

Do Some Stakeholders in Publicly Traded Firms Benefit at the Expense of Others as a Result of Corporate Inversions?

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ABSTRACT

This report examines corporate inversions to determine whether this practice benefits the majority of stakeholders or merely a select few. A sample of firms previously incorporated in the United States that have since undergone inversions is examined to answer this question. Annual stock price returns, stock price volatility, and earnings per share changes from the sample of inversion firms are the main sources of data examined. These results are compared to the S&P 500 and peer firms to determine whether the changes can be attributed to the inversions, or are merely a result of general economic conditions. Supporting topics addressed in this paper include an overview of legislation related to inversions and suggestions to mitigate the negative consequences of inversions. This study shows that there are no observable benefits to shareholder wealth arising from corporate inversions. While there were changes in the data from pre to post inversion, they were not unique to the inversion firms as the same changes were observed in the peer firms. However, the study showed that there is a fundamental difference between inversion firms when compared to the S&P 500.

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INTRODUCTION

With the growing prevalence of corporate inversions, an important question has yet to be answered. This project focuses primarily on shareholders who have been affected by corporate inversions that have taken place since 2008. Although inversions have been occurring for over 30 years, almost half have taken place since 2008. The impact of inversions on stakeholders prior to 2008 would not have been affected by the most recent legislation or economic conditions, which would not aid in drawing conclusions about inverting firms today. It can be assumed that corporate executives of the firm doing the inversion benefit from the practice, or else they would not allow the firm to engage in it. These executives are affected on the basis of salary increases, bonuses, and stock options due to positive impacts of the inversion on the firm's tax liability. Shareholders can be affected by the actions of a firm in the form of changing stock price as well as dividend payments based on earnings per share. Additionally, the United States government is largely involved in the consequences of tax inversions because they lose billions of tax dollars every year as a result of firms reincorporating outside of the United States. This is the reason behind the multitude of recent legislation summarized in the literature review.

This project serves to provide a critical analysis of the beneficiaries of corporate inversions. Through this analysis it will be determined whether inversions disproportionately benefit executives at the expense of other stakeholders. If this is true, then legislation and public sentiments condemning inversions are justified and should continue. This is because the primary duty of executives is to generate shareholder wealth. Additionally, knowing whether shareholders benefit from inversions will be a useful tool for investors in the future as they can avoid risky investments in companies that plan to do an inversion. If corporate inversions do generate shareholder wealth, then companies that have the potential to do an inversion should be sought after by investors. Regardless, the implications of inversions on the tax burden and tax base could explain the government's opposition to inversions. Finally, this project can be used as a future reference for other studies as the government continues to pass legislation that makes it more difficult to do inversions. Future projects may find it useful to

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know whether this legislation is well founded and can use the data collected as a starting point to compare to future data.

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LITERATURE REVIEW

Key Terms

In order to fully understand incentives to invert and legislation surrounding corporate inversions, there are several key terms which readers must be familiar with. One resource that is included in many different tax avoidance methods is a controlled foreign corporation, referred to as a CFC. A CFC is a subsidiary of the U.S. domestic corporation in which control is determined by shares owned by the domestic corporation. The CFC can conduct foreign business on behalf of the domestic corporation without incurring the U.S. corporate tax. Instead, the CFC adheres to the tax laws of the foreign country that it is incorporated in. The CFC can be used in various methods, discussed later, in which they conduct global business on behalf of the domestic parent and make loans to the parent company.

It is also important to understand the distinction between a worldwide tax system and a territorial tax system. A country with a territorial tax system only taxes a company when it does business in that country (Yang, 2016, Corporate inversion strategies 48). Companies that are incorporated in a country that uses a territorial tax system do not have to pay that country's corporate tax if they do business outside of that country and bring the proceeds from those transactions back to the country of incorporation. A worldwide tax system on the other hand taxes firms incorporated in that country on earnings no matter where they do business. The United States and China are the only two countries that use a worldwide tax system (Yang, 2016, Corporate inversion strategies 48). In the United States, this means a 35% corporate tax on all transactions conducted in the U.S., and firms have to pay the difference between the U.S. corporate tax rate and the tax rate of the other country in which they did business. For example, if a U.S. company conducts business in a country that has a 20% corporate tax rate, they will pay the 20% tax in that country, as well as a 15% tax when the money is repatriated to the United States.

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Introduction

The study of corporate inversions has become a very relevant and contemporary issue because the number of corporations that engage in the practice has been increasing at an increasing rate since the 1980's. To this point over 80 U.S. companies have undergone corporate inversions for various reasons. A common misunderstanding concerning corporate inversions is that companies only attempt to change their domicile for the potential to lower their effective tax rate. While this is true in many cases, there are several more incentives caused by tax legislation that push companies out of the United States. This trend has been causing a constant erosion of the U.S. tax base to a degree, and potentially has unintended consequences on the stockholders of these firms. This study takes new steps into the examination of corporate inversions by addressing the question of whether stockholders are disproportionately benefited by inversions compared to executive officers.

The answer to this question is clearly valuable to investors who are considering what to do with currently owned stocks that are involved in a tax inversion deal. However, this study may also be used to substantiate claims that reform in the tax code is a necessary step in reducing the number of inversions. In addition to individuals in the accounting field who may be affected by dealing with companies who have already undergone or are considering inversions, economists may utilize the study to examine how the loss of government tax revenue is affecting the micro and macro economy. Lastly, people studying legislation need to be aware of recent developments as Congress has been cracking down on inversions. They have done this through passing temporary regulations, adding notices to the IRS tax code to close loopholes, and increasing the costs of corporate inversions to make them less attractive for corporations seeking to reap the benefits of corporate inversions.

As previously mentioned, the question examined by this study is whether or not various stakeholders in corporations who undergo corporate inversions benefit disproportionately or are even worse off, post-inversion. The literature on this topic is examined to gather insight on how the corporate inversion trend grew to its current popularity as a business practice.

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Background

While corporate inversions are being addressed increasingly in the news and in political policy discussions, it is not a new corporate strategy. In fact, corporate inversions have been in practice since 1983, when the first U.S. company, McDermott International, reincorporated from the U.S. to Panama. It took ten years until in 1993, Helen of Troy also used an inversion to access overseas funds. Even with that large gap between the pioneers of inversions, 29 inversions took place in the 20 years between 1983 and 2003. The trend continued and increased in popularity rapidly in the ten years following, where 47 additional companies inverted between 2004 and 2014 (Ways and Means, 2014). Today, even against resistance from legislators and public sentiment, high profile firms continue to plan inversion deals worth hundreds of billions of dollars due to the benefits associated with corporate inversions (Novack, 2014).

Clearly, many firms have done a corporate inversion in the last several decades. The incentives to invert includes lowering their effective tax rate, escaping the worldwide tax system, and avoiding the repatriation tax since many have foreign income that are permanently reinvested. A study conducted using Fortune 500 companies identified the magnitude of permanently deferred foreign income. According to the study, “By the end of 2014, the 286 Fortune 500 companies that report holding offshore cash had collectively accumulated over \$2.5 trillion that they declare to be “permanently reinvested” (McIntyre, 2015, 10). This already massive and growing pool of un-repatriated earnings plays a major role, among the other factors, in incentivizing firms to plan inversion deals.

When examining corporate inversions, it is important to determine how the massive accumulation of overseas funds came into existence in addition to how firms carry out inversions. This is because it is a primary incentive that causes firms to invert. Harold McClure analyzes several different case studies of inversions throughout the last 34 years to describe the different methods used during that time to stash their funds abroad and subsequently invert to access those funds. McClure describes a proposed strategic move by one of the most well-known and profitable corporations in the world. He states that Wal-Mart,

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a company with \$72 billion in sales and \$2.5 billion of profit from the United States is considering re-domiciling in Switzerland (McClure, 2014, 10). What this means is that Wal-Mart would renounce its citizenship as a U.S. corporation and move its tax address to the foreign country while continuing to operate in the U.S. and around the world like it always has. While the operations of Wal-Mart go completely unchanged, the way they are taxed becomes completely different. Rather than being subject to a worldwide 35% corporate tax from the United States, they would only pay that corporate tax on operations in the U.S. Additionally, they would be free to only pay the tax rate of other countries that they do business in, like Switzerland, which has a corporate tax rate just below 18%. It is very logical for companies to seek this tax savings when no movement of assets is required in most cases. Marian makes the point that it, “makes no business sense,” to dislocate assets during the inversion process (Marian, 2015, 72). This is because the time and costs of transferring assets is unnecessary for the process and the gains from tax savings would be offset by the costs of dislocating those assets. This is the classic and simplest form of an inversion; however recent legislation has made it more difficult for firms to leave the United States. Today the requirements for a firm to invert are much more complicated and costly than simply renouncing their citizenship.

Early in the history of inversions, the company Helen of Troy used a tax avoidance method known as transfer pricing to achieve substantial tax savings and move their earnings abroad. The company, which sells various housewares and personal products, acts as a distributor and incurs operating expenses for a portion of sales. A parent corporation in Bermuda owns most of the intangibles belonging to the company, and purchases the products from the U.S. company and proceeds to sell them to worldwide affiliates. In this way, the Bermuda parent company is able to capture a majority of sales while incurring minimal operating expenses. This is very advantageous because there is no corporate income tax in Bermuda which means the parent company can retain all profits. Additionally, the U.S. domestic corporation reduces their taxable income by taking on most of the operating expenses. In this way, the model provided by McClure estimated an effective tax rate for Helen of Troy of 14.4%, far lower than the 35% corporate tax rate in the U.S. (McClure, 2014).

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McClure also gives an example of tax avoidance that could one day incentivize Walgreens to invert. An important distinction raised between Walgreens and Wal-Mart that must be noted is that Walgreens does business almost exclusively in the United States, while Wal-Mart is clearly a more global business. The benefit Walgreens would receive is known as earnings stripping. While they would still have to pay the high U.S. corporate tax, they could utilize a controlled foreign company, known as a CFC, to transfer U.S. income abroad. This is achieved primarily through intercompany debt, or royalty payments on use of intangible assets such as patents (McClure, 2014, 11). The difference between the advantages in these two cases is that the first granted immunity from the worldwide tax system of the United States, while the second allowed a company still based in the United States to shift its domestic income abroad to avoid the tax.

A final tax avoidance method worth discussing is known as a hopscotch loan. Under U.S. tax laws, a loan from a CFC to the U.S. domestic corporation is treated as a dividend and is taxable. In order to avoid this tax, a foreign parent corporation is required. The foreign parent is created in a tax haven as a parent corporation to the CFC. The CFC can then resume making intercompany loans to the foreign parent without passing the funds through the U.S. domestic corporation, thus avoiding the tax (Yang, 2016, Corporate Inversions 44).

In the subsequent section discussing government legislation responding to the inversion trend, it can be seen that many of the tax avoidance previously discussed become unviable. As a result, firms must consider enacting a corporate inversion in order to access their overseas cash. A common method of inversion that allows a corporation to change its tax domicile requires the use of a foreign corporation to take part in a merger. As described by Marples (2014), the U.S. company can seek a smaller foreign company to acquire, or can be acquired by a larger foreign company. In the first situation, the U.S. shareholders retain control of the company by owning a majority share while the company is still allowed to reincorporate in the country of the acquisition target. Marples cites the Eaton Cooper merger as an example of this inversion method where Eaton acquired Cooper while retaining 73% majority share and

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incorporating the new company in Ireland where Cooper was already incorporated (Marples, 2014, 3). The tax savings in this deal were substantial in that of the total cost savings of \$535 million, \$165 million were tax related savings (Marples, 2014, 4). In the second situation the tax implications are very similar, but control of the company shifts to the foreign acquiring company because they own the majority share of the new merger. An example of this situation was the merger between the larger United Kingdom firm Ensco, and the smaller U.S. firm Pride. After the merger, Pride became the minority shareholder in the company and moved their tax domicile to the United Kingdom where the parent company was located (Marples, 2014, 3). Regardless of the direction of the acquisition, the result is tax savings on international operations for the U.S. company involved in the merger.

It is simple to understand why legislators are attempting to close tax loopholes and prevent the validity of inversion methods when the amount of lost tax revenue is identified. In order to understand how the U.S. economy got to where it is today, with over \$2.5 trillion of permanently reinvested funds and dozens of expatriated firms, one must understand the current legislation affecting inversions. The following section outlines the details of IRS section 7874, various rules that inversion companies must meet, and legislative notices relating to section 7874.

Significant Legislation

The following section is a breakdown of the tax laws pertaining to inversions, broken down by location in the tax code. These laws and regulations are important to the study because they show attempts by the U.S. government to prevent inversions by making it more difficult to set up an inversion deal. Additionally, they close many of the tax loopholes that the previous inversion methods exploited. This makes many of the previous methods impossible to use after the passage of regulation.

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IRS Section 7874

- In effect since 2004 (DiFronzo, 2016, 50).
- Developed to prevent inversion transactions that did not result in a significant change in ownership or operations of the corporation (DiFronzo, 2016, 49).
- Requires the foreign acquirer to own “substantially all of the properties of the U.S. corporation” (DiFronzo, 2016, 49).
- The domestic corporation interest holders must hold certain amounts of stock in the foreign corporation (DiFronzo, 2016, 49).
- The new group of companies must have substantial business in the country where the foreign acquiring company is located (DiFronzo, 2016, 49).
- The 80/60 rule under section 7874 requires the ownership fraction of the U.S. corporation to be at least 60%, but less than 80%. If it is higher than 80% it will be treated as a U.S. company for tax purposes. (DiFronzo, 2016, 49).
- If there is a gain on the transfer of stock during the inversion process, an excise tax is imposed on shareholders (DiFronzo, 2016, 50).

Temporary Regulations Under Section 7874

- Disregards foreign stock from requirement included in the 80/60 rule when the foreign acquiring company has made other U.S. acquisitions in the last 36 months before acquisition (DiFronzo, 2016, 48).
- Disregards transactions that make the domestic company smaller prior to the inversion (DiFronzo, 2016, 48).
- Parent of the foreign acquiring company must be a tax resident in the same country as the foreign acquiring company (DiFronzo, 2016, 48).

Notice 2014-52

- If less than 25% of business activity takes place in the foreign parent’s home country, the foreign parent is treated as a U.S. corporation (Ruffner, 2015, 16).

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- U.S. companies can no longer access funds from CFC's via hopscotch loans (Ruffner, 2015, 16).
- All investments, loans, or stock purchases from CFC to domestic company or foreign affiliates are treated as dividends (Ruffner, 2015, 16).
- Stock related to the 80/60 rule requirement is disregarded if 50% of the assets belonging to the foreign parent are passive, such as cash and marketable securities (Ruffner, 2015, 17).
- Limited ability to create a separate entity out of an existing business unit to participate in an inversion (Ruffner, 2015, 17).

Notice 2015-79

- CFC substantial business test requires CFC to conduct 25% of business and be a tax resident of its own foreign country (Yang, 2016, Corporate Inversion Strategies 52).
- Second CFC's created before mergers to dilute U.S. equity share is not included in calculation of 80/60 rule (Yang, 2016, Corporate Inversion Strategies 52).
- Stock issued by CFC to foreign shareholders for passive assets is ignored (Yang, 2016, Corporate Inversion Strategies 52).

Section 367

- Asset dilution rule requires foreign subsidiaries to recognize gains on property transferred to a foreign transferee corporation (New Rules, 2016, 3).
- Post-inversion acquisitions by CFC's of the foreign parent's debt or equity interests are treated as U.S. property (DiFronzo, 2016, 49).
- CFC's will remain a U.S. subsidiary even if given a majority equity position by the foreign parent (DiFronzo, 2016, 49).

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Research Comparison

The articles consulted for this study were very homogenous in some aspects, yet varied widely in others. In examining the corporate inversion trend, the authors of the articles had varied explanations for the factors that incentivize firms to seek inversions. However, most researchers on this subject tend to agree on the fact that elements of the tax system in the United States act as a force to push firms to reincorporate abroad. Lastly, the consequences of inversions had mixed descriptions depending on the article.

With the complexity of inversions in general, in conjunction with the different types of firms and conditions that affect the inversions, it is unsurprising that researchers come up with varied explanations for the factors that provide incentive for inversions. According to Clausing (2014), the biggest incentives include growing stockpiles of overseas cash, anticipation of a tax holiday, and a follow the leader effect (Clausing, 2014, 1). As was mentioned earlier, the amount of permanently reinvested funds from U.S. corporations is over \$2.5 trillion dollars. This stockpile of un-repatriated funds carries two connected effects with it. First, firms are incentivized to invert so that they have access to this overseas cash without paying the U.S. corporate tax upon repatriation. Second, the longer the stockpile goes without repatriation, the higher the cost in taxes that will be incurred. Clausing's second incentive that firms are anticipating a tax holiday perpetuates the growth of the overseas stockpile, thus feeding back into the first incentive mentioned. The follow the leader scenario that Clausing alludes to is that as some firms are successful in completing corporate inversions and show economic improvement, more firms are incentivized to emulate the same strategy.

Additionally, competing firms will feel the need to invert simply to remain competitive with firms that are already reaping the benefits of corporate inversions. Sheppard also cites this as being a factor that causes firms to invert. Buckstein offers very different incentives explaining why some firms choose to attempt corporate inversions. Buckstein claims that in a globalizing world, firms are looking for ways to expand their business and gain access to human capital (Buckstein, 2014, 1). What he is stating is that due to the high costs of expanding a business into a global market, inversions can help mitigate that cost by lowering taxes and merging with a firm that has already established global connections. Additionally, the global

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connection to an acquiring firm can help a business become exposed to new talent in the form of human capital.

When it comes to discussing the consequences of inversions, researchers agree on more issues, yet still debate the observed outcome of others. For example, Desai and Hines agree with Frydam that managers of firms carrying out corporate inversions are acting in the best interest of the shareholders. While some studies examining the short term effects of inversion news on stock price show that changes in stock price can be volatile, they observed that shareholder wealth is maximized in the form of capital gains (Desai, 2002, 4). Sheppard also supports this claim by stating that inversion deals have to be approved by the shareholders and in that sense, the shareholders would not vote to carry through with the inversion if they did not believe that they would gain from the strategy (Sheppard, 2002, 560). Another point that researchers and legislators agree on is that the inversion trend is eroding the tax base of the United States. Sheppard cites this in his article as a definite consequence of inversions and is supported by Clausing who cites a study that claims simply limiting some aspects of inversions will save \$19 billion in tax dollars over 10 years (Clausing, 2014, 6). Where some researchers differ, involves the impact of inversions on jobs and capital. Many feel that inversions result in an exodus of jobs from the domestic country. Desai claims in his paper that the firms that are most likely to invert are those that are large and possess a large number of physical assets abroad. Clausing also makes the assertion that after the last tax holiday in 2004, there were no new jobs created, making it unlikely that the government will have another in the near future (Clausing, 2014, 5). This counters the claim that a tax holiday would be a possible solution for the issue of stopping the trend. Sheppard takes a different stance on this matter, claiming inversions do not reduce the number of jobs because the operations of a firm are unchanged after an inversion. Rather, the tax laws affecting the corporation is the only aspect changed as a result of an inversion (Sheppard, 2002, 559). Rao also claims that an unintended consequence of prohibiting easy forms of inversions has caused the spike in foreign mergers and acquisitions, which is one of the more popular inversion methods today (Rao, 2015, 21).

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The component of all the studies that is the most homogenous is the perception of the current United States corporate tax system. Most researchers agree that the high tax rate itself is a factor that pushes firms away from the U.S. However, the fact that firms such as Burger King Worldwide Inc. move their domicile to a country with a similar effective tax rate points to the worldwide tax system as being a primary motivator for firms to leave the U.S. All of the researchers who provided potential solutions to stopping the inversion trend stated that the U.S. should adopt a territorial tax system like the rest of the world. While this move is highly unlikely due to impact it would have on the government's tax revenue, Sheppard expresses the belief held by many other researchers that simply lowering the corporate tax rate by 5% would reduce the number of inversions as well as limit the practice of earnings stripping (Sheppard, 2002, 571). Buckstein supports this action as well by stating that lowering the tax rate would put the United States in a position to be much more competitive in terms of being a desired corporate destination, yet makes the point that a lower tax rate should be a part of a larger widespread overhaul of the tax system (Buckstein, 2014, 1). While these are the main points of agreement among researchers, there are also other proposed solutions pointed out by Clausing and Sheppard such as raising the foreign parent equity requirement associated with the 80/60 rule, limiting cash transfer methods, and pressuring tax haven countries to change their laws. While some of these proposed solutions may be very radical and different, the theme of reducing the number of inversions is constant.

The research conducted in the majority of these articles was qualitative. Inversions were studied by describing the attributes of the companies that had done inversions and the methods that they used to complete the inversion. The descriptions of the inversion methods were supplemented by summaries of the legislation passed concerning the taxation of inverted corporations. This was primarily concerning IRS Code Section 7874 and supplemental notices such as 2014-52 and 2015-79. The conclusions drawn from these studies were also qualitative. Offering proposed suggestions for ways in which the tax system could be reformed to place the United States on a more level playing field with the rest of the world. Some of the articles were quantitative however. Rao's article examined the short term impact of inversion announcements on stock price. These figures came from stock price history

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gathered on a number of firms that represent the total number of firms that have done inversions. This data along with other estimates such as the potential tax savings from various tax reform plans and the effective tax rate estimates of inverted firms provides a strong base on which the authors structured their recommendations and conclusions. While these quantitative steps were a good starting point to answering the question of whether shareholders benefit from inversions, there is much more that can be done through further study. At the time when many of these articles were written, some of the legislation restricting inversions had not yet been passed. Additionally, not enough time had passed to see the long term effect of inversions on shareholders. This is one area that can now be expanded upon, to include more data to calculate the long term effects on total shareholder wealth, rather than limited data on short term stock price fluctuations.

Conclusion of Literature Review

The literature on the subject of corporate inversions was very helpful in shaping my understanding of the trend as well as the progress that has been made in the field. The background history of inversions is very demonstrative of the different ways companies have stockpiled funds overseas and then inverted to access those funds. Over the years this has allowed them to circumvent legislation and achieve different benefits. Additionally, the summaries of legislation will be one of the most critical components to understanding how the trend developed and got to the level that it currently occupies. This is because if certain legislation under Code Section 7874 had not been passed, some of the methods that firms use to avoid taxes and invert may never have been used because there would have been no need for them. The most recent notices passed to support Code Section 7874 also reduce or eliminate many of the advantages provided by inversions. This must be taken into account because if inversions can no longer provide the benefits to shareholder wealth that they did in the past, they would certainly be disadvantageous to shareholders.

When constructing my qualitative and quantitative methods for answering the question of whether inversions disproportionately benefit shareholders and executives, I sought to build upon the work of Rao, who studied the short term effects of inversion announcements on

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stock prices. I improved upon their methodology primarily by using a larger timeframe to examine the companies. Also, I took into account more factors that impact shareholder wealth to address the claims by Frydam, Sheppard, and other researchers who claim that inversions maximize shareholder wealth in the long run rather than short term stock prices.

As previously mentioned, some of the proposed solutions to mitigate the inversion trend include altering the tax system to be a friendlier environment for corporations by lowering the tax rate and moving toward a territorial tax system. Regardless of what may appear to be the best solution, it is important to critically examine what the most plausible solution might be. This is because while an overhaul of the tax system might result in the most dramatic change in the inversion trend, it is unlikely to occur because of the guaranteed loss tax revenue. The government is much more likely to continue on the path it currently follows by closing loopholes and issuing notices to make inversions more difficult and less profitable.

METHODOLOGY

This project was designed to be a quantitative study, that would be used as evidence to aid investors in deciding how to handle investments in companies that announced plans to execute a corporate inversion. In order to accomplish this, I selected a number of companies to study and evaluated them based on a number of criteria. The companies had to have inverted since 2008 because inversions prior to that year would not have been affected by some of the more recent legislation and economic conditions. This is still a representative sample because almost half of corporate inversions have occurred since 2008, even though it has been a documented practice for over 30 years. The companies also had to be publicly traded so that the relevant data would be available. Therefore, 28 companies of various sizes and industries were selected as seen in Appendix A. The list was compiled primarily by cross referencing the Bloomberg article “Tracking Tax Runaways,” and Rao’s study titled, “Corporate Inversions and Economic Performance,” on the short term effects of inversions on stock prices.

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After selecting the sample companies, I obtained key information to be used in the quantitative analysis. This information included the year of inversion, industry, stock price history, earnings per share (EPS) levels, and market cap for each company. These metrics were chosen to evaluate the companies because they are primary inputs when measuring shareholder wealth. Changes in stock price have an obvious impact on the shareholders because it determines how the market value of their investments change over time.

Noteworthy changes in stock returns before and after inversions are important for investors because it would help them determine the impact of inversions on shareholder wealth. The standard deviation of the returns was also calculated to measure the volatility of the stock price. Lastly, EPS is the ratio of income available for common shareholders to the number of shares outstanding. It is useful for investors because it provides a metric for the profitability of the company. The year of inversion for each company was obtained at the same time the companies to be studied were determined from the sources previously mentioned. The industry each company operates in was determined using the Mergent Online database. The stock price history was researched using Yahoo Finance. The EPS levels and market cap for each firm were obtained from the Calcbench database.

When analyzing the data gathered for each company, a similar approach was used for each metric. Data was averaged for a number of years prior to the inversion and then compared to average data for a period of time after the inversion. For the stock price, the time frame consisted of a maximum of five years before and after the inversion. Neither set of average data contained information from the actual inversion year. To analyze changes in the stock price, the yearly return was calculated from historical stock prices and then averaged to get comparable returns for pre inversion and post inversion periods. When studying the EPS, an average was taken for all of the years prior to the inversion, and all of the years post inversion. Then the percent change between the pre inversion and post inversion average was calculated in order to compare all of the firms.

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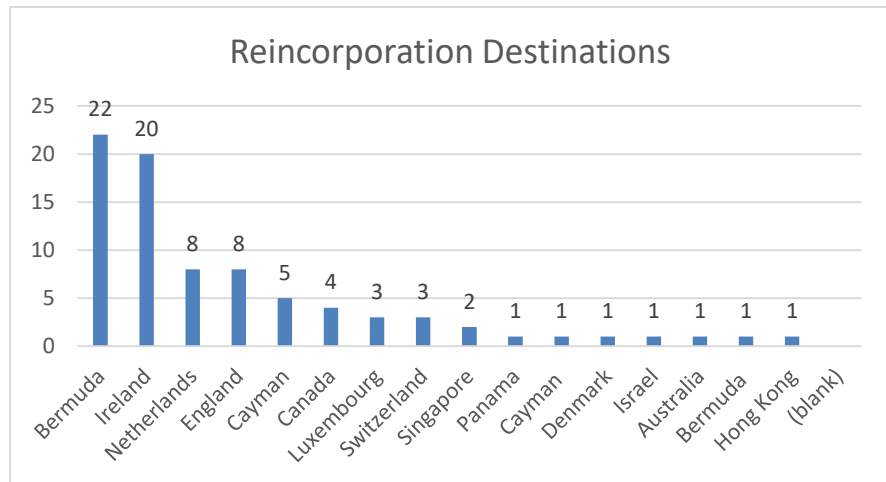
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Once there was a pre and post inversion average yearly return and percent change in EPS, the data could be examined from a number of viewpoints. These viewpoints consisted of an aggregate, industry, and firm size level.

RESULTS

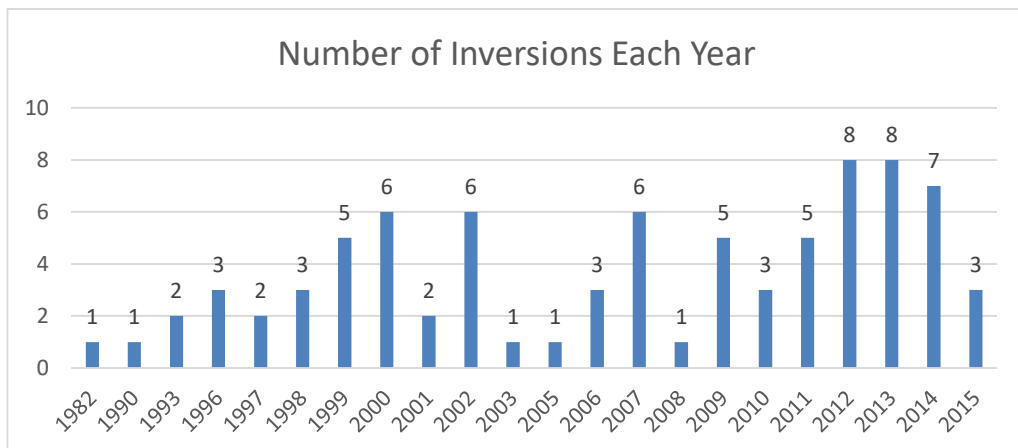
When studying corporate inversions, it is interesting to note the technical details about them in addition to their impact on shareholders. One of these details is where companies go when they decide to reincorporate. As illustrated by the graph below, Bermuda is the most popular destination for companies deciding to invert, followed closely by Ireland. These two destinations represent over half of inversions. This is due to the favorable laws related to

corporate taxation in these countries. The illustration includes all companies determined to have engaged in corporate inversions and exceeds the list of companies used for the quantitative element of the study.



It is also interesting to note the timing of inversions. As shown in the illustration below, the first inversion

took place in 1982 when the company McDermott International



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reincorporated to Panama. Since then, over 80 companies have followed in their footsteps and reincorporated in another country. The trend gained momentum, but years in which the number of inversions declined can be attributed to federal legislation and tax holidays discussed in the literature review. These events occurred around the same time periods during which the inversion trend exhibits a decrease. Most notable is that almost half of all inversions have taken place in the last 8 years. This shows that the practice of corporate inversions is gaining popularity among corporate executives and will continue unless action is taken. The impact of inversions that will be discussed next will become more widespread the longer the practice continues. The illustration includes all companies determined to have engaged in corporate inversions and exceeds the list of companies used for the quantitative element of the study.

Effect on EPS

The impact on EPS for companies that engaged in a corporate inversion was the most conclusive metric studied. When examining the average impact on all of the firms used in the study, the percent change from years before the inversion to years after the inversion was -189.30%. When narrowing the number of firms by industry, the results were the same in that the percent change in EPS was negative for all industries.

The effect of inversions on EPS was also examined through the lens of firm size. The firms in the study distributed evenly in to three groups based on market cap. The groups consisted of less than \$1 billion, between \$1 billion and \$10 billion, and greater than \$10 billion. For firms with a market cap below \$1 billion, the percent change in EPS from pre inversion years to post inversion years was very negative, at -577.73%. For firms between \$1 billion and \$10 billion, the impact on EPS was still negative but to a lesser degree, at -30.08%. Only the firms with a market cap over \$10 billion had a positive percent change in EPS, at 11.25%. The figures on the effect of inversions on EPS previously discussed can be found in the summary data table in Appendix B.

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Effect on the Stock Price

The change in average stock price returns from pre inversion years to post inversion years also differed between industries and firm size. When all companies used in the study were averaged together, the stock price returns showed a decrease from a 25.43% return to a 12.74% return. However, the standard deviation of the returns for all companies decreased from 68.63% to 44.39%. When the results are broken down by industry, it is clear that the stock price of companies in some industries showed improvement while others suffered. The service industry returns improved modestly from 16.16% to 23.06%. The insurance industry returns also rose from 3.48% to 8.24%. Lastly, firms in the manufacturing industry had returns that increased from 6.42% to 12.17% on average. Conversely, the oil industry showed a decrease from 23.93% to 16.25%. The health industry exhibited the worst decline in stock price returns from 43.76% pre inversion to 7.34% post inversion. In conformity with the total standard deviation decreasing, firms in the insurance, health, and oil industries also had lower standard deviations related to stock price returns post inversion. Firms in the service and manufacturing industries both had higher standard deviations after inversions took place.

At the firm size level, average stock price returns for companies with a market cap below \$1 billion decreased substantially from 55.44% to 16.26%. However, the standard deviation also decreased similar to the total average. Firms who had a market cap between \$1 billion and \$10 billion had higher returns of 9.85%, up from 4.61% pre inversion. This came at the cost of a higher standard deviation as well. Lastly, firms with a market cap higher than \$10 billion were unique in that their average stock price return decreased from 14.80% to 12.43%, but the standard deviation for those firms also increased from 30.92% to 43.85%. The figures on the effect of inversions on the stock price previously discussed can be found in the summary data table in Appendix B.

Sensitivity Test

As was mentioned previously, data from the year of inversion was not included in the calculations of either to pre or post inversion average for stock price returns or EPS. However, I performed a sensitivity test to observe the impact of including the inversion year in the pre

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inversion average and in the post inversion average separately. The pre and post inversion returns and the percent change in EPS were calculated without either group including data from the inversion year. This was used as the benchmark to judge the other tests against. When data from the inversion year was included in the pre inversion average, the pre inversion stock price return increased slightly, and the percent change in EPS was slightly less negative. This shows that during the inversion year, there was a slightly positive market reaction, but no major changes to the stock price. However, when the inversion year data was included in the post inversion averages the average stock price return more than doubled in a positive direction. This shows that the market reaction was somewhat delayed. The implications for this are that investors may not respond immediately after an inversion because there is no observable change in the value of the investment. According to these observations it takes a period of time for the market to react negatively, at which point it may be too late for investors. However, if investors are aware of the potential negative long term effects of inversions on stock price returns they may have time to take action. When determining the average pre and post inversion percent change in EPS, twice the interquartile range was used as a cutoff to identify outliers. The data tables for the sensitivity test can be found in Appendix C. The identified outliers in the table are highlighted, and were excluded from the average.

T-Tests

Regarding the average stock price returns and volatility of the stock price, it was seen through the analysis that the volatility of the stock price decreased at the expense of lower returns for inverting firms. I wanted to know whether these changes were a result of the inversions or if there was another unknown cause. In order to determine this, I performed a series of t-tests. The first t-test compared the stock price volatility results from the inverting firms to the S&P 500. In order to compare the group of inversion firms to the S&P 500 I first downloaded the historical data for the S&P 500 from Yahoo Finance and calculated the annual returns for the years 2004 through 2016. I then used these returns and simulated what the pre and post inversion returns would have been if the firms that comprise the S&P 500 had done an inversion for the years 2008 through 2015. Lastly, the standard deviations of those returns

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was calculated so that the t-test could be performed. The S&P statistics were then compared to those of the inversion firms by using a two sample t-test assuming unequal variances. The hypothesized mean difference for this test was 0, and the alpha was set to 0.05. As can be seen in Appendix E, the two tailed p-value is smaller than the alpha value both pre and post inversion. In addition, the absolute value of the t statistic is greater than the t critical value in both the pre and post inversion test. Both of these results provide statistical justification to reject the null hypothesis. This means that even before the inversion took place, there was something that made inversion firms fundamentally different from the S&P 500.

The next set of t-tests compared the stock price returns and volatility of the inversion firms to a matched competitor that was chosen based on industry, size, and financial strength. The list of peer firms can be found in Appendix D. For each matched competitor, the same process for determining the pre and post inversion average return and standard deviation was followed. The inversion year for the paired inversion company was used as the cutoff year in simulating how the firms would have compared during the same time period with the inversion being the primary difference between them. Once the competitors were selected and the hypothetical inversion year was determined I calculated the yearly stock price return for up to five years before and after the inversion year depending on the availability of data. The historical stock prices were drawn from Yahoo Finance, the same data source that was used in studying the inversion firms. After determining the yearly returns, I calculated the pre and post inversion standard deviations of those returns and averaged the returns to obtain an average pre and post inversion stock price return that could be compared for statistical similarity to the inverting firms. The paired sample t-test was performed four times. The four tests compared the inversion firms to the competitors regarding pre inversion stock price returns, post inversion stock price returns, pre inversion standard deviation of the returns, and post inversion standard deviation of the returns. For each test, the null hypothesis was that the hypothesized mean difference of the metric being studied would be 0, assuming an alpha value of 0.05.

For the test analyzing pre inversion average returns, the two-tailed p-value was very high at 0.86 and the t statistic was smaller than the t critical value. This shows that the inversion firms

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were statistically similar to the matched competitor firms in terms of average stock price return pre inversion. This was the expected result because pre inversion, the firms should have been very similar to their peers that were matched based on industry, size, and financial condition. Moving to the t-test comparing the same metric post inversion, there is a slight change in the output. The p-value decreased to 0.56 and the absolute value of the t statistic increased to 0.59. While there was a change, the p-value is still larger than the alpha value and the t statistic is still smaller than the t critical value. This shows that from pre inversion to post inversion, there was no statistically significant change to the annual stock price returns compared to the peer firms. Therefore, any changes in annual returns for the inversion firms can be attributed to general economic conditions and not the inversion. The output tables for this t-test can be found in Appendix F.

The results of the t-test regarding the standard deviation of the returns produced similar results. Pre inversion, the p-value of 0.81 implies no statistically significant difference between the groups. This is confirmed by the t statistic which lower than the t critical value. Once again, in regards to the volatility of the stock price the inversion firms were very similar to their peers pre inversion. This is congruent with the expectations since the firms were matched based on industry, size and financial condition. Similar to the test of the average return, there was no statistically relevant change in the correlation of the returns post inversion. The p-value of 0.53 and a low t statistic again imply no statistically significant difference between the groups. The output tables of this t-test can be found in appendix E.

DISCUSSION

Based on the data previously summarized in the results section, there are several conclusions that can be drawn regarding whether firms aided or harmed their shareholders through corporate inversions. When examining the pre inversion and post inversion returns filtered by industry, firms in the service, insurance, and manufacturing industries all exhibited improvement. Firms in the service industry showed the most improvement, as the returns in that industry increased by 6.9%. While the average returns for the service industry increased,

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it came at the cost of higher stock price volatility as shown by the larger standard deviation. Firms in the manufacturing and insurance industries had slightly lower increases of their returns by 5.75% and 4.76% respectively. However, manufacturing firms were subject to the same consequence as service firms in the form of more volatile stock price returns.

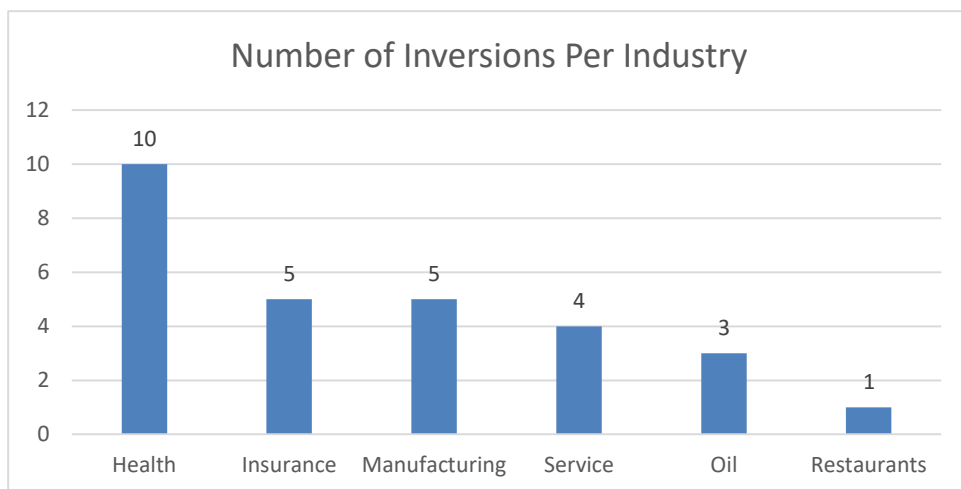
Each firm size also displayed different benefits. Relatively small firms with a market cap below \$1 billion had a less volatile stock price through a lower standard deviation of stock price returns. Medium sized firms, with a market cap between \$1 billion and \$10 billion, benefited differently by being the only firm size group to have higher stock price returns. The returns for medium sized firms increased by 5.24%. Relatively large firms with a market cap above \$10 billion were the only ones to have higher earnings post inversion. The EPS for these firms increased by 11.25% on average.

While there were numerous benefits to shareholders as previously mentioned, there were equally as many disadvantages. The only finding that was nearly unanimous across all industries and firm sizes was that EPS was lower post inversion. Firms in the oil industry had the worst decrease in EPS, followed closely by insurance. Another negative implication for firms in the oil industry was that their average stock price returns were 7.68% lower post inversion. The only other industry that had lower returns in addition to lower earnings was the health industry. The returns post inversion for the health industry were the lowest compared to pre inversion returns among all industries. The returns for firms in the health industry decreased by 36.42%. This is especially significant considering the fact that the health industry represented the industry with the most inversions in the study. The breakdown of inversions per industry can be seen in the following diagram.

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When the firms are filtered by relative size, each group had a distinct pairing of disadvantages and that offset the single redeeming factor for shareholders



as discussed previously. For relatively small firms, stock price returns were lower post inversion in addition to lower average EPS offset the benefit of a less volatile stock price. Medium sized firms also had lower EPS and had more volatile stock prices. This counteracts the benefit to shareholders of higher average stock price returns. Lastly, shareholders in large firms were disadvantaged through lower returns accompanied by a more volatile stock price. These harmful effects could potentially negate the benefit large firms enjoyed in the form of higher earnings post inversion.

Even with the noted pairs of advantages and disadvantages for firms in different industries and of different sizes, many of the findings are called into question when comparing the inversion firms to their competitors. While the stock price returns decreased for inversion firms after the inversion, the same pattern was exhibited for their competitors who did not invert. This suggests that the reduction in stock price returns was not directly caused by the inversions, but by general economic conditions. A similar result was observed in testing the volatility results of the inversion firms against their competitors. Non-inversion firms showed a similar decrease in volatility compared to inversion firms over the same period of time. The t-test showed that the difference in volatility between the inversion firms and their peers was not statistically relevant, meaning the inversions had no significant impact on the volatility of the annual returns.

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It is interesting that both pre and post inversion, the inversion firms remained similar to their competitors on the basis of annual returns and volatility. However, there was something fundamentally different about inversion firms even before the inversion when comparing their volatility to the volatility of the S&P 500. This fundamental difference could be a pressure that causes firms to execute inversions. Otherwise, it calls into question the actions of management because executives are supposed to be looking out for shareholder wealth above all else. This study shows that their decision to carry through with an inversion had no statistically significant impact on long term shareholder wealth. Even if the inversion was necessitated by the need to access overseas cash, management should have been more cognizant of the fact that shareholders would not share in the benefits. Investors should keep these facts in mind when evaluating whether a company represents a good financial investment. If executive compensation is not aligned with shareholder wealth, it is possible that they may make decisions such as voting on a corporate inversion, which is shown to have no impact on shareholder wealth in the long run.

POTENTIAL LIMITATIONS

While this study addressed an important question, there are some potential limitations such as topics that exceeded the scope of this project, and ways in which the methodology could have been improved. An assumption made in this study is that executives of inversion firms are benefiting in terms of additional compensation. However, the extent of the benefits they receive from inversions was not explored. This would be an interesting topic for future studies to build upon the degree of difference between executive and shareholder impacts resulting from inversions. One of the most conclusive results in the study was the change in EPS from pre inversion to post inversion. However, the issuance of new shares could have had an impact on the results and explain the observed change. Future studies could verify the results in this study by controlling for the number of shares outstanding in the calculation of EPS and stock returns. Lastly the results could be fortified in future studies by increasing the number of firms studied. As time progresses, the list of firms that complete inversions will increase. Their data could further confirm or deny the conclusion that there are no observable benefits to shareholder wealth caused by corporate inversions.

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APPENDICES

Do Some Stakeholders in Publicly Traded Firms Benefit at the Expense of Others as a Result of Corporate Inversions?

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Appendix A – List of companies studied

Co	Inversion Year	Industry
ACN	5/26/2009	Service
AGII	3/14/2007	Insurance
ALKS	5/9/2011	Health
ALLE	6/17/2013	Service
AMAT	9/24/2013	Manufacturing
AON	1/13/2012	Insurance
ASPS	5/13/2009	Service
CVEO	9/29/2014	Service
ENDP	11/5/2013	Health
ESV	11/9/2009	Oil
ETN	5/21/2012	Manufacturing
GBLI	2/16/2010	Insurance
HZNP	3/19/2014	Health
JAZZ	5/19/2011	Health
LBTYA	2/5/2013	Service
MDT	6/15/2014	Health
MYL	7/14/2014	Health
PGN	9/24/2013	Oil
PNR	3/28/2012	Manufacturing
PRGO	7/29/2013	Health
QSR	8/26/2014	Restaurants
RDC	8/26/2014	Oil
SSYS	4/16/2012	Manufacturing
TBPH	4/25/2013	Health
TROX	9/26/2011	Manufacturing
TWGP	7/30/2012	Insurance
VRX	6/21/2010	Health
WMGI	10/27/2014	Health
XL	1/9/2015	Insurance

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Appendix B – Summary data table of results

			EPS	Return Pre	Return Post	STD D Pre	STD D Post
<i>Industry Average</i>			-189.30%	25.43%	12.74%	68.63%	44.39%
Service			-45.93%	16.16%	23.06%	34.55%	61.50%
Insurance			-298.97%	3.48%	8.24%	26.65%	17.61%
Health			-157.68%	43.76%	7.34%	96.07%	39.23%
Manufacturing			-186.65%	6.42%	12.17%	44.53%	63.72%
Oil			-311.72%	23.93%	16.25%	83.15%	37.33%
Restaurant					16.49%		41.96%
<i>Size Average</i>							
Mkt Cap<1B			-577.73%	55.44%	16.26%	142.64%	42.09%
1B<Mkt Cap<10B			-30.08%	4.61%	9.85%	32.57%	46.94%
Mkt Cap>10B			11.25%	14.80%	12.43%	30.92%	43.85%

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Appendix C – Sensitivity test

Co	Inversion Year Not Included in Pre or Post			EPS % Change	Outlier
	Return Pre	Return Post	Δ in Returns		
ACN	-8.57%	18.49%	27.05%	14.08%	0
AGII	30.16%	-18.94%	-49.09%		0
ALKS	6.69%	66.85%	60.15%	137.78%	0
ALLE				-25.33%	0
AMAT	-8.30%	6.53%	14.84%	29.68%	0
AON	11.73%	25.63%	13.90%	55.72%	0
ASPS					0
CVEO				-162.16%	0
ENDP	-1.47%	-4.74%	-3.27%	-160.96%	0
ESV	-22.99%	18.05%	41.04%	-55.53%	0
ETN	10.85%	7.33%	-3.52%	14.39%	0
GBLI	-36.48%	4.70%	41.17%	-99.49%	0
HZNP	158.28%	0.03%	-158.25%		0
JAZZ	508.52%	95.11%	-413.41%	1213.43%	1
LBTYA	30.98%	-33.95%	-64.93%		0
MDT	21.10%	3.23%	-17.87%	-22.29%	0
MYL	48.44%	-14.33%	-62.76%		0
PGN	1.62%	71.35%	69.72%	-746.98%	1
PNR	10.12%	14.91%	4.79%	111.11%	0
PRGO	18.30%	-3.62%	-21.92%	-79.60%	0
QSR				0.99%	0
RDC	29.40%	-20.85%	-50.25%	-68.97%	0
SSYS	27.44%	9.78%	-17.66%	-310.42%	0
TBPH				-2033.33%	1
TROX				1382.50%	1
TWGP				-1046.59%	1
VRX	6.31%	34.76%	28.44%	-94.07%	0
WMGI	-6.39%	8.84%	15.23%		0
XL	11.84%	3.61%	-8.23%		0
	Average Pre	Average Post	Δ in Returns	EPS % Change	
Average	38.53%	13.31%	-25.22%	-42.06%	
	Q1	-145.59%			
	Q3	25.86%			
	IQR	171.45%			
	Lower Bound	-488.49%			
	Upper Bound	368.75%			

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Co	Inversion Year Included in Pre			EPS % Change	Outlier
	Return Pre	Return Post	Δ in Returns		
ACN	4.25%	18.49%	14.24%	18.80%	0
AGII	27.36%	-18.94%	-46.29%		0
ALKS	19.70%	66.85%	47.15%	126.98%	0
ALLE				30.04%	0
AMAT	4.56%	6.53%	1.97%	71.31%	0
AON	14.23%	25.63%	11.40%	30.91%	0
ASPS					0
CVEO				-267.57%	0
ENDP	35.05%	-4.74%	-39.79%	-72.97%	0
ESV	-1.11%	18.05%	19.16%	-47.12%	0
ETN	12.62%	7.33%	-5.29%	12.50%	0
GBLI	27.65%	4.70%	-22.95%	-99.48%	0
HZNP	127.73%	0.03%	-127.70%		0
JAZZ	375.00%	95.11%	-279.89%	258.70%	0
LBTYA	26.34%	-33.95%	-60.28%		0
MDT	26.24%	3.23%	-23.01%	-15.39%	0
MYL	37.97%	-14.33%	-52.30%		0
PGN	4.28%	71.35%	67.06%	-435.89%	1
PNR	19.29%	14.91%	-4.38%	493.75%	1
PRGO	30.49%	-3.62%	-34.11%	-74.44%	0
QSR				1120.00%	1
RDC	20.06%	-20.85%	-40.91%	-68.42%	0
SSYS	56.14%	9.78%	-46.36%	-351.10%	0
TBPH				-145.21%	0
TROX				535.95%	1
TWGP				-1922.03%	1
VRX	54.74%	34.76%	-19.98%	-83.85%	0
WMGI	6.70%	8.84%	2.14%		0
XL	9.61%	3.61%	-5.99%		0
	Average Pre	Average Post	Δ in Returns	EPS % Change	
Average	42.68%	13.31%	-29.37%	-39.78%	
	Q1	-95.57%			
	Q3	61.21%			
	IQR	156.78%			
	Lower Bound	-409.12%			
	Upper Bound	374.76%			

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Co	Inversion Year Included in Post			EPS % Change	Outlier
	Return Pre	Return Post	Δ in Returns		
ACN	-8.57%	22.28%	30.85%	6.74%	0
AGII	30.16%	-5.37%	-35.53%		0
ALKS	6.69%	59.80%	53.11%	51.85%	0
ALLE				-45.27%	0
AMAT	-8.30%	14.45%	22.75%	-4.52%	0
AON	11.73%	23.50%	11.76%	41.59%	0
ASPS					0
CVEO				-175.44%	0
ENDP	-1.47%	32.87%	34.33%	-158.18%	0
ESV	-22.99%	26.25%	49.24%	-47.64%	0
ETN	10.85%	10.27%	-0.58%	11.28%	0
GBLI	-36.48%	55.10%	91.57%	-67.58%	0
HZNP	158.28%	66.63%	-91.65%		0
JAZZ	508.52%	99.39%	-409.13%	1075.12%	1
LBTYA	30.98%	-16.95%	-47.93%		0
MDT	21.10%	10.90%	-10.20%	-23.37%	0
MYL	48.44%	-3.87%	-52.30%		0
PGN	1.62%	50.76%	49.14%	-436.24%	0
PNR	10.12%	22.49%	12.37%	9.63%	0
PRGO	18.30%	15.88%	-2.42%	-70.07%	0
QSR				-164.36%	0
RDC	29.40%	-13.44%	-42.84%	-47.70%	0
SSYS	27.44%	44.37%	16.93%	-223.15%	0
TBPH				-1868.89%	1
TROX				1223.33%	1
TWGP				-595.37%	1
VRX	6.31%	73.70%	67.39%	-125.99%	0
WMGI	-6.39%	16.85%	23.24%		0
XL	11.84%	4.37%	-7.47%		0
	Average Pre	Average Post	Δ in Returns	EPS % Change	
Average	38.53%	27.74%	-10.79%	-81.58%	
	Q1	-162.81%			
	Q3	8.91%			
	IQR	171.72%			
	Lower Bound	-506.25%			
	Upper Bound	352.34%			

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Appendix D – List of peer firms

Co	Peer Firm
ACN	NIELSEN HOLDINGS NV
AGII	NAVIGATORS GROUP INC
ALKS	CABOT MICROELECTRONICS CORP
ALLE	GRIFFON CORP
AMAT	BAKER HUGHES INC
AON	MARSH & MCLENNAN COS
ASPS	PAYCOM SOFTWARE INC
CVEO	BELMOND LTD
ENDP	ABRAXIS BIOSCIENCE INC
ESV	SEADRILL LTD
ETN	PACCAR INC
GBLI	EMC INSURANCE GROUP INC
HZNP	BIOCRYST PHARMACEUTICALS INC
JAZZ	ARIAD PHARMACEUTICALS INC
MDT	THERMO FISHER SCIENTIFIC INC
MYL	ECOLAB INC
PNR	NETAPP INC
QSR	BRINKER INTL INC
RDC	SANDRIDGE ENERGY INC
SSYS	CAVIUM INC
TBPH	PTC THERAPEUTICS INC
TROX	SENSIENT TECHNOLOGIES CORP
VRX	AGRIUM INC
WMGI	NUVASIVE INC
XL	UNUM GROUP

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Appendix E – T-test of inversion firm volatility compared to S&P 500

t-Test: Two-Sample Assuming Unequal Variances		
Std Dev-Pre	S&P	Inversions
	<i>Variable 1</i>	<i>Variable 2</i>
Mean	0.1896	0.6863
Variance	0.0090	1.0372
Observations	8.0000	21.0000
Hypothesized Mean Difference	0.0000	
df	21.0000	
t Stat	-2.2097	
P(T<=t) one-tail	0.0192	
t Critical one-tail	1.7207	
P(T<=t) two-tail	0.0384	
t Critical two-tail	2.0796	

t-Test: Two-Sample Assuming Unequal Variances		
Std Dev-Post	S&P	Inversions
	<i>Variable 1</i>	<i>Variable 2</i>
Mean	0.0986	0.4527
Variance	0.0005	0.1978
Observations	7.0000	25.0000
Hypothesized Mean Difference	0.0000	
df	24.0000	
t Stat	-3.9629	
P(T<=t) one-tail	0.0003	
t Critical one-tail	1.7109	
P(T<=t) two-tail	0.0006	
t Critical two-tail	2.0639	

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Appendix F – T-test of inversion firm returns compared to peers

t-Test: Paired Two Sample for Means		
Pre Inversion Average Return		
	<i>Inversions</i>	<i>Matched Pairs</i>
Mean	0.2628	0.2400
Variance	0.3150	0.0986
Observations	17.0000	17.0000
Pearson Correlation	0.3623	
Hypothesized Mean	0.0000	
df	16.0000	
t Stat	0.1760	
P(T<=t) one-tail	0.4313	
t Critical one-tail	1.7459	
P(T<=t) two-tail	0.8625	
t Critical two-tail	2.1199	

t-Test: Paired Two Sample for Means		
Post Inversion Average Return		
	<i>Inversions</i>	<i>Matched Pairs</i>
Mean	0.1176	0.1502
Variance	0.0537	0.0409
Observations	24.0000	24.0000
Pearson Correlation	0.2327	
Hypothesized Mean	0.0000	
df	23.0000	
t Stat	-0.5920	
P(T<=t) one-tail	0.2798	
t Critical one-tail	1.7139	
P(T<=t) two-tail	0.5596	
t Critical two-tail	2.0687	

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Appendix G – T-test of inversion firm volatility compared to peers

t-Test: Paired Two Sample for Means		
Pre Inversion Standard Deviation		
	<i>Inversions</i>	<i>Matched Pairs</i>
Mean	0.6708	0.6204
Variance	1.1469	0.2939
Observations	18.0000	18.0000
Pearson Correlation	0.5717	
Hypothesized Mean	0.0000	
df	17.0000	
t Stat	0.2424	
P(T<=t) one-tail	0.4057	
t Critical one-tail	1.7396	
P(T<=t) two-tail	0.8114	
t Critical two-tail	2.1098	

t-Test: Paired Two Sample for Means		
Post Inversion Standard Deviation		
	<i>Inversions</i>	<i>Matched Pairs</i>
Mean	0.4735	0.4056
Variance	0.2075	0.1593
Observations	23.0000	23.0000
Pearson Correlation	0.2782	
Hypothesized Mean	0.0000	
df	22.0000	
t Stat	0.6324	
P(T<=t) one-tail	0.2668	
t Critical one-tail	1.7171	
P(T<=t) two-tail	0.5336	
t Critical two-tail	2.0739	

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REFERENCES

- American Companies That Have Incorporated Overseas. (2016). *Washington Post*. Retrieved from <https://www.washingtonpost.com/apps/g/page/business/american-companies-that-have-incorporated-overseas/1238/>
- Balsam, Steven, Guy D. Fernando, and Arindam Tripathy. (2011). The Impact of Firm Strategy on Performance Measures Used in Executive Compensation. *Journal of Business Research*, 64(2), 187–193.
- Biggest Companies Incorporated in Ireland: Stocks - Bloomberg Best (and Worst). (2016). *Bloomberg*. Retrieved from <https://www.bloomberg.com/graphics/best-and-worst/#biggest-companies-incorporated-in-ireland-stocks>
- Boise, C. M., & Koenig, J. C. (2002). Practical and policy considerations in corporate inversion transactions. *Corporate Business Taxation Monthly*, 3(12), 3-20.
- Buckstein, Jeff. (2014). Getting some Perspective on Tax Inversions. *Bottom Line*, 30(15), 6.
- Chen, Long, Zhi Da, and Xinlei Zhao. (2013). What drives stock price movements?. *Review of Financial Studies*, 26(4), 841-876.
- Clausing, Kimberly, and Urban-Brookings Tax Policy Center. (2014). Corporate Inversions. *Washington: Tax Policy Center*.
- Cloyd, C. Bryan, Lillian F. Mills, and Connie D. Weaver. (2003) Firm valuation effects of the expatriation of US corporations to tax-haven countries. *Journal of the American Taxation Association*, 25, 87-109.
- Desai, Mihir. A., and Dharmapala, D. (2009). Corporate tax avoidance and firm value. *The Review of Economics and Statistics*, 91(3), 537-546.
- Desai, Mihir A., and James R. Hines Jr. (2002). Expectations and expatriations: Tracing the causes and consequences of corporate inversions. *National Bureau of Economic Research*.
- DiFronzo, M., Dubert, C., Penn, O., Collins, M., Sotos, D., Lohnes, T., & Boyer, M. (2016). Temporary Regulations Further Restrict Inversions. *Journal of International Taxation*, 27(6), 48.
- Frydam, Carola, and Raven E. Saks. (2010). Executive Compensation: A New View from a Long-Term Perspective, 1936-2005. *The Review of Financial Studies*, 23(5), 2099–2138.
- Godar, Susan H., Patricia J. O'Connor, and Virginia Anne Taylor. (2005). Evaluating the ethics of inversion. *Journal of business ethics*, 61, 1-6.

Do Some Stakeholders in Publicly Traded Firms Benefit at the Expense of Others as a Result of Corporate Inversions?

Senior Capstone Project for Ryan Hitchcock

- International Taxation. (2016). New rules target corporate inversions. *Federal Tax Practitioner's Newsletter*, 30(5), 1-3.
- Kleinbard, T.O.P.E.D. (2016). International Tax Reform Begins at Home. *U.S. House of Representatives Committee on Ways and Means*.
- Marian, Omri. (2015). Home-Country Effects of Corporate Inversions. *Washington Law Review*.
- Marples, D. J., & Gravelle, J. G. (2014). Corporate expatriation, inversions, and mergers: Tax issues.
- McClure, J. H. (2014). Corporate Inversions, Stateless Income, and Transfer Pricing. *Journal of International Taxation*, 25(11), 16-27,47.
- Mider, Z., & Drucker, J. (2016). Tax Inversion. Retrieved from <https://www.bloomberg.com/quicktake/tax-inversion>
- Novack, J. (2014). The Tax Inversion Rush in One Handy Graphic. Retrieved from http://blogs-images.forbes.com/janetnovack/files/2014/09/0909_industry-atlas-tax-dodgers_17001.jpg
- McIntyre, R., Phillips, R., Baxandall, P. (2015). "Offshore Shell Games 2014: The Use of Offshore Tax Havens by Fortune 500 Companies." *Citizens for Tax Justice and US PIRG Education Fund*.
- Rao, N. (2015). Corporate Inversions and Economic Performance. *NYU Wagner Research Paper*.
- Ruffner, W. G., C.P.A., & Wilkes, K., J.D. (2015). Actions on inversions impede but don't resolve trend. *Pennsylvania CPA Journal*, 85(4), 16-17.
- Sheppard, Hale E. (2002). Fight or Flight of US-Based Multinational Businesses: Analyzing the Causes for, Effects of, and Solutions to the Corporate Inversion Trend. *Nw. J. Int'l L. & Bus*, 23, 551.
- Slemrod, Joel. (2004). The economics of corporate tax selfishness. *National Bureau of Economic Research*.
- Tracking Tax Runaways. (2016). *BloombergView*. Retrieved from <https://www.bloomberg.com/graphics/tax-inversion-tracker/>.
- Wood, R. W. (2016). Hunt for inversions. *M & A Tax Report*, 24(6), 1-4.

Do Some Stakeholders in Publicly Traded Firms Benefit at the Expense of Others as a Result of Corporate Inversions?

Senior Capstone Project for Ryan Hitchcock

Ways and Means Committee Democrats. (2016). A Spike in Corporate Inversions. Retrieved from https://democrats-waysandmeans.house.gov/sites/democrats-waysandmeans.house.gov/files/A_Spike_in_Corporate_Inversions.pdf

Yang, J. G. S., & Aquilino, F. J. (2016). Corporate inversion strategies versus anti-inversion treasury regulations. *Taxes*, 94(8), 47-53.

Yang, J. G. S., & Lauricella, L. J. (2015). What is a corporate inversion? *Practical Tax Strategies*, 95(5), 214-221.

Yang, J. G. S., MPh, C.P.A., C.M.A. (2016). Corporate inversions. *Journal of International Taxation*, 27(6), 36-47.