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Patriotic Behaviour

- Behavioural Finance and an Empirical Investigation of the Patriotic Bias in the U.S. Equity Market

Master Thesis by

Inger Kirstine Dalgaard Pødenphanth

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Academic Supervisor: Gabriele M. Lepori

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Executive Summary

Identifying patriotism in the financial market can, to some extent, be difficult, because the concept is based on feelings rather than rationality. However, several scholars have already proofed the existence of patriotic bias in the equity market, which is not consistent with the efficient market hypothesis. Patriotic bias occurs because agents feel patriotic and want to support their home country. One of the possible ways, to support their country, is by investing in companies with patriotic names in them, thus referring to the agent's home country. This kind of investor behaviour, of preferring patriotic equities, all else equal, is not rational and therefore challenges the traditional economic theories that are developed on investor rationality and perfect markets.

In this study the patriotic bias is investigated in the US equity market around patriotic holidays. A surge of patriotism around those days in the US, together with previous findings by other scholars, contributes to the foundation of this thesis. In order to investigate whether there exists a patriotic bias or not around the patriotic holidays, two patriotic portfolios are constructed, one equally weighted and one value weighted. The portfolios consist of 97 American equities with the company names including either of the four names America(n), or US(A). Thirteen American patriotic holidays have been identified and a dummy variable has been constructed to capture these. Several regression analyses with the equally weighted and the value weighted portfolios, as the dependent variables have been performed to see if there is any significance in the variable of the patriotic holidays.

The results did, however, not show any significance of increased returns in the patriotic portfolios around patriotic days. In fact, each estimated coefficient on the patriotic holidays dummy was slightly negative for both the equally weighted portfolio, and the value weighted portfolio in all the regressions, after controlling for economic market news, and other calendar anomalies such as pre-holiday effect, week day effect and month effect. These results indicate a return in the patriotic portfolios of approximately 0.026%-0.05% less, around patriotic holidays compared to any other "regular" days. The results proofed to be valid, as same evidence of negative estimated coefficients of the patriotic holidays dummy were found when making robustness checks of increased time periods. Thus, no patriotic bias was detected around the patriotic holidays.

1. Introduction

Classic economic theories are developed on assumptions that, to some extent, are quite limited. One of the more essential assumptions, in the efficient market theory, states that agents act rationally when investing. It has been argued how well this theory can be applied when investors behave irrationally. In that case it is not always the best way to use the traditional economic models as they can be less valid or reliable. The assumption that agents are rational has been a great challenge to many economic theorists. By this thesis it is not my intention to disapprove this assumption, however, I will try to investigate the more irrational part of investor behaviour.

Behavioural finance explains how psychological factors affect the financial market. This research is relatively new as it was first introduced in the early 1990s (Brown & Reilly 2009). Research has found that whenever an investor needs to make decisions with risk in it, he unintentionally uses a strategy aid in the process. Such a strategy will mentally help the investor through the decision-making and are called heuristic. Different heuristics show that investors often behave in an irrational way due to psychological and sociological reasons. Since behavioural finance is still a relatively new field in economics, I find it intriguing to identify gaps in the existing scientific literature and this is what the thesis will try to pursue.

Studies in the perfect rationality have shown numerous deviations which leads to the possibility of new research. By exploring this academic problem additional knowledge can be generated for the economic field. My intention is therefore to investigate the impact of patriotic behaviour in the financial markets. One possible example of patriotic bias is observed, when an agent invests in a domestic equity with the name containing the agent's home country. This particular definition is the one that will be employed in the thesis. The patriotic bias takes place because the agent feels patriotic about his home country and possibly wants to support the domestic market. This is regardless of the information level the agent possesses. Different events can affect the agent to behave in a patriotic way and invest in the particular companies with country sounding names. I

wish to investigate if this is the fact to, an economically and statistically significant degree. More specific the thesis will test if patriotic holidays have an impact on investor behaviour. The focus will be on the US equity market in this study.

It is important to mention that previous research have found evidence that patriotic bias does in fact exists. The studies have for example tested patriotism around greater wars for the US such as World War II, the Korean War and War on Terrorism (Benos & Jochec, 2007). It has further been proofed that consumer's and investor's patriotic feelings affect their economic behaviour. Though these studies have identified patriotic bias, no one has tested whether patriotic bias exists around patriotic holidays.

My intention is to make an analysis based on empirical studies together with theories, which will lead to a discussion concerning patriotic behaviour. This will clarify whether the idea can add useful information to existing economic knowledge.

The empirical studies will be based on various factors that can show if the patriotic bias exists around the specific patriotic holidays. The studies will be conducted by using econometrics to investigate whether the patriotic bias exists or not. The intention is to make several regression analyses of different factors which can possibly help explain the occurrence of patriotism through a wide period of time. The regression analyse will be controlled for factors, that are known to affect stock returns. By using the regressors I can hopefully add new knowledge to *if* the patriotic behaviour does in fact exists around the patriotic holidays and to what extent agents might tend to invest more in patriotic equities during the specific days. Recent studies concerning the patriotism bias has been identified in portfolios (Morse & Shive, 2010) and around greater wars, but with this thesis I might expand the knowledge to the already existing scientific literature on patriotic behaviour.

1.1 Research Question

Based on the above thoughts about patriotic bias, I have developed the following research question:

- *Can patriotism explain movements in the US equity market around patriotic holidays?*

1.2 Delimitations

The studied country, in this thesis, fell on the United States of America because of their rather patriotic feeling towards their country compared to e.g. Denmark (Morse and Shive, 2010). Since it is optimal to have as many observations as possible, the sample period for the equity data goes back to 1983. This was the year where at least ten of the selected companies have available price data on the financial database Bloomberg. Ten companies are set as a minimum in order to achieve a meaningful analysis.

The American equities in the thesis are based on the selection process Benos and Jochec (2012) used in their study. The companies' names must contain either of the following four names; America(n) or US(A). This selection is clarified further in the methodology and data section. In addition, the companies were narrowed down to major stock exchanged equities only. All over the counter (OTC) traded equities are therefore deselected because of the lack of data about their market capitalization. Also, the OTC stocks are not included in the research, because of low liquidity in the equities and therefore have an incomplete set of price data. Including these equities would have resulted in a selection bias in the empirical analysis. Thus, the equities have to have a certain market capitalization and be publicly available on one of the large stock exchanges in the US.

The time frame had to be as long as possible to make a robust analysis. The data therefore goes back to 1983, since this is when Bloomberg provide enough data to obtain a meaningful study. The data collection does not take delisted companies into account, which means that it only includes surviving companies that existed in the end of the observation period, May 2013. Hence, companies that were active during the time of the observation period August 1983 – May 2013, but yet ended activities before the end of the sample period are not included. This could potentially lead to a survivorship bias, which will be discussed in the theory section.

1.3 Thesis Structure

First I will describe patriotism as the basically concept, but also as the behaviour detected in the financial markets. It is crucial to be familiar with the term to understand the investigation of the patriotic bias in this paper.

Chapter 2 is the basis of the theory used in the thesis and is divided into two distinct parts. The first part introduces the basics of behavioural finance and helps the reader to understand the field. The concepts of limits to arbitrage, survivorship bias, and holiday-effect are presented. In the second part of the chapter, findings by other scholars of patriotism in the equity market are introduced.

Chapter 3 describes the data and methodology used, explaining the scope and reasoning behind the choice of data. The methods obtained by the referred scholars are discussed, and some of their strategies toward selecting data, are used in the thesis. In the chapter I will explain how to reach the best possible models qua applied statistical analysis. Furthermore, the construction of the two patriotic portfolios is elaborated together with the idea behind dummy variables, which is essential in testing the patriotic bias. Lastly, robustness checks are explained as they will be used to support the findings, and hypothesis testing is clarified to understand the models.

In chapter 4, the results and analysis of the thesis are introduced, starting with the patriotic surge presented in the patriotic index, continuing with the equally weighted portfolio and finally the value weighted portfolio. The potential patriotic bias will be controlled for several variables, which

will be introduced throughout this chapter. The results are presented in table form to show the coefficients and possible statistical significance.

Chapter 5 contains a discussion of the results, primarily drawing from theory put forward in chapter 2 together with suggestions of future research.

In chapter 6, the conclusion of the thesis is presented.

Chapter 7 contains the references, followed by the appendix in chapter 8.

1.4 Understanding Patriotism

To get a better understanding about the topic of issue in the thesis, a review of the concept, patriotism, will be presented as follows. A brief definition of patriotism is; a 'love of one's country or nation.[1]

Patriotism is based on a political allegiance, loyalty, commitment and dedication. It appeals more to emotions rather than rationality, and demands recognition of the duty to the political state. Patriotism arises from a natural consequence of political membership or citizenship. If members of the political allegiance act contrary, it is the same as to be disloyal. Different trans-historical events unite a nation. The unity makes individuals inseparable from this past, as it is not something they can stand alone with, like a war or constitution. Patriotism is most likely to occur in times of trouble or stress, and is thereby not suddenly invoked in people. The acts of patriotism are issued whenever the goods of the people are attacked or jeopardised. People who perform attacks like these would, in the period after World War II, be titled as traitors. In today's World they are simply labelled as disloyal or outsiders. Oxford English Dictionary has a definition of a patriot during World War II which is stated as; a 'loyal inhabitant of a country overrun by the enemy, especially a member of resistance movement'.

[1] International Encyclopedia of the Social & Behavioral Science

For republicans patriotism is probably one of their strongest concepts. Republicanism considers the state as a tight and homogeneous association. Patriotism encourages members to put any discrepancies aside and support whatever they share. Patriotism appeals to emotions rather than reason, for people who are already feeling patriotic. Like the affections that hold families together, patriotism reminds members, of an association, about their ties and non-voluntary relationships to one another. People who can identify themselves with groups, at a micro level, are more likely to feel that they are a part of a unity (Huddy, 2005). This makes societies and cultures with greater micro sense more conditioned to be patriotic than others.

In United States of America, the time during the Cold War was characterized by attacks on 'communist sympathizers' who were deemed disloyal in the patriotic sense. It is believed that as long as there are territorial nations, patriotism will continue to exist, since there are reasons to be loyal to one's nation. Empirical studies, performed by the World Value Survey, have investigated patriotism in 53 countries (Morse and Shive, 2010). The primary measure of patriotism in the survey regards the national pride. The question reads as follows; "How proud are you to be (substitute nationality)?" ranging from 1 (not proud) to 4 (very proud). Europe and Asia are less patriotic compared to the Americas, the Middle East and Africa. More specifically the United States scores an average of 3.73 out of 4, which is quite high compared to the average score of 3.25-3.26.

1.5 Patriotism and the Equity Market

Patriotism can be reflected in the equity market whenever investors prefer to invest in patriotic sounding companies, all else equal, and invest more in these than other equities such as foreign. Patriotic stocks have a name, referring to the particular home country and are thereby domestic too. However, to minimize financial risk it is crucial to diversify one's portfolio with more than domestic equities (Brown and Reilly, 2009). To achieve a completely diversified portfolio, the

optimal portfolio is equal to the market portfolio, which contains all risky assets. The unsystematic risk, which is unique to the individual asset, is diversified away and only the systematic risk remains in the market portfolio. The systematic risk is due to macroeconomic factors, and affects all risky assets hence the systematic risk cannot be eliminated by diversification. Investors can therefore not avoid systematic risk, but a broad investment in different countries e.g. can reduce the unsystematic risk. Different country economies react differently to the market, which is why investing globally is important (Brown and Reilly, 2009).

There are four main reasons for investors preferring to invest in their home country, namely, information asymmetry, transaction costs that are higher when investing abroad, the lack of familiarity with foreign investment opportunities, and difficulty with estimation of the financial risk. These principals are referred to as home bias (Coval & Moskowitz, 1999) and this tendency occurs more often for patriotic countries. Theorists have tried to expand this idea and investigate the reason for the closely related bias, patriotic bias, which can help explaining the home bias. I have selected three different studies about patriotic bias which will be presented in the theory section.

2. Theory

2.1 Behavioural Finance in General

Overall behavioural finance is a field of finance that considers, how psychology-based theories explain anomalies in the stock market. In this section I will try to elaborate the behavioural finance field to get a deeper understanding of the patriotic bias.

Modern finance assumes that markets are efficient and that agents choose rationally between investment alternatives, knowing the probability of future market risk (Markowitz, 1952). The standard model of profit maximization and rational behaviour can be true to some extent, but is subject to certain boundaries. The traditional financial models are not always the most reliable because they do not consider individual behaviour (Olsen, 1998). Behavioural finance can help explain why markets might be inefficient. It is assumed in behavioural finance that psychological characters affect individuals' or groups' decisions in investment as well as market outcomes.

It is generally acknowledged that there does not exist a unified theory of behavioural finance, rather the dominating focus has been the identification of portfolio anomalies (Brown and Reilly, 2009). The possibility of abnormal return rates can be explained with various psychological aspects affecting investors. It has been noted over time that investors are subject to numerous of biases that have an influence on their investment performance. An essential aspect of behavioural finance is heuristics which are simply rules people rely on rather than logic and models. Heuristics function like a strategy aid to agents making them act fast in decisions instead of going through a process of rational deliberation. With the help of behavioural finance it is possible to explain many of these biases through psychology.

A well-documented bias is the tendency that investors hold on to “losers” for too long and sell “winners” too soon (Scott, Stumpp, and Xu, 1999). This indicates a higher fear for loss than the value of winning. A tight related bias is the belief of perseverance, which affect investment decisions quite seriously. It is the psychological phenomenon where people cling on to their ideas even after being confronted with the evidence of the opposite. In addition the bias, anchoring, is the issue when investors anchor values to prior information. This can often be misleading as e.g. stock prices follow a random walk and have nothing to do with historical evidence. Investors rely too much on current prices instead of looking at other relevant factors (Pike, *et Al.*, 2012).

The bias overconfidence has been documented by Solt and Statman (1989) for growth companies. Overconfidence causes investors to overemphasize good news and ignore any negative signs for these companies. This bias is further related to the self-attribution bias, where investors tend to reward success to their own decisions and blame failure on “bad luck”, resulting in an overestimation of their own talents (Gervais and Odean, 2001). In a study by Brown (1999) noise traders (non-professionals with no fundamental data) affected prices and volatility of closed-end mutual funds in trading hours. This is because these traders make the same decisions, while they react on the same tendencies, and overreact to good or bad news. This relates to herd behaviour, as market actors copies the actions of others, regardless of the information they possess. Instead of making their own decisions they just “follow the herd” (Clarke and Statman, 1998).

There are dozens of examples proving biases and irrational behaviour like the ones just described documenting the impact they have on investments. Behavioural finance can be perceived as a tool to better understand emotions and cognitive errors that influence investors in the decision process (Elvin, 2004). Limits to arbitrage play a great role in the nature of behavioural finance thus I will examine this subject in the next section.

2.2 Limits to Arbitrage

The behavioural finance field consists of the two blocks, psychology, and limits to arbitrage according to Thaler and Barberis (2002). In classical finance, arbitrage arises when a mispricing in two or more markets occurs and there is opportunity to take advantage of this mispricing (Brown and Reilly, 2009). For instance the same product is sold at different prices in two different markets. It is logical to invest in the product with the lowest price, and sell it at a higher price to gain profit. This process will continue until the price ends in equilibrium. The greater the deviation of prices the more aggressively will the arbitrage be carried out (Montier, 2003). In the traditional finance paradigm markets are efficient, and there should be no arbitrage opportunity, because competition makes sure that prices reflect their true value. How appealing this assumption might be, empirical evidence proof the contrary, and that investors are irrational (Herschberg, 2012).

Limits to arbitrage try to investigate why investors might not be able, to make lucrative profits in arbitrage situations, even though an asset is mispriced (Thaler and Barberis, 2002). The theory examines the existence of arbitrage opportunities, due to pricing inefficiencies that does not disappear immediately. If investors know how to take advantages of these arbitrage opportunities, why do they not quickly disappear? The theory is that the strategies developed to exploit the arbitrage are both costly and risky. Thaler and Baberis (2002) have identified the risks that arbitrageurs can be faced with. These can be divided into fundamental risk and noise trader risk.

Fundamental risk is simply the risk, that the investor is wrong about the purchased security. It is a fundamental risk that arrives after the investor has put his position in it, due to bad news. In theory this risk could be perfectly hedged by investing in a substitute security. However, perfectly substitute securities are rare, which make the fundamental risk inevitable. As an example, an investor owns two shares A and B, which are closely related and in the same industry. He now sells share B, and thereby removes most of the fundamental risk. The investor is, though, still exposed to fundamental risk as he is vulnerable to bad news about the industry in general. Fundamental

risk could also be natural catastrophes affecting an asset, leaving individuals with no control of the occurrences. Fundamental risk can be insured, but not in all cases and will always exist even though the portfolio can be hedged against it.

Noise traders were introduced in the section of behavioural finance defining them as possessing no valuable information. This group of investors are aware of the fact that they are irrational noise traders and thus, there will always be the risk that the market gets worse just because of them. In the short run noise trader risk reflects the risk, that mispricing may worsen. For instance pessimistic traders might become even more pessimistic about future outcomes (Herschberg, 2012). Noise trader risk can force fund managers and institutional investors, to go short in their positions too early, bringing great and unnecessary losses. Investors, who lack this kind of knowledge, might evaluate managers' strategies based on his returns. Thaler and Barberies argue that managers therefore could fear premature liquidations, making them less aggressive in arbitraging the mispricing to begin with.

Noise risk occurs usually when investors go short however this kind of risk is present in other situations as well. If, for instance, the owner of a stock demands it before the mispricing strategy is issued or in a repurchase program. This risk is referred to as "resale risk" because of the unpredictability of resale prices in the future (Shleiffer and Summers, 1990). It can particularly affect the time horizon of investors and managers, since a high resale risk will cause a shorter time horizon. Investors could fear that they have to liquidate earlier than expected because of exogenous factors.

A well-known case of evidence of limits to arbitrage is the case with the two independent companies Royal Dutch and Shell. They agreed on a 60:40 basis merger in 1907, though remaining separate companies. Royal Dutch's market value should then be 1.5 times, as the cash flows adjusted for tax where split in this proportion (Montier, 2003). This was however not the case as Royal Dutch was traded 35% under-priced and other times 15% over-priced relative to parity. The

case reflects good substituting securities, almost hedging fundamental risk perfectly. Investor sentiment could cause already undervalued shares to become even more undervalued on short term basis. Even though there was a mis-pricing in this case, arbitrage was limited and investors could not gain any profit from it. Facing a drop in prices like this must get investors to doubt their own sanity, and indeed their rationality.

2.3 Survivorship Bias

Delisted companies are often excluded from empirical studies of financial data even if they live up to the criteria of the study (Rohleder *et al.*, 2001). This is simply because they no longer exist in the end of an observation period, which make the process of obtaining details about the company more cumbersome. This tendency, to exclude failed companies, is called survivorship bias and is quite relevant for my thesis, as I have not included delisted companies in my research.

The reasons for companies being delisted on the stock exchanges are many and could be due to bad performances, mergers, or violation of regulations, etc. It may occur that companies on the stock exchanges fail to meet the financial specification requirements. In the United States the stock markets, in general, are being regulated by the Securities and Exchange Commission (SEC)[2]. The SEC makes sure that the companies follow the regulations and that all laws are fulfilled. If companies fail to meet the SEC's listing requirements, the exchange, on which the companies stocks are traded on, will delist the company's stock. Companies may also "disappear" from the stock exchanges because they have been merged, or acquired by another company.

Whenever research is grounded on historical data, survival will, to some extent, be of issue (Brown, *et al.*, 1995). Because my study is based on historical stock returns, it may be subject to the survivorship bias. The survivorship bias could cause my results to be skewed a little higher,

[2] www.sec.gov

since it is only companies that have been successful enough to survive till the end of the observation period that are included in this study. The average return of the equities could be higher in the beginning of the time period then, than the average return near the end if they were included. However, it could also cause the opposite than higher skewed results, and lead to overall lower results in the stock return depending on the amount of non-survived companies. Either way, the survivorship bias needs to be borne into mind, when analysing the empirical results of the thesis.

2.4 Holiday Effect

The holiday effect is a well-known phenomenon in finance, as several scholars have proved this effect. The holiday effect is the tendency for the stock market to rise on the last trading day before a holiday. This could be a long weekend, or holidays like Christmas, and Thanksgiving. Traders who make sure to buy securities in the days prior to the last trading day can gain profit by selling them for a higher price on the last trading day before the holiday. Because the stock prices are rising on this last trading day the phenomenon is also referred to as the *pre-holiday effect*.

Meneu and Pardo (2004) have investigated the existence of this pre-holiday effect in some of the most important individual stocks of the Spanish Stock Exchange. The examined stocks are also traded in the Frankfurt Stock Exchange and the New York Stock Exchange, though the results concerns only Spanish holidays. Their findings reveal that these stocks show high mean returns on pre-holidays, some are even 14 times higher than the mean returns for the remaining non-holidays in the particular year. This pre-holiday effect is due to small investors avoiding to buy on a pre-holiday, because trading sizes increase and they are afraid to be surprised by new information after it is too late to close their positions. They are, however, not reluctant to sell their stocks, hence, these trades are made by institutional investors who operate in the international stock market.

In addition Lakonishok and Smidt (1988), find same kind of evidence of persistently anomalies in the Dow Jones Industrial Average around holidays over a 90-year period. Their results show that the rate of return before holidays is 20 times higher than the normal rate of return. Some of the explanations include timing of trades by both informed and uninformed investors, and corporate news releases. Ariel (1990) studies the total return accruing to the market portfolio, in the period 1963-1982, and finds that more than one third was earned on eight trading days, all prior to a holiday.

I find it obligatory for the study of the thesis to test this pre-holidays effect in the patriotic portfolios. The pre-holiday effect could have an impact on the returns, and maybe add explanatory power to the model.

2.2.1 Patriotic Behaviour

2.2.2 Morse and Shive – Patriotism in Your Portfolio (2010)

Morse and Shive investigate whether patriotic investing has an impact on the home bias making their findings relevant to my study. They use the measure of patriotism the World Value Survey (WVS) has constructed and withdraws, in addition, a second measure of patriotism from the International Social Survey Program (ISSP). The dependent variable home bias can be difficult to give an exact calculation of. This is why the three different measurements, *CAPM home bias %, Domestic holdings %,* and *Covariance-adjusted domestic %,* are calculated to achieve the most precise measure of the bias.

Morse and Shive use the Tobit model[3] to estimate their results and find the evidence of an increasing relation between the patriotism and home bias measures. It is found that more patriotic countries have higher home bias at the 5% statistically significance level and is significant in explaining all the home bias. In addition, these results are controlled for the measures capturing the standard explanatory variables transaction barriers, the lack of familiarity with foreign investments, information asymmetry, and financial risk. The study shows that an increase in foreign born citizens, results in a decrease in all three home biases. This is in line with the fact that, if a citizen knows more about another country, he is more likely to invest abroad (Bhattacharya and Groznik, 2008). By using the *CAPM home bias %* Morse and Shive are able to calculate, that a one standard deviation drop in patriotism results in a 4.8% increase for the aggregated portfolio in foreign holdings, and an increase of 3.1% and 3.0% for the *Covariance-adjusted home bias % and the Domestic holdings %*, respectively.

By instrumenting patriotism with social variables that are all uncorrelated with political and economic factors, Morse and Shive proof that patriotism affects investment. The tendency is that more patriotic countries have higher holdings of domestic equities in their portfolios.

2.2.3 Benos and Jochec – Patriotic Name Bias and Stock Returns (2007)

Benos and Jochec's study is essential to this thesis, because they investigate the patriotism bias in the US equity market as well, though under different circumstances. Benos and Jochec's main reason with the study is to examine the returns of stocks with patriotic names around three important US wars. They have chosen periods around wars, because of the potential increase in people's patriotic feelings. The three wars include, World War II (WWII), the Korean War and the War on Terror (WOT).

[3] The Tobit model is an extension of the statistical Probit model, describing the relationship between a non-negative dependent variable Y_i, which is unobservable, and an independent variable X_i via a parameter β.

The analysis starts by constructing both an equally and value weighted portfolio containing stocks with patriotic names.[4] They use a benchmark of stocks with same industry, size, and book to market as a control portfolio. The efficient market hypothesis is challenged, because Benos and Jochec find evidence of a 52% positive abnormal return in the patriotic value weighted portfolio, compared to the control portfolio, in a one and a half years period after the 9-11 attacks. Benos and Jochec perform a test where they regress the value weighted portfolio with the four factor French and Fama model and with Jensens alpha as the constant, measuring the portfolio's risk-adjusted performance. They find evidence of a positive alpha in a multiple time period during the wars, which is significant both statistically and economically. The equally weighted patriotic portfolio shows slightly different tendencies with a cumulative abnormal return (CAR) that is not as high as in the value weighted. The CAR keeps increasing though, reaching a peak of 36% four years after 9-11 attacks. Further, they find no results of industry driven abnormal returns.

Because war periods increase people's patriotic feelings Benos and Jochec's findings are evidence of a patriotic bias, causing investors to gravitate toward stocks with patriotic names. This implies a quite irrational reaction where investors believe that stocks with patriotic names have a superior quality.

2.2.4 Gu and Schinski – Patriotic Stock Repurchases: The Two Weeks Following the 9-11 Attack (2003)

From the terrorist attacks on the World Trade Center, September 11, 2001, a quite unique situation arose where companies had the opportunity to make a patriotic move, by announcing a repurchase program. In order to stabilize the financial markets, officials urged companies to buy-back their shares. There was, however, reason to believe that companies might not follow through with the repurchase, as the historical stock market crisis in 1987 showed that companies failed to do so.

[4] A patriotic company name has to include either of the words America(n) or US(A).

Gu and Schinki investigate the stock returns for firms announcing a repurchase of their stocks in the period right after the 9-11 attacks. Their study reveals a positive market response to the announcement, indicating that investors weighted the positive signals higher than the negative. The findings support, the request from officials, that a repurchase program could stabilize the market. This is in line with the evidence from the 1987 stock market crash (Netter and Mitchel, 1989). The earlier the announcement was made after the attacks, the more positive the market response. Early announcers were rewarded by this "patriotism effect" with higher returns, than companies announcing the repurchase later. To study the evidence of an undervaluation signal from the repurchase announcement, Gu and Schinski exercised cross-sectional analysis to test if the announcement was due to firm size and value. No statistically significance was found in the relation between firm size, or relative value, and market response to the announcement.

3. Methodology and Data

This chapter will review the methodology used in the thesis to study patriotic behaviour in the US equity market. As I have described in the theory section, different scholars have used quite different approaches to investigate patriotic behaviour. Two of them will be elaborated in this section as they fit this study the most and have been useful in my research approach. Because the data selection has been a great part of the method it will be clarified in this section as well. Thus, the aim of this section is to explain the ideas behind the particular method I have used.

3.1 Methods by Gu and Schinki, and Benos and Jochec

Gu and Schinski use data from investhelp.com in their study to test the stock prices of the repurchase announcement program of 329 companies after the 9-11 attacks in the US. They calculate the stock returns with the difference in natural logarithm of the closing prices on the consecutive days. Further, they compute the market adjusted returns by taking the difference in the stock returns and the S&P500 returns. A critique point in Gu and Schinki's study is the information asymmetry in the smaller companies as they, in general, are less discussed in the media and financial press (Vermaelen, 1981). Another pitfall to the Gu and Schinki's research, is the assumption that all the announcers of repurchase, buy-back their shares as a patriotic act to the 9-11 attacks. The repurchase of the company shares, might as well, be due to other factors such as, avoiding shares dilution, eliminating take overs, etc., and just happens to be at the same time as the aftermath of 9-11. I will, however, state that the research is valid, because of the historical evidence of much less company buy-backs than what can be observed after 9-11. One can, though, argue that since the repurchase announcement from September 12-28 was more than 9 times as many as the announcement the entire year prior to September 12[5] the assumption must indeed be trustworthy.

[5] 254 days prior to September 12 in 2001, 565 announcements, gives an average of 2.22 announcements a day. Comparing this with the 16 days (September 12-28) and 329 announcements, gives an average of 20.56 announcements a day and thus, 20.56/2.22 = 9.26 times higher than "normal".

Benos and Jochec collect their return and market size data from CRSP[6] in their research, "Patriotic Name Bias and Stock Returns". They construct their portfolios by excluding American equities, whose names do not include either America(n) or US(A) and classify these firms as patriotic for a maximum period of 48 months before and after each war. The book to market is overall the same for the patriotic equities and the control portfolio, and both are in the same industry. Benos and Jochec find evidence of an abnormal return in the patriotic portfolio after the 9-11 attacks, compared to the control portfolio. They use the Newey-West method to correct for heteroskedasticity and autocorrelation in the error terms in all their regressions. The patriotic portfolios' monthly excess returns are regressed with the three factors in Fama and French's model, which are, the market premium, HML and SMB[7].

From these two approaches to identify patriotic bias, Benos and Jochec's methodology in selecting patriotic stocks has been very useful. The foundation of selecting the right patriotic portfolio is crucial for my study, and in line with Benos and Jochec's method of collecting stocks with patriotic names in them. Further, they use the Newey-West approach to correct for heteroskedasticity and autocorrelation in the error terms. This is the method I have applied in the empirical regression analysis as well. Like Gu and Schinsky I have computed the stock return with the natural logarithm on the closing prices on the consecutive days.

3.2 Data Selection

The stocks in the thesis are provided from Morningstar Direct and carefully chosen in a selection process that will be elaborated as follows. As mentioned in the delimitation the name of a company in the sample observation has to include either of the four names America(n) or US(A) to be considered as "patriotic". In line with Benos and Jochec (2007) it is necessary that the company

[6] Center for Research in Security Prices
[7] HML stands for high minus low (based on book to market values), and SMB stands for small minus big (based on market capitalization)

is exclusively American and does not refer to a region in the US. Here are a few examples of companies that are excluded even though the names include Amercia(n) or US(A), see table 1.

Table 1

Company name	Explanation for exclusion
Arabian American Development Company	Does not exclusively refer to America but to a foreign region too
Banco Latinoamericano de Exportaciones SA	Refers to a foreign region in America
Entertainment Is Us, Inc.	Us is used as a pronoun and does not stand for United States
Westamerica Bancorporation	Refers to a region within the US

As the table shows, it is important that the companies used in the study are exclusively American and without any uncertainties hereof. Further, equities with missing price values are not included in the list since they cannot provide any information.

The initial raw data file provided by Morningstar Direct consisted of 15,764 companies exchanged in the United States. The first step in the process was to exclude all companies that that were not American, which eliminated the list to 10,449 companies. From this entire list I made the selection, based on the principles above. The list with target names came down to 330 equities which are traded on both the stock exchanges and OTC. OTC stocks are deselected from the list because many of these stocks do not provide any information about their market capitalization. The OTC stocks are rarely traded and their price data is thus, inadequate for this thesis. An inclusion of OTC stocks could result in a selection bias and perhaps to collinearity in the regression

model. After filtering the list from names that do not comply with the selection criteria and excluding the OTC equities the final list was reduced to 97 equities.

The equity price data has been extracted from the financial database Bloomberg, which provide 24-hour financial news together with information that include historic and real time price data. Bloomberg is able to provide data for this study back to 1983. From 1983 Bloomberg has been able to provide price data for 10 of the, in the thesis, selected companies. If I went further back in time it would only be possible to obtain data for fewer companies than 10, and an analysis with for instance, just one stock would not be reliable. The results would not reflect a truthful version of reality, which is why I have set 10 companies as a minimum criterion to gain a meaningful analysis. The data is based on the daily closing price for each stock. More precisely, the data in this research covers August 10th 1983 to May 9th 2013, for those companies that were active throughout the entire sample period. As described in the theory section, companies that did not survive in this observation period are excluded. This could cause the mentioned, survivorship bias in the empirical results. Since it is only companies that have been successful and survived until the end of the observation period, the results might be skewed a little higher than if they were in fact included. For a stock that is observed in the entire period, the maximum observation number is 7,503.

Bloomberg has further provided market capitalization data of the different companies. This data, however, is only available from 1989, because I sat the criterion to have at least 10 companies in this empirical analysis as well. The market capitalization is based on daily data too. It should be noted that there has been no maximum or minimum level for the market capitalization level. The only criterion, beside the name aspect, has been that the equities are traded on a major American stock exchange and active towards the end of the observation period.

3.3 Benchmarking

In order to investigate whether the patriotic equities have an abnormal price return around patriotic days, it is necessary to control for economic news to observe this kind of behaviour. The benchmark needs, of course, to be American and give a broad representation of the American equity market. It will always be difficult to find, or construct a perfect market benchmark which is a 100% representative, because such portfolio would need to contain every, single equity in the US market. I have selected a benchmark that will, hopefully, come close to reflect the US equity market in the best way possible. The benchmark that will be used as a control portfolio is the Russell 3000 Index.

The Russell 3000 Index is based on 3000 of the largest publicly held US companies and measures their performance. The companies in the index represent almost 98% of the US equity market (Russell Investments). The Russell 3000 Index is further a weighted market capitalization equity index, and preserved by the Russell Investment Group. The index seeks to provide an unbiased, comprehensive, and stable measurement of the entire US stock market. It is reconstructed each year to ensure that new and growing stocks are reflected, in order to make a broad barometer of the market. This reconstitution occurs normally around May or June and the companies' market capitalizations are then re-ranked that year. If a member company during that year is somehow not qualified to be considered in the index, the replacement will not take place until the next reconstitution. This disqualification could consist of bankruptcy, the company is going private, or that it has been acquired by another firm.

The Russell 3000 Index will be used as the US Market Index in the thesis and will be referred like this here after. Studies have found that stock prices adjust to world or economic news before the market opens again or reopened after announcement programs (Brown and Reilly, 2009). By using this "market benchmark" as a control portfolio to market news, it is possible to observe if, the

equally weighted portfolio and the value weighted portfolio, detect any significance in the return rates. Data on the US Market Index is obtained from Bloomberg as well.

3.4 Return Calculations

The data provided from Bloomberg is raw price data of the equities, the returns on the stocks are therefore needed to be calculated to observe the stock movements. The return measures the percentage change in a stock value over a given period of time. In this research the dividends and other distributions are not included in the calculations of the stock returns. As dividends are relatively infrequent events, the return in the majority of time is simply the percentage change in the price, from the end of the day to the end of the next day. I used the following formula to compute the stock returns:

$$r_t = \ln\left(\frac{\mathrm{p}_t}{\mathrm{p}_{t-1}}\right)$$

Where r_t represents the holding return period from period t-1 till t. ln is the natural logarithm, and p_t stands for the closing price of the stock at time t, and p_{t-1} stands for the closing price of the stock the previous day. The actual return rate on a stock is calculated with the natural logarithm to the two consecutive days divided with each other. Using the natural logarithm of a time series it is possible to compute the continuously compounded return and thus, determine the interest earned in the portfolios. This procedure is continuously calculated for each stock, in the portfolios for each day. 10 stocks were active the entire observation period and all of the 97 equities were active in the end of the observation period. Thus, this gave an average return data of 3,793 observations for each stock in the equally weighted portfolio and 3,497 observations for the value weighted portfolio with 28 equities active in the entire observation period.

3.5 Model Selection

There are different things to take into account when selecting the model that needs to be specified for one's regression analysis. The attributes of a "good" model has some guidelines that have been listed by econometrician A.C. Harvey (1981). One of the criteria concerns *parsimony*, which suggests that a model is kept as simple as possible, since it can never capture reality completely. *Identifiability* means that there should only be a single estimate per parameter. While looking at *goodness of fit* the R^2 is a useful measure to assess how well the model explains the variations in Y_i. Another important criterion is the *theoretical consistency* which simply refers to the theoretical basis of the constructed model. Last the *predictive power* indicates that one should choose the model whose theoretical predictions are based by actual economic experience. These criteria are, of course, not necessarily the correct way of estimating a model but they are good foundations in developing a good econometric model. It must be noted that all the models are regressed in the statistical software program Stata.

3.6 Ordinary Least Squares

The primary method to investigate whether there exists, a patriotic bias around the patriotic holidays is regressing the two variables with the use of ordinary least squares (OLS). This is the most frequently used method in obtaining estimators in regression analyses. If the right assumptions are met the OLS estimates are unbiased, and most efficient, plus it minimizes the sum of squared residuals (Gujarati and Porter, 2010). Consider the following two-variable regression function:

$$Y_i = \beta_0 + \beta_1 X_i + e_i$$

The method of OLS states that β_0 and β_1 should be chosen so the residual sum of squares is as small as possible. The squares of e_i -procedure removes the problem of the signs of the residuals themselves since they can be both positive and negative. By minimizing the sum of squared residuals, the output will give a zero average residual.

Because all the data is times series, the models are distributed lag models that take the changes of a variable into account (Gujarati and Porter, 2010). The regressions are used to predict the current value of the dependent variable, based on the current value, and the lagged (past period) values, of the explanatory variable. In this thesis I will set the autocorrelation structure to 5 lags.

3.7 The Classical Linear Regression Model

The OLS is a procedure to estimate the variances and standard errors in the classical linear regression model (CLRM). The CLRM is based on six assumptions, namely the model is linear in parameters, zero population mean, uncorrelated with the error term, homoskedastic, no autocorrelation and finally no specification bias (Gujarati and Porter, 2010). For classical linear regression models (CLRM) assumption 4 and 5 is often violated.

As mentioned assumption 4 states that the variance of each u_i is constant, or homoskedastic:

$$var(u_i) = \sigma^2$$

This assumption simply means that the individual *Y* values are spread with the same variance around their mean values. If this is not the case, heteroskedasticity arises, or unequal variance, where the variance of each Y population is different. Heteroskedasticity occurs most often in cross-sectional data, thus data where observations are all from the same period of time but though from different entities. A violation of assumption 5 of the CLRM leaves the OLS best unbiased estimator (BUE) and not best linear unbiased estimator (BLUE) as before the violation.

Assumption 5 assumes that there is no correlation between two errors terms. That is, no autocorrelation, which can be written like this:

$$cov(u_i, u_j) = 0, i \neq j$$

Where *cov* stands for covariance and *i* and *j* are any two error terms. It should be noted that if *i* = *j* it will result in the variance of *u*, which is then constant. Assumption 5 means that there is no systematic relation between two error terms u_i, they are simply just random.

As noted before these two assumptions are often violated and will therefore need to be adjusted in the regressions. Luckily there are many formal tests to do this, and one of the specifics in testing for heteroskedasticity is the White test. The White test is the most useful one, but quite general making it the least powerful test as well. In addition the Park test, Glejser test, and the Goldfelt-Quandt test can be named among others. In this thesis I will choose the method obtained by Newey and West (1987), since their procedure corrects for both heteroskedasticity and autocorrelation. More about this method is elaborated in the Robustness Checks section.

3.8 Constructing the Patriotic Portfolios

After computing the rates of returns for all the equities the portfolios were constructed. To make sure the results are not driven by a few large companies both an equally and a value weighted portfolio will be constructed, where the equally weighted portfolio will reveal if this is the case. With the equally weighted portfolio the construction method is simply an average of all the equities return, like the name suggests. So for each of the 7,503 observed days, an average of the included equity return is calculated to obtain equality in the portfolio. Depending on how many equities that have historical price data on the given day, the average of the return is adjusted for the number of equities. Hence, in the first observations from 1983, with 10 companies the average return of these 10 equities is computed. As more and more companies provide price data through the observation time, the average return will include these data continuously. The last day of the observation period it will end with 7,503 observed days, and the average of all 97 equity returns. This is expressed with the formula below, showing the equally weighted return at time *t*:

$$Equally\ Weighted\ Return(t) = \left(\frac{r_1 + r_2 \dots r_n}{n}\right)$$

Where r_1 represents the return of equity 1, r_2 represents the return of equity 2 and so forth, and n represents the number of equities.

The same procedure is used with the value weighted portfolio though, adding another factor, namely the market capitalization. The market capitalization for each company, each day, is extracted from Bloomberg in order to compute the portfolio based on value weights. The observed data reach 5,985 days for companies with available market capitalization data in the entire observation period. Like with the equally weighted portfolio the value weighted return is computed depending on the number of observed equities the given day. Thus, in the beginning of the observation period the value weighted return obtains 28 equities. As more equities provide price and market capitalization data, they will be included in the value weighted return. As an example of a daily value weighted portfolio on the last day of the observation period, each of the 97 equity return rates are multiplied with the total market capitalization of all the companies the specific day. The value weighted return at time t is expressed with the following formula:

$$Value\ Weighted\ Return(t) = \left(\frac{r_1 \times mc_1 + r_2 \times mc_2 \dots\ r_n \times mc_n}{Total\ MC(t)}\right)$$

Where r_1 stands for the return of company 1, r_2 stands for the return of company 2 and so on. Further, mc_1 stands for the market capitalization of company 1, mc_2 stands for the market capitalization of company 2 and so forth. The *Total MC* represents the summed market capitalization for the included companies at time t.

3.9 Dummy Variables

The foundation of this thesis is build, on the hypothesis that patriotic bias is present around patriotic holidays. Because I want to test for the relation between the two variables, a dummy variable for the patriotic holidays is required. The nature of dummy variables in general will therefore be reviewed in this section but first a specification of the patriotic holidays variable.

It is necessary to identify all the existing American patriotic holidays that will be included in the patriotic holidays dummy variable. Since it can be up for discussion which days are patriotic and which are not I have chosen a governmental source, The National Archives of Boston and an organizational source, Veterans of Foreign War, both American of course, to clarify the days. These sources suggested thirteen patriotic days[8], which will all be included in the patriotic holidays dummy variable.

The patriotic holidays variable is not numerical and will be treated as a qualitative variable, also known as a dummy variable. A method of "quantifying" this characteristic is by constructing an artificial variable (Gujarati and Porter, 2010). The dummy variable, patriotic holidays, can take the value of either 1 or 0. It will take the value 1 each time a patriotic holiday occurs and 0 indicating the absence of a patriotic holiday, which is called the category. One could also assume that investors will trade the patriotic stocks prior to the patriotic holiday and, or the day after. The time window is thus, (t-1) and (t+1) and will capture any possible trading in the patriotic stocks around the patriotic holidays. This means that (t-1), t, and (t+1) will all three, be given the value 1 in the dummy variable. Many of the patriotic holidays are bank holidays as well, which mean that the stock is closed for trading that particular day. This is also the reason why the time window is (t-1) and (t+1) for time t, because in that way it is certain that the patriotic holidays are represented in the analysis. To give an example Veterans Day, which is a patriotic holiday, is on the 31st of May in 2004. This is a Monday, but since it is a bank holiday as well, the stock exchanges are closed that day, and it is therefore not possible to give the 31st of May the value 1. The stock exchanges are closed in the weekend too, which is why Friday the 28th of May must be (t-1) and the 1st of June is (t+1), and both days will take the value 1. Thus (t-1) and (t+1) refers to trading days and not calendar days. If there is any presence of patriotic bias, the estimated patriotic holiday coefficient will be positive and the empirical results will show significance in the regressions.

[8] See appendix 1 for specifications of the patriotic days

It would be narrow-minded to assume that the patriotic portfolios are only related to one independent variable (the patriotic holidays). The dependent variable is, in general, often related to more than just one independent variable. One could perform a regression with an independent variable and then make another regression with a second independent variable, and continue with a third regression and variable etc. This would, though, not provide any information about the patriotic bias, which is the topic of interest in this thesis. Instead it will be interesting to examine whether different independent variables obscure each other's effect on the dependent variable. This is possible with a multiple regression, which allows simultaneous testing of multiple independent variables. The other independent variables, besides the patriotic holidays, include the US market index, all other bank holidays than the patriotic, weekdays, months, and the three most important patriotic holidays. As described earlier in the thesis, the pre-holiday effect tends to increase stock returns prior to a holiday, which is why it will be examined whether other bank holidays could affect the patriotic portfolios. Lakonishok and Smidt (1988) find similar evidence of anomalous returns around the turn of the week, around the turn of the month, and around the turn of the year. This is why both weekdays, and months are included in the regression models. The three most important patriotic holidays are selected to control for a possible pre-holiday effect and to find out if they have a higher impact on the patriotic portfolios than all of the thirteen patriotic holidays. The three most important patriotic holidays are, Memorial Day, Independence Day, and Veterans Day. These are selected because they are all three bank holidays, and they appear as the only ones on both, the Veterans of Foreign War organization webpage, and The National Archives at Boston webpage. Because the model will be tested for these other factors that might affect the return of the patriotic portfolios, several dummy variables will be constructed for this matter.

Dummy variables are just as readily in regression models as quantitative variables. In fact, a regression model may contain of dummy explanatory variables only. Regressions like these are called analysis-of-variance (ANOVA) models, and can take form like the following formula:

$$Y_i = B_1 + B_2 D_i + u_i$$

Since dummy variables take the value 1 or 0, they are non-stochastic and do not rise any estimation problems in the ordinary least square (OLS) method, which is ordinarily used to estimate parameters of models. Further, it would not be correct to call B_2 the slope coefficient but rather the differential intercept coefficient, as there is no continuous regression involved with a dummy variable. Hence, the differential intercept coefficient tells how much the value of the intercept term differs between the two categories.

The technique of creating a dummy variable can easily be extended to include more than one qualitative variable in a model. It is however, important to note that one should always select one less dummy variable than conditions (categories). I will for instance test the effect of weekdays in the empirical analysis, and will then omit one of the weekdays, Friday, to avoid falling into the "dummy variable trap" and violate assumption 6 of the CLRM. The model can also be extended to include more than one quantitative variable and more than two qualitative variables, which will be useful in this thesis, while the benchmark portfolio and the important patriotic days will be added in the analysis. Including quantitative variables in a regression model as a combination with qualitative variables generates an analysis-of-covariance (ANCOVA). They are more common in economics than the ANOVA models and provide a method to statistically control the effects of control variables, which are the quantitative variables (Gujarati and Porter, 2010).

3.10 Robustness Checks

To be certain that the findings in the empirical analysis are valid, I will run some different robustness checks. The first kind of robustness check will be an examination of the time frame. The regression models captures the patriotic holidays in a time window of (t-1), and (t+1), which is the case for the dummy variables, *All Other Bank Holidays*, and *Important Patriotic Holidays* too. However, the patriotic bias could be present a few days earlier and, or later than this specified time frame. To make sure that the presence of patriotic bias is captured in the model the dummy variable, patriotic holidays, is expanded to include two more trading days, thus (t-2), and (t+2). It

could happen that the patriotic stocks are traded more often two trading days prior, or later, to a patriotic holiday, and with this new time frame it will be determined if that is the case. Thus, the dummy variable, patriotic holidays, will take the value of 1 at time (t-2), t, and (t+2). A new regression between the patriotic portfolios and the independent variables will then be run to check for any variations in the initial findings. If no significantly difference is observed in the new regressions it will imply that the first results are robust. This procedure is tested once again with a new time window of (t-3) and (t+3) while the patriotic bias might even be present 3 trading days prior, and later to a patriotic holiday.

In general, OLS regressions are potentially subject to serial autocorrelation and heteroskedasticity in the error term. Instead of transforming the variables in order to correct for autocorrelation, Newey and West have developed a method to compute these standard errors that are corrected for autocorrelation (Newey and West, 1987). It is important to note that the method is only valid in large samples, which of course is relative but I have, either way, chosen to determine these samples as suitable for the Newey-West method. An increase in the robustness of the test will then be reached with the Newey-West method. It should be noted that the correction does not change the parameter estimates, but only their standard errors, which become higher. The statistical software program Stata provides this Newey-West method, making the process of correcting for autocorrelation and heteroskedasticity quite accessible.

3.11 Hypothesis testing

When testing for patriotic behaviour in the stock market, I will formulate a hypothesis in order to do so. The hypothesis is a statement about a population parameter (patriotism), subject to verification. Testing the hypothesis is a procedure based on sample evidence (patriotic stocks) to decide if the hypothesis is a reasonable statement. Testing a hypothesis follows a five-step procedure (Lind *et Al.,* 2010).

State the Null (H_0) and the Alternate Hypothesis (H_1). For instance, the null hypothesis states that, patriotic holidays have no impact on the return of the equally weighted patriotic portfolio, thus, beta is not different from zero. The alternate hypothesis is thus, significantly different from zero and will be accepted if the sample data provide enough evidence that the null hypothesis is false.

Selection of Significance Level, α. This is the probability, or risk, of rejecting a null hypothesis when it is in fact true. Normally researchers choose between three levels, the .01, the .05, or .10. In this thesis the .05 level, stated the 5% level, is applied and the region of rejection is .025 because it is a two-tailed test. This significance level is chosen for all the models in the thesis. If one reject the null, when it is true, a Type I error is committed. The opposite is a Type II error when one fails to reject the null when it is false.

Selection of Test Statistics. This is simply selecting between the different test statistics, such as z, t, F, and chi-square. In this research the t and F statistics are used. In addition, the p-value is applied to decide whether or not to reject the null hypothesis.

Formulation of the Decision Rule. The decision rule states the conditions when the null hypothesis is rejected and is based on the, above described, three steps.

Decision making. The final step is to make a decision of either reject, or fail to reject the null hypothesis.

The hypotheses are constructed throughout the empirical results section, and will be carried out as more and more control variables are added to the test.

4. Empirical Results and Analysis

4.1 The Patriotic Index

Before starting the actual research with this thesis I wanted to explore whether there even was a surge in patriotism around the certain patriotic holidays. To examine this level of patriotic feelings I chose to create, what I would like to call, a patriotic index. The patriotic index is created around numerous patriotic concepts and words, such as freedom, justice, liberty and so forth. More precisely a list of 230 patriotic words[9] was used to construct the index.

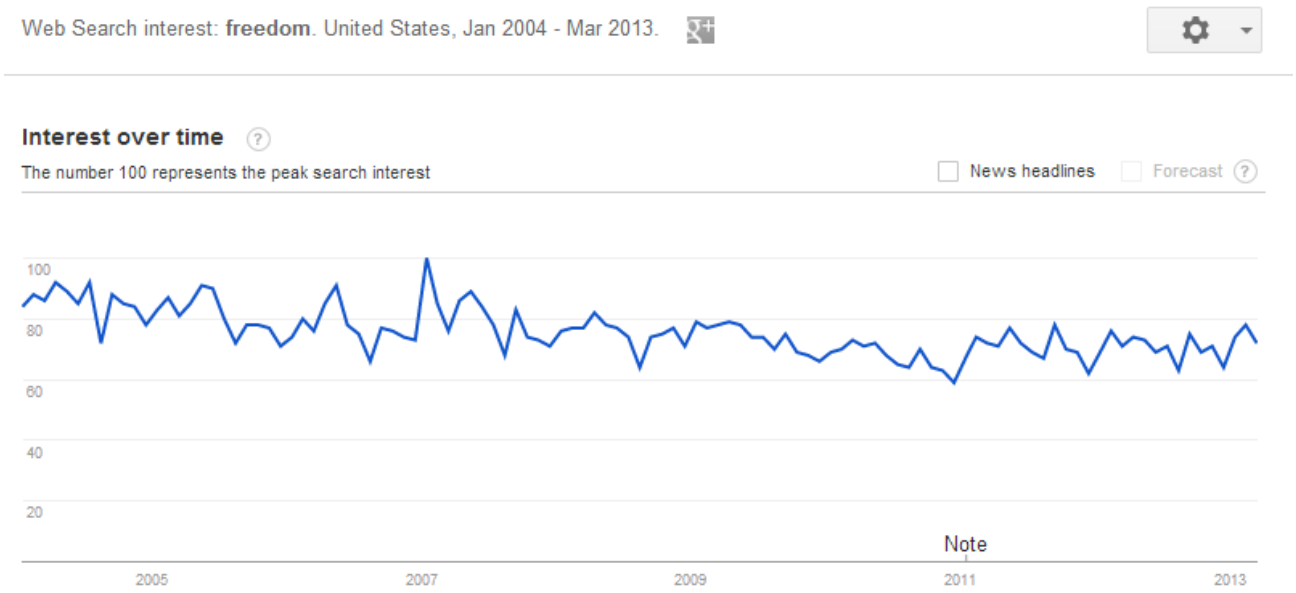
To analyse the surge for patriotism I used the tool "Google Trends", which is one of Google Inc.'s publicly available web services.[10] Google Trends is based on Google Search and shows how frequently a particular search-item is entered compared to a total search-volume throughout the entire world and in several languages. The certain "trend" is depicted in a graph where the horizontal axis presents time and the vertical axis shows the frequency of a searched term relative to the aggregated, globally, number of searches. It is possible to collect data back to 2004 on a weekly level. Further, the main graph can be broken down to region and country level as well as cities and languages. This has been quite useful, as the need was to collect data trends from the United States only.

The process of extracting patriotic searches starts by typing in a single word at the time in the "Trends" search. The next step is filtering the search on country level, ensuring that the data is from the United States only. It is possible to break down the search on the following five different categories, web, image, news, product, and YouTube search. For this study web search is used. Finally the time period is selected, which is January 2004 till March 2013 for this research, to collect the largest amount of data possible. The displayed graph shows the output of interest over

[9] Patriotism Vocabulary Word List from: www.myvocabulary.com
[10] www.google.com/trends

time, where the number 100 represents the peak in search interest. See example with the patriotic word “freedom” in figure 1 below.

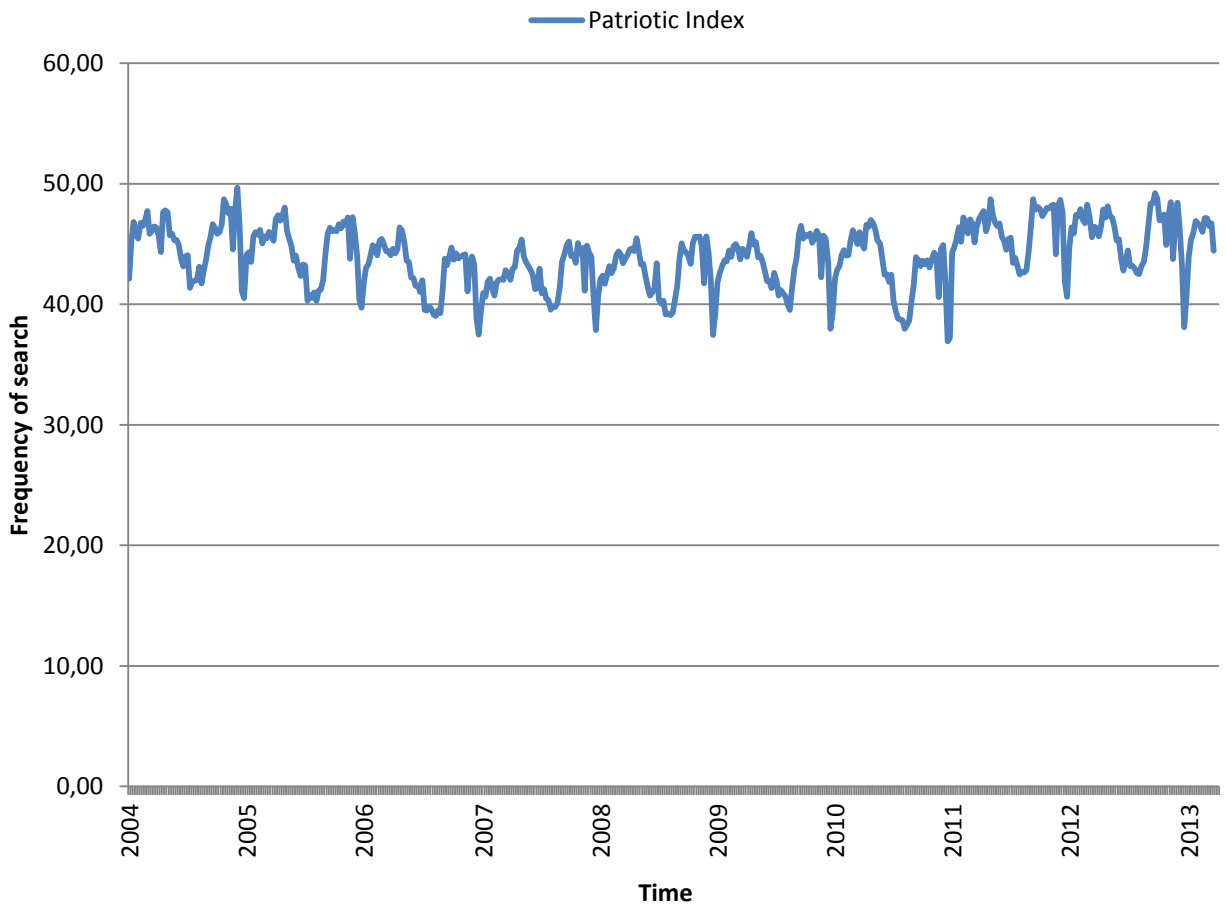
Figure 1



Source: www.google.com/trends

Subsequently an Excel file can be extracted from the Google Trends webpage providing data on a weekly basis. This process is continuously done until every patriotic word is covered. The patriotic index is then constructed, by the average of all the patriotic words of the particular week, throughout the whole sample period with 482 observations, see figure 2.

Figure 2 – The Patriotic Index



Source: Self constructed from the data provided by Google Trends

From the graph it can be seen that the interest of patriotic words fluctuates approximately between 37 and 50. After the process of extracting patriotic searches from Google Trends the next step was to set up the patriotic holidays variable, which will be used to analyse if there is a surge in patriotic feelings around the specific patriotic holidays.

To check whether there is a surge for patriotism around the patriotic days, I specified a model where the patriotic index is the dependent variable, and patriotic holidays the independent variable.

Model 1:

$$PatrioticIndex_t = \beta_0 + \beta_1 * PatrioticHolidays_t + \varepsilon_t$$

Where β_0 is the constant in the model and β_1 is the coefficient of the patriotic holidays variable. The $PatrioticHolidays_t$ is set as a dummy variable taking the value 1 if the week contains a patriotic holiday and 0 otherwise. Finally, the error term, ε_t, reflects all the variation in the patriotic index that cannot be explained by the $PatrioticHolidays_t$.

The null hypothesis (H_0) states that the β_1 is not different from zero, thus there is no evidence of varying surge for patriotism around patriotic days. The alternative hypothesis (H_1) states that the β_1 is different from zero hence the surge for patriotism increase around patriotic days. If β_1 is negative, I will still reject the null, because from my assumption β_1 should be positive if the patriotic holidays do have the assumed effect on the surge for patriotism around those days.

$Hypothesis$:

$H_0: \beta_1 = 0$, $H_1: \beta_1 \neq 0$

If the null hypothesis is not rejected there is no evidence of a surge in patriotism around patriotic days. I apply the conventional 5% significance level, α, for the test. I have regressed the times series data from the patriotic index with this patriotic Holidays variable, the results are shown in table 2 below.

Table 2

Regression with Newey-West standard errors — Number of obs = 482
maximum lag: 5 — F(1, 480) = 13.23
Prob > F = 0.0003

patrioticindex	Coef.	Newey-West Std. Err.	t	P>|t|	[95% Conf.	Interval]
patrioticholidayt	.94424	.2595502	3.64	0.000	.434245	1.454235
_cons	43.86126	.2632075	166.64	0.000	43.34408	44.37844

As can be seen from the table the coefficient on the PatrioticHoliday dummy is estimated to be positive because the slope coefficient, β_1, is +0.94424. Thus, the slope coefficient of about +0.944 suggests that if the index of patriotic holidays goes up by one unit, the patriotic index will go up, on average, by 0.944 units. This coefficient is statistically significant since the p-value is 0.000. The null hypothesis can therefore be rejected because there is extremely strong evidence that (H_0) is not true. Thus, the patriotic index is indeed significantly higher, in weeks containing a patriotic day, compared to weeks without. As for the economic significance I will argue that it is rather small, since this is not directly related to any trading or investment. However, this finding of a surge in patriotism around patriotic holidays is used as a foundation of the investigation of patriotic bias. The next sections will investigate this patriotic bias, starting by analysing the equally weighted patriotic portfolio, while moving on to the value weighted portfolio after that.

4.2 The Equally Weighted Portfolio

The equally weighted portfolio is, as the name suggests, a portfolio where each stock is given the same weight. Thus the smallest companies in the portfolio are given the same equal importance as the largest companies. Since there are 97 companies in the portfolio each, equity is given the weight $\left(\frac{1}{97}\right)$ or approximately 1.091%. To recap, the time period covers August 10th 1983 till May 5th 2013, which gives 7503 trading days in the observation.

Regression with the Patriotic Holidays

The first step in studying the patriotic bias in the US equity market is testing the return of the equally weighted portfolio. To do this I have specified the following model, where the return of the equally weighted portfolio represents the dependent variable and the patriotic holidays represent the independent variable.

Model 2:

$$r_{EWP(t)} = \beta_0 + \beta_1 * PatrioticHolidays1_t + \varepsilon_t$$

Where $r_{EWPP(t)}$ represents the return of the equally weighted portfolio at day t. The patriotic holidays variable is constructed as a dummy variable based on daily basis. Hence, this variable takes the value 1 each day a patriotic holiday occurs, and 1 on the trading day before and after the patriotic holiday, (t-1), and (t+1). This is why the patriotic holidays variable is named 1 so it is possible to distinguish between the robustness tests that will be carried out later in the thesis. They will have an increased time window of (t-2) and (t+2), and (t-3) and (t+3), thus named patriotic holidays2 and patriotic holidays3, respectively.

β_0 is the constant in the model, and β_1 is the coefficient of the patriotic holidays variable, and the error term, ε_t, reflects all the variation in the returns of the equally weighted portfolio that cannot be explained by the patriotic holidays.

The times series are analysed with the Newey-West method, that estimates the standard errors in the model accounting for heteroskedasticity and autocorrelation in the errors. A positive coefficient (β_1) would indicate that the patriotic holidays return is higher than the non-patriotic holiday return and a significant p-value would provide evidence of a patriotic bias in the patriotic portfolio.

I can now state the null hypothesis (H_0) that patriotic holidays have no impact on the returns of the equally weighted portfolio. Thus β_1 is not different from zero while the alternative hypothesis (H_1) states β_1 is different from zero, thus making patriotic holidays have an impact on the returns of the patriotic portfolio. It should be noted that I will still reject the null if β_1 is negative, because based on my conjectures β_1 should be positive if the patriotic holidays do have an effect on the returns of the patriotic portfolio.

Hypothesis:

$H_0: \beta_1 = 0,$ $H_1: \beta_1 \neq 0$

If the null hypothesis is not rejected there is no evidence of a patriotic bias around patriotic holidays. However, if I reject the null, there is evidence in favour of my hypothesis, but only if β_1 is positive. I have regressed the times series data from the equally weighted portfolio with the patriotic holidays variable, the results are shown in table 3 below.

Table 3

```
. newey EquallyWeightedPortfolio PatrioticHolidays1, lag(5)

Regression with Newey-West standard errors          Number of obs   =      7503
maximum lag: 5                                      F(  1,  7501)   =      1.23
                                                    Prob > F        =    0.2668

------------------------------------------------------------------------------
                             |             Newey-West
EquallyWeightedP~o |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------------+----------------------------------------------------------------
PatrioticHolidays1 |  -.0005026   .0004526    -1.11   0.267    -.0013898    .0003846
             _cons |   .0002062   .0001538     1.34   0.180    -.0000953    .0005078
------------------------------------------------------------------------------
```

From the table it can be seen that the coefficient on the patriotic holidays dummy is estimated to be slightly negative (-0.0005026). This actually means that the returns of the equally weighted portfolio are approximately 0.05% lower around patriotic holidays than on any other days. Thus, the slope coefficient of about (-0.0005026) suggests that if the index of patriotic holidays goes up by one unit, the equally weighted portfolio will go down, on average, by (-0.0005026) units. My assumption that the returns would increase around patriotic holidays is not consistent with the findings of the negative sign of the estimated coefficient on the patriotic holidays dummy. If the patriotic holidays should have an impact on the returns of the patriotic portfolio, due to my assumption, the coefficient should be positive.

Furthermore, this coefficient is statistically not significant because the p-value is (+0.267), which is way too high to reject the null hypothesis. I thereby fail to reject the null hypothesis (H_0), hence, it seems like the patriotic holidays do not have an impact on the returns of equally weighted portfolio based on this baseline model.

Regression where the US Market Index is added to the model

The US market index captures a wide spectrum of economic market news. The next step is to test whether patriotic holidays have an impact on the equally weighted portfolio after controlling for this market index. The US market index is therefore added to the model to see if anything changes in the regression analysis.

Model 3:

$$r_{EWP(t)} = \beta_0 + \beta_1 * PatrioticHolidays1_t + \beta_2 * USMarketIndex_t + \varepsilon_t$$

β_2 is the coefficient of the US Market Index, which is a quantitative variable and represents the return of a very broad selection of US equities. The US market index consists of the Russell3000 Index, hence representing 3,000 equities in the US equity market.

The null hypothesis (H_0) will be the same as before, stating that patriotic holidays have no impact on the returns of the equally weighted portfolio, after controlling for the US market index. Thus β_1 is not different from zero, and the alternative hypothesis (H_1) is the same as before. Again the null hypothesis will be rejected if β_1 is negative, because, based on my conjectures, β_1 should be positive if the patriotic holidays do have an effect on the returns of the equally weighted portfolio.

If the null hypothesis is not rejected there is no evidence of a patriotic bias around patriotic holidays, after controlling for economic market news captured in the US market index. I have regressed the times series data from the equally weighted portfolio with this new model 3, the results are shown in table 4 below.

Table 4

Regression with Newey-West standard errors — Number of obs = 7503
maximum lag: 5 — F(2, 7500) = 822.77
Prob > F = 0.0000

EquallyWeightedP~o	Coef.	Newey-West Std. Err.	t	P>|t|	[95% Conf.	Interval]
PatrioticHolidays1	-.000534	.0003293	-1.62	0.105	-.0011795	.0001114
USMarketIndex	.7086505	.0174709	40.56	0.000	.6744027	.7428984
_cons	-6.99e-06	.0001067	-0.07	0.948	-.0002161	.0002021

From the table it can be seen that the coefficient on the patriotic holidays dummy has decreased by a very small amount from (-0.0005026) to (-0.000534). Thus, nothing much has changed for the patriotic holidays coefficient, the model still suggests that the returns of the equally weighted portfolio is 0.05% less than the returns of all other "regular" days. On the other hand, has the p-value of the patriotic holidays decreased relatively much as it is now (+0.105). This is still too high to reject the null hypothesis test on the 5% significance level. I fail to reject the null hypothesis based on the patriotic holidays variable's statistical analysis. This suggests that after controlling for the economic news effect the US market index encompasses, the patriotic holidays still have no impact on the returns of the equally weighted portfolio.

Regression where All Other Bank Holidays is added to the model

As presented in the theory section holidays tend to have an effect on the stock market as evidence has showed high abnormal returns on days prior to a holiday. I will next control for this pre-holiday effect by including bank holidays that are not patriotic and see, whether there is a patriotic bias or not. These other bank holidays in the US are Labor Day, Columbus Day, Thanksgiving, Christmas, and New Year's Eve. The new model will thus take the following form.

Model 4:

$$r_{EWP(t)} = \beta_0 + \beta_1 * PatrioticHolidays1_t + \beta_2 * USMarketIndex_t + \beta_3 * All\ Other\ Bank\ Holidays1_t + \varepsilon_t$$

Where All Other Bank Holidays1 is a dummy variable taking the value of 1 each day it is one of the above mentioned holidays. In general the stock exchanges are closed these days, but e.g. at Columbus Day it is observed to be open[11]. The trading day before and after one of these, bank holidays are given the value 1 as well, thus (t-1) and (t+1). All other days are given the value 0. β_3 represents the coefficient of All Other Bank Holidays1.

The null hypothesis (H_0) states that patriotic holidays, have no impact on the returns of the equally weighted patriotic portfolio, after controlling for the pre-holiday effect, which the variable all other bank holidays represents. Thus β_1 is not different from zero. The alternative hypothesis (H_1) is the same as before and even though β_1 is negative, the null will still be rejected as β_1 needs to be positive to favour my hypothesis.

If the null hypothesis is not rejected there is no evidence of a patriotic bias around patriotic holidays, after controlling for the pre-holiday effect. The regression results of model 4 are shown in table 5 below.

[11] Columbus Day is observed in most states but not in all, so the Stock Exchanges are open that day. The reference www.timeanddate suggests it is a bank holiday, which is why it is included in the analysis.

Table 5

Regression with Newey-West standard errors — Number of obs = 7503
maximum lag: 5 — F(3, 7499) = 551.20
Prob > F = 0.0000

EquallyWeightedP~o	Coef.	Newey-West Std. Err.	t	P>|t|	[95% Conf.	Interval]
PatrioticHolidays1	-.0004725	.0003307	-1.43	0.153	-.0011208	.0001757
USMarketIndex	.7079335	.0174294	40.62	0.000	.673767	.7421
BankHolidays1	.0012501	.0005844	2.14	0.032	.0001045	.0023956
_cons	-.0000683	.0001097	-0.62	0.534	-.0002832	.0001467

From the table it can be observed that controlling for the pre-holiday effect have not changed the patriotic holidays to be significant. The p-value of patriotic holidays is (+0.153), and therefore too high to reject the null hypothesis. The coefficient on the patriotic holidays dummy is continued to be estimated as slightly negative (-0.0004725), not much different from the previous results. The null cannot be rejected hence there is still no indication of a patriotic bias in the returns of the equally weighted portfolio, after controlling for the pre-holiday effect.

It is noteworthy to mention that the coefficient on all other bank holidays is positive (+0.0012501), and thereby consistent with what has been detected in previous studies about pre-holiday effect. The returns of the patriotic portfolio will go up by approximately 0.13% around the bank holidays compared to any other days. This is even after controlling for the behaviour in the entire US market, which in principle should already have captured the effect of other bank holidays.

Regression where Weekdays are added to the model

Like the pre-holiday effect, it has been proofed that certain days of the week have an effect on stock returns as well. Lakonishok and Smidt (1988) find evidence of anomalous returns around the turn of the week. This is why the day-of-the-week dummies are included in the model to control for any week-day effect. Thus model takes the following form.

Model 5:

$$r_{EWP(t)} = \beta_0 + \beta_1 * PatrioticHolidays1_t + \beta_2 * USMarketIndex_t + \beta_3 * All\ Other\ Bank\ Holidays1_t + \beta_4 * Monday_t + \beta_5 * Tuesday_t + \beta_6 * Wednesday_t + \beta_7 * Thursday_t + \varepsilon_t$$

Each weekday in the model is a dummy variable, so e.g. for the Monday dummy variable it will take the value 1 each day it is a Monday and 0 otherwise. The Tuesday dummy variable takes the value 1 each day it is Tuesday and 0 otherwise. This, of course, applies for Wednesday and Thursday as well. Friday is used as the category variable in order to avoid the dummy variable trap.

The null hypothesis states that the patriotic holidays have no impact on the returns of the equally weighted portfolio after controlling for turn of the week day effect with the weekday dummies. Thus β_1 is not different from zero. The alternative hypothesis (*H_1*) is the same as before and even though β_1 is negative, the null will still be rejected as β_1 needs to be positive to favour my hypothesis.

If the null hypothesis is not rejected there is no evidence of a patriotic bias around patriotic holidays, after controlling for the week day effect. The regression results of model 5 are presented in table 6 below.

Table 6

Regression with Newey-West standard errors — Number of obs = 7503
maximum lag: 5 — F(7, 7495) = 246.32
Prob > F = 0.0000

EquallyWeightedP~o	Coef.	Newey-West Std. Err.	t	P>|t|	[95% Conf.	Interval]
PatrioticHolidays1	-.0005123	.0003305	-1.55	0.121	-.0011602	.0001356
USMarketIndex	.7078241	.0174152	40.64	0.000	.6736854	.7419628
BankHolidays1	.0011525	.0005752	2.00	0.045	.0000249	.0022801
Monday	-.001617	.0003517	-4.60	0.000	-.0023064	-.0009275
Tuesday	-.0014265	.0003399	-4.20	0.000	-.0020929	-.0007602
Wednesday	-.0009679	.0003581	-2.70	0.007	-.00167	-.0002659
Thursday	-.0005691	.0003453	-1.65	0.099	-.0012459	.0001078
_cons	.0008516	.0002493	3.42	0.001	.000363	.0013403

From the table it is observed that the coefficient on the patriotic holidays dummy is still estimated to be slightly negative (-0.0005123). This shows that after controlling for the week day effect, nothing much has changed for the patriotic holidays dummy. The p-value continues to be too high (+0.121) to reject the null hypothesis that patriotic holidays have an impact on the returns in the equally weighted portfolio.

Another interesting finding is the coefficient on the Monday dummy, which is estimated to be negative (-0.001617), confirming previous findings of negative Monday returns (Keim and Stambaugh, 1984). Thus the returns of the equally weighted portfolio should be approximately 0.16% less on Mondays than any other weekdays.

Regression where Months are added to the model

It is not only certain days that tend to have an effect on stock returns. Rozeff and Kinney (1976) find evidence of differences in mean returns among months, which is primarily due to large January returns. This is why I will control for this monthly effect by including each month in the model and examine if there is any patriotic bias. The model will then take this form.

Model 6:

$$r_{EWP(t)} = \beta_0 + \beta_1 * PatrioticHolidays1_t + \beta_2 * USMarketIndex_t + \beta_3 * All\ Other\ Bank\ Holidays1_t + \beta_4 * Monday_t + \beta_5 * Tuesday_t + \beta_6 * Wednesday_t + \beta_7 * Thursday_t + \beta_8 * January_t + \beta_9 * February_t + \beta_{10} * March_t + \beta_{11} * April_t + \beta_{12} * May + \beta_{13} * June_t + \beta_{14} * July_t + \beta_{15} * August_t + \beta_{16} * September_t + \beta_{17} * October_t + \beta_{18} * November_t + \varepsilon_t$$

Every month in the model is a dummy variable, so e.g. for the January dummy variable, it will take the value 1 each day it is January and 0 otherwise. The February dummy variable takes the value 1 each day it is February and 0 otherwise. This, of course, applies for the rest of the months as well except for December. December is used as the category variable in order to avoid the dummy variable trap.

The null hypothesis states that the patriotic holidays have no impact on the returns of the equally weighted portfolio after controlling for the monthly effect with the month dummies. The alternative hypothesis (H_1) is still the same as before. Thus β_1 is not different from zero while the alternative hypothesis (H_1) states β_1 is different from zero, making patriotic holidays have an impact on the returns of the Patriotic Portfolio. The null will still be rejected if β_1 is negative, because of my assumption that β_1 should be positive, if the patriotic holidays do have an effect on the returns of the equally weighted portfolio.

If the null hypothesis is not rejected there is no evidence of a patriotic bias around patriotic holidays, after controlling for the monthly effect. The results of model 6 can be seen in table 7.

Table 7

Regression with Newey-West standard errors — Number of obs = 7503
maximum lag: 5 — F(18, 7484) = 101.12
Prob > F = 0.0000

EquallyWeightedP~o	Coef.	Newey-West Std. Err.	t	P>|t|	[95% Conf.	Interval]
PatrioticHolidays1	-.0004489	.0003474	-1.29	0.196	-.00113	.0002321
USMarketIndex	.7070571	.017521	40.35	0.000	.672711	.7414033
BankHolidays1	.0016266	.0005949	2.73	0.006	.0004604	.0027928
Monday	-.0015766	.0003534	-4.46	0.000	-.0022693	-.0008838
Tuesday	-.0014157	.0003407	-4.16	0.000	-.0020836	-.0007478
Wednesday	-.0009414	.0003597	-2.62	0.009	-.0016464	-.0002364
Thursday	-.0005404	.0003468	-1.56	0.119	-.0012202	.0001395
January	.0015936	.0005214	3.06	0.002	.0005715	.0026156
February	.0009939	.0004651	2.14	0.033	.0000822	.0019056
March	.0012111	.0004739	2.56	0.011	.0002821	.00214
April	.0003842	.0004421	0.87	0.385	-.0004825	.0012509
May	.0002853	.0004455	0.64	0.522	-.0005881	.0011587
June	.0004206	.0004832	0.87	0.384	-.0005267	.0013679
July	.0000401	.0004764	0.08	0.933	-.0008938	.0009741
August	.0003502	.0004943	0.71	0.479	-.0006189	.0013192
September	.0001498	.0004637	0.32	0.747	-.0007592	.0010587
October	-.0009746	.000531	-1.84	0.066	-.0020154	.0000663
November	.0001228	.0005129	0.24	0.811	-.0008825	.0011282
_cons	.0004283	.0004475	0.96	0.339	-.0004489	.0013055

From the table it is observed that the coefficient on the patriotic holidays dummy continues to be estimated as slightly negative. However, a little less than previous, as it is now (-0.0004822). This shows that after controlling for the monthly day effect, nothing much has changed for the patriotic holidays dummy. The p-value is still too high (+0.171) to reject the null hypothesis that patriotic holidays have an impact on the returns in the equally weighted portfolio.

The positive coefficient of the January dummy (+0.0015936) supports previous findings of a January effect. Furthermore, the estimated coefficient of the January returns is higher than any other of the month coefficients. Model 6 shows that the returns should be approximately 0.16% higher on January days than the rest of the days in the year.

Regression where Important Patriotic Holidays is added to the model

Some of the patriotic holidays seem to have greater value than others, while it is not every patriotic holiday that is in fact a bank holiday for instance. Three of those that seem most important are, Memorial Day, Independence Day, and Veterans Day. These are selected because they appear as the only ones on both, the Veterans of Foreign War organization webpage, and The National Archives at Boston webpage. Like described in the methodology and data section they are bank holidays as well. They might have an effect similar to the pre-holiday effect as they are all bank holidays and possibly arouse people's patriotic feelings. Based on my assumption that this could lead to higher returns in the patriotic portfolio, I will now test for this effect. The particular important patriotic days are now included in the model and it will be tested to see, whether patriotic holidays have an impact on the patriotic portfolio after controlling for the important patriotic holidays. Model 7 will therefore take this form:

Model 7:

$$r_{EWP(t)} = \beta_0 + \beta_1 * PatrioticHolidays1_t + \beta_2 * USMarketIndex_t + \beta_3 * All\ Other\ Bank\ Holidays1_t + \beta_4 * Monday_t + \beta_5 * Tuesday_t + \beta_6 * Wednesday_t + \beta_7 * Thursday_t + \beta_8 * January_t + \beta_9 * February_t + \beta_{10} * March_t + \beta_{11} * April_t + \beta_{12} * May + \beta_{13} * June_t + \beta_{14} * July_t + \beta_{15} * August_t + \beta_{16} * September_t + \beta_{17} * October_t + \beta_{18} * November_t + \beta_{19} * ImportantPatrioticDays_t + \varepsilon_t$$

Where Important Patriotic Days is a dummy variable that would normally take the value of 1 each day it is one of the above mentioned patriotic holidays. However the stock exchanges are closed those particular days, but the trading day before, and after, the important patriotic day will take the value 1, thus (t-1) and (t+1). All other days are given the value 0.

The null hypothesis (H_0) states that patriotic holidays have no impact on the returns of the equally weighted portfolio, after controlling for the new pre-holiday effect, which the variable important patriotic days represents. Thus β_1 is not different from zero while the alternative hypothesis (H_1) states β_1 is different from zero, thus making patriotic holidays have an impact on the returns of

the patriotic portfolio. Again, I will still reject the null if β_1 is negative because based on my conjectures β_1 should be positive if the patriotic holidays do have an effect on the returns of the equally weighted portfolio.

If the null hypothesis is not rejected there is no evidence of a patriotic bias around patriotic holidays, after controlling for this new pre-holiday effect. The regression results of model 7 are shown in table 8 below.

Table 8

Regression with Newey-West standard errors — Number of obs = 7503
maximum lag: 5 — F(19, 7483) = 96.06
Prob > F = 0.0000

EquallyWeightedPortfo~o	Coef.	Newey-West Std. Err.	t	P>|t|	[95% Conf.	Interval]
PatrioticHolidays1	-.0003823	.0003797	-1.01	0.314	-.0011265	.000362
USMarketIndex	.7070424	.0175171	40.36	0.000	.6727039	.7413809
BankHolidays1	.0016303	.0005945	2.74	0.006	.0004648	.0027958
Monday	-.0015796	.000354	-4.46	0.000	-.0022734	-.0008857
Tuesday	-.0014149	.0003403	-4.16	0.000	-.002082	-.0007477
Wednesday	-.0009426	.00036	-2.62	0.009	-.0016483	-.0002368
Thursday	-.0005405	.0003468	-1.56	0.119	-.0012204	.0001394
January	.0016034	.0005222	3.07	0.002	.0005797	.0026271
February	.0010044	.0004648	2.16	0.031	.0000932	.0019156
March	.0012286	.0004748	2.59	0.010	.0002978	.0021594
April	.0003986	.0004431	0.90	0.368	-.0004701	.0012672
May	.0003151	.0004532	0.70	0.487	-.0005734	.0012036
June	.0004309	.0004806	0.90	0.370	-.0005112	.001373
July	.0000765	.0004794	0.16	0.873	-.0008634	.0010163
August	.0003676	.0004953	0.74	0.458	-.0006033	.0013385
September	.0001503	.0004637	0.32	0.746	-.0007587	.0010593
October	-.0009575	.0005322	-1.80	0.072	-.0020007	.0000856
November	.0001641	.0005345	0.31	0.759	-.0008837	.0012119
ImportantPatrioticDays1	-.0002721	.0008009	-0.34	0.734	-.0018421	.0012978
_cons	.0004115	.0004455	0.92	0.356	-.0004618	.0012848

From the table it is observed that the coefficient on the patriotic holidays dummy continues to be estimated as slightly negative. However, it has increased a little, since it is now (-0.0003823). This shows that after controlling for the new pre-holiday effect, nothing much has changed for the patriotic holidays dummy. The p-value is still by far too high (+0.314) to reject the null hypothesis

that patriotic holidays have an impact on the returns in the equally weighted portfolio after controlling for the new pre-holiday effect.

If my assumption and idea that patriotic bias would occur especially around important patriotic holidays then the coefficient, of the important patriotic days, should have a positive sign. I assume that the important patriotic holidays have a stronger effect than the overall "regular" patriotic holidays. However, I find that the coefficient on the important patriotic days dummy is estimated as slightly negative (-0.0002721) just like all the other patriotic holidays. It seems, though, that the important patriotic holidays affect the patriotic portfolio less negative, than the other patriotic holidays, as the coefficient is estimated to be less negative than coefficient on the patriotic holidays.

To sum up the findings, there is no evidence of patriotic holidays having an impact on the returns of the equally weighted portfolio. This is also the finding after controlling for other calendar anomalies, and economic market news captured in the US market index. This is due to non-positive estimated coefficients on the patriotic holidays dummy, which indicates that the observed patriotic holiday returns is not higher than the non-patriotic days' returns. In addition every p-value of the patriotic holidays dummy variable were statistically not significant, which made me fail to reject the null hypothesis in each case.

Since I have controlled for many of the same effects that have been found in previous studies it is possible to compare the size effect of these findings with my results. In previous studies about pre-holiday effect a mean return in pre-holiday is detected to be 0.438% higher than non-holidays return for the IBEX-35 Index in Spain (Meneu and Pardo, 2004). For the individual stocks in this study the mean returns varies between 0.308% and 0.553% on pre-holidays, 0.07% and 0.034% for non-holidays. In my results I found consistent evidence of a pre-holiday effect of 0.13% rate of return and approximately -0.05% rate of return around the patriotic holidays.

Lakonishok and Smidt (1988), found a rate of return in January of 0.818%, whereas I detect a January effect of 0.159% in the rate of return. They also study the weekday effect, detecting a -0.14% negative rate of return on Mondays, and a 0.07% rate of return on Fridays, supporting the evidence of both a Monday effect and a Friday effect. I found a Monday effect with a rate of return of -0.16%, which is in line with Lakonishok and Smidt's size effects.

Ariel (1990) finds evidence of pre-holiday effect of 0.401%, which is not caused by a January effect. Furthermore, he finds a pre-holiday effect of 0.400%, which is not caused by a week day effect. For comparison the pre-holiday effect I found is 0.162% and 0.115% after controlling for January effect, and week day effect, respectively.

Throughout the entire study of the equally weighted portfolio, the patriotic holidays effect fluctuates from -0.038% to -0.051% after controlling for the different effects. So based on the above clarification of the size effects, I will argue that my results indicate economically significance, while they are in the same size scale as previous studies about daily effects and the calendar effects show results of abnormal return. I can conclude that the general findings of the study, of the equally weighted portfolio, show returns that are approximately 0.05% lower around patriotic days than on other "regular" days. All effects in the study of the equally weighted portfolio are in line with previous studies supporting the claim of economic significance.

4.3 The Value Weighted Portfolio

The next step in the process, of investigating a possible patriotic bias in the US equity market is to test the returns of the value weighted portfolio. The equities in the value weighted portfolio are given the weight based on their market capitalization. The procedure of detecting patriotic bias is the same as for the equally weighted portfolio, thus, the models will control for the same effects. The parsimony behind the models is therefore the same as in the study of the equally weighted portfolio, which is why the focus in this section will be the results. Descriptions of the models are therefore rather scarce, as they can be found in the equally weighted portfolio section. Every

times series are analysed with the Newey-West method that estimates the standard errors in the model correcting for heteroskedasticity and autocorrelation in the errors.

Regression with the Patriotic Holidays

The returns of the value weighted portfolio, representing the independent variable, will be regressed with the patriotic holidays, representing the independent variable, which the following model specifies.

Model 8:

$$r_{VWP(t)} = \beta_0 + \beta_1 * PatrioticHolidays1_t + \varepsilon_t$$

Where $r_{VWP(t)}$ represents the return of the value weighted portfolio at day t. The patriotic holidays variable is constructed as a dummy variable based on daily level, just like before.

I can now state the null hypothesis (H_0) that patriotic holidays have no impact on the returns of the value weighted patriotic portfolio. Thus β_1 is not different from zero while the alternative hypothesis (H_1) states β_1 is different from zero, thus making patriotic holidays have an impact on the returns of the patriotic portfolio. It should be noted that I will still reject the null if β_1 is negative, because based on my conjectures β_1 should be positive if the patriotic holidays do have an effect on the returns of the patriotic portfolio.

Hypothesis:

$H_0: \beta_1 = 0,$ $H_1: \beta_1 \neq 0$

If the null hypothesis is not rejected there is no evidence of a patriotic bias around patriotic holidays. However, if I reject the null, there is evidence in favour of my hypothesis, but only if β_1 is positive. I have regressed the times series data from the value weighted portfolio with the patriotic holidays variable, the results are shown in table 9 below.

Table 9

Regression with Newey-West standard errors — Number of obs = 5985
maximum lag: 5 — F(1, 5983) = 0.48
Prob > F = 0.4901

ValueWeightedPor~o	Coef.	Newey-West Std. Err.	t	P>|t|	[95% Conf.	Interval]
PatrioticHolidays1	-.0004981	.0007218	-0.69	0.490	-.0019131	.0009169
_cons	.000374	.0002305	1.62	0.105	-.0000778	.0008258

From the table it can be seen that the coefficient on the patriotic holidays dummy is estimated to be slightly negative (-0.0004981). This actually means that the returns of the value weighted portfolio are approximately 0.05% lower around patriotic holidays than on any other days. Thus, the slope coefficient of about (-0.0004981) suggests that if the index of patriotic holidays goes up by one unit, the value weighted portfolio will go down, on average, by (-0.0004981) units. My assumption that the returns would increase around patriotic holidays is not consistent with the findings of the negative sign of the estimated coefficient on the patriotic holidays dummy. If the patriotic holidays should have an impact on the returns of the value weighted portfolio the coefficient should be positive.

This coefficient is statistically not significant because the p-value is (+0.490), which is way too high to reject the null hypothesis. I thereby fail to reject the null hypothesis (H_0), hence, it seems like the patriotic holidays do not have an impact on the returns of value weighted portfolio based on this baseline model.

Regression where the US Market Index is added to the model

The next step is to test whether patriotic holidays have an impact on the patriotic portfolio, after controlling for the US market index, which is therefore added to the model.

Model 9:

$$r_{VWP(t)} = \beta_0 + \beta_1 * PatrioticHolidays1_t + \beta_2 * USMarketIndex_t + \varepsilon_t$$

The null hypothesis (H_0) will be the same as before, stating that patriotic holidays, have no impact on the return of the value weighted portfolio, after controlling for the US market index. Thus β_1 is not different from zero, and the alternative hypothesis (H_1) is the same as before. Again the null hypothesis will be rejected if β_1 is negative, because, based on my conjectures, β_1 should be positive if the patriotic holidays do have an effect on the returns of the patriotic portfolio.

If the null hypothesis is not rejected there is no evidence of a patriotic bias around patriotic holidays, after controlling for economic market news captured in the US market index. I have regressed the times series data from the value weighted portfolio with this new model 9, the results are shown in table 10 below.

Table 10

Regression with Newey-West standard errors — Number of obs = 5985
maximum lag: 5 — F(2, 5982) = 811.92
Prob > F = 0.0000

ValueWeightedPor~o	Coef.	Newey-West Std. Err.	t	P>|t|	[95% Conf.	Interval]
PatrioticHolidays1	-.0002551	.000423	-0.60	0.547	-.0010843	.0005742
USMarketIndex	1.211021	.0301835	40.12	0.000	1.151851	1.270192
_cons	.0000238	.0001406	0.17	0.866	-.0002519	.0002994

From the table it can be seen that the coefficient on the patriotic holidays dummy has increased relatively much from (-0.0004981) to (-0.000251), after controlling for the market economic news captured in the US market index. Thus, the model still suggests a negative return of the patriotic portfolio around patriotic holidays, but as it was -0.05% before, it is now -0.025%, than the return at all other "regular" days. However, the p-value of the patriotic holidays has increased to be (+0.547). This is by far too high to reject the null hypothesis test on the 5% significance level. These findings suggests that after controlling for the economic news effect the US market index encompasses, the patriotic holidays still have no impact on the return of the value weighted portfolio.

Regression where All Other Bank Holidays is added to the model

I will next control for the pre-holiday effect by including bank holidays that are not patriotic and see whether there is a patriotic bias or not. The new model will then take the following form.

Model 10:

$$r_{VWP(t)} = \beta_0 + \beta_1 * PatrioticHolidays1_t + \beta_2 * USMarketIndex_t + \beta_3 * All\ Other\ Bank\ Holidays1_t + \varepsilon_t$$

The null hypothesis (H_0) states that patriotic holidays have no impact on the return of the value weighted portfolio, after controlling for the pre-holiday effect, which the variable all other bank holidays captures. Thus β_1 is not different from zero. The alternative hypothesis (H_1) is the same as before and even though β_1 is negative, the null will still be rejected as β_1 needs to be positive to favour my hypothesis.

If the null hypothesis is not rejected there is no evidence of a patriotic bias around patriotic holidays, after controlling for the pre-holiday effect. The regression results of model 10 are shown in table 11 below.

Table 11

Regression with Newey-West standard errors — Number of obs = 5985
maximum lag: 5 — F(3, 5981) = 550.61
Prob > F = 0.0000

ValueWeightedPor~o	Coef.	Newey-West Std. Err.	t	P>|t|	[95% Conf.	Interval]
PatrioticHolidays1	-.000287	.0004243	-0.68	0.499	-.0011187	.0005447
USMarketIndex	1.211459	.0302523	40.05	0.000	1.152153	1.270764
BankHolidays1	-.0006496	.0006373	-1.02	0.308	-.0018989	.0005997
_cons	.0000557	.0001457	0.38	0.703	-.00023	.0003414

From the table it can be observed that controlling for the pre-holiday effect has not changed the patriotic holidays to be significant. The p-value of patriotic holidays is (+0.499), and therefore too

high to reject the null hypothesis. The coefficient on the patriotic holidays dummy is continued to be estimated as slightly negative (-0.000287), not much different from the results of model 9. The null can therefore not be rejected, which means that there is still no indication of a patriotic bias in the return of the value weighted portfolio, after controlling for the pre-holiday effect.

Interesting to notice is the coefficient on other bank holidays, which is negative (-0.0006496). This is not consistent with the findings in the equally weighted portfolio, where the coefficient was estimated to be positive (+0.0012501), and in addition, not consistent previous studies with positive abnormal rate of returns before a holiday. According to model 10 the return of the patriotic portfolio will go down by approximately -0.065% around the bank holidays compared to any other days.

Regression where Weekdays are added to the model

To control for day-of-the-week effect, weekday dummies are added to the model. Thus model 11 takes this form.

Model 11:

$$r_{VWP(t)} = \beta_0 + \beta_1 * PatrioticHolidays1_t + \beta_2 * USMarketIndex_t + \beta_3 * All\ Other\ Bank\ Holidays1_t + \beta_4 * Monday_t + \beta_5 * Tuesday_t + \beta_6 * Wednesday_t + \beta_7 * Thursday_t + \varepsilon_t$$

The null hypothesis states that the patriotic holidays have no impact on the returns of the value weighted portfolio after controlling for turn of the week day effect, with the weekday dummies. Thus β_1 is not different from zero. The alternative hypothesis (H_1) is the same as before and even though β_1 is negative, the null will still be rejected as β_1 needs to be positive to favour my hypothesis.

If the null hypothesis is not rejected there is no evidence of a patriotic bias around patriotic holidays, after controlling for the turn of the week day effect. The regression results of model 11 are presented in table 12 below.

Table 12

Regression with Newey-West standard errors — Number of obs = 5985
maximum lag: 5 — F(7, 5977) = 240.09
Prob > F = 0.0000

ValueWeightedPor~o	Coef.	Newey-West Std. Err.	t	P>|t|	[95% Conf.	Interval]
PatrioticHolidays1	-.0003301	.0004237	-0.78	0.436	-.0011608	.0005006
USMarketIndex	1.211427	.0302654	40.03	0.000	1.152095	1.270758
BankHolidays1	-.0007136	.0006344	-1.12	0.261	-.0019572	.0005299
Monday	-.0001084	.0004437	-0.24	0.807	-.0009781	.0007614
Tuesday	.0001406	.0004014	0.35	0.726	-.0006463	.0009276
Wednesday	-.0002303	.000436	-0.53	0.597	-.0010851	.0006245
Thursday	-.000242	.0003949	-0.61	0.540	-.0010162	.0005322
_cons	.000151	.0002823	0.53	0.593	-.0004023	.0007044

From the table it is observed that the coefficient on the patriotic holidays dummy is still estimated to be slightly negative (-0.0003301). Controlling for the week day effect has not changed much for the patriotic holidays dummy. The p-value continues to be too high (+0.436) to reject the null hypothesis that patriotic holidays have an impact on the return in the value weighted portfolio.

Like the previous discussed findings on negative Monday returns, this analysis shows similar results. The Monday dummy is estimated to be negative by (-0.0001084). The return of the value weighted portfolio should then be approximately 0.011% less on Mondays than any other weekdays.

Regression where Months are added to the model

The next model will control for the monthly effect by including each month in the model and see if there is any patriotic bias or not.

Model 12:

$$r_{VWP(t)} = \beta_0 + \beta_1 * PatrioticHolidays1_t + \beta_2 * USMarketIndex_t + \beta_3 * All\ Other\ Bank\ Holidays1_t + \beta_4 * Monday_t + \beta_5 * Tuesday_t + \beta_6 * Wednesday_t + \beta_7 * Thursday_t + \beta_8 * January_t + \beta_9 * February_t + \beta_{10} * March_t + \beta_{11} * April_t + \beta_{12} * May + \beta_{13} * June_t + \beta_{14} * July_t + \beta_{15} * August_t + \beta_{16} * September_t + \beta_{17} * October_t + \beta_{18} * November_t + \varepsilon_t$$

The null hypothesis states that the patriotic holidays have no impact on the returns of the value weighted portfolio after controlling for the monthly effect with the month dummies. The alternative hypothesis (H_1) is still the same as before. Thus β_1 is not different from zero while the alternative hypothesis (H_1) states β_1 is different from zero, thus making patriotic holidays have an impact on the returns of the value weighted portfolio. The null will still be rejected if β_1 is negative, because, based on my conjectures β_1 should be positive, if the patriotic holidays do have an effect on the returns of the value weighted portfolio.

If the null hypothesis is not rejected there is no evidence of a patriotic bias around patriotic holidays, after controlling for the monthly effect. The results of model 12 are presented in table 13.

Table 13

Regression with Newey-West standard errors — Number of obs = 5985
maximum lag: 5 — F(18, 5966) = 95.78
Prob > F = 0.0000

ValueWeightedPor~o	Coef.	Newey-West Std. Err.	t	P>|t|	[95% Conf.	Interval]
PatrioticHolidays1	-.0003089	.0004339	-0.71	0.476	-.0011595	.0005416
USMarketIndex	1.211369	.0302627	40.03	0.000	1.152044	1.270695
BankHolidays1	-.0005249	.0006759	-0.78	0.437	-.00185	.0008001
Monday	-.0001119	.0004443	-0.25	0.801	-.0009829	.0007592
Tuesday	.0001408	.0004023	0.35	0.726	-.0006478	.0009294
Wednesday	-.000222	.000438	-0.51	0.612	-.0010807	.0006366
Thursday	-.000238	.0003966	-0.60	0.548	-.0010156	.0005395
January	-.000267	.0006778	-0.39	0.694	-.0015957	.0010617
February	-.0000684	.0006475	-0.11	0.916	-.0013378	.0012011
March	.0006132	.0006786	0.90	0.366	-.0007171	.0019435
April	.0003607	.0006492	0.56	0.579	-.000912	.0016334
May	.0000794	.0005812	0.14	0.891	-.0010598	.0012187
June	.0002605	.0005455	0.48	0.633	-.000809	.0013299
July	.0011243	.000644	1.75	0.081	-.0001381	.0023868
August	-.0000208	.0005747	-0.04	0.971	-.0011474	.0011058
September	.0005767	.0006185	0.93	0.351	-.0006359	.0017893
October	-.0000423	.0005982	-0.07	0.944	-.0012151	.0011304
November	-.0000748	.0005551	-0.13	0.893	-.0011629	.0010133
_cons	-.000072	.0004811	-0.15	0.881	-.0010151	.0008711

From the table it is observed that the coefficient on the patriotic holidays dummy continues to be estimated as slightly negative (-0.0003089). This shows that after controlling for the monthly day effect, nothing much has changed for the patriotic holidays dummy. The p-value is still too high (+0.476) to reject the null hypothesis that patriotic holidays have an impact on the return in the value weighted portfolio.

Like the pre-holiday effect, detected with the other bank holidays dummy in the value weighted portfolio, the coefficient of the January dummy shows contradictory results compared to previous studies as well. That is, an estimated negative coefficient of (-0.000267), suggesting that the return should be approximately 0.0267% less on January days compared to the rest of the days in the year.

Regression where Important Patriotic Holidays is added to the model

As described for the equally weighted portfolio analysis, some of the patriotic holidays are more important than others, which is why they are included to the model.

Model 13:

$$r_{VWPP(t)} = \beta_0 + \beta_1 * PatrioticHolidays1_t + \beta_2 * USMarketIndex_t + \beta_3 * All\ Other\ Bank\ Holidays1_t + \beta_4 * Monday_t + \beta_5 * Tuesday_t + \beta_6 * Wednesday_t + \beta_7 * Thursday_t + \beta_8 * January_t + \beta_9 * February_t + \beta_{10} * March_t + \beta_{11} * April_t + \beta_{12} * May + \beta_{13} * June_t + \beta_{14} * July_t + \beta_{15} * August_t + \beta_{16} * September_t + \beta_{17} * October_t + \beta_{18} * November_t + \beta_{19} * ImportantPatrioticDays_t + \varepsilon_t$$

The null hypothesis (H_0) states that patriotic holidays, have no impact on the return of the value weighted portfolio, after controlling for the new pre-holiday effect, which the variable important patriotic days represents. Thus β_1 is not different from zero while the alternative hypothesis (H_1) states β_1 is different from zero, thus making patriotic holidays have an impact on the returns of the value weighted portfolio. Again, I will still reject the null if β_1 is negative, because based on my conjectures β_1 should be positive if the patriotic holidays do have an effect on the returns of the value weighted portfolio.

If the null hypothesis is not rejected there is no evidence of a patriotic bias around patriotic holidays, after controlling for this new pre-holiday effect. The regression results of model 13 are shown in table 14 below.

Table 14

Regression with Newey-West standard errors — Number of obs = 5985
maximum lag: 5 — F(19, 5965) = 90.76
Prob > F = 0.0000

ValueWeightedPortfolio	Coef.	Newey-West Std. Err.	t	P>|t|	[95% Conf.	Interval]
PatrioticHolidays1	-.0003505	.0005086	-0.69	0.491	-.0013476	.0006465
USMarketIndex	1.21139	.0302625	40.03	0.000	1.152065	1.270716
BankHolidays1	-.0005275	.0006761	-0.78	0.435	-.0018528	.0007978
Monday	-.0001098	.0004456	-0.25	0.805	-.0009834	.0007638
Tuesday	.0001404	.0004022	0.35	0.727	-.0006481	.0009288
Wednesday	-.0002213	.0004385	-0.50	0.614	-.0010809	.0006382
Thursday	-.0002378	.0003967	-0.60	0.549	-.0010155	.0005398
January	-.000273	.000681	-0.40	0.689	-.0016079	.0010619
February	-.0000749	.0006493	-0.12	0.908	-.0013477	.0011979
March	.0006022	.0006811	0.88	0.377	-.0007331	.0019375
April	.0003517	.0006503	0.54	0.589	-.0009231	.0016264
May	.0000609	.0005931	0.10	0.918	-.0011019	.0012237
June	.0002538	.000548	0.46	0.643	-.0008206	.0013281
July	.0011012	.0006656	1.65	0.098	-.0002036	.002406
August	-.0000317	.0005786	-0.05	0.956	-.001166	.0011025
September	.0005772	.0006185	0.93	0.351	-.0006352	.0017897
October	-.000053	.0006012	-0.09	0.930	-.0012315	.0011256
November	-.0001005	.0005726	-0.18	0.861	-.001223	.0010221
ImportantPatrioticDays1	.0001705	.0008823	0.19	0.847	-.001559	.0019001
_cons	-.0000616	.0004826	-0.13	0.899	-.0010076	.0008845

From the table it is observed that the coefficient on the patriotic holidays dummy continues to be estimated as slightly negative (-0.000305). This shows that after controlling for the new pre-holiday effect, nothing much has changed for the patriotic holidays dummy. The p-value is still by far too high (+0.491) to reject the null hypothesis that patriotic holidays have an impact on the return in the value weighted portfolio after controlling for the new pre-holiday effect.

Besides these findings, it is interesting to see that the coefficient of the important patriotic days dummy is estimated to be positive (+0.0001705). This is consistent with my assumption in the thesis about a possible patriotic bias around patriotic holidays. The return on the value weighted patriotic portfolio will be 0.017% higher around these important patriotic days than the return on all other days.

To summarize the results, there was not found any evidence of patriotic holidays having an impact on the return of the value weighted portfolio. This can be concluded after controlling for the different effects in the stock market that previous studies have proofed to be present. Nothing significant was detected in the p-values of the patriotic holidays. Furthermore, none of the estimated coefficients on the patriotic holidays were positive. I failed to reject the null hypothesis based on these facts. Hence, it does not seem like the patriotic holidays should have an impact on the return of the value weighted portfolio. Noteworthy, is it, to highlight the positive estimated coefficient on the important patriotic days dummy, indicating a higher return around those days than on other "regular" days.

To compare the size effect of my findings in the value weighted portfolio I will use previous studies that examined the daily effects in the stock market. Arsad and Coutts (1997) find a pre-holiday effect of 0.269% in the rate of return of the FT-30 index[12] over the time period 1935-1994. Further, they find a Monday effect of -0.129% and a January effect of 0.104% in the rate of return of the FT-30 index. In comparison I find a Monday effect of -0.011% in the return of the value weighted portfolio. The January effect I have detected is not consistent with previous studies as it is negative (-0.027%).

Other studies with daily effects include investor sentiment in sports. Investors tend to be overly enthusiastic about their team's prospects ex ante. Bernile and Lyandres (2011) have investigated publicly traded European soccer clubs and their stock returns around important matches. They detect a postgame abnormal return of 0.12% after a team has won a match.

The size effects in these findings are overall in line with the results of this study. Throughout the study of the value weighted portfolio I found the estimated patriotic holidays coefficient to fluctuate between -0.026% and -0.05%, after controlling for the different effects. I will stress that this is economically significant as the study shows that the return in the stocks are being affected by patriotic holidays. This is, though, to a negative extent whereas my assumption suggested the

[12] FT-30 is the Financial Times Ordinary Shares Index

return of the portfolios would have been affected in a positive way showing increasing rate of returns.

The effects in the study of the value weighted portfolio are not as unambiguous as what was observed in the study of the equally weighted patriotic portfolio. This is due to the pre-holiday effect and the January effect, which were both estimated to be negative, contradictory to previous studies. Otherwise, the rest of the studied effects were in line with previous findings.

4.4 Dealing with Robustness Checks

As presented in the methodology and data section, I want to check whether the results found in the analysis of the equally weighted and value weighted portfolios are robust[13]. To do so I will change the time frame of the patriotic holidays dummy to include two more trading days, one before and after t, thus (t-2) and (t+2). A patriotic bias could be present a few days earlier, and or later than the initial time frame of (t-1) and (t+1). The control dummy variables All Other Bank Holidays and Important Patriotic Holidays will be given this new time frame as well, to reach consistency in the regression analysis. Nothing else is changed for the regression analysis beside the three independent variables just described. This means that the hypotheses will be the exact same as before, hence the patriotic holidays will have no impact on the returns of the portfolios, after controlling from the different effects in the stock market. After checking the regression analyses with this time frame, another examination of the portfolio analyses is made with the new time frame (t-3) and (t+3). This is based on the same assumptions that the possible patriotic bias could occur even earlier or later than the particular patriotic holiday.

For the equally weighted portfolio nothing significant is detected in the new analysis with the time window of (t-2) and (t+2). The p-value continues to be too high to reject the null hypotheses for all the regressions. In addition, the estimated coefficients of the patriotic holidays dummies are still negative in each case, fluctuating from -.0001343 to -.0003698. These sizes are somewhat smaller

[13] See Appendix 2 for results of all the robustness regressions

than the initial analysis, but it supports the results, which makes the study of the equally weighted portfolio valid so far.

After increasing the time window to include three trading days before, and after a patriotic holiday, the same negative estimated coefficients on the patriotic holidays dummies was observed. The coefficients are now ranging from -.0004561 to -.0006174, which comes closer to the initial results of 0.05% less in the returns of the equally weighted portfolio around patriotic holidays compared to other "regular" days. Interesting to observe are the significance in all the p-values, after controlling for effects in the regressions. Nevertheless, will I still reject the hypotheses as the, coefficient on the patriotic holidays dummies, β_1, are negative and thereby not in favour of my story about the patriotic bias affecting the portfolios positively. Another interesting finding from the regression with the time frame of (t-3) and (t+3), is the effect of important patriotic holidays. This coefficient is estimated to be positive (+.0004818), indicating a positive return around those important patriotic days of approximately 0.05%.

For the value weighted portfolio nothing significant was found in the p-values of the regressions with the time window (t-2) and (t+2) either. Each coefficient of the patriotic holidays dummies are negative like the initial findings. The results show the coefficients to fluctuate between -.0003902 to -.0006077, which supports the initial results. The estimated coefficients of bank holidays, and January, are still negative like before, and thereby not consistent with other research of pre-holiday and January effect. However, this is not different from the initial results, which makes the findings valid.

When the time window increased to (t-3) and (t+3), the estimated coefficients of the patriotic holidays showed negative values, which is in line with the first findings. Like with the equally weighted portfolio with this time frame, some significance is now found in the p-values. I will however reject the null hypotheses as the negative coefficients do not match my patriotic story. But since the results are the same as what was found in the first findings the results must be robust and for that matter valid.

5. Discussion

In this section I will discuss some of the potential pitfalls I have come across in the study. Further, I will try to explain why the assumption, of the thesis, is not consistent with the empirical results. In the end I will discuss the possibility of detecting patriotic bias differently than the approach I have used, which can lead to suggestions of areas for future research.

The first pitfall I will like to highlight is the issue of survivorship bias. Since the thesis did not take delisted companies into account there is a potential of survivorship bias. The delisted companies were not included because it was difficult to obtain any information about non-surviving companies with the particular patriotic target names. Nevertheless, it must be noted that the results may be subject to this survivorship bias and potentially causing the results to be skewed, compared to if all companies were used in the research, including the non-surviving.

Another point I want to discuss is the omission of OTC stocks. I have argued that an inclusion of these stocks in the portfolios could have caused a selection bias in the regression analysis. The OTC stocks were not considered because of their low liquidity and lack of information about the market capitalization of the companies. However, since I have not made an analysis with the OTC stocks it is not possible to be certain about, what kind of direction the results would have taken, if they were, in fact, included.

Constructing the patriotic index and finding a significant surge for patriotism around patriotic holidays, was a foundation to the actual research. The assumption of a patriotic bias in the equity market seemed plausible after detecting the surge for patriotism around patriotic holidays. In addition, the previous studies of patriotism in the equity market supported the idea of a potential patriotic bias in the US equity market. I did, however, not proof any statistically significance in the return rates around patriotic holidays, which can lead to several discussions about *why* this is the case.

First of all, one could question how reasonable the idea of a patriotic bias is on daily level. This is due to the definition that patriotism most often occur at times of trouble or stress. Daily effects is a well-known phenomenon in the equity market like calendar anomalies and sports games, for instance, but since patriotism is most likely to occur when a nation is exposed to attacks it is discussable whether patriotism can be detected at daily level. Like Benos and Jochec (2007), and Gu and Schinski (2003) who study patriotism after wars, it could be more likely that patriotic bias exists at greater events like these than on a daily basis. Another reason could simply be that the market is sufficient and corrected for any mis-pricing.

There could be other approaches of research in detecting the patriotic bias around the patriotic holidays. Instead of basing the investigation on patriotic name bias, one could examine other companies, which of course are national to the agent. As an example one could create a study of military companies, defence companies and other companies related to war. Again, this could be based on the fact that people's patriotic feelings are stronger in times of war. Equities related to war are therefore ideal to investigate further for patriotic bias.

Yet, another research could be distinguishing between small investors and institutional investors. It is quite likely that they invest differently, since evidence has showed that small investors are reluctant to invest prior to a holiday for instance. An investigation of individual stocks could also be of interest like Meneu and Pardo (2004) have examined in their research, thus, it does not necessarily have to be an entire portfolio. Since I have not distinguished between large and low capitalization companies a study, where these are divided might lead to different results than what I have found.

6. Conclusion

The focus of the thesis was to investigate the more irrational investor behaviour that traditional economic theories fail to explain, and capture in the classical economic models. A behavioural finance approach has therefore been used to evaluate movements in the US equity market that could be caused by patriotism. The idea behind the thesis was the possibility of a patriotic bias around patriotic holidays in the US equity market. To investigate this kind of patriotic behaviour several regression analyses have been tested in order to observe possible abnormal return in patriotic portfolios around patriotic holidays. Behavioural finance could help explain the underlying reasons for a potential patriotic bias, as patriotism is rather based on feelings than rationality. The overall finding could, however, not confirm this assumption of patriotic bias, as no statistical significance was observed in the empirical studies of the patriotic portfolios.

The equally weighted portfolio showed an estimated negative coefficient of the patriotic holidays variable after regressing it with the return of the portfolio. Controlling for economic market news did not change the results to be any different, as no significance from the first regression was observed in the analysis. Moving on to control for pre-holiday effect did, in addition, not change much either, as the estimated patriotic holidays coefficient continued to be negative. After controlling for the week day effect, the patriotic holidays dummy showed an estimated negative value. This was the fact too, with the monthly effect as nothing significantly new was observed. Lastly, the regression analysis was controlled for the new pre-holiday effect, as the important patriotic days was added to the model. No evidence of patriotic bias was detected either, but the estimated coefficient of the patriotic holidays dummy became less negative compared to the previous controlled effects.

To bring the results together, the study found a return in the equally weighted portfolio to be approximately 0.038-0.05% less around patriotic holidays than on any other “regular” days, after controlling for calendar anomalies and economic market news. Robustness checks in all the regressions have proofed the study to be valid as the same overall results were found in the increased time frame analyses. It is essential to mention that calendar anomalies were detected in

the equally weighted portfolio, because they all support previous findings of those effects. A positive pre-holiday effect was observed in the estimated coefficient of all other bank holidays. In addition, a negative Monday effect was detected, together with a positive January effect. These three findings are all in line with what other researchers have found in their studies of anomalies in the stock market.

The findings in the study of the value weighted portfolio showed overall same results of no evidence of a patriotic bias. The coefficient of the patriotic holidays dummy was estimated to be negative after regressing it with the return of the value weighted portfolio. Controlling for economic market news showed a small increase in the estimated coefficient of the patriotic holidays dummy, thus it was less negative than before controlling for market news. Same size of a negative estimated coefficient was detected after controlling for the pre-holiday effect. This was the fact, with the weekday effect and month effect as well. Lastly, after controlling for the new pre-holiday effect, captured by the important patriotic days variable, the results continued to show a negative estimated patriotic holidays coefficient. These findings suggest a return in the value weighted portfolio to be approximately 0.026% to 0.05% less, around patriotic holidays, than any other days. The value weighted portfolio showed somewhat less unambiguous results compared to the equally weighted portfolio, while detecting a positive estimated coefficient on the important patriotic days variable. This suggests a return in the value weighted portfolio to be 0.017% higher around those days than on any other "regular" days, which is what my idea behind the thesis assumed as a foundation of the investigation of the patriotic bias.

Even though nothing statistically significant was found in this thesis about the patriotic bias, the daily size effect showed similar results of what has been found in previous studies. The calendar anomalies detected in the regressions are in line with findings of seasonality effects in the stock market. These include the negative Monday effect, positive pre-holiday effect and positive January effect in the equity market. The results are, in that way, significant to an economically degree as they are supporting previous studies.

The main purpose of the thesis was to investigate patriotic bias around all the patriotic holidays but no evidence in the regression analyses could support this idea. Based on the results in the empirical studies it must be concluded that investors do not gravitate towards patriotic stocks after all. I can therefore not add new knowledge about patriotic investor behaviour, as this study implies that it does not exist around patriotic holidays. The research meant to further investigate to what extent agents might tend to invest more in patriotic stocks around patriotic holidays. From the results the reverse of an increase in the returns of the patriotic portfolios was in fact detected. Instead of a positive return the results revealed a negative return of about -0.026% to -0.05% in the studied portfolios around patriotic holidays. Thus, the overall conclusion is that patriotic bias cannot explain any movements in the US equity market around patriotic holidays.

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8. Appendix

Appendix 1

Patriotic Days in USA

Date 2013	Day	Details
21.01	Birthday of Martin Luther King, Jr.	Activist in the civil rights movement
18.02	Washington's Birthday or President's Day	Honor the first president of the US
01.05	Loyalty Day	Reaffirmation of loyalty to the US
27.05	Memorial Day	Sacred day to all war veterans
14.06	National Flag Day	Celebrates the official symbel of US
04.07	Independence Day	Declaration of Independence
11.09	Patriot Day	Those lost on the WTC Attacks
17.09	Constitution Day and Citizenship Day	Memorializing the date that the Constitution was signed in 1787
05.11	Election Day	The first presidential election to occur simultaneously on this day took place in 1848
20.09	Recognition Day	Nation's prisoners of war and missing in action
11.11	Veterans Day	Commemorate the contributions of living veterans
07.12	Pearl Habour Day	Japanese attack on US military
15.12	Bill of Rights Day	Celebrates the freedoms and rights that the Bill of Rights preserve for Americans

Sources: The National Archives at Boston; www.archives.gov and Veterans of Foreign War; www.vfw.org

Appendix 2

Regression with Patriotic Holidays

	Equally Weighted Portfolio				Value Weighted Portfolio			
	(t-2),(t+2)		(t-3),(t+3)		(t-2),(t+2)		(t-3),(t+3)	
	Coef.	P-value	Coef.	P-value	Coef.	P-value	Coef.	P-value
Patriotic Holidays	-.0003698	0.273	-.0004561	0.137	-.0006538	0.222	-.0003802	0.425

Controlling for economic market news

	Equally Weighted Portfolio				Value Weighted Portfolio			
	(t-2),(t+2)		(t-3),(t+3)		(t-2),(t+2)		(t-3),(t+3)	
	Coef.	P-value	Coef.	P-value	Coef.	P-value	Coef.	P-value
Patriotic Holidays	-.0002781	0.253	-.0005334	0.018	-.0003902	0.266	-.0004273	0.165
US Market Index	.7085893	0.000	0.7087206	0.000	1.218489	0.000	1.218611	0.000

Controlling for pre-holiday effect

	Equally Weighted Portfolio				Value Weighted Portfolio			
	(t-2),(t+2)		(t-3),(t+3)		(t-2),(t+2)		(t-3),(t+3)	
	Coef.	P-value	Coef.	P-value	Coef.	P-value	Coef.	P-value
Patriotic Holidays	-.0002190	0.373	-.0004722	0.040	-.0004779	0.179	-.0005434	0.086
US Market Index	.7083611	0.000	.7084458	0.000	1.218889	0.000	1.219134	0.000
Bank Holidays	.0005754	0.129	.000422	0.207	-.0008536	0.056	-.0008150	0.038

Controlling for day of the week day effect

	Equally Weighted Portfolio				Value Weighted Portfolio			
	(t-2),(t+2)		(t-3),(t+3)		(t-2),(t+2)		(t-3),(t+3)	
	Coef.	P-value	Coef.	P-value	Coef.	P-value	Coef.	P-value
Patriotic Holidays	-.0002506	0.308	-.0005118	0.027	-.0004931	0.163	-.0005477	0.089
US Market Index	.7081887	0.000	.7082555	0.000	1.218841	0.000	1.219079	0.000
Bank Holidays	.0005446	0.151	.0004143	0.220	-.0008689	0.051	-.0008186	0.038
Monday	-.0016446	0.000	-.0016645	0.000	-.0003227	0.465	-.0003072	0.487
Tuesday	-.0014318	0.000	-.0014367	0.000	.0000565	0.887	.0000760	0.849
Wednesday	-.0009810	0.006	-.0009459	0.009	-.0002192	0.616	-.0001529	0.801
Thursday	-.0005919	0.091	-.0005797	0.100	-.0002236	0.567	-.0001529	0.697

Controlling for month effect

	Equally Weighted Portfolio				Value Weighted Portfolio			
	(t-2),(t+2)		(t-3),(t+3)		(t-2),(t+2)		(t-3),(t+3)	
	Coef.	P-value	Coef.	P-value	Coef.	P-value	Coef.	P-value
Patriotic Holidays	-.0001474	0.581	-.0004735	0.076	-.0005495	0.139	-.0006429	0.072
US Market Index	.7075374	0.000	.7074549	0.000	1.2187700	0.000	1.219032	0.000
Bank Holidays	.0010346	0.012	.0008877	0.022	-.0007919	0.120	-.0007890	0.097
Monday	-.0016129	0.000	-.0016405	0.000	-.0003296	0.456	-.0003138	0.478
Tuesday	-.0014354	0.000	-.0014490	0.000	.0000540	0.892	.0000749	0.851
Wednesday	-.0009793	0.006	-.0009725	0.007	-.0002226	0.611	-.0001059	0.813
Thursday	-.0005928	0.091	-.0006026	0.087	-.0002298	0.557	-.0001527	0.697
January	.0016754	0.002	.0015615	0.004	-.0005140	0.453	-.0005832	0.400
February	.0011014	0.021	.0010248	0.036	-.0003325	0.611	.0004353	0.515
March	.0013349	0.007	.0011423	0.028	.0002084	0.763	.0000201	0.978
April	.0005014	0.276	.0003635	0.452	-.0000104	0.987	-.0001598	0.814
May	.0003767	0.409	.0003381	0.472	-.0002033	0.730	-.0002871	0.637
June	.0005216	0.291	.0004809	0.350	-.0000355	0.949	-.0001040	0.856
July	.0001455	0.766	.0000472	0.925	.0007536	0.242	.0006204	0.343
August	.0004590	0.367	.0002432	0.646	-.0003476	0.558	-.0005100	0.407
September	.0001903	0.684	.0001329	0.778	.0004233	0.492	.0003859	0.529
October	-.0008631	0.106	-.0010975	0.043	-.0003771	0.528	-.0004871	0.422
November	.0001778	0.729	.0000829	0.872	-.0002717	0.625	-.0003083	0.579

Controling for new pre-holiday effect

	Equally Weighted Portfolio				Value Weighted Portfolio			
	(t-2),(t+2)		(t-3),(t+3)		(t-2),(t+2)		(t-3),(t+3)	
	Coef.	P-value	Coef.	P-value	Coef.	P-value	Coef.	P-value
Patriotic Holidays	-.0001343	0.655	-.0006174	0.040	-.0006077	0.175	-.0006227	0.155
US Market Index	.7075394	0.000	.7074571	0.000	1.218765	0.000	1.219033	0.000
Bank Holidays	.0010364	0.011	.0008663	0.025	-.0008005	0.117	-.0007859	0.100
Monday	-.0016133	0.000	-.0016362	0.000	-.0003276	0.459	-.0003144	0.477
Tuesday	-.0014354	0.000	-.0014489	0.000	.0000541	0.892	.0000748	0.851
Wednesday	-.0009791	0.006	-.0009734	0.007	-.0002235	0.610	-.0001058	0.813
Thursday	-.0005925	0.092	-.0006069	0.085	-.0002312	0.554	-.0001522	0.698
January	.0016789	0.002	-.0015147	0.005	-.0005291	0.444	-.0005769	0.410
February	.0011050	0.020	.0009778	0.046	-.0003487	0.596	-.0004287	0.525
March	.0013413	0.007	.0010500	0.047	.0001800	0.797	.0000331	0.964
April	.0005065	0.274	.0002922	0.551	-.0000333	0.960	-.0001497	0.827
May	.0003871	0.413	.0001902	0.699	-.0002491	0.690	-.0002667	0.687
June	.0005262	0.284	.0004051	0.437	-.0000564	0.921	-.0000932	0.874
July	.0001578	0.753	-.0001217	0.818	.0006982	0.313	.0006444	0.371
August	.0004653	0.364	.0001527	0.776	-.0003757	0.533	-.0004972	0.433
September	.0001914	0.683	.0001140	0.809	.0004200	0.496	.0003879	0.527
October	-.0008572	0.111	-.0011810	0.032	-.0004032	0.504	-.0004755	0.442
November	.0001910	0.725	-.0001064	0.850	-.0003299	0.567	-.0002821	0.641
Important Patr.H.	-.0000477	0.930	.0004818	0.316	.0002102	0.763	-.0000667	0.908