale trend and was rated the 80th regarding its arms sale. This fact shows increase in sales among military suppliers with a small contribution of Canada in it.

The year when Canadian Forces joined U.S.-led in Anti-Terror war, Canada kept increasing its export until 2004. Then arms export started to decrease. However, recent data shows that there is a tendency to the new increase in the production of conventional weapons, and the observation of the 2006th year supports this evidence. Nowadays Canada has 9 major recipients compared to the beginning of 1990s when the number was 17.

Hypothesis #5:

Is oil price influenced by war when we control for GDP and military expenditure?

Regression OIL = f(GDP, WAR, ME)

Using the OLS command we have next result:

$\hat{}$

$OIL_t = -2.5671 \; -0.0005\,(ME)_t + 0.03606(GDP)_t \; \mathbf{-0.04226}(WAR)_t$ t= 1,2…15

se	(4.1993)	(0.0007)	(0.0107)	(1.8119)
t	(–0.61)	(–0.64)	(3.36)	**(–0.23)**
p	(0.553)	(0.536)	(0.006)	(0.820)

$R^2 = 0.7102$ df = 11 $F_{3,11} = 8.99$ (Prob > F = 0.0027)

The model is not rejected, and according to R^2 value, the variation in oil price is explained by variations in the chosen variables by 71 percent.

The estimated coefficients of military expenditure and war participation seem to be statistically insignificant. It means that these variables are weakly related to the change in the oil price. GDP level has more power to change the oil price.

The major change in the price level happened in 1997 when it hit $17.18 per barrel and went down to $5.37 in 1999 (A: Table 5). Canada was not involved at that time in the hostilities. However, its neighbor the U.S.A. had a very intensive relationship with the Middle East, where Iraq conflict was growing fast. In the beginning of 1990s Iraq became one of the major suppliers of oil for the U.S.A., but in the middle of 1990s Iraq stopped its delivery due to serious hostilities on its territory and aggressive policy between the U.S.A. and Iraq. Canada was and is the oil supplier number one for the U.S.A. From the basic rule of demand and supply relationship we know: when there is a decrease in quantity and the demand is increasing, there is an increase in price level. Considering the fact that in the second half of 1990s the U.S.A. increased its demand for oil by more than 10 percent, it is evidently that those changes positively reverberated on oil price as well.

The second jump in oil price happened in 2000, but went down in 2001, when Canada started its military operations in Afghanistan. Next year the price dropped again. However, in 2003 the price jumped up by more than 100 percent. This was the year when Saddam regime toppled in Baghdad and U.S. forces occupied country and battled Sunni and Shiite insurgencies. Canadian Forces till present time are in Afghanistan and their presence demands financial support from the country. Thus, considering the history of the military events for the last fifteen years we notice that Canadian participation in war plays secondary role in change of oil prices in the period of peacekeeping. However, at the time when the country is involved in the war the influence of this fact on oil prices is still insignificant.

Hypothesis #6:

Is monetary policy in Canada influenced by war when we control for GDP, political direction, and the unemployment rate?

Regression R = f(GDP, WAR, PARTY, UE)

Using the OLS command we have next result:

$$\hat{R}_t = 0.00188 \quad -0.0205\,(GDP)_t \quad -1.1002(UE)_t \quad \mathbf{-1.9763}(WAR)_t \quad -0.9605(PARTY)_t$$

t= 1,2…15

se	(0.0004)	(0.0052)	(0.3486)	(0.5580)	(1.0069)
t	(4.24)	(–3.93)	(–3.17)	**(–3.54)**	(–0.95)
p	(0.002)	(0.003)	(0.011)	(0.006	(0.356)

$R^2 = 0.8818$ df = 9 $F_{5,9} = 13.43$ (Prob > F = 0.0006)

The model is not rejected, and according to R^2 value, the variation in interest rate is explained by variations in the chosen variables by about 88 percent.

Any changes in chosen variable have a strong adverse change in interest rate. However, the political direction of the country doesn't affect the interest rate at all. The war coefficient in this model is highly statistically significant. Thus it seems to be obvious that participation in war decreases interest rate a lot.

Our test refers to the effect of war on interest rate. The results confirm that when we control for GDP, unemployment rate and party, the war has a negative effect on the interest rate. Therefore, during war the monetary policy is relaxed to counterbalance the tendency of saving and determine people to consume. The relationship also shows that GDP has a negative impact on the interest rate, in other words, an increase in GDP may increase prices, which in turn are balanced by lower interest rates. Unemployment on the other hand affects negatively the interest rate.

The global maximum in the whole interest trade of Canada during the last fifteen yeas was in 1995 with the average annual index is 7.3075. In that year there was an overlap of events: a series of military operations in Yugoslavia conducted by NATO (without participation of Canada) and the Quebec Referendum for separation in Canada. These events caused uncertainty in the society and instability in business environment in the country.

Starting from 2001 Canadian interest rate has been decreasing. This is also the year when Canada got involved in The Afghan War. Therefore, the relationship between war participation of Canada and monetary policy in the country should not be rejected.

Conclusion

This paper considers the effect of participation in war on different economic variables. Six hypotheses were tested and they are enumerated as follows: the effect of war on GDP, on the unemployment, on the interest rate, on domestic oil price, on military expenditures and on arms export. According to the results of the hypothesis, engagement in war negatively affected the GDP level of the U.S.A. and Russia and positively affected the GDP level of Canada. The unemployment rate in Russia and the U.S.A. is negatively affected by war; therefore, it is increasing during war times. On the contrary, for Canada there is a decrease in the unemployment during the participation in war. Military expenditures are positively related to the engagement in hostilities, but the marginal effects are different for the three countries. This can be explained by the level of the military spending as a percentage of GDP, which is the lowest for Canada and the highest for the U.S.A. Arms export is not affected by the involvement in war in the case of Russia and Canada, on contrary, it increases. This is not true for the U.S.A., where we observe a continuous decline in arms exports, especially during war times. Wars have negative impact on the oil price for all of these countries. Thus, the price is decreasing at the time of their involvement. Interest rate is going down in the case of the U.S.A. and Canada and goes up in the case of Russia.

There are five conclusive observations coming out from the analysis. We observe significant different results for the three countries, and these differences are due to the degree of involvement and economic conditions inside the country at the beginning of their involvement.

First, as it has been mentioned in the introduction, the impact of the participation in war depends very much on the degree of development in the economy and technology of the country that is involved in war. Thus, we notice that the U.S.A. as a country with a strong economy and highly developed technology had an advantage over Russia whose involvement in internal armed conflicts was on the background of a deep economic recession in the period of wars. As a result, we see continual growth of GDP over the time in the U.S.A. and declining GDP in Russia. Only at the time when the tension of the war event in Chechnya began to decrease, Russia's GDP began to grow.

Second, the involvement of the U.S.A. in the Middle East military conflict has a strong impact on the oil price. There are official evidences of the influence of the events happening in the Middle East on the world price of oil. The degree of involvement in hostilities in the Middle East by the U.S.A. has a significant impact on the world oil price and world economies. There is a logical assumption that the U.S.A. as a biggest importer and consumer of oil is interested in moderate oil prices because any sudden increase in the price level doesn't make a positive contribution for its economy. However, the upward shift in the oil price, mostly caused by the facts of unsuccessful operations of the U.S. Forces in the Middle East, makes positive contribution to the economies of countries that are producers and exporters of oil. Thus, Russia and Canada, as largest exporters of oil in the world, gain a lot from the increased oil price, even not being involved in war in Iraq.

Third, war is a great contributor to the military industry for big arms exporters as Russia and the U.S.A. Thus, under the pressure of the Chechen war, there was a fast revival of a military-industrial complex and noticeable increase in the arms exports. In the case of the U.S.A. there were many good deals between the military complex of the U.S.A. and countries having armed conflicts on their territories. There is one important fact. Both, the U.S.A. and Russia, are competitors in the arms market, whose military technology is directed on the extermination of the weapon technology of each other. Therefore, the war in Iraq became a profitable business for Russia and wars against Russia are profitable for the U.S.A. arms exports. Canada as a country with one company that produces military equipment and weapons does not gain much due to its not competitive position. However, the U.S.A. as a major recipient of Canadian military arsenals made a great contribution to the Canadian economy in 2003 when it purchased military goods of 190 million U.S. dollars in value.

Fourth, the interest rate is going up when the country faces economic uncertainty and less security due to participation in wars. With growing risk of investments, the interest rate is also growing. However, in the case of the U.S.A., the Federal Reserve is decreasing the interest rate in order to stimulate internal consumption. The failure of the policy leads to outflow of the capital to more stable economies. Considering the fact of close economic relationship between the U.S.A. and Canada we find many similar features in the trend of the interest rate as well. Nonetheless, the participation of Canada in the Anti-Terror war is minimal compared to the participation of the U.S.A. and due to this fact the fluctuation of the

interest rate in Canada is not much influenced by the war. Thus, we observe inflow of capital in the Canadian economy with lower interest rate, when the U.S.A.'s interest rate goes up.

Fifth, according to the western myth that was mentioned in the introduction, the unemployment rate is supposed to go down due to the big involvement of human capital in a war. There is noticeable negative trend of the unemployment rate in the U.S.A. with the consequent increase in degree of contribution in the war against the terror. Canada is more stable in its unemployment rate and this is mostly due to much lower costs incurred by war participation. In the case of Russia we cannot be objective in the issue of influence of war on the unemployment rate due to general economic instability and many other reasons during the considered wars and armed conflicts.

Thus, in view of the above, we conclude that war is a business that affects both the long-term and short-term investment. The countries with great natural resources and well-developed military complexes have an advantage over the countries that experience lack of this. On the other hand, the growth of contribution in war can negatively influence the development of social, scientific, educational, demographical and other spheres of the country. The cost of being involved in war is growing for each year of participation. Today's profit gained from arms exports and increased oil price can be lost tomorrow due to loss of stability and peaceful future in the world. Thus, on the one hand, war is good for the economy for a certain period of time; on the other hand, long-term war has a ruinous character in the life of the country that is engaged in war.

APPENDIX A

Table 1

Armed Conflict with a military involvement of Russia, the U.S.A. and Canada (1990–ongoing)

Russia (formerly U.S.S.R.)	*United States of America*	*Canada*
South Ossetian Rebellion 1990–92 Soviet Intervention: Latvia 1991 Moldovan Civil War 1991–1992 Georgian Civil War 1991 Abkhazian Rebellion 1992–1993 Dushanbe Demonstration 1992 Tajikistani Civil War 1992–1997 Georgian Civil War 1993–1994 Chechen War I 1994–1996 Chechen War II 1999–ongoing	Persian Gulf War 1990–1991 Somalia 1992–1994 Haiti 1994 Yugoslavia 1992–1995 Iraq 1998 Yugoslav War 1999 War on Terrorism 2001–ongoing Iraq War 2003–ongoing Pakistan 2005–ongoing	Persian Gulf War 1991 Afghanistan War 2001–ongoing

Source: http://www.onwar.com and http://academic.evergreen.edu/g/grossmaz/interventions.html

Table 2

Source: http://www.sipri.org/contents/milap/milex/aprod/sipridata.html

Canada

1 company with arms sales of 0.4b USD
(0.2 percent of SIPRI Top 100 total arms sales)
CAE

Russia

9 companies with arms sales of 5.4b USD
(1.9 percent of SIPRI Top 100 total arms sales)
Almaz-Antei, Admiralteiskie Verfi, Irkut, Sevmash, Sukhoi, Severnaya Verf, Aerokosmicheskoe Oborudovanie, TRV Corp and MMPP Salyut

U.S.A.

40 companies with arms sales of 182.5b USD
(62.9 percent of SIPRI Top 100 total arms sales)
Boeing, Northrop Grumman, Lockheed Martin, Raytheon, General Dynamics, L-3 Communications, United Technologies Corp., SAIC, Computer Sciences Corp. and 31 others

Table 3

Data for the U.S.A. 1992–2006:

Y	ER	GDP	UE	INFL	R	OIL	ME	ME, %GDP	CPI	AE	PARTY	WAR	POP
1992	1	6337.8	7.5	3	3.4792	16.1	305.141	4.9	140.3	14,444	1	1	255,410
1993	1	6657.4	6.9	3	3.0000	16.8	297.637	4.5	144.5	14,611	0	1	258,119
1994	1	7072.2	6.1	2.6	4.2917	12.93	288.059	4.1	148.2	11,801	0	1	260,637
1995	1	7397.6	5.6	2.8	5.8125	16.56	278.856	3.8	152.4	11,289	0	1	263,082
1996	1	7816.8	5.4	2.9	5.2500	17.48	271.417	3.5	156.9	10,919	0	0	265,502
1997	1	8304.3	4.9	2.3	5.4583	23.02	276.324	3.4	160.5	14,249	0	0	268,048
1998	1	8747	4.5	1.5	5.3125	14.33	274.278	3.2	163	15,388	0	0	270,509
1999	1	9268.4	4.2	2.2	5.0417	10.16	280.969	3.1	166.6	11,490	0	0	272,945
2000	1	9817	4	3.4	6.2708	25.29	301.697	3.1	172.2	7,508	1	0	282,388
2001	1	10128	4.8	2.8	3.7292	24.49	312.743	3.1	177.1	5,814	1	1	285,321
2002	1	10487	5.8	1.6	1.6667	17.04	356.720	3.4	179.9	5,009	1	1	288,205
2003	1	11004	6	2.3	1.1042	30.3	415.223	3.8	184	5,611	1	1	291,049
2004	1	11733.5	5.5	2.7	1.3958	30.11	464.676	4	188.9	6,665	1	1	293,027
2005	1	12438.9	5.3	2.7	3.2500	37.56	504.638	4.1	195.3	7,095	1	1	295,734
2006	1	13152.7	5	2	2.8333	55.9	546.018	4	201.6	7,940	1	1	299,398

Y – year
ER – exchange rate
GDP[1] – Gross Domestic Product, real. In billions of U.S. dollars
UE[1] – unemployment rate
INFL[1] – inflation
R[2] – interest rate
OIL[3] – oil price in $U.S. / barrel (U.S. Refiner Acquisition)
ME[4] – military expenditure, in millions of U.S. dollars
ME, %GDP[4] – military expenditure as a percent of GDP.
CPI[1] – consumption price index
AE4 – arms export, Trend Indicator Values (TIVs) in terms of U.S. million dollars
PARTY – political system of government, 1-Democrat, 0-Conservative
WAR[5] – dummy variable: 1- in-war, 0-out of war
POP[6] – population, thousands people

Sources:

1. EconStat™ of U.S.A. http://www.econstats.com
2. Federal Reserve Bank of New York, http://www.rba.gov.au/Statistics/Bulletin/F13hist.xls
3. Energy Information Administration, official energy statistics from the U.S. Government.
1. http://tonto.eia.doe.gov/dnav/pet/pet_pri_rac2_dcu_nus_m.htm
4. SIPRI Arms Transfers Database http://www.sipri.org/contents/armstrad/output_types_TIV.html
5. Zoltán Grossman http://www.zmag.org/list2.htm and website: http://www.onwar.com/
6. U.S. Census Bureau, http://www.allcountries.org/uscensus/population.html

Table 4

Data for RUSSIA 1992–2006:

Y	ER	GDP	UE	INFL	R	OIL	ME	ME, %GDP	CPI	AE	PARTY	WAR	POP
1992	0.0035	85.572	5.2	1734.70	80.000	16.55	42,500	4.50	139.3333	2,648	1	1	148,704
1993	0.0011	183.826	5.5	878.80	210.000	16.30	37,600	4.20	120.6670	3,526	1	1	148,673
1994	0.0004	276.901	7.4	307.50	180.000	12.35	36,600	4.67	110.0833	1,519	1	1	148,366
1995	0.0002	313.451	8.5	198.00	91.483	16.40	21,700	3.47	107.3417	3,364	1	1	148,306
1996	0.0002	392.085	9.6	47.70	38.042	19.47	19,200	3.18	101.6667	3,712	1	1	147,976
1997	0.0002	404.946	10.8	14.80	20.967	22.85	21,300	3.47	100.8760	3,131	1	0	147,502
1998	0.1019	271.038	11.8	27.70	50.558	15.79	13,600	2.85	105.6750	2,025	1	0	147,105
1999	0.0407	195.907	12.9	85.70	14.792	10.09	14,000	2.79	102.6500	3,810	1	1	146,693
2000	0.0356	259.702	10.6	20.80	7.142	24.71	19,100	2.93	101.5417	4,140	1	1	148,366
2001	0.0343	306.583	9.1	21.50	10.100	21.40	21,300	3.19	101.4500	5,744	1	1	145,185
2002	0.0319	345.071	8.0	15.80	8.192	20.85	23,600	3.12	101.1833	5,658	1	1	143,954
2003	0.0327	430.057	8.7	13.70	3.767	30.31	25,100	3.14	100.9500	5,443	1	1	143,246
2004	0.0357	582.731	8.2	10.90	3.325	27.42	26,100	2.91	100.9250	6,486	1	1	143,600
2005	0.0353	755.437	7.6	11.80	2.675	33.06	31,100	3.04	100.8667	6,452	1	0	143,420
2006	0.0369	863.550	7.2	9.00	3.425	53.70	34,700	3.05	100.7333	6,626	1	0	142,700

Y – year
ER[2] – exchange rate
GDP[7] – Gross Domestic Product, real. In billions of U.S. dollars (current year)
UE[1] – unemployment rate
INFL[1] – inflation
R[2] – interest rate
OIL[3] – oil price in $U.S. (current year) / barrel (Urals (32), sulfur weight 1.3)
ME[4] – military expenditure, in millions of U.S. dollars (current year)
ME, %GDP[4] – military expenditure as a percent of GDP.
CPI[1] – consumption price index
AE[4] – arms export, Trend Indicator Values (TIVs) in terms of U.S. million dollars
PARTY – political system of government
WAR[5] – dummy variable: 1- in-war, 0-out of war
POP[6] - population

Sources:

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3. Energy Information Administration, official energy statistics from the U.S. Government.
1. http://tonto.eia.doe.gov/dnav/pet/pet_pri_rac2_dcu_nus_m.htm
4. SIPRI Arms Transfers Database http://www.sipri.org/contents/armstrad/output_types_TIV.html
5. Website:http://www.onwar.com/
6. Federal Service of Government Statictics, http://www.fsgs.ru/wps/portal/!ut/p/.cmd/cs
7. Journal "Questions of Economics" November, 2004

Table 5

Data for CANADA 1992–2006:

Y	ER	GDP	UE	CPI	INFL	R	OIL	ME	ME, %GDP	AE	PARTY	WAR	POP
1992	0.8276	579.98	11.2	84	1.5	6.7833	11.38	13041	1.9	116	0	0	28,366,737
1993	0.7726	563.94	11.4	85.6	1.9	5.0883	12.56	13248	1.8	119	0	0	28,681,676
1994	0.7293	564.61	10.3	85.7	0.2	5.7658	9.52	13079	1.7	147	0	0	28,999,006
1995	0.7284	590.65	9.4	87.6	2.2	7.3075	12.85	12595	1.6	326	0	0	29,302,091
1996	0.7334	613.81	9.6	88.9	1.6	4.3017	14.3	11748	1.4	136	0	0	29,610,757
1997	0.7225	637.67	9.2	90.4	1.6	3.2917	18.6	11001	1.2	88	0	0	29,907,172
1998	0.6743	617.43	8.4	91.3	1	4.9792	10.28	11495	1.3	34	0	0	30,157,082
1999	0.6766	661.34	7.6	92.9	1.7	4.6667	6.01	12199	1.2	76	0	0	30,403,878
2000	0.6793	725.16	6.9	95.4	2.7	5.5208	20.03	12326	1.1	83	0	0	30,689,035
2001	0.6458	715.73	7.2	97.8	2.5	4.0625	16.53	12972	1.2	128	0	1	31,021,251
2002	0.6368	738,00	7.7	100	2.3	2.4583	11.55	13332	1.2	182	0	1	31,372,587
2003	0.7135	872.32	7.6	102.8	2.7	2.9375	24.51	13952	1.1	278	0	1	31,676,077
2004	0.7683	995.83	7.2	104.7	1.8	2.2500	22.87	14749	1.1	304	0	1	31,989,454
2005	0.8253	1098.45	7.2	107	2.1	2.6667	23.26	15739	1.1	193	0	1	32,299,496
2006	0.8818	1161.94	7	109.1	1	2.2917	31.33	16677	1.2	227	1	1	32,623,490

Y – year
ER[2] – exchange rate
GDP[1] – Gross Domestic Product, real. In billions of U.S. dollars
UE[1] – unemployment rate
INFL[1] – inflation
R[2] – interest rate
OIL[3] – oil price in $U.S. / barrel (Lloyd Blend (22), sulfur weight 2.2)
ME[4] – military expenditure, in millions of U.S. dollars
ME, %GDP[4] – military expenditure as a percent of GDP.
CPI[7] – consumption price index
AE[4] – arms export, Trend Indicator Values (TIVs) in terms of U.S. million dollars
PARTY – political system of government
WAR[5] – dummy variable: 1- in-war, 0-out of war
POP[6] - population

Sources:

1. EconStat™ of U.S.A. http://www.econstats.com
2. Bank of Canada, http://www.bank-banque-canada.ca/en/rates/exchange.html
3. Energy Information Administration, official energy statistics from the U.S. Government.
4. http://tonto.eia.doe.gov/dnav/pet/pet_pri_rac2_dcu_nus_m.htm
5. SIPRI Arms Transfers Database http://www.sipri.org/contents/armstrad/output_types_TIV.html
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7. CANSIM table 051-0001, http://www.statcan.ca/english/freepub/98-187-XIE/pop.htm#table3
8. CANSIM, Catalogue nos. 62-001-X, 62-010-X and 62-557-X.

APPENDIX B

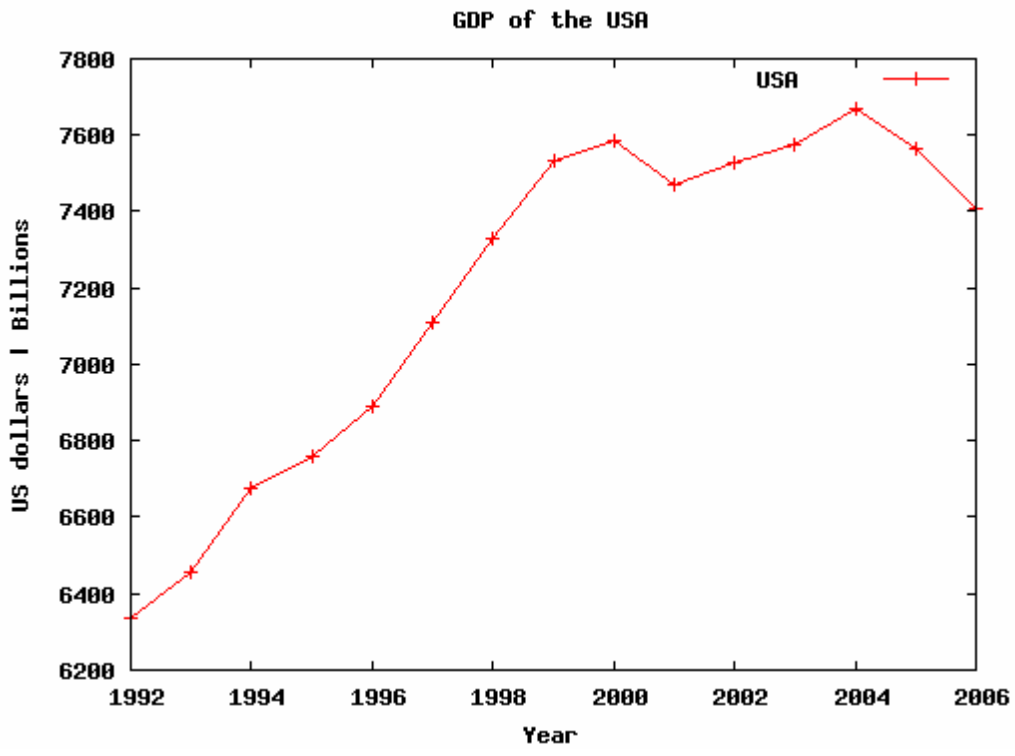


Figure 1

Figure 2

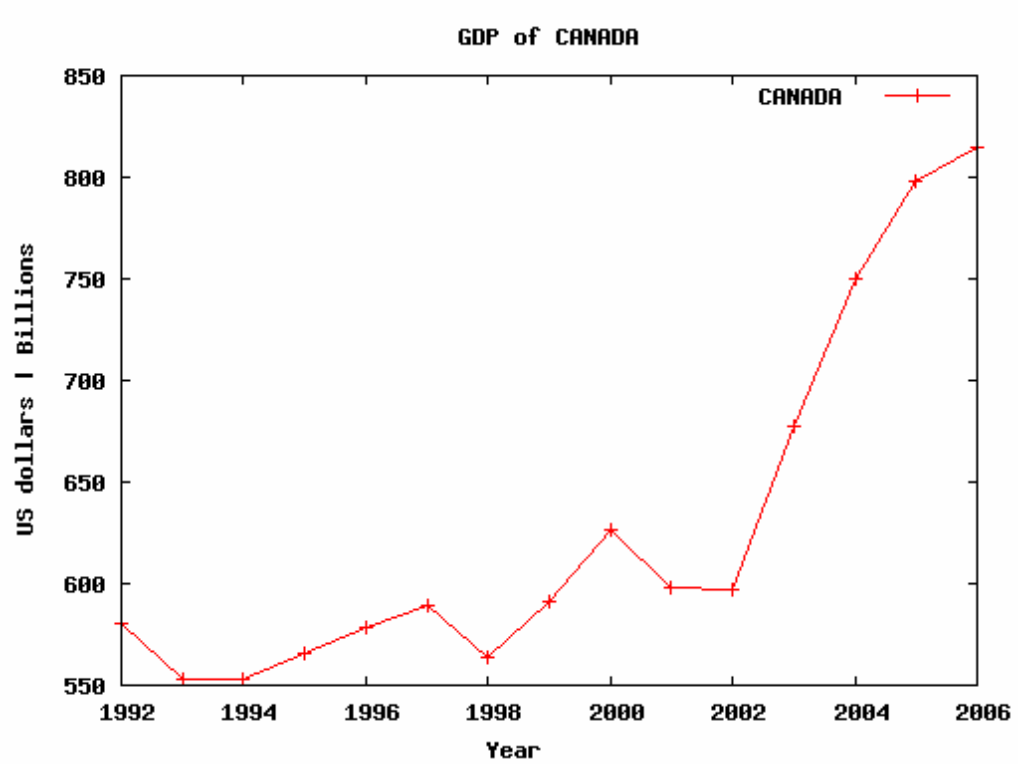
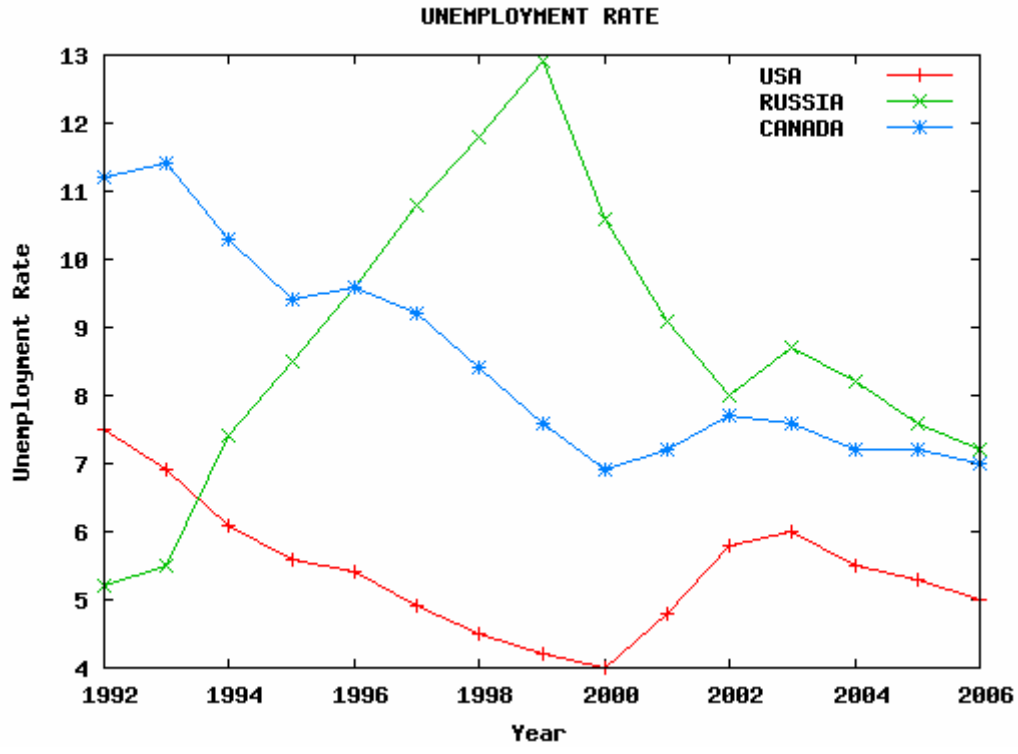


Figure 3



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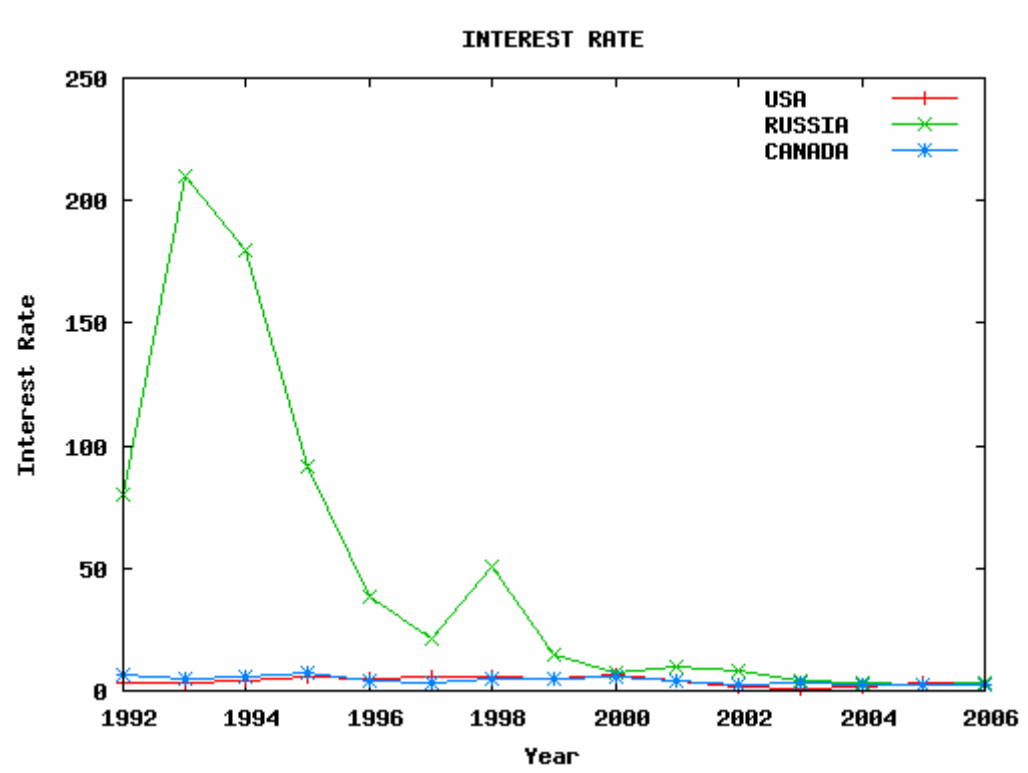

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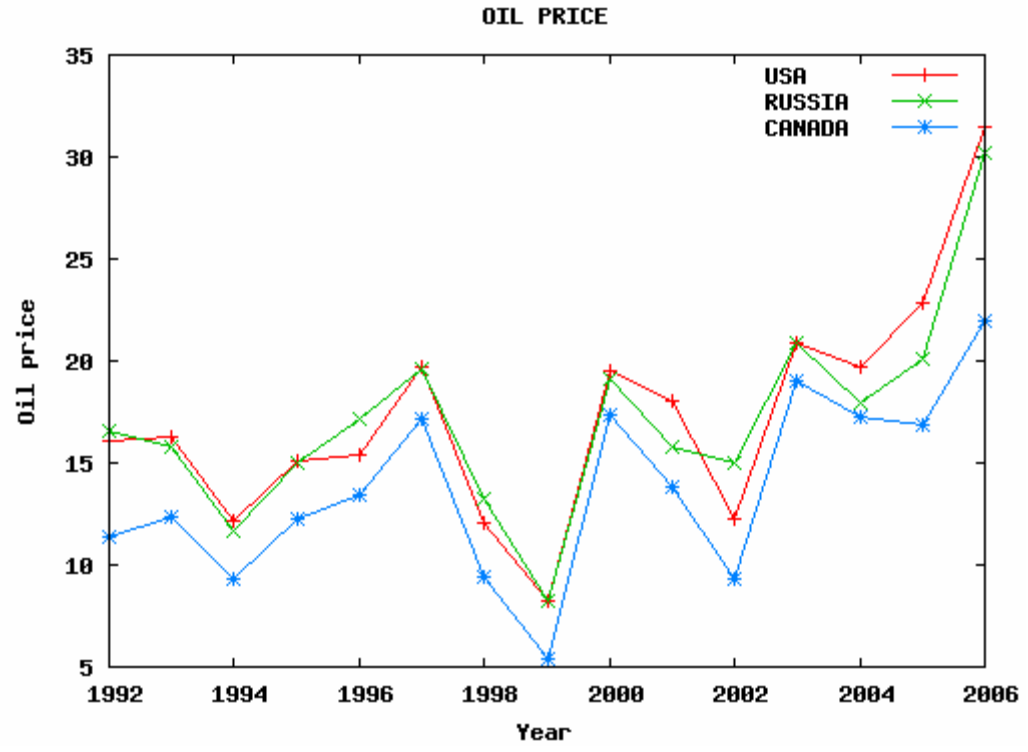

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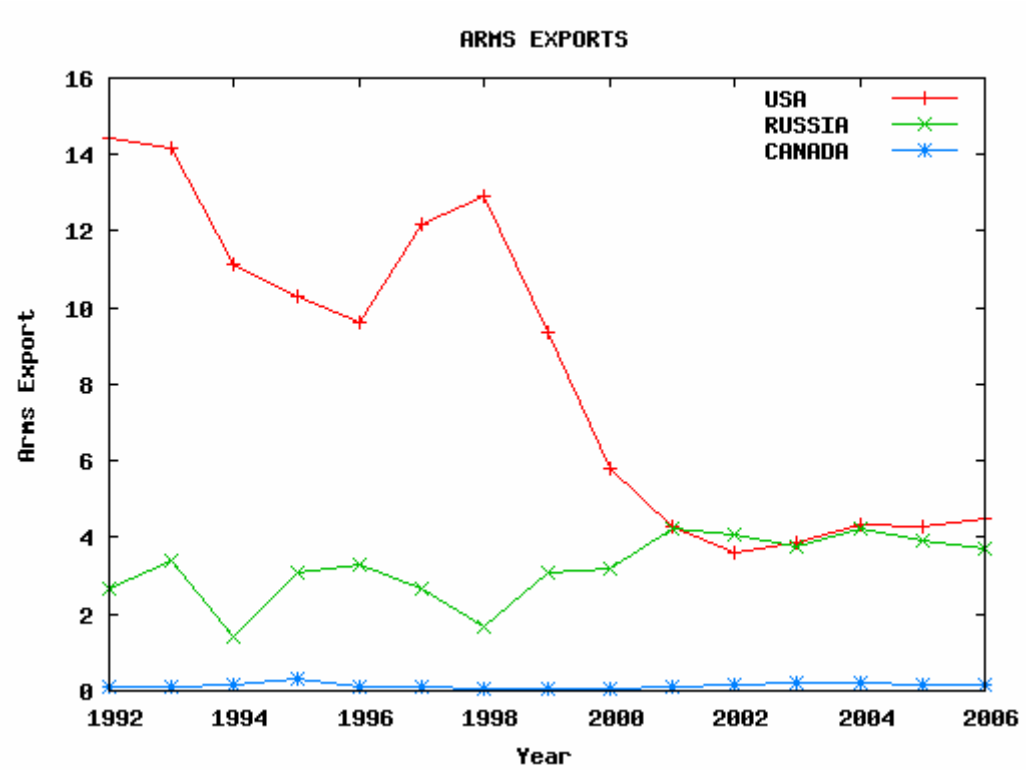

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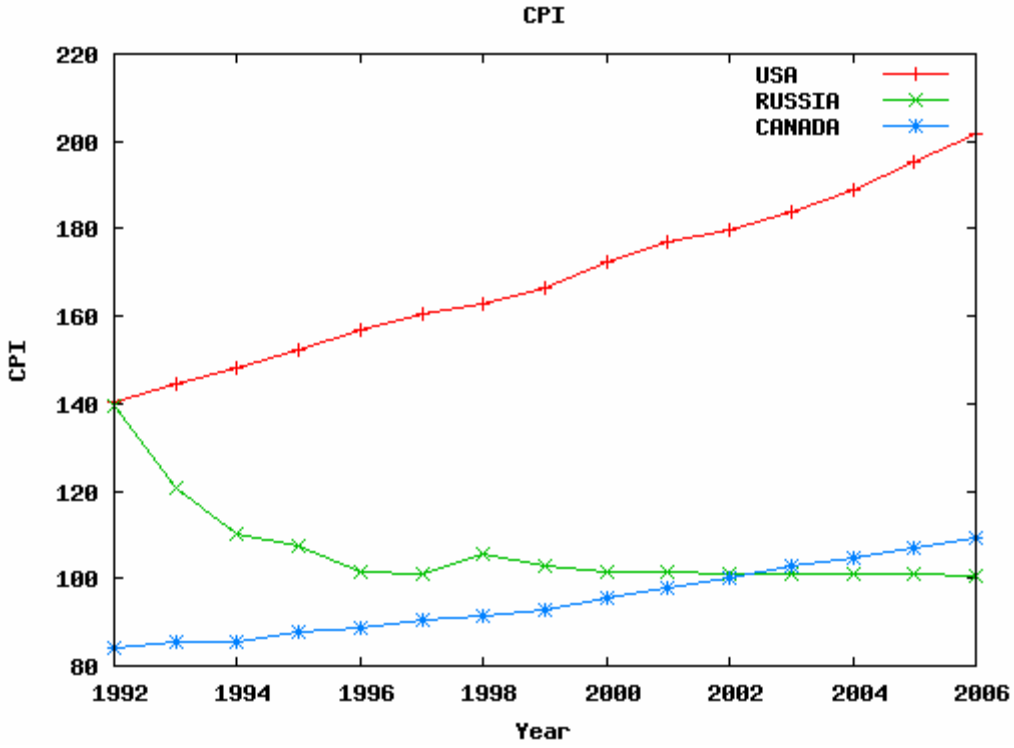

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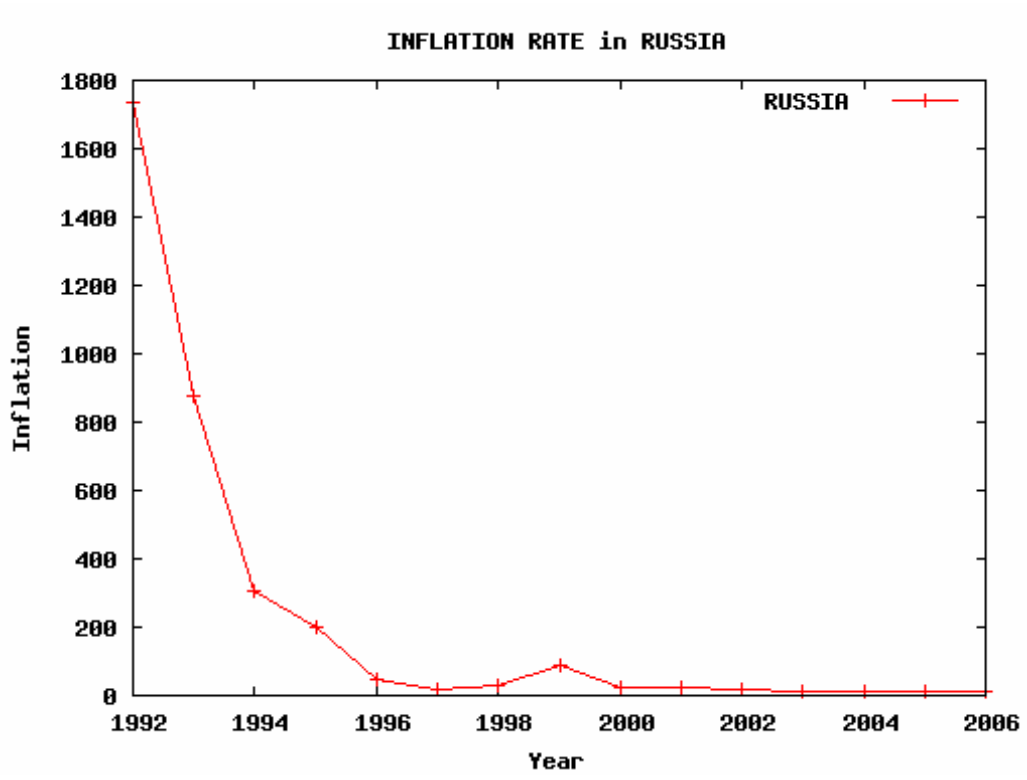

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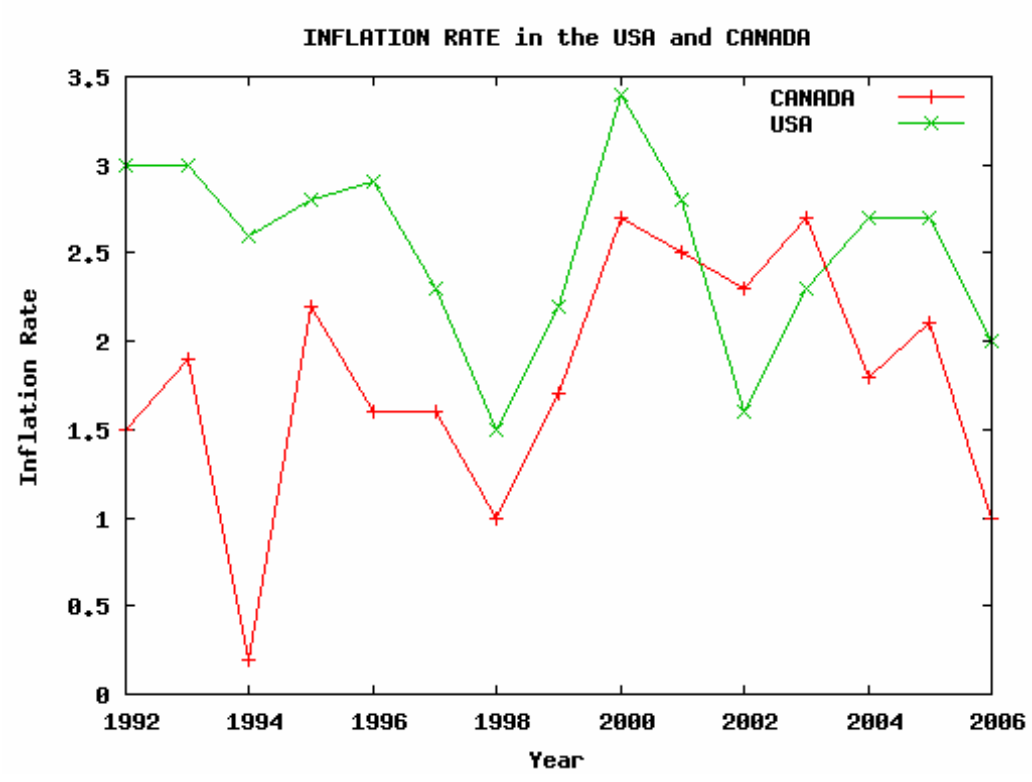

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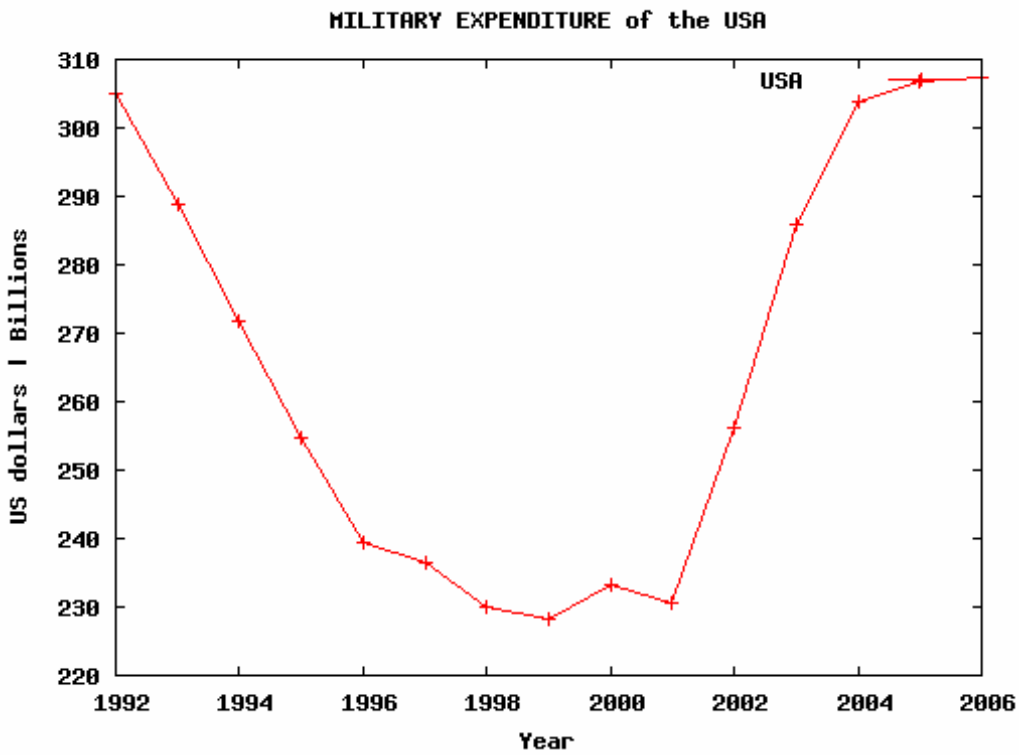


Figure 11

Figure 12

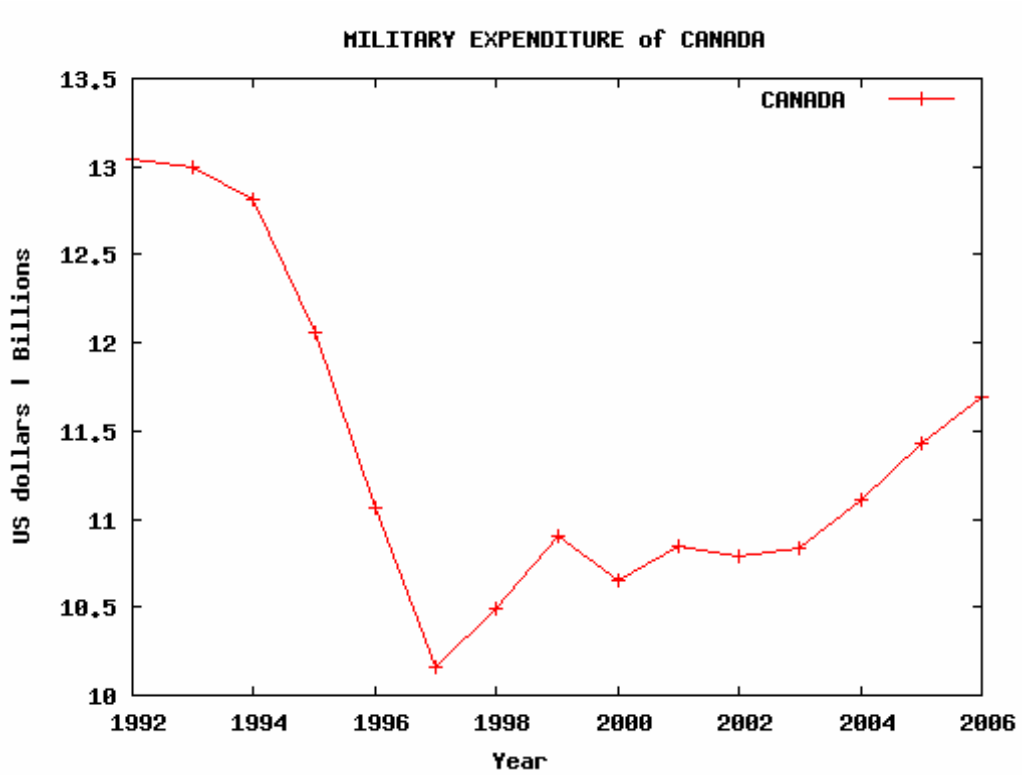
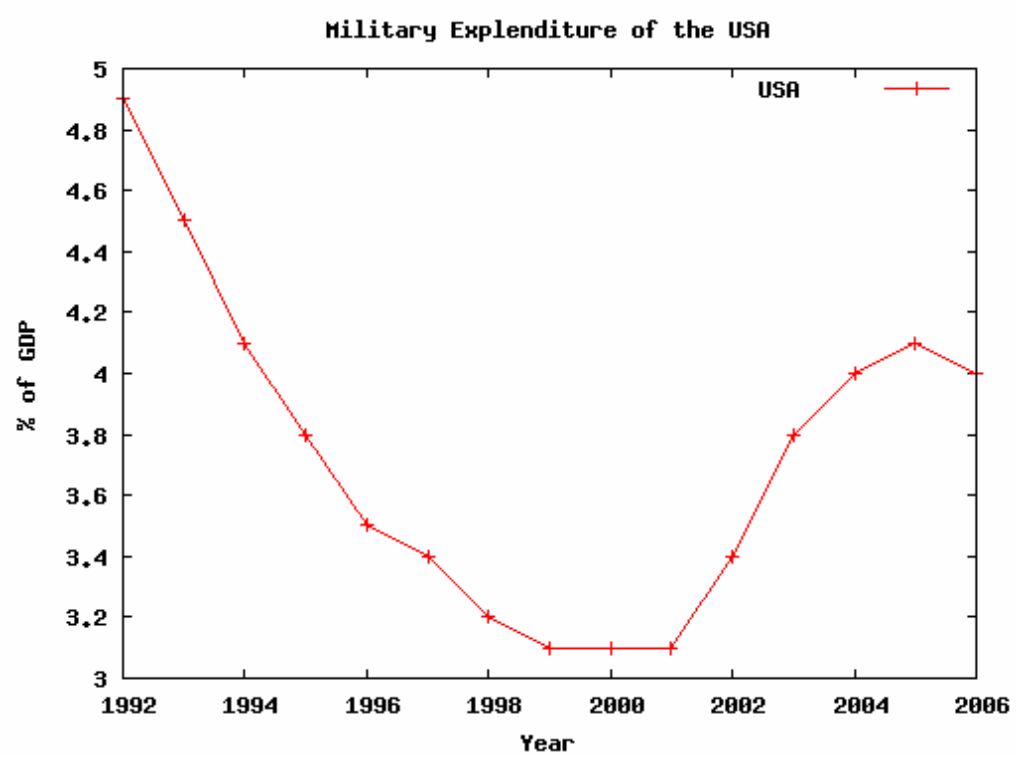


Figure 13



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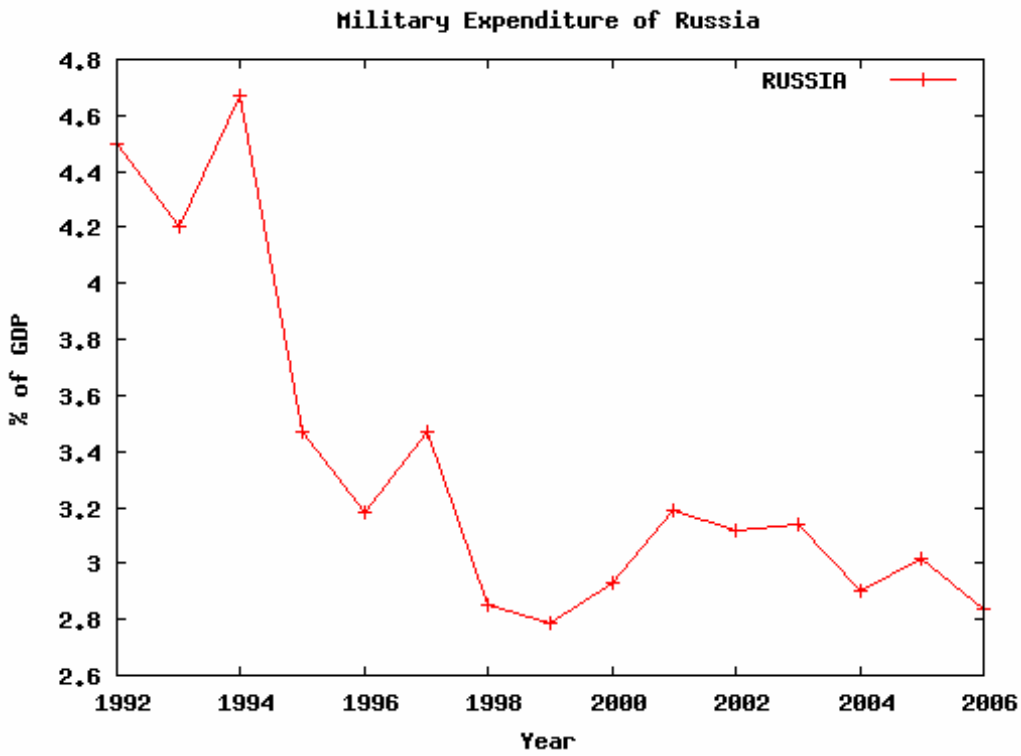

Figure 15

Figure 16

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