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Abstract

Because of the nature of war, many feel that war is negative for the United States because it costs lives, damages communities, and uses resources. It is true that wars have many negative effects, but is it possible that war could have positive effects also? Is it possible that wars can benefit shareholders who are invested in the stock market? Is it possible that stocks in certain industries benefit from war? This paper will seek to answer these questions and demonstrate how wars affect the stock market and certain industries.

Introduction

When most Americans think of war, they think about many different factors surrounding the war. They think about the number of casualties the war will bring. They think about the soldiers who are fighting the war. They think about how long the war will be. Few Americans think about how the war will affect the economy and more specifically, the stock market. Most of the research that has studied the effects war has on the economy observes the effects that war has on elements of the economy such as inflation and the employment rate. There is very little research done as to how American wars affect the stock market or certain industries within the stock market. This paper will seek to address how the stock market is affected by American wars. The wars that will be observed are WWII, the Korean War, the Vietnam War, Desert Storm, and Operation Iraqi Freedom. This paper will also examine how certain industries within the stock market are affected by war. The industries that have been chosen are the oil industry, defense industry, and energy industry.

Relevant Literature

Most of the literature shows that wars tend to have an effect on the GDP of the United States. The Institute for Economics and Peace states that all of the wars since WWII that the United States has been involved in can be characterized by an increase in government spending resulting in an increase in GDP in the short-run (2011). Baker's model further suggests that war affects the GDP of a state after he found that over a five year period from 2007, the military spending associated with war increased the GDP of the United States from $14 trillion in 2007 to $80.8 trillion five years later only to decrease 20 years later to 2007 level (2007). Kirchhoff further backs this theory when she quotes Allen Sinai stating, "[d]efense spending does add to gross domestic product. But at the same time, the net impact of the Iraq conflict has been to reduce GDP by as much as a full percentage point annually" (Kirchhoff). Labonte and Levit state that because the spending associated with wars is included in the GDP of a state, the increase in military spending associated with war is the only factor of war that will have an effect on the GDP of a state (2008). The Institute for Economics and Peace makes the claim that the increased government spending associated with the war effort can be harmful for the economy, and increased government spending on wars and the military will lead to immediate economic growth, as well as, increased inflation, an increased budget deficits, high taxes, and reductions in consumption or investment soon after the economic boom causing the economy to be harmed in the long run (2011). Labonte and Levit refute the claim of the Institute for Economics and Peace when they state that the increased government spending on wars typically leads to an economic boom during the war, and that as the war ends and government spending decreases, the economic boom that comes during the war gradually goes away as the economy goes back to a peacetime economy (2008).

Some of the literature has suggested that the length, type, and size (pertaining to the number of troops deployed) have an effect on the economy of a state. Labonte and Levit state that the size and length of a war determine how much of an impact the war will have on the economy. Labonte and Levit further explain that the larger the war, the more government involvement, thus, the greater the economic effects of the war. They further make the claim that because the Vietnam War and two wars in Iraq were too small in respects to number of troops, they did not have a significant effect on the American economy (2008). Koubi further backs Labonte and Levit's claim when he states that the severity and duration of a war has positive effects on the economy (2005).

Caplan goes further to suggest that the type of war determines how much of an impact the war has on the world economy when he states that domestic wars or wars fought within a state's borders have a negative impact on the economy of a state and wars fought on foreign soil or wars fought outside a state's borders have a positive impact on a state's economy (2002). Schneider and Troeger back Caplan's claim when they state, "[r]ecent comparative evidence suggests that the rapid expansion of output that one can observe for the economic development of the United States during World War II is only typical for wars that were fought on foreign soil" (2006). In order to characterize the effects that foreign and domestic wars have on the economy, Caplan provides the following list:

1. Spending and taxation as a percentage of GDP both rise during both domestic and foreign wars
2. Real output growth declines during domestic wars and increases slightly during foreign wars
3. Inflation during domestic wars is greater than inflation during foreign wars
4. Money supply is greater during domestic wars than during foreign wars
5. Taxation as a fraction of output increases during foreign wars and remains constant or declines during domestic wars
6. Government spending as a percentage of output increases in advanced industrialized countries during both types of wars (2006)

The literature also states that how the techniques chosen to fund a war affects the economy of a state. The Institute for Economics and Peace states that the methods of financing wars (through debt/government borrowing, increasing taxes, or printing more currency) all have negative impacts on the American economy that lead to an increased budget deficit, higher taxes, and increased inflation (2011). Most of the literature mainly focuses on financing wars through debt. Labonte and Levit assert that public borrowing to fund a war has negative impacts on the economy when they state that public borrowing for funding wars increases prices and the interest rate as well as leads to decreased investment causing the long run capital stock and future size of the economy to decrease as well (2008). Teslik also discusses how debt funding impacts the economy when he states, “[b]oth estimates from the Joint Economic Committee and Congressional Budget Office factor in interest payments on foreign debt, which the United States has sold in order to help finance the war. These debt payments account for a significant percentage of total costs. For instance, examining long-term costs just for Iraq, the CBO says actual costs through 2017 will amount to roughly $1 trillion, but interest payments on debt will add over $700 billion to that price tag” (2008). Kirchhoff quotes Allen Sinai saying, “[m]any effects won't be fully felt for years, deficit financing of the Iraq War makes the United States more dependent on foreign investors to finance its debt and, ultimately, lowers standards of living. It leaves the nation in worse shape to face coming economic challenges as the baby boomers retire and health care costs rise, straining Medicare and Social Security” (Kirchhoff). Labonte and Levit also observe how money creation to fund wars affects the economy when they state that the money creation method for raising funds for the war effort has an effect on the economy in that the money that individuals previously held is worth less once more money is printed than it was before the printing of more money. Labnote and Levit further suggest that because Operation Desert Storm was primarily financed by other states, it had very little effect on the American economy (2008).

There has been some literature that talks about how various markets and industries are affected by war. Schneider and Troeger use Operation Desert Storm as an example of how war affects the markets when they state, “[w]hile the Dow Jones index plunged 6.31 percent following the invasion of Kuwait by Iraqi troops in 1990, it gained 17 percent in the first four weeks of Operation Desert Storm" (2006). Many other scholars have suggested that markets react the same way it did to Operation Desert Storm, by experiencing a sharp decline before and at the beginning of the war and increasing over the course of the war. The Institute for Economics & Peace uses an example from WWII when it states that the Dow Jones Industrial Average initially fell at the beginning of the war; however, over the course of the war, the Dow Jones started increasing (2011). Nordhaus uses Operation Desert Storm as well to show how markets react to war, and he states that the market took a sharp decline when the First Persian Gulf War first started but quickly picked up after the quick victory in February 1991 (2002).

Some literature has suggested that wars have a psychological effect on markets. Nordhaus states that the psychological factors and not the spending involved with the war affects the economy in the short run by driving stock prices, exchange rates, and consumer sentiment (2002). Teslik further backs this theory when he quotes Zakaria saying, "[t]his fear, the worries spawned from Iraqi Freedom, has led to protectionist policies on trade, immigration, and markets, which in turn threaten the future of the U.S. economy" (2008). Schneider and Troeger use Operation Iraqi Freedom to demonstrate an example of psychological factors that affect the markets when they state, "[t]he initial stock market reaction to the second war against Iraq was equally positive, with a plus of around 2 percent at the main European Stock markets; however, the stock market war rally was quickly followed by a period of increased volatility of the main indices when the invasion encountered some fierce resistance" (2006).

Other scholars have suggested that the length of a war can be used to determine how much of an impact the war will have on the economy. To describe the relationship between the length of war and the market, Schneider and Troeger state that if an action promises a quick and relatively painless resolution of the conflict, markets will respond positively. Cooperative, short events will typically stir the optimism of traders while conflictive, long events incite them to sell stocks. They state that the prolonged war in Vietnam and Korea caused negative reactions among private investors in the United States (2006). They further state, “[i]f the market expects a long war, traders will sell stocks and escape into less risky alternatives” (2006).

Some scholars further observe how war affects different industries. Labonte and Levit summarize the relationship between certain industries and wars when they state that industries such as the defense industry and transportation industry profit during times of war; however, once the war is over these industries and the market experiences a brief contraction (2008). Schneider and Troeger back the statement of Labnote and Levit when they state that the stocks of companies in the weapons manufacturing industry experience sharp growth during periods of tension (2006). One particular industry that the literature has focused on is the oil industry. Nordhaus states that war, especially in the Persian Gulf region, can have a huge impact on the price of oil (2002). Johnson states that the tension in the Middle East and North Africa during the Arab Spring caused the price of oil to increase sharply (2011). Though the uprising in the Persian Gulf region is not a war that the United States deployed troops to, it is an example of how any type of conflict within the Middle East can affect the price of oil. Schneider and Troeger state, “[w]hile the dollar, equity prices, and treasury yields declined and the spread of corporate yields widened, oil prices soared” (2006). Kirchhoff provides evidence of the effects of Operation Iraqi Freedom on oil prices when she states, “[f]or example, fighting in Iraq — a major oil producer — arguably has contributed to skyrocketing oil prices, but it is far from the sole cause. Crude oil prices were about $25 a barrel five years ago, compared with more than $100 now” (Kirchhoff). Teslik reinforces the idea that the War in Iraq affected the price of oil when he states, crude oil prices have spiked since the beginning of the Iraq War (2008). He further states, “[s]till, Iraqi production currently accounts for 3 percent of global oil production, and thus turmoil in Iraq can have a substantial effect on oil prices" (2008). The price of crude oil caused the price of gas to increase. According to the U.S. Energy Association, the average price of a gallon of gas went from $1.77 on 17 March 2003, two days before the invasion of Iraq, to $2.75 per gallon on 2 April 2007 when American activity in Iraq was at its peak. The oil industry was not the only industry to be affected by the spike in oil prices. The average retail price of electricity went from 7.16 cent per kilowatt-hour in March 2003 to 8.82 cents per kilowatt-hour in April 2007 (U.S. Energy Association). This data backs Schneider and Troeger statement, "[t]he prospect of an impending war affects the gold and energy sectors negatively" (2006).

Methods

The hypotheses are that the Dow Jones will experience a decline at the beginning of a war but will increase as the war goes on; Industries such as the energy industry, defense industry, and utilities industry will decrease initially when the war is fought in a region that has a natural resource such as oil that the industry depends on, but will increase as the war goes on; and the Dow Jones will increase more during wars that are three years or less than with wars that are over three years. The three industries were chosen because most of the literature suggests that these three industries are most affected by war. The literature also suggests that wars that are three years or less have more of an effect on the Dow Jones than other wars. The Dow Jones was chosen because it is the only American market index that has been around since WWII. These hypotheses will be tested by examining how the Dow Jones and the three industries did during times of war. The Dow Jones charts are broken up into 20 year intervals with the times of war marked. In order to analyze the data for the industries, the top three companies for the industries will be observed over the course of Desert Strom and Operation Iraqi Freedom in order to observe how the industry did over the course of the war. These two wars were chosen because the literature has suggested that these wars have had the greatest impact on the industries being observed because of the region that they were fought in. The companies are as followed: Chevron, Exxon Mobil, and Royal Dutch Shell (energy industry), Lockheed Martin, Northrop Grumman Corp., and General Dynamics Corp. (defense industry), and Southern Company, Alliant Energy, and Dominion Resources (utilities industry).

Discussion

If one observes Figures 1-4 in the appendix, one will find that the Dow Jones initially increases when the war starts. One will also observe that for all of the wars observed except the Korean War, the Dow Jones decreased during the middle of the war. One will further observe that the Dow Jones appears to increase toward the end of the war observed, except the Vietnam War, and immediately following the war. The hypothesis, the Dow Jones will experience a decline at the beginning of a war but will increase as the war goes on, is rejected. It further supports the idea from the literature that psychological factors over the course of the war affect investor confidence which affects the markets. The pattern observed displayed by the Dow Jones in Figures 1-4 could possibly be used to predict how the markets will react to future wars. One will further observe that the Dow Jones experienced sharper increases during wars that were three years or less, than with wars than with wars that were over three years supporting the idea that shorter wars are better for the stock market than longer wars. The hypothesis, the Dow Jones will increase more during wars that are three years or less than with wars that are over three years, is accepted. It can be further said that the figures support the idea that the psychological effects of a long war has a drastic effect on the markets.

The initial fact that one will notice from Table 1 in the appendix is that stocks in the energy industry and in the defense industry except Northrop Grumman Corp. initially suffer a decrease in value during Desert Storm and stocks in the utilities industry all increased at the beginning of Desert Storm. This finding is perplexing because one would expect the industries such as the defense industry that benefit from war would initially increase because of war, not decrease. If one continues to analyze Table 1, one will further find that all of the stocks, except Dominion Resources, in the three industries observed increased from the middle of Desert Storm to the end of Desert Storm. This finding can be used to further support the idea that the psychological effects of a war getting ready to end is positive for industries and market indexes.

Table 1 further shows that all of the stocks in all three industries observed increased from the beginning of Iraqi Freedom to the middle of the war. It can be said that investor confidence that Iraqi Freedom was going to result in a quick American victory drove stocks in the industries observed up. If one continues to observe Table 1, one will find that from the middle of the war until the end, all stocks in the energy industry and two of the stocks in the energy industry experienced an increase in the value of their shares and the stocks in the defense industry and Exxon Mobil experienced a decline. This finding is also perplexing because one would expect the stocks in the defense industry to increase as the war goes on and towards the end of the war, not decrease as the war goes on and until the war ends.

The hypothesis, industries such as the energy industry, defense industry, and utilities industry will decrease initially when the war is fought in a region that has a natural resource such as oil that the industry depends on, but will increase as the war goes on, is partially accepted. During Desert Storm, the stocks from the energy and defense industries initially decreased, only to increase as the war went on. The stocks from the utilities industry, however, increased from the beginning of the war until the end. The table further shows that all of the stocks in the three industries observed increased from the beginning of Iraqi Freedom until the middle of Iraqi Freedom. Most of the stocks in the industries observed increased from the middle of Iraqi Freedom until the end; while other stocks in other industries decreased from the middle of the war until the end. The idea that industries will decrease initially when the war is fought in a region that has a natural resource such as oil that the industry depends on, but will increase as the war goes on is an idea that cannot be applied to all conflicts and all industries that are associated with that conflict. Another idea that table seems to suggest is that the longer the war, the more diluted the effects of the war will have on the stock market. Because Desert Storm was a shorter war, there was little time for other factors besides the war to have a significant effect on the industries. Because Iraqi Freedom was longer, there was more time for other factors to also have an effect on the industries observed.

Some factors that could have affected the results include a recession that occurred in 1990 during Desert Storm and the 2007-2008 Financial Crisis, and other factors other than the war that might have affected investor confidence.

Conclusion

One topic that could use further research is how wars that the United States is not involved in affect American markets and industries. Another topic that could use further research is how the economy affects policy makers' decisions on rather to go to war or not. One more topic that could use further research is how natural resources such as water and oil can lead to conflict and war. Further research can also be done on rather peace or war is better for American markets and industries.

Wars can have both positive and negative effects on the stock market. In some cases, as shown by the research, the way some industries have grown in past wars can be used to predict how they will perform during future wars. The length of a war can also help an investor determine the effects the war will have on the market. Wars that a typically long have a negative impact on the stock market in the long run while shorter wars have more of a positive effect on the stock market. Wars can be used as an investment tool if an investor knows the relationship between American wars and American markets and industries.

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Appendix

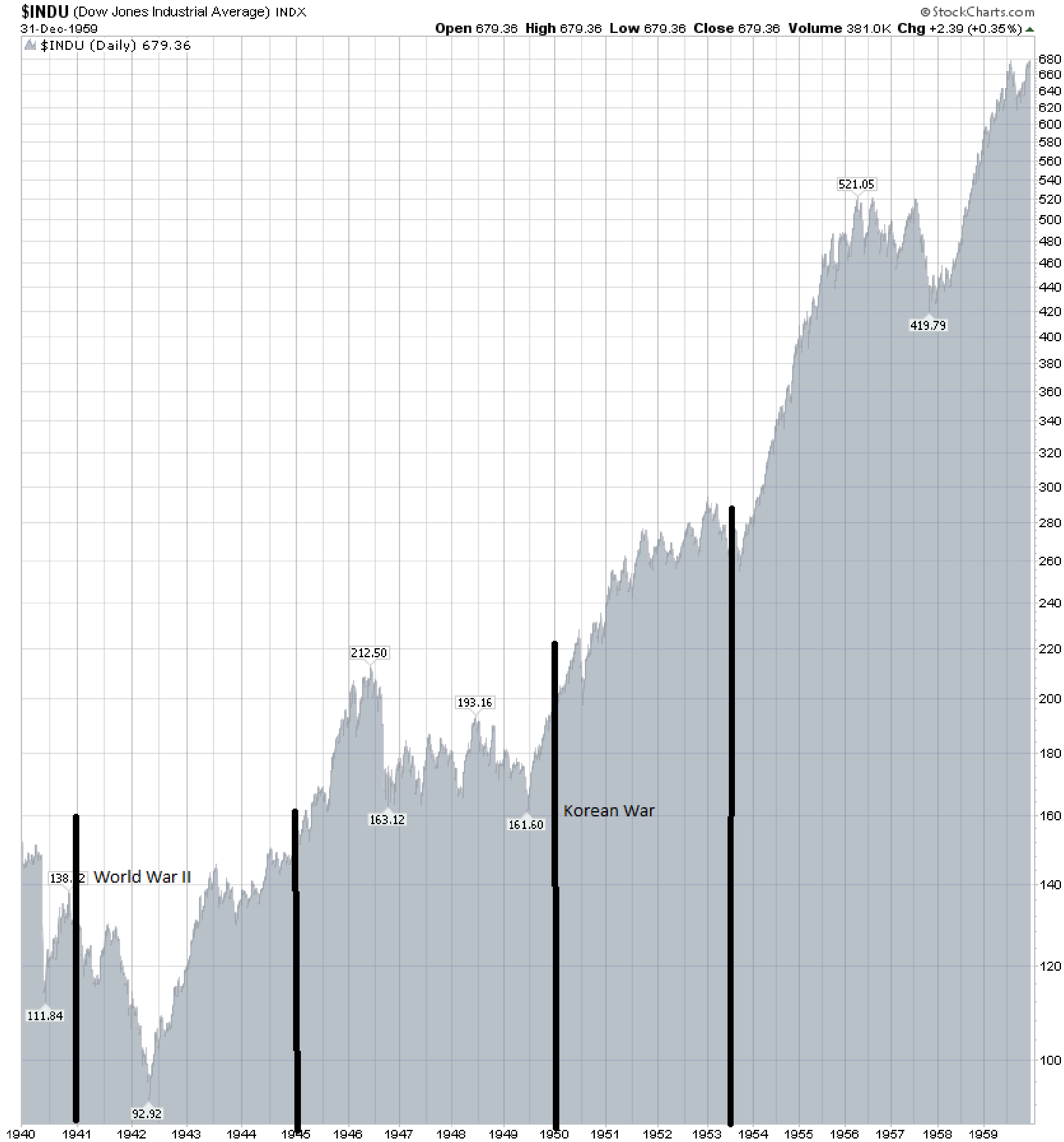

Figure 1: The above figure shows the performance of the Dow Jones from 1940-1959. WWII is shown from 1941-1945 and the Korean War is shown from 1950-1953. This figure came from stockcharts.com.

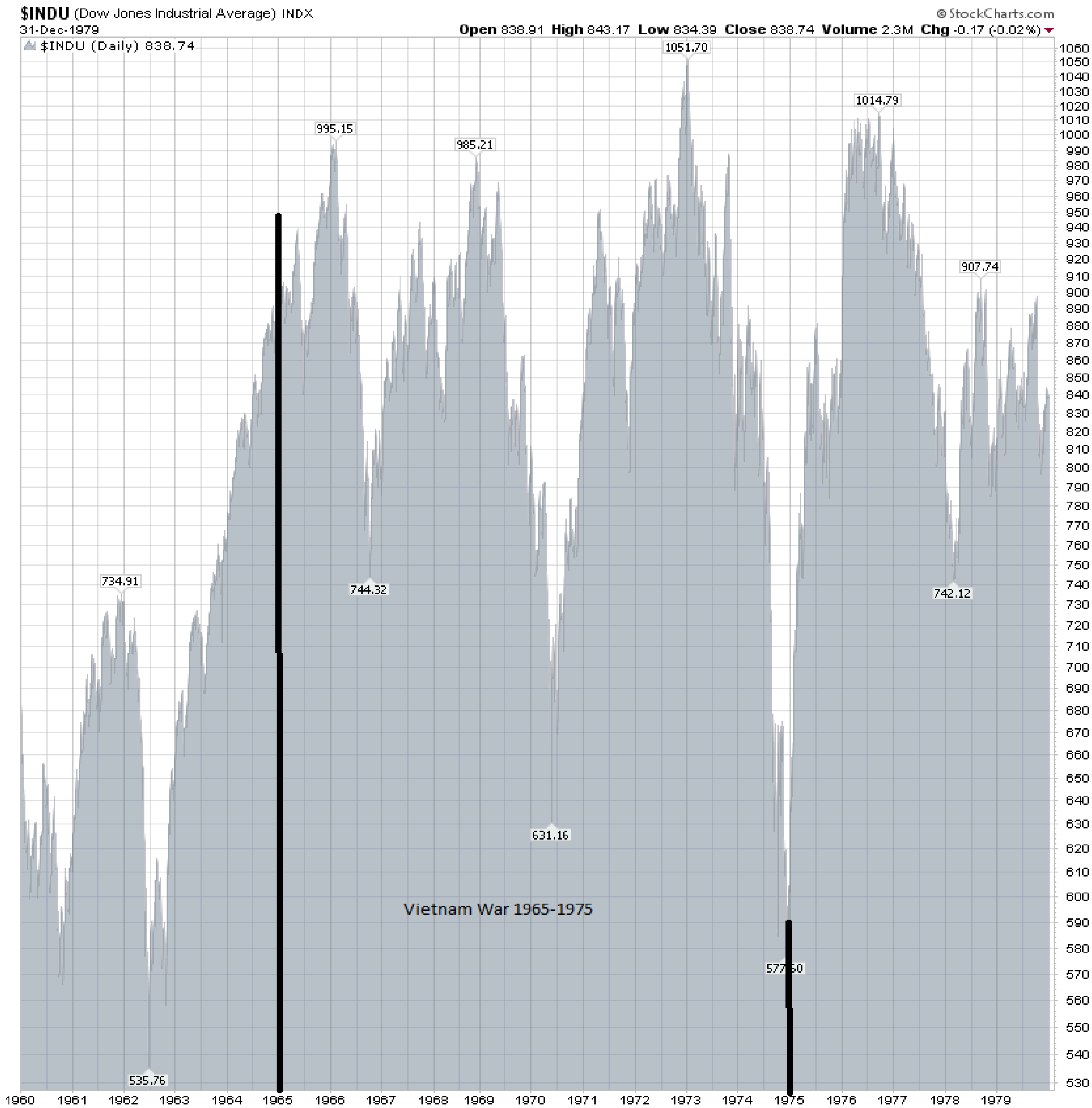

Figure 2: The above figure shows the performance of the Dow Jones from 1960-1979. The Vietnam War is shown from 1965-1975. This figure came from stockcharts.com.

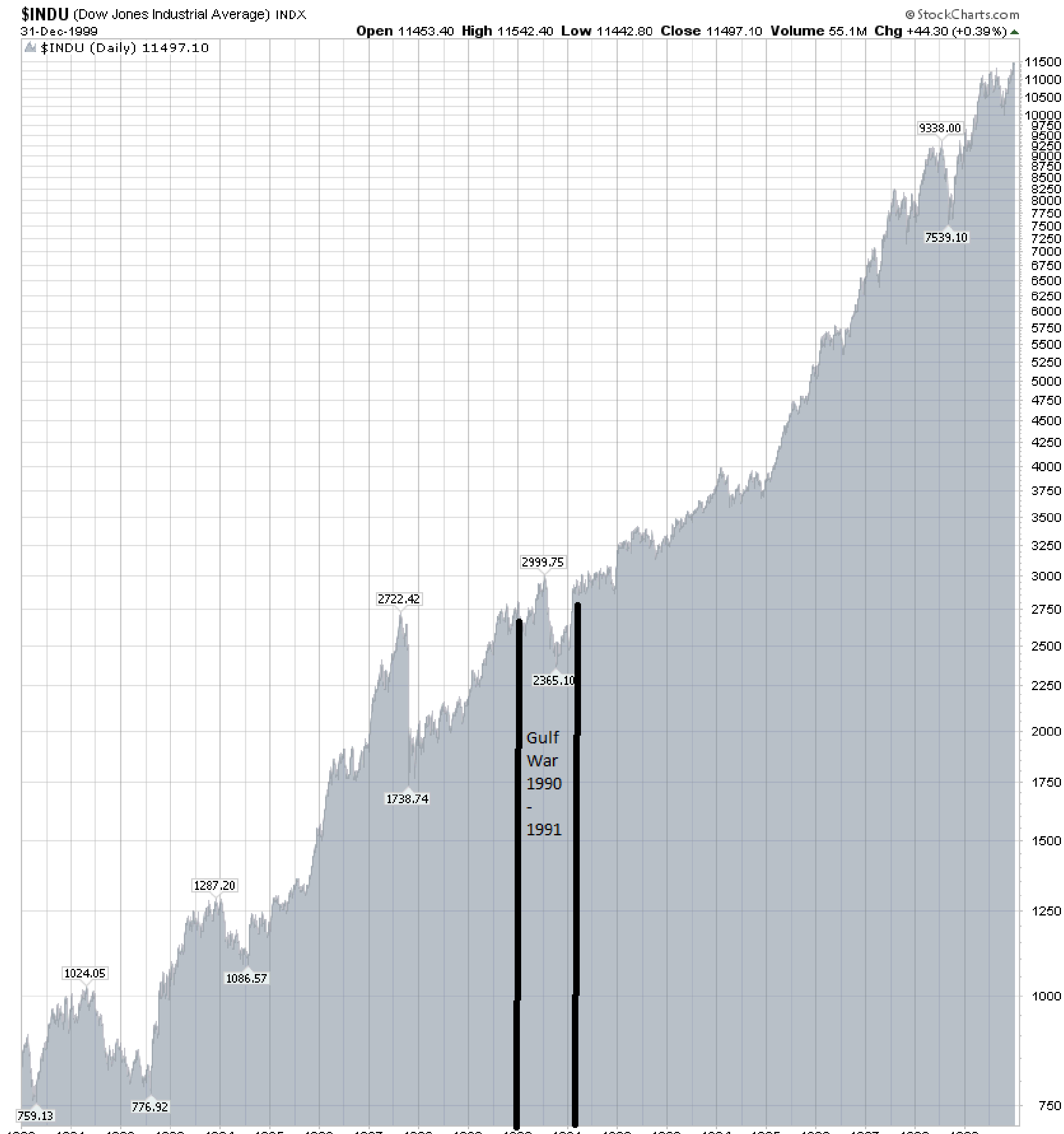

Figure 3: The above figure shows the performance of the Dow Jones from 1980-1999. Desert Storm can be observed from 1990-1991. This figure came from stockcharts.com.

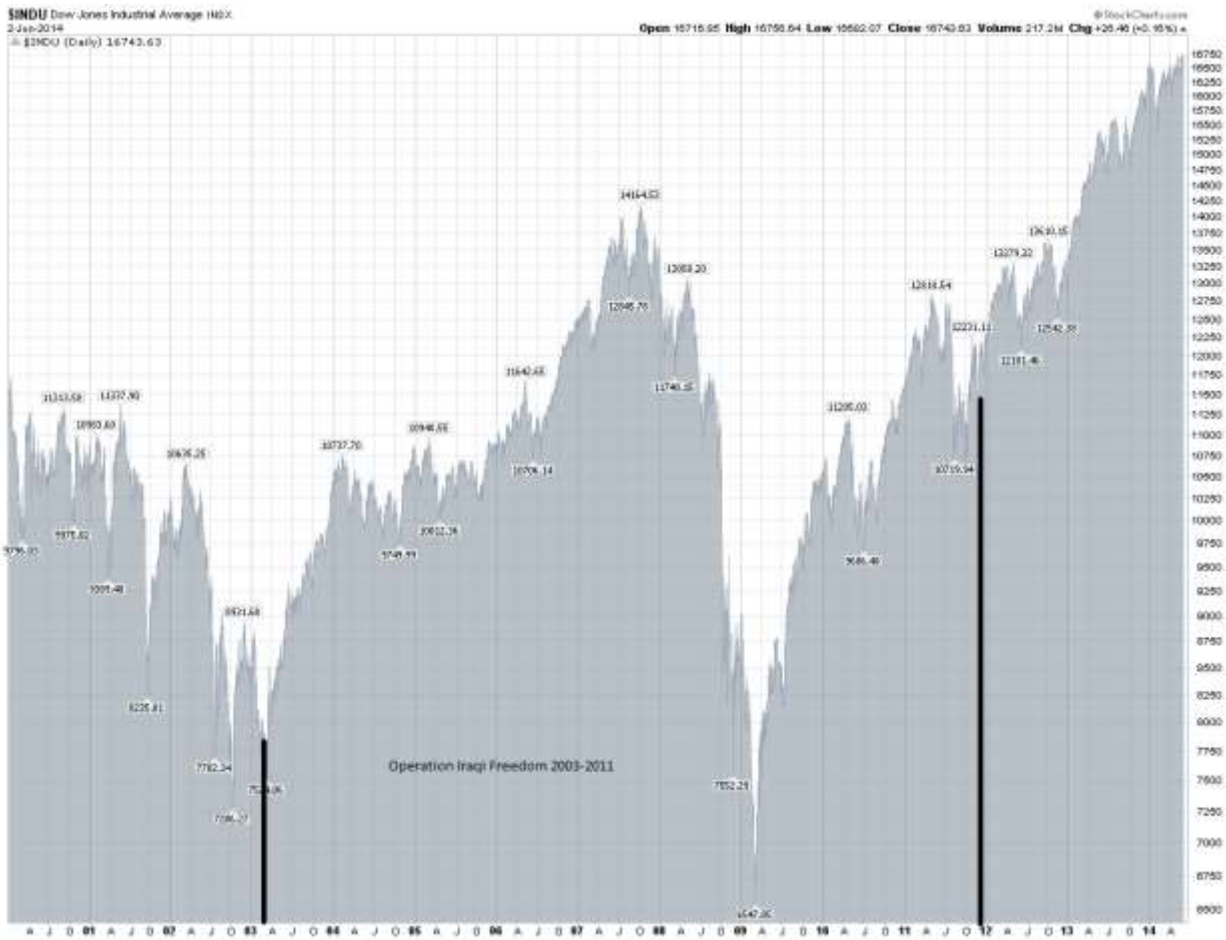

Figure 4: The above figure shows the performance of the Dow Jones from 2000-Present. Operation Iraqi Freedom can also be observed from 2003-2011. This figure came from stockcharts.com.

Companies (Industry)	**Desert Storm Beginning Stock Price**	**Desert Storm Middle Stock Price (Oct. 29, 1990)**	**Desert Storm Ending Stock Price**	**Iraqi Freedom Beginning Stock Price**	**Iraqi Freedom Middle Stock Price (Jan. 22, 2008)**	**Iraqi Freedom Ending Stock Price**

Chevron (Oil)	$20.09	$16.78	$18.81	$32.90	$81.25	$103.62
Exxon Mobil (Oil)	$13.31	$11.91	$13.94	$35.59	$82.45	$80.53
Royal Dutch Shell (Oil)	$21.02	$19.87	$21.51	$41.56	$71.29	$73.39
Lockheed Martin (Defense)	$8.59	$8.17	$12.23	$46.41	$101.69	$76.73
Northrop Grumman Corp (Defense)	$6.61	$6.83	$11.63	$38.38	$70.76	$55.30
General Dynamics Corp. (Defense)	$3.53	$2.77	$3.13	$28.54	$79.05	$63.50
Southern Company (Energy)	$7.75	$7.98	$8.44	$28.86	$37.00	$44.72
Alliant Energy (Energy)	$22.25	$23.00	$25.63	$15.90	$35.98	$42.13
Dominion Resources (Energy)	$15.21	$15.92	15.75	$28.16	$42.35	$50.78

Table 1: The table above shows the stock prices of companies that were observed at the beginning of the wars that were observed, in the middle of the wars that were observed, and at the end of the war of the wars that were observed. The industry that the companies represent is in parentheses. The data for this table came from yahoo.finance.