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Motivations and Implications of Corporate Tax Inversion

Brendan R. Dowling

Trinity College, brendan.dowling@trincoll.edu

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Motivations and Implications of Corporate Tax Inversion

By

Brendan R. Dowling

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Abstract

The phenomenon of tax inversion has returned to the public eye as American companies in every sector explore expatriation as a means to avoid the highest corporate tax rate in the developed world. In response to billions of dollars in tax revenue flowing overseas, legislators have proposed dozens of laws over the past four decades aimed at curbing these transactions, but to no avail. In 2015 alone, tens of billions of dollars' worth of tax inversion transactions were announced. This thesis will analyze the motivations behind corporate emigration using both legal and economic framework, and will model this behavior using Probit analysis. We conclude that run rate tax differentials, rather than the distinction between worldwide and territorial systems, motivate corporate inversion. We suggest that a tax holiday would limit the short-term benefits of expatriation and provide time for a new administration to work with Congress to enact a competitive reduction in the corporate income tax rate.

Dedication

My parents, Ellen and Phil Dowling, have been the ultimate supporters and motivators throughout my entire academic journey. I cannot thank them enough for the amazing learning opportunities they have given me.

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Trinity College is an institution that encourages students to collaborate with faculty to pursue their intellectual curiosities, and the College consistently attracts professors who offer expert guidance on students' academic journeys. It has been an honor to learn from the entire community, and I am extremely grateful for the College's environment that fosters intellectual and personal growth.

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I. Introduction

For decades, political and business leaders have voiced their displeasure with the American tax code. While the tax policies of the United States' economic competitors have developed and evolved along with their economies, the tax system in the United States has remained out-of-touch, both in its content and complexity. The contents of its over 4 million words¹ detail a system unique to the developed world that puts American firms at a disadvantage to their international competitors. Two key idiosyncrasies are that the United States employs a worldwide tax system, rather than the territorial approach found in almost every other major economy, and the United States has the third-highest corporate tax rate in the developed world². In response, several companies domiciled in the United States have employed creative legal tactics to avoid what they consider an uncompetitive tax environment.

Economies around the world tax foreign earnings of domestic corporations using two main approaches. Most of the world uses a *territorial* tax system in which foreign earnings are taxed in their source location, and there is "...little or no associated tax obligation to the parent firm's home country"³. This means, for example, that if a German subsidiary of a British company earns a profit, it will be either free or extremely cheap to repatriate those profits to the British parent company. The United States, however, is unique in that it employs a *worldwide* tax system in which "...the earnings of foreign subsidiaries are taxed in both the foreign jurisdiction

¹ Wood (2014) explains that since 1913, the tax code has grown from 27 to 9,000 pages containing 4 million words. He adds, "from 2001-2002 alone, there were 4,600 changes, more than one a day"

² Pomerleau and Lundeen (2014) add that only Puerto Rico and the United Arab Emirates have tax rates higher than the 39.1% corporate income tax rate in the United States, which is 14.1 percentage points higher than the OECD average

³ Bird, Edwards and Shevlin (2015)

where they are earned, and in the multinational's home country"⁴. This means that if those same German profits belonged to the subsidiary of an American, rather than British, parent company, they would be subject to the same German taxes, but also an additional American tax upon repatriation. In other words, a worldwide system entails double taxation of foreign earnings, while a territorial tax system taxes profits only at the source. As the Tax Foundation, a nonpartisan tax research group, states, "this (American) system allows corporations to compete internationally, but places a significant burden on corporations that want to reinvest income back into America"⁵.

As a result of this disadvantage, American companies are forced to make the decision of whether it is more beneficial to repatriate foreign earnings or simply leave those earnings offshore, classifying them as "locked-out earnings", avoiding the repatriation tax. Consider a multinational presented with a domestic investment opportunity that will be financed by foreign profits. Presented with the exact same investment profile, that opportunity will have a lower net present value for an American firm than one of its competitors operating under a territorial system because it entails additional taxation to which international firms' foreign profits are not subjected. Ultimately, this makes it less likely that American multinationals reinvest foreign profits in the United States, and in turn less likely for those companies to conduct research and create jobs in the U.S. A study conducted by Bloomberg using securities filings confirms this, concluding that as of the end of 2014, American companies held approximately \$2.1 trillion overseas, a figure which at over 12% of 2014 gross domestic⁶ product reflects the significant

⁴ Bird, Edwards and Shevlin (2015)

⁵ Pomerleau (2015) notes that "today there are only 6 countries that tax corporations on their worldwide income"

⁶ World Bank data for 2014 United States Gross Domestic Product found at

incentive for American companies to avoid double taxation at the highest rate in the developed world⁷.

While it is common practice for U.S. multinationals to keep international profits offshore, a technique known as deferral⁸, an increasing number of companies are taking even more extreme measures to avoid taxes. A “tax inversion” is a technique by which an American company expatriates its tax headquarters through a complex legal maneuver, and since 1982 over 75 formerly U.S. multinationals have reestablished their tax domiciles in a foreign country. The Committee on Ways and Means in the U.S. House of Representatives estimates that inversions will cost the government tens of billions of dollars in the coming years⁹, and consequentially this issue has reached the highest levels of debate.

The boardrooms of Fortune 500 companies do not have a responsibility to protect government coffers, though, and despite political backlash and name-calling, executives continue to look for ways to minimize their firms’ tax obligations. Some leaders have suggested that paying taxes is a patriotic duty, but boards of directors instead subscribe to the ideas of judicial philosopher Learned Hand, who in *Commissioner v. Newman* stated, “...there is nothing sinister in so arranging one’s affairs as to keep taxes as low as possible. Everybody does so, rich or poor; and all do right, for nobody owes any public duty to pay more than the law demands: taxes are enforced exactions, not voluntary contributions. To demand more in the name of morals is mere cant”¹⁰. Firms certainly do not voluntarily pay more taxes in the name of patriotism, so as

⁷ Rubin (2015)

⁸ Surowiecki (2016) suggests that deferral causes “...the worst of both worlds. Since so much of what companies earn remains abroad and untaxable, we (the U.S.) raise only a small amount of revenue from our global system”

⁹ U.S. House of Representatives Committee on Ways and Means (2016)

¹⁰ Chirelstein (1986)

Learned Hand writes, companies using the law to reduce their tax bill are not acting unpatriotic, and should not be shamed for doing so. In this line of reasoning, if a firm identifies a strategic opportunity within the boundaries of the law to limit its tax burden without materially impacting business operations, it is well within its rights to do so. Similar to the way in which companies organize their distribution operations to maximize profits, firms organize their legal structure in the most efficient way possible. The key takeaway is that while some political leaders suggest that inversions exploit “loopholes”¹² that let multinationals avoid paying their fair share, tax inversions are completely legal and have withstood countless legal battles. To the extent that these loopholes exist, it is elected officials’ collective responsibility to close them, and in fact, they are the only people with the legal power to do so.

Arguments against Corporate Tax Inversion

Many legislators, though, rather than working to change the tax code that has made the United States less competitive than its international competitors, suggest that corporations in fact do have a patriotic duty to pay the high American corporate tax rate, which stands almost 15 percentage points higher than the OECD average. This issue has risen to the highest levels of the American government, and has become so important that it’s reached the Oval Office.

In a summer 2014 weekly address, President Barack Obama finally brought the issue of tax inversions to the American public. During a tumultuous time both domestically and abroad,

¹¹ Learned Hand is widely considered one of the greatest judges ever and “...was nicknamed the ‘10th man on the U.S. Supreme Court’ because of his towering intellect and sterling reputation” according to Grondahl (2013)

¹² This excerpt is from the Clinton Campaign (2016), but both Democrats and Republicans have discussed tax inversions in almost every debate, frequently suggesting that companies are exploiting loopholes in the tax code; Donald Trump has been adamant in his stance that he does not blame these companies - he blames legislative incompetence - while most other candidates have faulted these companies for leaving the U.S.

tax policy and its implications took center stage. Describing the increasing popularity of tax inversion transactions, the President alerted the American public,

“...There’s a trend that threatens to undermine the progress (the American people) have helped make. Even as corporate profits are as high as ever, a small but growing group of big corporations are fleeing the country to get out of paying taxes. They’re keeping most of their business inside the United States, but they’re basically renouncing their citizenship and declaring that they’re based somewhere else, just to avoid paying their fair share” - President Barack Obama, July 26, 2014 Weekly Address¹³

Tax inversions, which President Obama went on to describe in his address as “unpatriotic” and “totally wrong”, are a type of Mergers and Acquisition (M&A) transaction in which an American company purchases an international company, and in so doing structures itself as a subsidiary of a foreign parent company. The acquirer, which in a traditional M&A transaction would be the parent company of the newly acquired target, in effect flips, or inverts, its corporate structure so that it is no longer an American company, but an American subsidiary of the newly established international parent. After completion of these transactions, the firm’s physical headquarters often remains in the United States, its executives continue to operate in the United States, and by most measures the firm conducts itself in the exact same fashion as any other American company after a cross-border acquisition. The key difference that demands the American public’s attention is that for tax purposes, it now has a different address. Essentially, it is business as usual, except for a symbolic address change on a piece of paper that helps these multinational firms save millions, and in some cases, billions.

¹³ From the Remarks of President Obama (2014) published on the White House website

The President claimed that firms have a patriotic duty to pay American taxes because they have benefited from the business environment in the United States for many years, and owe it to the American people to continue paying United States taxes. The idea is that after incorporating in the United States, as a firm grows it will benefit from the favorable American business climate. American property rights, its education system, infrastructure, regulatory environment and well-established capital markets are just a few of the distinctions that have made the United States the largest economy in the world and a fantastic environment for growth relative to the rest of the globe. Certainly, these benefits are the result of significant fiscal policy commitments, and at the same time, the country benefits as the growing company creates more jobs, transfers skills, and, of course, pays its own taxes. In this framework, the public and private sector have a mutually beneficial relationship: private companies use the American business environment as a growth catalyst, and the firms repay the country by paying their fair share of taxes as their bottom line continues to grow.

Tax inversion, by this line of reasoning, represents a complete betrayal of the American public and the firm's duty as a corporate citizen, and has earned some businesses that employ this strategy the distinction of "corporate deserter"¹⁴ from political figures such as Democratic Presidential candidate Hillary Clinton¹⁵. President Obama accuses these companies of taking advantage of the business environment in the United States to grow, and once it's time to pay the country back as a major corporation, leaving town for a country with lower taxes.

¹⁴ Gleckman (2014)

¹⁵ Hillary Clinton's campaign website states, "these corporations benefit from access to the most talented workforce in the world, billions of dollars in public investment in basic research, and the robust American legal system, yet trade their U.S. identity to avoid paying their fair share."

Considerations about the Troubling Trend behind Inversions

Lost in the debate about the ethics of inversion is a troubling trend that threatens the very foundation of the United States economy. Boardrooms that used to debate in which American city to build a new factory are now debating to which foreign country they should relocate their headquarters. Rather than invest domestically, Fortune 500 companies are spending hundreds of millions of dollars on advice from lawyers and bankers on the most efficient way to leave the country. Business leaders in every sector have decided that the United States no longer represents a competitive economic environment, and are instead relocating from the country once considered to have the best economic opportunity in the world. It is important to note, though, that the estimate of a \$20 billion loss over the next decade¹⁶ is a rounding error in a multi-trillion dollar federal budget. The real threat that arises from tax inversions is the increasingly prevalent sentiment that the United States no longer represents an attractive country to conduct business. As a 2015 study of tax systems concluded, “as the economic differences between the United States and other countries narrow, the ability of the United States to sustain U.S. exceptionalism will also decline”¹⁷.

In a clear recognition of the increasingly competitive international tax environment, America’s economic competitors are evolving their tax code, in the process exacerbating the adverse impact of Congressional inaction. In the past decade, major trade partners such as the United Kingdom and Japan have shifted to modified versions of territorial tax systems, and economies like Ireland have entire divisions of their federal government dedicated to wooing

¹⁶ This estimate used by Walker (2014) comes from “a nonpartisan congressional research panel (that) said the U.S. would receive an additional \$19.46 billion over a decade if most new tax inversions were essentially halted with proposed changes to the tax code”

¹⁷ Surowiecki (2016) cites that capital is more mobile, the rest of the world has caught up to U.S. shareholder laws, and the U.S. is no longer such a huge part of the world economy

American companies. While other factors such as wages and trade agreements also incentivize companies to relocate their domiciles, these policy changes suggest that the entire international community is capitalizing on the uncompetitive business environment in the United States.

Due to the tremendous advancements in technology that enable colleagues to stay connected all over the globe, the economic landscape is such that it really doesn't matter where a multinational firm is headquartered. Barriers to cross-border capital flow continue to fall, and the modern multinational firm treats the entire globe as its headquarters rather than only the country in which it incorporated. The confluence of these dynamics means that the advantages of incorporating in the United States are diminishing.

With this in mind, and understanding that these trends are extremely unlikely to reverse, this means that the incentive for American companies to invert will be present for at least the near term. Perhaps due to tax incentives, companies are buying targets that they would not normally consider simply because it enables inversion. While the tax benefits to inversion are significant, hundreds of millions of dollars on a run rate basis in some cases, they may not offset the significant risks inherent in any M&A activity, namely, execution and integration risk. An interesting topic, then, is the extent to which targets in tax inversions differ from targets in traditional cross-border M&A transactions with an American acquirer.

This analysis compares tax inversion with traditional cross-border M&A in an effort to discern if tax benefits, rather than traditional strategic factors, motivate these transactions. Tax inversions, particularly in their current form as part of acquisitions, are a relatively recent phenomenon in the field of corporate finance, and there exists a significant opportunity for new research. Previous studies have focused on *inbound* acquisitions and the impact of the level of

locked-out earnings on M&A, but this analysis is unique in that it focuses on corporate tax rate differentials and their impact on *outbound* acquisition.

The following section will provide a review of existing literature on tax inversions and merger motivation, and Section 3 will detail the birth and evolution of tax inversions. Section 4 considers the Net Present Value (NPV) rule in the context of tax inversion and introduces the idea of “inversion elasticity”. Section 5 offers parallels between the leveraged buyout wave of the 1980s and the increasing number of tax inversions over the past decade, and explains that both can be understood using a similar framework. Econometric analysis begins in Section 6 which details the various hypotheses and methods of data collection, and Section 7 defines the variables. Interpretation of the model is considered in Section 8, and Section 9 concludes.

II. Literature Review

There exists a substantial literature base discussing the extent to which taxes impact corporate behavior; however, tax inversion literature is still in its early stages, largely because the technique is relatively new in the field of corporate finance, and because the structure of tax inversion has evolved in response to several decades of legislation. After several rounds of legislation followed by creativity from lawyers and bankers, the modern corporate inversion is when an American company acquires or merges with a foreign company, and in the process adopts a new domicile in a new low-tax country. The modern inversion will be the focus of this thesis, and existing literature offers a foundation on which to build. While the following papers and articles do not explicitly address the modern inversion, they offer methodologies for understanding M&A behavior and research suggesting that the motivations for inversion are both present and significant.

Much of the previous research has been focused on the impact of locked-out earnings on acquisition behavior. Because the United States tax code includes a tax on foreign earnings upon repatriation, many American companies choose to permanently keep cash overseas, called “locked-out” earnings, to avoid further taxation using a provision in the tax code called “deferral”. Bird, Edwards and Shelvin (2015) find an economically significant relationship between the amount of locked-out earnings an American company has and the likelihood that a foreign firm acquires it. Using a Probit model and a measure of the reported permanently reinvested earnings as a proxy for locked-out earnings, the authors conclude that American acquirers are at a disadvantage to foreign acquirers when pursuing an American target. Certainly this conclusion follows expectations; firms in economies with lower tax rates will value American targets higher than domestic acquirers because they will have access to more of the

target's capital after the transaction, and thus will offer a higher price for the rights to that capital base. In effect, the American tax code makes American acquisitions less valuable because domestic buyers will realize lower after-tax cash flow than an international buyer. The United States' high corporate tax rate of 35% paired with its unique worldwide, as opposed to territorial, tax system combine to make it very difficult for American companies to compete with foreign bidders.

According to an empirical study conducted by Feld et al. (2013), this dynamic is also at play in the context of outbound cross-border acquisitions. The authors compare the number of outbound M&A transactions in Japan and the United Kingdom before each economy switched from an international to a territorial tax system in 2009 with the number of outbound transactions after the switch, and estimate that Japanese acquisitions abroad increased by 31.9%, while outbound acquisitions executed by firms domiciled in the United Kingdom increased by only 3.9%. In other words, the switch from a worldwide to territorial system increased outbound acquisitions significantly. The authors explain the difference in the level of the policy change's impact by stating that "the economic importance of this effect depends on the level of the domestic profit tax rate in place"¹⁸. In this situation, Japan's tax rate was 40.9%, more than 10% higher than the United Kingdom's, explaining the difference in magnitude. The statistically significant increase in investment activity indicates that firms have the appetite for investment, but are hesitant due to uncompetitive tax regimes. Building off of this conclusion, this means that American firms are not pursuing as much outbound investment as they would because of the United States tax code. The authors claim that a similar policy reform in the United States would increase outbound acquisitions by slightly over 17%.

¹⁸ Excerpt from the "Non-Technical Summary" section of the paper

Given that American firms are less inclined to engage in outbound M&A due to the repatriation tax, it is possible that the repatriation tax also has an adverse effect on the outbound M&A that does take place. Certainly, as companies hold more cash overseas to avoid the high cost of repatriation, they need to find ways to put that money to work. Edwards et al. (2014) demonstrate that the current U.S. tax code, through its incentives to keep cash offshore, causes firms to use these funds for less profitable acquisitions. In other words, locked-out foreign earnings “burns a hole” in multinational corporations’ pockets, and they invest that cash in less attractive targets. Considering the execution and integration risk inherent in any M&A activity, this is a surprising, but perhaps logical conclusion. Rather than incur a cash drag on returns by pursuing no M&A at all, companies would rather purchase less-attractive firms. This means that the American tax system forces multinationals based in the United States to pursue less attractive investment opportunities abroad rather than bring that money back to the U.S. and invest in their home economy.

A key aspect of the authors’ analysis focused on the extent to which this relationship existed during the brief tax holiday, an aspect of the American Jobs Creation Act of 2004 that “...allowed firms to repatriate earnings previously designated as permanently reinvested earnings at a temporarily decreased tax rate of 5.25 percent (from 35 percent)”¹⁹. Their conclusion offered further proof that the repatriation tax stifles outbound M&A, and is a disadvantage to American companies, as the authors did not observe a significant negative relationship between the amount of locked out earnings and acquisition profitability. This means that when the repatriation tax was cut by 30 percentage points, firms were able to pursue more profitable acquisitions. In this instance, it is reasonable to conclude that the tax holiday was responsible for the sudden increase

¹⁹ American Jobs Creation Act of 2004

in frequency of profitable investments by U.S. multinationals, but tax inversions also exhibit periods of increased frequency followed by periods of inactivity²⁰.

Stearns and Allan (1996) suggest that periods of high merger activity can be broken down using the idea of “waves”, or a herd mentality. Using the leveraged buyout wave inspired by pioneers at the private equity firm KKR during the 1980s, the authors illustrate the phenomenon of a new technique taking the corporate world by storm and motivating leadership to pursue new strategy. The authors identify *challengers*, who are the most likely to exploit new economic and political conditions as a means to grow and profit, and *members*, top corporations and financial institutions that control the institutional economic system. According to their theory, challengers take advantage of simultaneous economic and political changes first, and after letting the challengers test the political and capital markets landscape, the members decide to act. Abrupt changes in the institutional setting eventually result in the end of merger waves. Section 5 offers an updated application of this theory to the tax inversion wave that has occurred over the last five years, highlighting parallels between this wave and the LBO wave of the 1980s.

Certainly, in any merger or acquisition, the acquirer views the target as valuable in some way and worth pursuing. Harris et al. (1982) characterize two schools of thought describing merger activity. The first theory uses capital market valuations of corporations to shed light on their attractiveness as a target, suggesting that the acquirer believes they will successfully realize more value than the target’s current capital market valuation. The second school uses managerial actions, not necessarily motivated by capital markets, to explain acquisition behavior. For example, a manager looking to create an empire may engage in an acquisition that increases market share, but will not necessarily be profitable. These are of course two very specific schools

²⁰ Bloomberg News (2015)

of thought, and many mergers are no doubt motivated by a combination of these factors. After a careful review of prior literature, the authors conclude that a consistent view of important characteristics that make certain firms merger targets does not exist.

In their paper, Harris et al. use empirical analysis to discern what measureable factors make certain firms takeover targets while others are not. Using a sample of firms from the 1970s consisting of the same proportion of acquired vs. non-acquired firms as the whole economy, the authors conduct a Probit analysis in an effort to determine which, if any, financial and product market variables impact whether a firm was acquired or not. The authors reach a perhaps expected conclusion that at different times, different characteristics matter. While firms with low price to earnings ratios and smaller firms are more likely to be acquired during any time period, other financial variables play roles in certain time periods. For example, during the LBO boom, low debt levels made firms more attractive, likely because there was more room to use leverage in the acquisition in hopes of increasing returns to equity investors.

While interesting, these results are far from complete. As the authors note, “perhaps most crucial is the realization that a merger is a combination of two separate entities”²¹. With this in mind, not only is the acquirer assessing the target, but investors in the target must determine what constitutes an acceptable offer. Still, though, this analysis provides an interesting model to use in the context of tax inversion transactions. Because tax inversions have been taking place for several years, analysis can include the cyclical variables such as liquidity, capital structure and size, but it will be interesting to discern if tax rate differentials are statistically significant across the entire sample. Using this framework, it will be possible to learn whether inversion motivates the transactions or if inversion is simply “the icing on the cake”.

²¹ Harris et al. (1982) p. 183

One such inversion that has garnered public attention, and frankly public consternation, is Burger King's 2014 acquisition of Tim Hortons, a Canadian coffee chain, and the consequential relocation of its corporate address to Canada. In the realm of "Americana", it is difficult to find anything more iconic than a hamburger, and the American press did not view the transaction favorably, suggesting that tax savings motivated the deal. In a 2015 case study, Chris Capurso uses this transaction as a mechanism to discuss the phenomenon of a tax inversion, with a focus on tax policy. Specifically, he identifies the verbiage ambiguity in the American Jobs Creation Act of 2004, and suggests that its focus on physical location misses the true purpose of tax inversions, namely, that companies change their tax domicile - not their physical domicile.

Additionally, Capurso highlights the Treasury Department regulations announced in September of 2014, which were aimed at eliminating "hopscotch loans", or loans between foreign subsidiaries of a U.S. company, and language that made it more difficult for American companies to shrink in size prior to announcing the transaction in order to qualify for inversion. While both of these are necessary and relevant measures to deter corporate expatriation, it is important to note that these measures have not been effective in stopping these types of transactions, as 2015 saw 6 completed inversions and another 4 announced that are pending²². Interestingly, though, similar to government announcements in the early 2000s, Obama and Treasury Secretary Jack Lew have announced that further action is coming, and may be retroactive. Capurso also offers his own hybrid proposal to solve the tax inversion issue, but as I will discuss in later sections, this solution would not be effective.

While Capurso provides an excellent foundation on which to build policy analysis, Auerbach and Reishus (1988) provide perhaps the most thorough and effective analysis of the

²² Bloomberg News (2015)

role taxation plays in merger decisions. The authors conclude that the only two potential tax benefits that have some impact on merger activity are the extent to which tax losses and credits are used by the acquiring company to offset the taxable income of target firms, and the ability to increase an asset base, and thus, depreciation, without paying a capital gains tax. They included other tax variables in their analysis, but ultimately concluded that the potential increase in interest deductions due to higher debt levels and tax losses and credits in the target firm are not significant. These conclusions are hardly convincing, but at the time in which this study was conducted, there had only been one completed tax inversion, and for the next several years tax inversions took place by restructuring one firm's organization rather than as part of a cross-border M&A transaction.

This introduces the clear opportunity to build on this model, using the difference in tax rates and tax systems in international, rather than domestic, mergers to explain corporate investor behavior. The authors use similar nontax control variables, specifically, industry, valuation, and size. These are all effective and certainly include relevant variables in the context of merger decisions, but due to the fact that this study takes place over several years, it is important to control for economic conditions, as merger activity is extremely cyclical. Auerbach and Reishus's work will provide an important foundation on which to build.

Reuven S. Avi-Yonah, Professor and Director of the International Tax Program at the University of Michigan Law School, over the past several years has offered expert interpretation of previous legislation aimed at curbing corporate inversions. In his 2002 paper titled "For Haven's Sake: Reflections on Inversion Transactions", the author explains that the increased frequency and size of inversions in the late 1990s and early 2000s "...involves the increased

market acceptance of the transaction”²³. After citing the sizable post inversion savings, \$400 million in the case of Tyco International, Avi-Yonah (2002) suggests that it took so long for other companies to follow suit because the capital markets landscape was still uncertain, and companies first wanted to see how investors would welcome this maneuver, but once it became clear that “...there were no market downsides to inversion” many other companies used the technique, and legislators introduced several bills aimed at curbing inversion activity.

Avi-Yonah maintains that any proposal must account for corporate residence in a meaningful and legitimate way, but it may be possible that “...technological developments have reduced corporate residence to meaningless”. In his critique of the six proposed Congressional bills at the time of writing, he suggests that “...the focus on ‘substantial business activities’ in the foreign jurisdiction is likely to lead to endless arguments about what is substantial enough”. He also goes on to explain that public shareholder composition is not necessarily related to what makes a multinational firm U.S.-based, and even if it did, the fluid nature of public markets means that the composition changes by the second, making it nearly impossible to use this metric as a definition for corporate residence.

In a 2015 continuation of his legal approach to tax inversion research, Avi-Yonah identifies three main drivers of inversions, and suggests that the Treasury’s November 2015 proposal fails to adequately address these motivations, and is “...unlikely to stem the tide”. He states that the first merger wave was driven by motivation “...to avoid Subpart F restrictions on the receipt of passive income and base company income”²⁴, which is the practice of using deferral to avoid double taxation²⁵. As an inverted company, the new entity would no longer

²³ p. 1794

²⁴ Avi-Yonah (2015) p. 2

²⁵ Internal Revenue Service Subpart F

have the incentive to use the deferral clause to avoid repatriation tax because the repatriation tax would no longer exist. Additionally, Avi-Yonah states, the “...new foreign parent could engage in earnings stripping transactions with old US parent”²⁶, further limiting tax liabilities and increasing cash flow. He maintains that both of these benefits have been present throughout the history of tax inversions, but that in the most recent wave a technique called “hopscotch” loans surfaced as an additional motivation. These loans are structured as a loan to the new foreign parent, avoiding the repatriation tax, as a means to distribute dividends or return cash to shareholders without high tax consequences.

Citing the fact that most of Perrigo’s (a pharmaceutical company that inverted to Ireland) income is in the United States and the fact that companies with huge amounts of locked-out earnings, such as Apple, Google and Amazon, are not inverting, Avi-Yonah suggests that hopscotch transactions are not a key motivation. After all, Notice 2014-52 addressed this issue, and tax inversions are still taking place with increasing frequency. His contention is that “...the main driver for most inversions...is earnings stripping”²⁷, essentially treating American profits as loans to the foreign parent company that are not subjected to the 35% tax rate. This is an important motivation for the econometric analysis that is detailed in Section 6; rather than use locked-out earnings as the motivation for inversion, the difference in tax rates between the target country and the United States is considered. Avi-Yonah’s research provides a legal and theoretical framework with which to understand the motivations behind tax inversion, and the quantitative analysis in this piece will offer econometric support to this hypothesis.

In its continuing effort to inform public debate, Marples and Gravelle of the Congressional Research Service published a report (2015) outlining the extent to which proposed

²⁶ Avi-Yonah (2015) p. 2

²⁷ Avi-Yonah (2015) p. 3

legislation has impacted the so-called “second wave” of tax inversions since the financial crisis. The authors contend that there are two distinct policy options that have been offered in response to the most recent wave; one is an overhaul of the entire United States tax code, and the other is specific legislation aimed at curbing tax-motivated cross-border M&A. With respect to changing the entire tax system, the authors suggest that it would be difficult to reduce the corporate tax rate enough to limit inversions, and shifting from a worldwide to a territorial tax system “...could worsen the profit-shifting that already exists among multinational firms”²⁸. The latter argument, though, is somewhat lacking. The authors raise theoretical arguments as to why shifting to a territorial system might be an issue, but fail to highlight the arguments as to why it may be a net positive for the U.S. economy.

The following section offers a brief history of tax inversion, explains the legislation that caused the structure of inversions to change over the past three decades, and provides analysis of the potential effectiveness of legislation currently in Congress.

²⁸ Excerpt from the Summary section

III. History of Tax Inversions

Pre-Crisis Tax Inversions

Despite the relatively short history of corporate expatriation, there have been several different forms of tax inversion since McDermott International, a construction and engineering company based out of New Orleans, first flipped its corporate structure to become a Panamanian firm in 1982²⁹. High oil prices during the stagflation of the late 1970s helped the firm earn massive contracts to manufacture offshore drilling equipment serving the oil and gas industry around the entire world. So high were their international profits that they were actually problematic; internal estimates concluded that bringing those profits back to the U.S. parent company would cost approximately \$220 million. Because so much of McDermott's business was based on building and designing drilling machinery outside of the U.S., bringing foreign-earned profits back to the American parent company was a particularly expensive and consequential endeavor.

McDermott's tax director decided to reach out to the firm's lawyers at the famous New York firm Davis Polk & Wardwell to see if there was any maneuver that could enable the company to avoid paying such a heavy fee to simply move profits from offshore accounts to the American parent. Using every ounce of creativity and an extremely thorough understanding of international tax law and the U.S. tax code, they finally decided to pursue what would eventually be coined the "Panama Scoot". McDermott announced the first corporate inversion in late 1982, engaging in a transaction "...in which its Panamanian subsidiary would acquire the American parent company, in effect making the Panamanian company the parent form and the American company one of its subsidiaries"³⁰. This was a brand new approach to tax-efficient multinational

²⁹ Skadden Client Presentation (2015)

³⁰ Hines (1991) p. 463

structuring, and as Bloomberg reporter Zachary Mider writes, it was “...like a daughter legally adopting her own mother...”³¹.

Using this brand new technique, the firm was able to circumvent Subpart F of the United States tax code, which for so many years made it expensive for multinational firms to repatriate foreign profits. Describing methods of operation for U.S. multinationals, the Internal Revenue Service states that “one type of entity through which foreign operations may be conducted is a foreign corporation”³². Prior to inversion, McDermott International used its Panamanian subsidiary as the parent corporation for its entire international operations. That is, it decided to funnel all of its foreign profits into the Panamanian corporation before repatriation to the ultimate United States parent; the IRS describes this technique, explaining, “a major tax advantage of using a foreign corporation to conduct foreign operations is income tax deferral: generally, U.S. tax on the income of a foreign corporation is deferred until the income is distributed as a dividend or otherwise repatriated by the foreign corporation to its U.S. shareholders”³³.

Congress eventually ruled that this type of deferral was unfair because U.S. taxpayers attempted to shift as much profit as possible to these foreign corporations in low-tax areas. In response, Subpart F was enacted, eliminating the opportunity to defer certain types of income and “...treating a U.S. shareholder of a controlled foreign corporation (CFC) as if it actually received its proportionate share of certain categories of the corporation’s current earnings and profits”³⁴. With so much foreign-based income accruing, McDermott’s tax inversion seemed to

³¹ Mider (2014)

³² Internal Revenue Service Subpart F Overview Slides

³³ id

³⁴ While eliminating this practice certainly makes it more difficult for multinationals to avoid paying U.S. taxes, it also means that the Internal Revenue Code in a sense ignores fiscal

be an ideal solution; rather than the Panamanian company being subjected to Subpart F as a CFC of the American parent company, the American company became a CFC of the Panamanian parent. Post inversion, McDermott operated in a more favorable international tax environment because “Panama’s corporate tax operates on a territorial basis, so it excludes from taxation the foreign (non-Panama) earnings of its resident corporations” (Hines 1991). This brand new technique would take the debate on international tax regimes by storm, and it seemed as if McDermott had struck a gold mine. As Charles Kraus, McDermott’s former tax director, stated in an interview with Mider, “there was a loophole in the law, and we capitalized on it legitimately”³⁵ (Mider 2014).

Adding fuel to the fire that immediately followed was the fact that McDermott didn’t even pretend that there were strategic reasons for restructuring their business – it was a tax play all the way. In its 1982 deal prospectus, the firm explained that “the principal purpose of the reorganization is to enable the McDermott Group to retain, reinvest and redeploy earnings from operations outside the United States without subjecting such earnings to United States income tax”. Where nowadays companies at least use terms like “structural synergy” or “organizational improvements” to avoid the appearance of financial engineering, McDermott was explicit in its reasoning. The firm even went on to say that because Panama was a less stable political and social climate than the United States, the firm “...will not have any significant assets located in Panama”³⁶. The company was almost asking for the lengthy legal battle that ensued.

Almost immediately following McDermott’s announcement, the Tax Court purported to claim that while the cash transaction was permissible, the exchange of shares between the

sovereignty and claims taxation rights to all profits, regardless of where they were earned (from Subpart F Overview Slides)

³⁵ This certainly evokes Learned Hand’s philosophy from decades earlier

³⁶ Harris 1991 p. 464

Panamanian subsidiary and American parent company did not constitute assets as defined in Section 368³⁷, and therefore did not constitute a legal acquisition. Presented with this brand new transaction structure, “the Tax Court conceded that the issue was before it ‘for the first time’ and that ‘commentators are split on the issue’”³⁸. That this was an entirely new phenomenon and the court’s decision would set an historical precedent offers an explanation as to why it took a seven-year legal battle with the IRS to finally ratify the transaction. In 1989, the first corporate inversion was finally ratified as legal, and the “...transaction was tax-free to the corporation”³⁹.

The corporate world was stunned that McDermott was able to drastically shrink its tax bill simply by using an existing international subsidiary to buy the American parent company, and surely boardrooms in every sector studied the maneuver to see if it was possible to copy it. Fearing mass corporate exodus and a sudden erosion of tax revenues, the IRS amended Section 1248, which “...was originally enacted as an anti-avoidance measure as part of Subpart F”⁴⁰ with subsection (i). Section 1248(i) represents the first government response to tax inversion, and redefined the nature of inversions; henceforth, the law would assume that the American parent company already owned all of the stock of its international subsidiaries and that the stock was already transferred to shareholders of the parent company, and forced the parent “...to recognize and pay taxes on dividend income with respect to the previously untaxed earnings and profits of (the foreign subsidiary)”⁴¹. While this would put a stop to McDermott-like tax inversions, the floodgates certainly had opened.

³⁷ <https://www.irs.gov/pub/irs-drop/rr-00-5.pdf>

³⁸ *Bhada v. Commissioner Internal Revenue Service* (1989)

³⁹ Hwang (2015) p. 824

⁴⁰ Fenwick & West (2013) p. 3

⁴¹ Hwang (2015) p. 823

Section 1248(i) and extremely negative press releases conspired to halt corporate inversions for a decade⁴², but in 1994, a consumer products company called Helen of Troy, formerly of El Paso, Texas, took center stage. Section 1248(i) eliminated the tax-free nature of inversions by taxing a CFC's profits as if they were dividends to the parent company, essentially eliminating the tax benefits to the transaction, so in response, Helen of Troy "...set up a brand new non-CFC corporation that had no earnings and no profits"⁴³. That Helen of Troy's newly created Bermudan subsidiary had no profits meant that there wouldn't be any taxes levied on the transaction; Section 1248(i) mandated taxes on the stock exchange, but since the American parent was exchanging stock with a brand new Bermudan non-CFC that had no profits to tax, the transaction was effectively tax-free. This creative structure sidestepped 1248(i), and again, the firm did not mince words about its motivation for expatriation as evidenced by the transaction prospectus, which stated that Helen of Troy's new structure enabled "...greater flexibility in structuring its international business activities to minimize its non-U.S. income taxes"⁴⁴. It is difficult to overestimate the threat that this inversion posed; the Bermudan⁴⁵ subsidiary used to facilitate the transaction was brand new, introducing the potential that any American company can choose any country in the world, create a brand new non-CFC subsidiary, and relocate its tax domicile just as Helen of Troy had done. Certainly, the IRS and Treasury needed to act quickly to prevent a mass exodus of American businesses.

Echoing the same haste and frustration that existed after McDermott's departure, the U.S. government quickly responded to this creative structure with an amendment to Section 367(a) of the Internal Revenue Code (IRC), which details the treatment of outbound transfers of property

⁴² Wood (2014)

⁴³ Hwang (2015) p. 824

⁴⁴ id

⁴⁵ The corporate tax rate in Bermuda is 0%, certainly qualifying the country as a tax haven

to a foreign corporation, and specifically “...nonrecognition transactions such as capital contributions, corporate liquidations, and reorganizations”⁴⁶. Under the law at the time of transaction, Helen of Troy’s inversion was not taxable to U.S. shareholders, so to prevent further tax-motivated reorganizations, the IRS issued Notice 94-46, providing “...that the transfer of stock or securities of a domestic corporation by a U.S. person to a foreign corporation is taxable if all U.S. transferors own in the aggregate 50 percent or more ... of the transferee corporation immediately after the exchange”⁴⁷. This regulation served to limit the benefits of inversion, and also proved that the IRS had the power to act swiftly to curb any perceived unfair activity in the early days of corporate expatriation.

The first true wave of tax inversions followed Helen of Troy’s lead during the late 1990s and early 2000s, likely due to the confluence of several dynamics including the stock price crash, which greatly diminished or even eliminated capital gains taxes, pressure on managers to find a way to increase value, and the fact that lawyers and bankers continued to innovate new ways to provide a competitive advantage for their corporate clients^{48,49}.

It is crucial to use a wide lens to understand the aggregate impact of a tax inversion on the United States. Increased earnings stripping after inversion reduced American tax liabilities⁵⁰, and certainly the transition to an ex-U.S. territorial system eliminated American tax liabilities on ex-U.S. profits. Residual U.S. profits were still subjected to American taxes post-inversion, and it is possible that after freeing up offshore cash and operating under a lower tax rate, the inverted

⁴⁶ Internal Revenue Code Part 367 Overview
https://www.irs.gov/pub/int_practice_units/ISO9411_08_01.pdf

⁴⁷ Herzfeld (2014)

⁴⁸ Hwang (2015)

⁴⁹ As later chapters will discuss, law firms and investment banks have earned hundreds of millions advising on tax inversions

⁵⁰ Treasury (2007)

company will pursue new investment opportunities in the United States that were previously unprofitable. Even if the company employs earnings-stripping to reduce the income of these new projects, this new investment will have a positive growth effect on the relatively highly-skilled and wealthy American economy⁵¹. Continued Congressional opposition suggests, however, that the negative impacts of inversion outweighed these potential benefits as legislators introduced wide-sweeping regulation in the early 2000s that served to temporarily halt inversions.

After several years of posturing and governmental warnings that inverters would be punished, Congress enacted the American Jobs Creation Act of 2004 (AJCA) that added Section 7874 to the IRC in an attempt to finally close the door through which dozens of American companies had left. Section 7874 specifically addressed the fact that despite renouncing their corporate citizenship, inverted firms still operate the same way they did when they were based out of the United States. To combat the superficial nature of these firms being characterized as international, Section 7874 instead classifies these businesses as “surrogate foreign corporations” if one of three conditions are met: shareholders of the domestic corporation hold at least 80% of the new international business, the new company does not have a substantial business presence in its new domicile, or the new foreign entity acquires substantially all of the American business⁵². If one of these conditions were met, then the firm would be taxed in the same way as a domestic corporation (although if shareholders of the domestic corporation owned between 60% and 80% of the new international business, then certain gains taxes were imposed that diminished inversion profitability, but not to the same extent as above-80% ownership mandates).

⁵¹ Carkovic and Levine (2002) conclude that FDI has a positive impact on growth in economies with relatively high levels of education and wealth, both of which apply to the United States

⁵² U.S. Code 7874

The Section 7874 addition made it extremely difficult for a company to complete an inversion using only business lines owned by the inverting business, whether in the same vein as McDermott using an existing subsidiary, or as Helen of Troy, creating a new subsidiary in a tax haven. The AJCA was the culmination of federal attempts to curb inversions, and even through the financial crisis, it was successful. There were only 3 tax inversions between 2002 and 2009⁵³, and it seemed as if the various rounds of regulatory responses to inversion had been successful. This moratorium would not last, though, and it is now appropriate to address the most recent form of tax inversion.

Post-Crisis Tax Inversions and Policy Considerations

Many companies were unable to invert because they could not prove that they had substantial business activity in the new country. To circumvent these Section 7874 requirements, the modern, post-crisis inversion is characterized by an American firm buying an international company with substantial business activity in the desired country. Whereas previously, American firms either used an existing subsidiary or established a new foreign subsidiary, they are now purchasing existing foreign companies to ensure “...that there is not too much ownership continuity between the old U.S. company and the new combined company”⁵⁴. At face value, this may appear to limit the American company’s choice of a new domicile to countries in which targets are domiciled, but in order to circumvent this issue and keep the entire world as an option, many companies are combining “...with a smaller existing foreign corporation using a

⁵³ Only one of these inversions, Argonaut Group’s 2007 expatriation, involved an M&A transaction. Lazard’s 2005 IPO structured the financial services provider as a Bermudan company, and Western Goldfield redomiciled in Canada in 2007

⁵⁴ Hwang (2015) p. 831

new foreign parent whose tax residence is different from that of the existing foreign corporation”⁵⁵.

Since 2009, dozens of companies have used this tactic as a means to leave the country, but whereas pure financial engineering motivated the preceding inversions, the fact that this new structure is part of an M&A transaction introduces the potential to at least hide the inversion behind strategic rationale. In its relocation to Canada through the acquisition of Tim Horton’s, Burger King Chairman Alex Behring explicitly stated, “this is not a tax-driven deal”⁵⁶. CF Industries, one of the largest fertilizer companies in the world, used the phrase “~\$500 million of annual after-tax run-rate synergies from optimization of operations, capital and corporate structure”⁵⁷ to explain the benefits of its acquisition of OCI NV as only partially related to taxes.

This poses a challenge for regulators because they do not want to make it difficult for companies to engage in actual strategic investments; Burger King’s acquisition, for example, while structured as a tax inversion, is part of an acquisition-focused growth model, with the burger chain expanding its market share in the breakfast space by purchasing an international coffee and doughnuts business. Executives at both firms argue that the main reason for using Canada as the new company’s domicile was because that location would make it more likely that Canadian regulators would allow the transaction^{58,59}.

⁵⁵ Treasury (2014)

⁵⁶ Das and Hoffman (2014)

⁵⁷ CF Industries 2015 Presentation from the Citigroup Basic Materials Conference found at <https://www.snl.com/Cache/1001201056.PDF?Y=&O=PDF&D=&FID=1001201056&T=&IID=4533245>

⁵⁸ Leonard (2014)

⁵⁹ Many have suggested that this is simply an excuse, but companies even suggesting non-tax motivation stands in stark contrast to the rhetoric from early inverters such as McDermott and Helen of Troy

That has not stopped the Obama administration, though; in September 2014, the Treasury responded to Congressional inaction by announcing guidance aimed at limiting inversion benefits. The notice specifically addressed the issue of companies creating subsidiaries in tax havens, adding a rule that "...will prevent U.S. firms from essentially cherry-picking a tax-friendly country in which to relocate their tax residence"⁶⁰. The notice also limited the ability of a company to inflate the value of the foreign target in an attempt to stay under the 80% threshold, but the language echoes the prevalent ambiguity problem in anti-inversion legislation, stating, "...the anti-stuffing rules apply to any assets acquired with a principal purpose of avoiding the 80-percent rule..."⁶¹. This is an intuitive rule, but it is extremely difficult to prove that an asset is acquired principally to avoid the 80-percent rule given that there are many different reasons to buy assets.

These measures, along with slight changes to the interpretation of passive income and capital gains for CFC stockholders, were a failure; while there was a brief intermission during which lawyers and bankers interpreted the Treasury Notice, the Obama administration failed to address earnings stripping, one of the most significant benefits of inversion⁶². In the year following the Treasury Notice, six companies announced inversions and several more have followed their lead. Additionally, and equally as troubling, "...foreign takeovers of U.S. firms, which have the same effect of preventing the IRS from capturing world-wide earnings...exceeded \$379 billion..." in the first nine months of 2015.

Clearly, despite legislative evolution over the thirty-year history of tax inversions, the private sector has also evolved, and continues to find ways to circumvent Treasury and

⁶⁰ Treasury (2015)

⁶¹ id

⁶² Gleckman (2014) "Treasury's New Rules May Slow, but won't Stop Corporate Tax Inversions"

Congressional measures aimed at eliminating tax-based expatriation. If progress is to be made, it is necessary to understand the economic motivations behind inversion rather than rely almost exclusively on legal measures to patch up a porous Internal Tax Code.

Fiscal Implications

The United States used to be able to attract businesses despite using a tax code unique to the entire world; businesses felt that it was worth the cost of paying a nominal 35% corporate tax rate in a worldwide system for the benefits of being incorporated in the United States. However, as shareholder protection rights, capital mobility, trade agreements and labor conditions have changed over the past several decades, corporate emigration proves that the United States tax system imposes a disproportionately high cost on domestic businesses. In other words, many businesses no longer feel that the benefits of American incorporation warrant existence under such a unique and potentially harmful tax code.

This means that to offer a competitive environment moving forward, the United States either needs to increase the benefits it offers to domestic corporations or decrease the cost those corporations pay for American incorporation. To a certain extent, the worldwide system suggests that there exists American exceptionalism: the United States has the only government in the developed world that feels it has the right to tax profits outside of its borders, ignoring fiscal sovereignty.

It can be argued that this worldwide system enables less discipline in American fiscal policy; the territorial tax system allows firms to benefit from lower-tax jurisdictions, and thus provides incentives for governments to charge the lowest feasible tax rate to encourage firms, both domestic and international, to conduct business within their borders. One way to feasibly

charge a lower tax rate is to exhibit fiscal discipline: if the government is responsible in its expenditures, it will not require as much revenue to fund those expenditures, and thus can charge a lower tax rate.

Conversely, “worldwide tax systems mean that companies always pay the highest possible tax – either the tax of their home country or the tax of the country in which they are operating”⁶³. This entails an explicit guarantee to the country of domicile that no matter where domestic companies conduct business, the government will still earn tax revenues. In other words, for countries with a worldwide system there is not the same incentive to have a low tax rate to attract business activity with respect to domestic firms because tax revenues are not contingent upon domestic activity. Because the incentive to lower the tax rate does not have as much of an effect on these governments, that means that there also is not the same incentive for fiscal discipline. As long as companies continue to incorporate in worldwide-system economies and as long as domestic corporations don’t leave, these governments are unlikely to change their tax codes.

To the extent that tax inversion represents corporate dissatisfaction with the American tax system, the Internal Revenue Code must adapt to the global economy in order to stay competitive. If the United States wants to keep the largest, most important, and most profitable companies domestic, it must consider lowering the corporate tax rate, abandoning the worldwide tax system for a territorial system, or a combination of both. With an understanding of the idiosyncrasies plaguing the American tax code and a thorough history of tax inversion, it is now appropriate to discuss the economic impact of these options.

⁶³ Mitchell (2003)

Economic Considerations of Policy Changes

Cutting the corporate tax rate from its current level of 35% and transitioning from a worldwide to a territorial tax system both represent significant steps towards conformity with the methods economic competitors use to tax domestic corporations, and both would have a significant impact on the way in which both domestic and international firms would conduct business in the United States. There are certainly a wide range of implications for both policies, but this analysis will be focused on the respective impact of each policy in the context of corporate expatriation.

If the Internal Revenue Code were amended to decrease the corporate tax rate from 35% on a permanent basis, it would likely result in increased investment in the United States by both domestic and foreign companies. On a country by country basis, there are several dynamics at play. Consider Equation 1 below, depicting the tax differential incentive between the United States and any country X:

Equation 1

$$INCENTIVE_X = USA_RATE_{NEW} - CORPORATE_RATE_X$$

If the new rate were higher than any Country X, then there remains a positive incentive for American companies to depart for X, but if the incentive is lower than it currently stands, and the remaining incentive is directly related to the level of the tax cut: the higher the tax cut and lower USA_RATE_{NEW} , the smaller the remaining incentive to depart for X. This is true both on a run-rate and repatriation basis; as the tax differential decreases between the United States and X, both run-rate and deferral benefits to operating in X instead of the U.S. decrease, making inversion less likely to the extent that these benefits motivate inversion.

If the new rate were even with X, then the company would essentially operate under a territorial regime with respect to profits originating in X; a worldwide system requires a tax liability equal to the tax differential between the two countries upon repatriation, but if that difference is zero, then there is no additional charge. This means both on a run-rate and deferral basis there is no explicit incentive with respect to taxes to leave the United States for X because $INCENTIVE_X = 0$, so if a company departed under this condition it would likely be due to another motivation such as wage dynamics or trade agreements.

If the United States were to cut the corporate tax rate to a level below the corporate rate in X, then there would actually be a cost to inversion, because in this instance the American company would be reestablishing its domicile in a higher-tax economy. In this instance $INCENTIVE_X < 0$, so inversion would be unlikely. For example, if the U.S. kept the worldwide system but reduced its corporate tax rate to 15%, which is below the British rate of 20%, the remaining incentive would be to operate on a territorial basis with respect to any countries with a tax rate below 15%. However, at that point, the difference is extremely small, and would require relocating to a higher-tax domicile.

Introducing new legislation that lowers the corporate tax rate, therefore, would serve to decrease the benefits of inversion by reducing the cost of repatriating foreign profits and reducing tax liabilities on a run-rate basis. Additionally, with respect to each country for which the new tax rate is at least as low, the decreased tax rate would have the same effect as instituting a territorial tax regime. It is also important to note that currently, $INCENTIVE_X > 0$ with respect to almost every country, and the longer it takes for elected officials to lower the tax rate, the higher the present value of that incentive. This notion will be further developed in the following chapter.

Leaving the corporate tax rate at 35% but instituting a territorial regime would introduce different economic dynamics. It would eliminate the need for deferral and would encourage firms to repatriate profits, but there are contrasting motivations regarding how to use those profits. While eliminating repatriation tax will make domestic investments financed by foreign income less costly, it also makes foreign investments more profitable from the perspective of the American parent company, because repatriating foreign profits would be much cheaper. This means that American companies may be encouraged to pursue more foreign investments because it would realize the benefits of the corporate tax rate differentials with respect to each foreign country.

Perhaps even more significantly, eliminating the repatriation tax will encourage earnings stripping, one of the key motivations for tax inversions; while the companies would remain American, a territorial tax regime may encourage domestic companies to engage in similar behavior as inverted companies, using intra-company loans and transfer pricing techniques to make it appear that American profits are actually foreign, and thus avoid the residual 35% domestic rate. Similar to the way in which an inversion is superficial headquarters relocation, shifting to a territorial tax regime while the tax rate stands at 35% would allow domestic companies to behave similar to foreign companies while remaining superficially American.

Each of these represents an extreme revision to the decades-old American tax code, and especially considering Congressional gridlock, neither policy is likely to be enacted in the near term. While legislators, economists and lawyers debate about the proper approach to tax code modernization, America's best and largest companies will continue to pursue tax inversions. In the short term, Congress and the executive branch would do well to take a lesson from the AJCA of 2004 and allow a tax holiday.

American companies don't necessarily want to abandon the country in which they incorporated; in many cases, this causes bad publicity, and the overwhelming sentiment in corporate America is a willingness to cooperate with legislators to create a mutually beneficial code⁶⁴. Enacting a short-term tax holiday would buy time to find a real, long-term solution. Allowing American firms to repatriate deferred income at a low cost would decrease the short-term benefits of inversion, and potentially eliminate inversions for several years similar to the way in which inversions briefly stopped after the AJCA was enacted.

This idea faces Congressional opposition, though, as "...U.S. Senator Carl Levin called a tax holiday for repatriated offshore profits a failed policy that shouldn't be repeated"⁶⁵, citing job cuts during the 2004 holiday. Many of these job cuts occurred as a byproduct of synergies after American companies used repatriated profits to engage in M&A⁶⁶. Levin fails to take into account the fact that during this policy, not one American company engaged in a tax inversion⁶⁷, meaning that the tax holiday saved the government billions of dollars in tax revenue.

It is likely that over the coming years the United States will need to enact some form of a territorial system and decrease the corporate tax rate, but in the short term, a tax holiday will serve to prevent corporate expatriation, bring potentially trillions of dollars back to the United States⁶⁸, and buy time for Congress to engage with the business community to establish a tax

⁶⁴ Elected officials and corporate executives all agree that the American tax code is not competitive, but have not yet found a way to compromise

⁶⁵ Rubin and Zajac (2011)

⁶⁶ These job cuts, while difficult for employees, made these firms more profitable, increased returns to shareholders, and on a long-term basis likely improved the economy as long as those workers were able to find new employment

⁶⁷ Bloomberg News (2015)

⁶⁸ As previously mentioned, at the end of 2014 American companies held approximately \$2.1 trillion in offshore profits, a number that has almost certainly increased in the past 2 years

system that helps the United States remain competitive in an increasingly borderless global economy.

While legislators continue to weigh the costs and benefits of amending the Internal Revenue Code, companies also engage in careful cost-benefit analysis when deciding if expatriation is the right decision. When evaluating M&A opportunities, similar to the approach towards other investments, firms will engage in Net Present Value (NPV) analysis. However, the uniqueness of tax inversion transactions introduces brand new NPV considerations, and it is important to understand these considerations when evaluating motivations behind the maneuver. The following section will offer theories about NPV considerations unique to tax inversions, and introduce the idea of “inversion elasticity”.

IV. Net Present Value Theory and Tax Inversion

The NPV rule is an extremely intuitive approach to investment decisions and is taught in almost every introductory corporate finance course. An investment's NPV is the difference between the present value of the benefits and the present value of the costs, and the NPV rule simply states "...that you should discard projects with negative NPVs and undertake all projects with positive NPVs"⁶⁹. The structure of all of the inputs for the NPV of M&A, particularly cross-border M&A, is extremely intricate and has been discussed extensively in prior literature. Tax inversion, though, represents a relatively new brand of NPV considerations, specifically in the context of discerning the impact of inversion on profits.

As previously mentioned, the tax benefits to inversion are significant. In some cases firms are able to reduce their tax liabilities by more than 20 percentage points, saving hundreds of millions of dollars on a run-rate basis. This means that each year the firm is saving (from Equation 1) $INCENTIVE_X * PROFITS_t$ every year. Assuming that profits will grow, the present value of these savings with respect to the parent company is calculated by Equation 2:

Equation 2

$$PV(BENEFITS) = \frac{INCENTIVE_X * PROFITS_t}{i - g} \left(1 - \left(\frac{(1 + g)}{(1 + i)} \right)^n \right) + LOE_t$$

where i is the discount rate specific to each potential inverter and g is the profit rate of growth. N represents the number of years for which the tax differential exists, and the higher the value of n , the higher the present value of the benefits of inversion⁷⁰. LOE_t is the current balance

⁶⁹ Ross (1995) adds that all positive NPV decisions should be made in the context of each other, that is, one should only take on a project if it doesn't prevent pursuing another, more profitable opportunity

⁷⁰ The value of n will vary from firm to firm, depending on their belief about when, or if, Congress will act to reduce the corporate tax rate

of locked-out earnings, and does not need to be discounted because the firm will realize those profits immediately upon inversion.

There are three main sources of inversion costs, and before discussing each, the present value of the cost of inversion is modeled in Equation 3 below:

Equation 3

$$PV(COSTS) = PV(INVERSION ELASTICITY) - PV(ADVISORY) - PV(INTEGRATION)$$

where $PV(ADVISORY)$ is simply how much a company will have to pay lawyers, bankers and consultants for their advice and expertise in structuring the inversion. This cost can range from very little to hundreds of millions of dollars depending on which firm is enlisted and the size of the transaction.

Inversion Elasticity

To understand the first term in the above equation, we use the term “inversion elasticity” to explain how a firm’s profits will change after inversion. Elasticity is an extremely basic economic term that every ECON 101 student learns in their first few classes. Put simply, it is the extent to which some dependent variable changes in response to a change in an independent variable, for example, the extent to which the quantity demanded of a good changes in response to a change in its price. For the purposes of this analysis, we define inversion elasticity as the extent to which profits⁷¹ change in response to a change in domicile:

Equation 4

$$INVERSION ELASTICITY = \frac{PROFITS_{USA} - PROFITS_{INVERTED}}{\Delta DOMICILE}$$

⁷¹ Profits, in this theory, are more akin to revenues; we have discussed at length the impact of inversion on reducing costs, but this theory will be the first attempt in this analysis to discuss the extent to which inversion impacts a business’ revenues

Firms with largely retail customers who have readily available substitutes have high inversion elasticities, and therefore do not frequently engage in corporate inversions. Walgreens is an excellent example of this phenomenon⁷²; after announcing its intent to relocate to Switzerland after purchasing Alliance Boots in an attempt to save \$4 billion over 5 years⁷³, in August 2014 “Walgreen CEO Greg Wasson said a move to Switzerland was ‘not the right course of action’ as it would have led to ‘potential consumer backlash...’”⁷⁴. Walgreens is a household name serving largely retail customers, and has several competitors such as CVS which customers could use in its place. So intense was the public backlash that many customers actually planned to boycott the chain if it went through with the inversion⁷⁵. This means that the present value of inversion elasticity is large for firms such as Walgreens who serve retail customers and compete with a large number of substitute companies.

The pharmaceutical industry also serves largely retail customers in search of medication, but the important distinction is that there are not readily available substitutes. A consumer could easily substitute another pharmacy in place of Walgreens if they were upset that the company was leaving the U.S. That same consumer certainly would not stop taking their medication if the pharmaceutical company that made their drugs were leaving the United States for Ireland, though. If someone needs medicine to contain a life-threatening illness, it doesn’t matter where the drug maker is paying taxes. Politicians and the general public can, and do, freely insult pharmaceutical companies who plan to pursue corporate inversions, but it is not very likely that the move will have an impact on their bottom line. This means that despite serving the retail

⁷² Stanley Works, which abandoned its attempt to relocate to Bermuda in 2002, is also an excellent example of high inversion elasticity

⁷³ Americans for Tax Fairness (2014)

⁷⁴ Kaufman (2014)

⁷⁵ Lim (2014)

market, the present value of inversion elasticity is not very high for pharmaceutical companies because they do not operate in a market with widely available substitute goods.

It is clear that some companies get more bad press than others; while Pfizer has recently been lambasted by the press and public for moving to Ireland, very little was made of Terex announcing that it would move its tax domicile to Finland in its merger with Konecranes. This is partially due to the fact that Terex, the crane maker, does not serve retail customers. Terex is certainly not a household name despite its over \$6 billion in annual sales, and the commercial customers to which it sells cranes generally do not care where the company's tax headquarters is located when they sign multimillion dollar contracts with the company. This means that for large companies serving the commercial, rather than retail, customer, inversion elasticity is very low; it is unlikely that tax inversion will have a significant negative impact on operations.

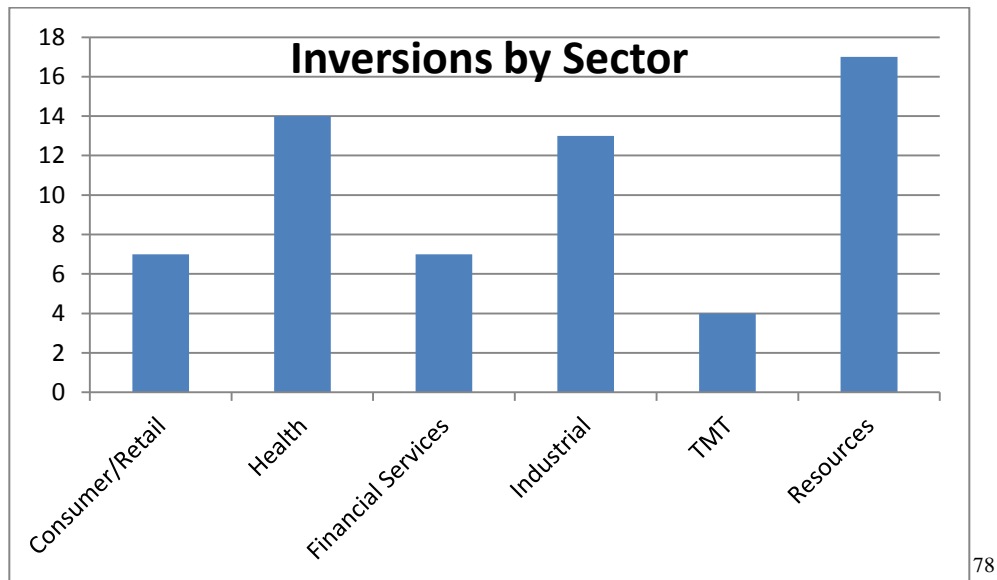
It is important to note that these dynamics have changed over time. The U.S. government enacted legislation increasing inversion elasticity for companies that operate outside of the retail space, and ironically McDermott International, the first corporate inverter, had to spin off its American subsidiary to continue doing business with the Navy after "...Congress passed a law banning federal contracts for inverted companies"⁷⁶. The Navy is certainly not a retail customer, but because of this new law inversion became extremely costly for any company that relies on contracts from any branch of the United States government. It is also possible that inversion elasticity actually has a positive effect on a company's profits; perhaps relocating to a new country will cater to a more receptive consumer base and sales will actually increase post-inversion⁷⁷.

⁷⁶ Mider (2014)

⁷⁷ Subtracting $\frac{PROFITS_{USA} - PROFITS_{INVERTED}}{\Delta DOMICILE}$ when $PROFITS_{USA} - PROFITS_{INVERTED} < 0$ would have a positive effect on the NPV of inversion

Graph 1 below illustrates the number of inversions that have taken place by industry; the stark contrast between the number of inversions in the health, industrial and resources sectors compared to inversions in more retail-friendly financial services, retail and technology, media and telecom industries certainly supports the notion that historically, companies with retail consumers and readily available substitutes have a higher inversion elasticity.

Graph 1



We can also consider inversion elasticity as a means to understand inversion as an arbitrage opportunity. Arbitrage is taking advantage of price differentials between identical assets, for example, buying an asset at a low price on one exchange and selling the exact same asset for a higher price on another. We can view tax regimes as prices, and the assets in this instance are the economic implications of being domiciled in each country. Let us use the recent migration from the United States to Ireland as an example of this theory.

⁷⁸ This data uses the Thompson Reuters sample available at <http://graphics.thomsonreuters.com/14/inversion/index.html>

The price corresponding to the “asset” of American incorporation is a 35% tax rate in a worldwide system, and the price of Irish incorporation is a 12.5% tax rate in a system that is effectively territorial. Several decades ago, when the United States clearly represented a more hospitable environment for ambitious entrepreneurs in the form of political stability, business and property laws, advanced capital markets and a relatively competent workforce, the asset of American incorporation was certainly more valuable than the asset of Irish incorporation which was plagued by relatively weak capital markets, a weak monetary system, political instability and a relatively less-skilled work force. The difference in asset quality explained the difference in prices, in other words, the difference in tax regimes, the same way it is more expensive to eat at the Capital Grille than Mather Hall. This means that inversion elasticity with respect to earnings was high; while American firms would benefit from a less burdensome tax regime, operating in the Irish economy versus the United States would have had such an adverse impact on profits as to make the maneuver no longer profitable. Arbitrage theory would not apply in this case, because there was a clear difference in asset quality.

However, it is clear that over the past several decades the prices have stayed the same while the difference in the quality of the assets has changed. The United States still offers domestic firms an excellent business climate⁷⁹ relative to the rest of the world, but that relative advantage has decreased significantly, especially with respect to countries like Ireland. The Irish economy has greatly improved its infrastructure, capital markets and quality of employees, reducing inversion elasticity with respect to earnings. Now, relocating to Ireland would no longer have a clearly adverse impact on earnings, and may in fact increase earnings as the Irish workforce and political climate improved, a phenomenon we define as low inversion elasticity.

⁷⁹ Removing taxes from the equation

The transition from high to low inversion elasticity means that the value of the asset, an Irish domicile, has increased, and to the extent that a firm's business operations would not change if it were operated in Ireland as opposed to the U.S., the value of each asset is essentially equal, despite the persistent price differential in the form of a relatively burdensome American tax regime. We interpret corporate migration from the U.S. to Ireland, then as firms responding to this arbitrage opportunity. In this framework, the asset of business operations is the exact same in the United States as it is in Ireland. By engaging in tax inversion, we conclude that American companies sell the asset with the high price (American incorporation) and simultaneously buy the asset with the low price (reestablishing with an Irish domicile), pocketing the difference (increased returns on a run rate basis).

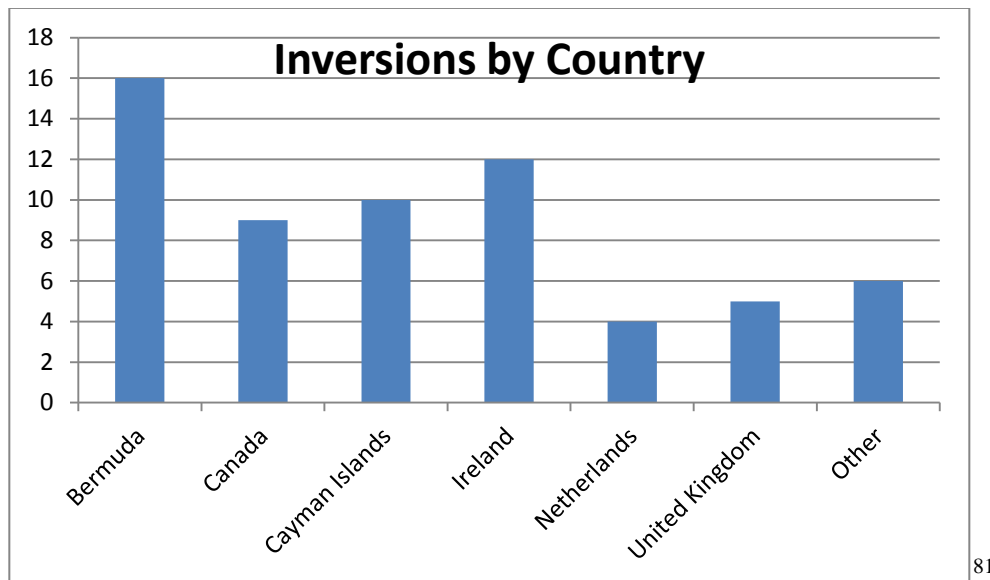
Integration Risk

In earlier sections we discussed the fact that early inversions were conducted intra-company; that is, the firm either used an existing subsidiary or created a new one, in a sense keeping it "all in the family". The early inversion did not involve a separate entity. Fast forward to the post-crisis inversion that requires the acquisition of or merger with an entirely different company; while these mergers and acquisitions involve companies in the same line of business, there still exist the same execution and integration risk inherent in any M&A transaction. That tax inversions require merger with a large enough company to qualify for relocation and are cross-border by nature makes them even riskier on an execution and integration basis. As former Morgan Stanley Investment Banking Chairman and Perella Weinberg founder Joseph R. Perella writes, "a successful merger is not the result of the contracts and documents binding

organizations together; rather, it is a function of the implicit agreements governing the conduct of all individuals involved and the effects the new organization will have on these individuals”⁸⁰.

As the chapter discussing the model’s sample will explain, companies pursuing inversions will do so with targets that minimize execution and integration risk. Acquiring a company that operates in the same space is an important first step; it would be much more difficult to integrate Burger King and Volkswagen, for example, than Burger King and Tim Horton’s. Interestingly, it also appears that firms try to mitigate integration risk by purchasing targets in English-speaking countries, or countries in which a large portion of the population speak English, as evidenced by Graph 2 below:

Graph 2



By purchasing targets in the same industry that have the same consumer base and speak the same language, American companies pursuing tax inversion are able to mitigate integration risk and maximize the net present value of inversion.

⁸⁰ Excerpt from the Forward of “Applied Mergers and Acquisitions” by Robert F. Bruner (2004)

⁸¹ This data uses the Thompson Reuters sample available at <http://graphics.thomsonreuters.com/14/inversion/index.html>

It is important at this juncture to revisit legislation discussed in Section 3 mandating that in order for a cross-border transaction to qualify for inversion, the American buyer cannot hold more than 80% of the pro forma entity, and if it owns between 60% and 80% of NewCo the financial benefits are greatly reduced. This means that for companies considering inversion, there is a very limited number of businesses they can acquire that will enable them to accomplish their goal.

The integration process is much easier after acquiring a small company versus a larger one; consider the integration process after a hypothetical Starbucks acquisition of Peter B's versus the integration between Starbucks and Dunkin Donuts, for example. Certainly the onboarding process for Peter B's would be easier because there are fewer employees, locations and operations to integrate, as opposed to Dunkin Donuts, which has complex global systems dictating its operations, thousands of stores around the world and a deeply-rooted culture. The integration costs and risks for the large merger, therefore, are much more significant than they are for the small acquisition.

Due to Section 7874 of the Internal Revenue Code, every transaction that is structured as a tax inversion requires an American firm to buy a large international competitor, which serves to increase integration risk. Where there was essentially zero integration risk in McDermott's inversion because it was an intra-company transaction⁸², tax inversion regulations have evolved to introduce significant integration risks in an attempt to decrease the NPV of inversion, and ultimately reduce the number of inversions that take place.

⁸² In fact, until the AJCA caused tax inversions to evolve from intra-company structural adjustments to complex cross-border M&A, there was very little, if any, integration risk in tax inversions

It is important to note, also, that these integration risks begin as soon as the transaction is announced. By agreeing to become the target of an inversion, the foreign company makes its shareholders vulnerable to dynamics related to the deal, for example, being unable to overcome regulatory and antitrust hurdles. On April 4, 2016, the U.S. Treasury announced brand new legislation aimed at curbing post-inversion earnings stripping and the extent to which prior inversions and acquisitions can be included in target valuation⁸³. Allergan's stock immediately dropped over 15% after the news, cutting its market capitalization by about \$18 billion⁸⁴, an example of the volatility to which targets are susceptible. To mitigate this risk and increase the likelihood that the target's shareholders will approve the transaction, high-profile deals often include a termination fee that would come into play if the transaction was terminated for any reason; if Pfizer and Allergan ultimately decide to cut ties, this will entail a \$400 million dollar payment for Pfizer⁸⁵⁸⁶. This means that even if the transaction doesn't close, Pfizer is liable to pay \$400 million and endure all of the negative press, very clear and tangible examples of the large potential costs of inversion.

After thousands of hours' worth of analysis from lawyers, bankers, consultants and internal strategy teams, it is ultimately up to company executives and boards of directors to pull the trigger on the transaction. In the rare occasion that a firm decides to pursue a tax inversion, this means that their analysis yields a positive NPV; in other words, the tax rate differential and

⁸³ The higher the target valuation the inverter is able to prove, the higher the likelihood it stays under the 60% threshold, enabling the company to reap the pro forma benefits of inversion. There was a great deal of speculation that this measure specifically targeted Pfizer's inversion to Ireland through its merger with Allergan

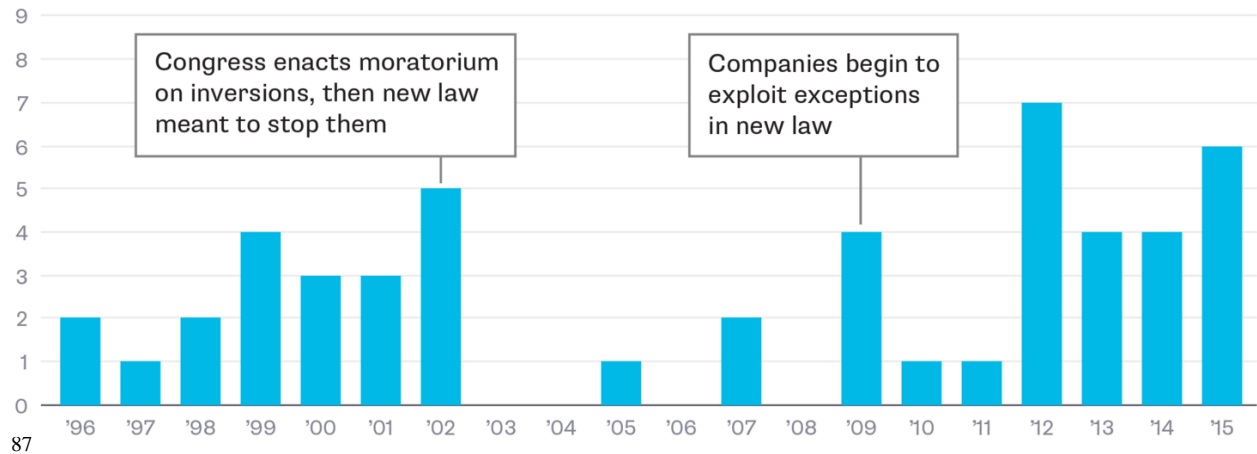
⁸⁴ Allergan's shares were down 19% in pre-market trading, but recovered slightly when the market opened from Petroff (2016)

⁸⁵ McCracken (2016)

⁸⁶ Syngenta rejected Monsanto's takeover offer in the summer of 2015 despite a \$2 billion takeover fee (Kaskey 2016)

locked-out earnings benefits outweigh the potentially adverse impacts of inversion elasticity and integration risk, along with agency costs.

Graph 3



Despite the fact that these NPV exist constantly, it is clear that their dynamics cause boards of directors to behave in a sort of “wave” mentality. Graph 3 above clearly depicts that over the past two decades, there have been periods of high activity followed by lulls, and considering the fact that several tax inversions have already been announced in 2016, it is reasonable to say that we are currently in a period of high activity. The following section examines the nature of this herd-like mentality using Stearns and Allan’s 1996 model of the 1980s LBO wave.

⁸⁷ Using data from Bloomberg News (2015)

V. An Updated Application of Merger Wave Theory

Stearns and Allan's Institutional Environments Theory

In their innovative 1996 paper, “Economic Behavior in Institutional Environments: The Corporate Merger Wave of the 1980s”, Stearns and Allan study the political and economic climates in which merger activity increases. This analysis leads to a useful model for understanding what causes and ends the merger waves that clearly exist⁸⁸. Similar to the argument in earlier chapters of this thesis, the authors claim that “...the socio-political setting in which mergers take place is as important as the economic setting” (p. 701).

Stearns and Allan claim that economic and political changes must occur simultaneously in order for a merger wave to begin, and cite an increase in available capital in the context of relaxed regulatory bodies. They define two different categories of firms who act in response to these changes; “challengers” are economic entities who operate near the establishment, but are fringe players who have an incentive to shake things up. “Members” are constrained by expectations and have an incentive to protect their reputation. They have earned a place in the establishment, and do not have an incentive to shake things up because they have reached the pinnacle of corporate America.

Challengers experiment with new innovations, and use mergers as a means to gain market share in ways that members cannot. To the extent that challengers succeed in shocking the system, members will “...start to adopt the challengers’ methods so as to cash in on the larger profits they offer. When this happens, the innovations diffuse quickly throughout the business

⁸⁸ In fact, “...over 50 percent of all merger activity in the United States in the last 100 years has taken place during one of four merger waves” (p. 699)

community” (p. 703). In the context of the LBO wave of the 1980s, the political and economic dynamics that enabled the wave were threefold⁸⁹.

Discussion of the 1980s LBO Wave

On the economic front, as the international economy expanded, borders lost their meaning and capital markets became much more global, presenting much easier access to funds for firms looking to expand. The key regulatory relaxation that fueled the merger wave was the Garn-St Germain Depository Institutions Act of 1982⁹⁰ that allowed thrift institutions to make a wider range of investments. As Stearns and Allan explain, “once limited to investing primarily in single-family homes, the act enabled S&Ls (savings and loan institutions) to make business loans and to invest in corporate securities” (p. 704). Finally, the massive growth of mutual funds⁹¹ represents investor appetite for opportunities to put money to work.

The confluence of these dynamics presented challengers with a fantastic opportunity to earn massive profits simply by feeding investor appetite. Two firms, Drexel Burnham Lambert (DBL) and Kohlberg Kravis Roberts (KKR) combined their financial innovations to greatly expand access to capital and what appeared to be the perfect investment opportunity for that capital. KKR pioneered the LBO, a transaction in which “...a company is acquired by a specialized investment firm (in this case, KKR) using a relatively small portion of equity and a relatively large portion of outside debt financing”⁹² during the 1960s. The idea is that by holding the acquired company as an investment for several years and using its free cash flow to pay

⁸⁹ The following three dynamics are discussed on pp. 704-705

⁹⁰ See <https://www.fdic.gov/regulations/laws/rules/8000-4100.html>

⁹¹ A fivefold increase from \$46 billion in assets under management to almost \$300 billion between 1978 and 1983 (p. 704)

⁹² Kaplan and Stromberg (2008)

down the debt, returns to equity shareholders will provide above-market returns. They were unable to grow as quickly as possible, though, because it was very difficult to find enough outside debt financing, or leverage.

Enter DBL, which was responsible for turning the junk bond market into a newly viable and highly liquid source of investment opportunities for investors, such as mutual funds, and capital for borrowers, such as financial sponsors trying to engage in LBOs⁹³. These two financial agents, one a market-maker and one an investor group, were both challengers who exploited opportunities in the political and economic landscapes along with innovation in the form of junk bonds to fuel the merger wave that ensued.

Stearns and Allan suggest that changes in the economic and political landscape end merger waves, and political and economic headwinds surfaced in the late 1980s that would do just that. The authors explain the way in which the political environment changed, stating, “the Bush Administration’s and Congress’s new posturing put the business community on notice that it no longer had carte blanche” (p. 713). At the same time, the October 1987 stock crash introduced volatility to a previously tame market, and the prospect of rising rates and a potential recession combined to make debt more expensive and less palatable for investors. These dynamics conspired to end LBOs, and in turn end the merger wave of the 1980s. We now present an analysis of the extent to which this model can be used to understand the dynamics currently motivating the wave of tax inversions, beginning with a discussion of the political and economic landscape in which the wave began.

⁹³ Stearns and Allan note that “between 1983 and 1989, nonfinancial corporations issued \$160 billion of junk bonds to the public... (accounting) for more than 35 percent of total public bond offerings” (p. 708)

Updated Application of Stearns and Allan's Merger Wave Model

The modern tax inversion wave was borne out of the financial crisis, a period in which boards of directors were desperately searching for new ways to return capital to shareholders in the face of financial turmoil and limited organic investment prospects. Tax inversion represented a legal maneuver to restructure a company's organization, freeing up capital and potentially increasing investor returns. The immediate global rate cuts made capital the cheapest it had ever been, and offered a new source of financing should a firm choose to pursue M&A. On the political front, regulators from international competitors were doing whatever they could to entice American firms to leave the United States and domicile in their country⁹⁴. The innovation that fueled the inversion boom was the inversion itself; the new structure as part of a strategic M&A transaction provided a shield from the negative press that haunted early forms of inversion that clearly were tax plays.

It is important to note that because of the extreme circumstances surrounding the financial crisis, the challengers were actually members, but the economic system of which they were established members had fallen apart, opening the opportunity for members to act in challenging ways. Perhaps no agent has profited more from the tax inversion boom than the historic law firm Skadden, Arps, Slate, Meagher & Flom which has advised on "78% of inversions by deal value since 2011"⁹⁵. After developing the inversion idea on a company bike trip, they challenged the status quo by presenting this idea to corporate clients.

⁹⁴ The Irish Development Agency's website proudly states "Ireland is one of the best places in the world to do business" at the top. The Agency further claims "we favour green lights over red tape" and "new business is welcomed and supported by the flow of talent coming from our schools" in an attempt to offer contrast between the Irish and American business environments <http://www.idaireland.com/>

⁹⁵ Per Thompson Reuters data compiled by Rice (2014)

Other agents, namely top global investment banks, bought into the idea and began advising in tandem with Skadden. Large investment banks with international operations brought to the table not only considerable valuation and capital markets expertise, but also a global client base, meaning that they are uniquely positioned to advise American clients on cross-border acquisitions.

The combination of third-party financial and legal advice was convincing enough that large, historic American brands quickly realized the value of this strategy, and began to engage in tax inversions. Wall Street Journal reporter Shayndi Raice noted that inversions accounted for just 1% of outbound cross-border M&A in 2011, but at the time of her writing in August of 2014, the maneuver accounted for 66%. This sharp rise is due to only a few deals relative to the total number of outbound acquisitions, indicating the massive size of these transactions.

Whereas unestablished challengers began the merger wave in the 1980s, the first American company to engage in a transaction-based inversion was Valeant, a large, well-established pharmaceutical company. The immediacy with which the corporate establishment attempted to copy this strategy speaks not only to its value, but also to its temporary nature. Firms understood that it only takes one piece of legislation to close the loophole through which they were trying to leave, and there was a race for the exit, exacerbating the wave dynamic.

Similar to the way in which Congress imposed new laws on the market for junk bonds and on LBO execution that put a stop to the merger wave, legislation has also been very recently brought forth in an attempt to end this merger wave. On April 4, 2016, the Treasury announced action to “limit inversions by disregarding foreign parent stock attributable to recent inversions

or acquisitions of U.S. companies” and “address earnings stripping”⁹⁶. It will take months, and more likely years, to learn if this action will prove to cause the “...collapse of the most important innovation...”⁹⁷, in this case, inversion.

Early speculation suggests that these measures will be successful, as Pfizer announced two days later that it would not go through with its announced merger with Allergan; in response, Max Nisen of Bloomberg wrote, “with hubris and attempted mega-deals, the (pharmaceutical) industry called forth the wrath of the U.S. Treasury Department against inversions...”⁹⁸. He also suggests the notion of inversions as only one aspect of a strategic acquisition is a façade, stating, “both sets of companies had long protested their mergers were about strategic fit, not just taxes. In Pfizer and Allergan’s case, it took less than two days for the deal’s death to put lie to that”⁹⁹.

While it will certainly take a longer time frame to learn what causes tax inversions to end, it is clear that Stearns and Allan’s 1996 model of the dynamics behind merger waves can be used to understand the tax inversion merger wave that began in 2010. At this juncture, with a historical and theoretical perspective of corporate expatriation, we will proceed to an econometric analysis of the ways in which tax inversion differ from traditional cross-border M&A with an American acquirer.

⁹⁶ The Treasury action, available at <https://www.treasury.gov/press-center/press-releases/Pages/jl0405.aspx>, was more harsh than expected

⁹⁷ Stearns and Allan (1996) p. 712

⁹⁸ Nisen (2016)

⁹⁹ id

VI. Hypothesis Discussion, Data Discussion and Data Limitations

Hypothesis Discussion

The following econometric analysis will test two hypotheses for tax inversion motivation. Given the large differential between the U.S. corporate tax rate of 35% and the corporate tax rate in other economies, inversion is an opportunity to realize a significant run rate benefit¹⁰⁰. After inversion, the firm's newly-lowered effective tax rate, sometimes referred to as a "structural synergy", is realized every year that the company is domiciled abroad rather than in the United States. Extrapolated for several years, this run rate reduction in effective tax rate is a significant motivation for American companies to consider relocating their domicile abroad. It can be inferred, then, that the larger the potential run-rate structural synergy contained in a cross-border transaction, the higher the motivation to structure that transaction as an inversion.

The second motivation for inversion, which has been discussed at length in earlier chapters, is the opportunity to abandon the worldwide tax system in the United States in favor of a territorial system elsewhere. The severe reduction or elimination of a repatriation tax would free up existing locked-out earnings¹⁰¹, and cheap intra-company capital flows would serve to improve capital allocation efficiency. Additionally, a territorial system would enable expatriated companies to use earnings stripping¹⁰² as a means to reduce American profits subjected to the 35% rate. These dynamics combine for a very compelling motivation to use cross-border M&A as a means to invert.

¹⁰⁰ The only two countries with higher corporate tax rates than the United States where a run rate benefit would not exist are Puerto Rico and the United Arab Emirates. As of writing no American company has used a tax inversion to relocate their domicile to either of these economies.

¹⁰¹ Bird, Edwards and Shevlin (2015) demonstrates a strong positive relationship between an American firm's locked-out earnings balance and the probability that it is acquired by a company domiciled in a territorial tax economy

¹⁰² Avi-Yonah (2015) suggests that "...the main driver for most inversions...is earnings stripping"

The following section will explain the data collection, sample, and dependent, explanatory and control variables constructed to test these hypotheses.

Data Sources

There are three key sources of data: the Bloomberg Terminal Service provides an extensive database of all cross-border M&A transactions with an American buyer, along with historical financial statements and capital markets data for the targets; the Bloomberg News “Tracking Tax Runaways”¹⁰³ database offers a complete database of all tax inversions since 1982; the World Bank provides all historical economic data on a country by country basis. To the extent that any historical financial data was not available on the Bloomberg Terminal, the relevant company’s 10-K was consulted from the Securities and Exchange Commission’s “EDGAR” database¹⁰⁴ to fill in this gap.

Data Limitations

The control variables consist of a wide range of financial data; to ensure that enough data was available and reliable, the sample must be limited to transactions in which the target was a publicly traded company. Private companies are not required to report audited financial statements, so transactions in which the target was private would not yield enough data to use as control variables. This means that while 25 tax inversions were announced between 2010 and 2015, only 17 are included in the sample, and 244 total transactions are included out of all the cross-border activity over the past 5 years.

¹⁰³ Bloomberg News (2015)

¹⁰⁴ SEC’s EDGAR

Additionally, while the Bloomberg Terminal includes a very large M&A database, it is extremely difficult to be certain that the sample includes every qualifying cross-border acquisition from 2010 to 2015.

Sample Construction

Tax inversions represent a unique subset of cross-border M&A transactions. To examine the motivations behind tax inversion, the entire sample of cross-border M&A transactions must be considered. Using the Advanced Search Bloomberg <MA> function, every cross-border acquisition in which the buyer was an American company was gathered. The sample was limited to transactions consisting of a majority purchase of at least \$25 million from 2010-2015¹⁰⁵. Acquisitions in which the acquirer was a financial sponsor, such as a private equity firm or supranational entity, were excluded because the hypothesized tax motivations do not apply to these buyers¹⁰⁶.

¹⁰⁵ The 2009 Financial Crisis presents a challenging year in which to evaluate motivations, and the modern form of tax inversion (structured as part of a cross-border acquisition) became extremely popular in 2010. Restricting the data to only apply to transactions since 2010 also increases the reliability of the financial information, and makes it easier to audit

¹⁰⁶ Bird (2015) uses a similar approach, stating, “we also exclude all acquisitions by private equity and non-taxable entities as the hypothesized tax motivated effect should not impact these acquirers”

VII. Variable Definitions

Explanatory Variable Discussion

Prior studies analyzing merger motivation use a large sample of firms over a specified period of time, and the binary, observable dependent variable is whether or not each company was acquired¹⁰⁷. This thesis will utilize a similar methodology. The sample consists of a large sample of cross-border acquisitions with an American acquirer, and the binary, observable dependent variable is whether or not the transaction was structured as a tax inversion. For each observation, $INVERT_i = 1$ if the transaction was a tax inversion, otherwise $INVERT_i = 0$.

To test each of the tax motivation hypotheses, this analysis calls for three explanatory variables. To examine the motivation that arises out of the run rate benefit of relocation to a lower-tax economy, we compute the difference between the American acquirer's effective tax rate and that of the foreign target, using Equation 5 below:

Equation 5

$$TAX_DIFF_i = ETR_{USA} - ETR_{NEW}$$

where ETR_{USA} is the effective tax rate of the American buyer in the prior fiscal year and ETR_{NEW} is the effective tax rate of the foreign target in the prior fiscal year. Occasionally in a tax inversion, the American firm may acquire a target in one country but use another company as the domicile for NewCo¹⁰⁸. In this instance, ETR_{NEW} was calculated using the NewCo domicile, rather than the target domicile. This assumes that the pro forma foreign entity will have the same

¹⁰⁷ See Harris et al. (1980)

¹⁰⁸ For example, Cyberonics announced the acquisition of Sorin, an Italian company, on February 26, 2015, but stated in the investor relations merger announcement that NewCo would be domiciled in the United Kingdom

effective tax rate as the target, and we assume $TAX_DIFF_i = 0$ for standard cross-border acquisitions in which the parent of NewCo remains the American buyer.

As an alternative measure of run-rate tax differentials, we consider the difference between the nominal¹⁰⁹ American tax rate that the acquirer currently pays and the nominal corporate tax rate of the country in which the target is domiciled using Equation 6 below:

Equation 6

$$POTENTIAL_DIFF_i = CORPORATE_RATE_{USA} - CORPORATE_RATE_{TARGET}$$

This equation represents the nominal potential difference of relocating from the American economy to that of the target.

To examine the extent to which reorganizing in a territorial system serves as motivation for inversion, a simple dummy variable is used. $WORLDWIDE_i = 1$ if the acquisition target resides in an economy that uses a worldwide tax system, and $WORLDWIDE_i = 0$ if the target is in an economy that uses a territorial system.

Control Variable Definitions

Building off of prior studies, there are several categories of control variables used in this analysis, namely: size, profitability, valuation, capital structure and business cycle. A firm's size will affect the likelihood that the transaction is structured as a tax inversion, especially given the complicated legalese dictating which kind of acquisitions are and are not eligible to be tax inversions. To control for this, we gather the reported figures for sales in the prior fiscal year, total assets and enterprise value at the end of the last fiscal year, and market capitalization. When

¹⁰⁹ We use nominal in this context as the legal corporate tax rate in each domicile, thus avoiding the nuances of transfer pricing and tax benefits that are idiosyncratic to each individual company and difficult to quantify

conducting pro forma analysis, these metrics are of critical importance in forecasting NewCo's financial position. Three-year average sales growth is also included in an effort to control for the target firm's stage of growth.

Profitability is another important metric that impacts merger activity; whether acquiring a largely profitable business in hopes of reaping the benefits of proven success or purchasing a "fixer upper" company struggling to produce results, a target firm's profitability is an important metric. To control for this, we use the prior year's earnings per share and EBITDA¹¹⁰ margin. Undoubtedly, firm valuation is of critical importance in merger behavior; to control for this dynamic, we calculate two important multiples. Tobin's Q, developed by Nobel laureate James Tobin, compares a firm's capital markets valuation to the replacement cost of its assets, illustrated in Equation 7 below:

Equation 7

$$TOBINS_Q_i = \frac{MKT_CAP_i}{TOTAL_ASSETS_i}$$

The Enterprise-Value-to-Revenue multiple is included due to its importance in acquisition valuation, and is calculated in Equation 8 below:

Equation 8

$$EV_SALES_i = \frac{EV_i}{SALES_i}$$

Companies certainly employ a multitude of strategies regarding capital structure; some firms operate using very low debt levels, while others rely heavily on debt to fund operations. Both ends of this spectrum will impact the decision to invest, so we include total debt, shareholder equity and the debt-to-equity ratio to control for this dynamic.

¹¹⁰ EBITDA is widely used by practitioners because it avoids the myriad of approaches accountants use to calculate depreciation and amortization, and is considered "pure" earnings

Business cycle dynamics both in the United States and the target country will impact the inversion decision. To control for the business cycle the annual GDP growth and unemployment rate during the year in which the acquisition was announced are included for both the United States and the target's country of domicile.

We also include two country characteristic variables that may impact the inversion decision. When a company purchases a foreign target in an inversion, as opposed to a traditional cross-border acquisition, it commits to relocate its headquarters to a new country, showing a great deal of commitment to that economy's legal structure and culture. In an attempt to control for this commitment and in light of Equation 3, we include a dummy variable that equals 1 if the target country¹¹¹ lists English as its official language, and 0 otherwise. We also include the target country's Human Development Index (HDI), which ranges from 0 to 1 and "...is a summary measure of average achievement in key dimensions of human development: a long and healthy life, being knowledgeable and having a decent standard of living"¹¹². This metric was created by the United Nations Development Programme, and presents a holistic picture of the standard of living in the target's country.

We will now consider the sample's composition on a country and industry basis, and then turn to the model's specifications, outputs and interpretations.

*Country and Industry Considerations*¹¹³

The sample's composition of 244 total cross-border transactions, of which 17 were constructed as tax inversions, suggest that the theories we presented that impact the NPV of

¹¹¹ Similar to the tax rate differential variables, for inversions, we use the new country of residence if it is different from the target firm's country

¹¹² United Nations Human Development Index

¹¹³ See Appendix for Descriptive Statistics and the Country and Industry Breakdowns

expatriation actually impact inversion motivation. We observe that 88% of tax inversion targets are from English-speaking countries, compared to only 40% for traditional outbound M&A, certainly speaking to the idea that English-speaking targets help mitigate integration risk by avoiding language and cultural barriers. Further proving this notion is the fact that the three most popular locations for tax inversion in the sample are Ireland, the United Kingdom and Canada. It is difficult to think of three countries that are more similar to the United States.

Additionally, the sample certainly suggests that there are sector-specific dynamics reflecting different levels of inversion elasticity; medical and pharmaceutical industries make up 65% of the inversions in the sample, while energy makes another 12%. This means that almost 80% of the inversion sample comes from two industries with very few substitutes, and therefore very low inversion elasticity. Compare this to the less than 20% share that medical technology, pharmaceutical, energy and biotechnology firms have of traditional cross-border acquisitions.

Perhaps the most surprising and potentially misleading takeaway from the descriptive statistics is the fact that 40%¹¹⁴ of inverters leave the United States for another country with a worldwide tax system. This certainly contradicts likely motivations discussed earlier in this thesis, in particular Avi-Yonah's 2015 claim that the main motivation for tax inversion is earnings stripping. Paying closer attention to the data, though, every single tax inversion to a worldwide tax system was to Ireland, a country with a 12.5% tax rate that is effectively territorial because that level is below almost every other country. Taking this into account and considering Ireland as a territorial system, there were no inversions to worldwide economies.

We will now use Probit analysis to examine the extent to which these observations are statistically significant.

¹¹⁴ See Table 6 of the Appendix

VIII. Probit Analysis

Effective Tax Rate Differential Form

Specification 1 below specifies the model using the effective tax rate differential as the key explanatory variable, and Figure 1 depicts the Stata output.

Specification 1

$$\begin{aligned} INVERT_i = & \beta_0 + \beta_1 TAX_DIFF_i + \beta_2 WORLDWIDE_i + \beta_3 HDI_i + \beta_4 ENGLISH_i + \\ & \beta_5 SALES_i + \beta_6 SALES_GROWTH_i + \beta_7 EPS_i + \beta_8 ASSETS_i + \beta_9 MKT_CAP_i + \\ & \beta_{10} TOBINS_Q_i + \beta_{11} EV_SALES_i + \beta_{12} EBITDA_MGN_i + \beta_{13} EV_i + \beta_{14} TOTAL_DEBT_i + \\ & \beta_{15} SHAREHOLDER_EQUITY_i + \beta_{16} DEBT_TO_EQUITY_i + \beta_{17} TGT_GDP_i + \\ & \beta_{18} TGT_UNEMPLOYMENT_i + \beta_{19} US_GDP_i + \beta_{20} US_UNEMPLOYMENT_i + \varepsilon_i \end{aligned}$$

of shareholder equity and the likelihood that a transaction is structured as a tax inversion; in other words, larger target firms are more likely to be involved in tax inversions than smaller firms. This is likely due to Section 7874, preventing American companies from using small foreign acquisitions to relocate by mandating that the inversion would only be fully recognized if the American inverter had lower than a 60% equity stake in the new company. The fact that MKT_CAP_i is not statistically significant speaks to this notion as well; the IRS does not recognize capital markets valuation in this determination, rather, it only considers total shareholder equity.

It is interesting, and perhaps surprising, that $WORLDWIDE_i$ is not statistically significant. Relocating to another worldwide tax system appears counterintuitive based on prior analysis of merger motivation suggesting that one of the main motivations for inversion is earnings stripping. This suggests that in reality, firms value the run-rate tax differential as more important than the method of global taxation, potentially because the lower the tax rate, the less significant the impact of repatriation tax¹¹⁵. The extent to which the target country speaks English and the Human Development Index are also insignificant, leading us to conclude from this specification that the motivation for tax inversion is the run-rate tax differential contingent upon the target firm being large enough to qualify for inversion. We will now consider Figure 2, which depicts the marginal effects of each variable at its mean.

¹¹⁵ Ireland is an excellent example of this phenomenon. It taxes profits on a worldwide basis, but because of its extremely low 12.5% tax rate, repatriation tax is essentially nonexistent

Figure 2

	Delta-method					[95% Conf. Interval]	
	dy/dx	Std. Err.	z	P> z			
TAX_DIFF	.0099864	.003001	3.33	0.001	.0041046	.0158682	
iWORLDWIDE	-.000287	.0371191	-0.01	0.994	-.0730391	.072465	
HDI	.1871515	.3106267	0.60	0.547	-.4216656	.7959687	
ENGLISH	.0035194	.0239821	0.15	0.883	-.0434846	.0505234	
SALES	1.03e-07	4.48e-06	0.02	0.982	-8.67e-06	8.88e-06	
SALES_GROWTH	-.1500163	.1073761	-1.40	0.162	-.3604697	.060437	
EPS	.0011944	.0013616	0.88	0.380	-.0014743	.0038631	
ASSETS	-.0000104	9.61e-06	-1.08	0.280	-.0000292	8.45e-06	
MKT_CAP	-.0000215	.0000398	-0.54	0.590	-.0000995	.0000566	
TOBINS_Q	.0133106	.0169837	0.78	0.433	-.0199768	.046598	
EV_SALES	-.0041933	.0081962	-0.51	0.609	-.0202575	.0118709	
EBITDA_MGN	.0197801	.0609853	0.32	0.746	-.0997488	.1393091	
EV	.0000269	.0000405	0.67	0.506	-.0000524	.0001063	
TOTAL_DEBT	-.0000257	.0000441	-0.58	0.559	-.0001121	.0000607	
SHAREHOLDER_EQUITY	.0000365	.0000206	1.77	0.077	-3.88e-06	.0000768	
DEBT_TO_EQUITY	.0018443	.0065784	0.28	0.779	-.0110492	.0147378	
TGT_GDP	.005274	.0107125	0.49	0.622	-.0157221	.0262701	
TGT_UNEMPLOYMENT	.0019711	.0039777	0.50	0.620	-.005825	.0097673	
US_GDP	-.0089884	.026293	-0.34	0.732	-.0605217	.0425449	
US_UNEMPLOYMENT	-.0024366	.0077404	-0.31	0.753	-.0176075	.0127343	

Interestingly, we conclude that at its mean, there is almost an exact 1-for-1 relationship between the tax differential and the likelihood a cross-border acquisition: a 1-basis point increase in the tax differential leads to a 1-basis point increase in the likelihood ratio. We also conclude that at its mean, a \$100 million increase in the book value of shareholder equity increases the likelihood that a cross-border transaction is an inversion by 3%.

Selected Likelihood Ratio Tests

We perform likelihood ratio tests on various categories of variables to determine the extent to which they are statistically significant in predicting whether a cross-border acquisition is structured as a tax inversion. Figure 3 depicts the output of a likelihood ratio test for the model restricted to non-tax variables, and as expected, the extremely low p-value leads us to conclude

that the tax variables TAX_DIFF_i and $WORLDWIDE_i$ are statistically significant in predicting inversion.

Figure 3 – Likelihood Ratio Test for Tax Variable Significance

```
. lrtest unrestricted .  
  
Likelihood-ratio test                LR chi2(2) =    33.49  
(Assumption: . nested in unrestricted)  Prob > chi2 =    0.0000
```

Figure 4 evaluates the extent to which capital structure variables, $TOTAL_DEBT_i$, $SHAREHOLDER_EQUITY_i$ and $DEBT_TO_EQUITY_i$, are statistically significant in predicting inversion. This variable group is interesting to consider because the book value of equity is statistically significant in predicting inversion.

Figure 4 – Likelihood Ratio Test for Capital Structure Significance

```
. lrtest unrestricted .  
  
Likelihood-ratio test                LR chi2(3) =     4.61  
(Assumption: . nested in unrestricted)  Prob > chi2 =    0.2025
```

Despite shareholder equity's significance, the p-value of .1656 leads us to conclude that capital structure is not statistically significant in predicting tax inversions from cross-border acquisitions. This means that inversion targets do not have statistically significantly different capital structures from other international firms acquired by American companies.

Nominal Tax Rate Differential Form

We also analyze the data using the nominal, or potential, tax rate differential using the below specification. Where the effective tax rate differential attempts to quantify the actual run-rate benefit from each announced transaction, the nominal tax rate represents the potential differential a company would realize if it left the U.S. for the domicile of the acquisition target.

Specification 2

$$\begin{aligned}
 INVERT_i = & \beta_0 + \beta_1 POTENTIAL_DIFF_i + \beta_2 WORLDWIDE_i + \beta_3 HDI_i + \\
 & \beta_4 ENGLISH_i + \beta_5 SALES_i + \beta_6 SALES_GROWTH_i + \beta_7 EPS_i + \beta_8 ASSETS_i + \beta_9 MKT_CAP_i + \\
 & \beta_{10} TOBINS_Q_i + \beta_{11} EV_SALES_i + \beta_{12} EBITDA_MGN_i + \beta_{13} EV_i + \beta_{14} TOTAL_DEBT_i + \\
 & \beta_{15} SHAREHOLDER_EQUITY_i + \beta_{16} DEBT_TO_EQUITY_i + \beta_{17} TGT_GDP_i + \\
 & \beta_{18} TGT_UNEMPLOYMENT_i + \beta_{19} US_GDP_i + \beta_{20} US_UNEMPLOYMENT_i + \varepsilon_i
 \end{aligned}$$

Figure 5

Probit regression	Number of obs	=	244
	LR chi2(20)	=	65.09
	Prob > chi2	=	0.0000
Log likelihood = -29.138203	Pseudo R2	=	0.5276

INVERT	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
POTENTIAL_DIFF	.1210077	.0443606	2.73	0.006	.0340625	.2079528
WORLDWIDE	.5518864	.7557505	0.73	0.465	-.9293574	2.03313
HDI	21.93613	13.60803	1.61	0.107	-4.735108	48.60737
ENGLISH	.5847264	.4545097	1.29	0.198	-.3060962	1.475549
SALES	-6.25e-06	.0001217	-0.05	0.959	-.0002449	.0002323
SALES_GROWTH	-1.91204	1.58857	-1.20	0.229	-5.025579	1.201499
EPS	.0498836	.0283226	1.76	0.078	-.0056278	.1053949
ASSETS	-.0001059	.000183	-0.58	0.563	-.0004645	.0002527
MKT_CAP	.0002737	.0005436	0.50	0.615	-.0007917	.0013392
TOBINS_Q	.002832	.3444688	0.01	0.993	-.6723144	.6779784
EV_SALES	-.0219505	.1139612	-0.19	0.847	-.2453103	.2014093
EBITDA_MGN	.6016486	1.041916	0.58	0.564	-1.440469	2.643766
EV	-.0001313	.0005487	-0.24	0.811	-.0012067	.0009441
TOTAL_DEBT	.000212	.0006178	0.34	0.731	-.0009988	.0014229
SHAREHOLDER_EQUITY	.0001845	.0003426	0.54	0.590	-.000487	.0008559
DEBT_TO_EQUITY	.1016165	.1227854	0.83	0.408	-.1390385	.3422714
TGT_GDP	.2893019	.1811143	1.60	0.110	-.0656757	.6442795
TGT_UNEMPLOYMENT	.1069002	.0828032	1.29	0.197	-.0553911	.2691916
US_GDP	.124159	.4970202	0.25	0.803	-.8499827	1.098301
US_UNEMPLOYMENT	-.2000686	.1454415	-1.38	0.169	-.4851288	.0849916
_cons	-23.57938	12.51622	-1.88	0.060	-48.11072	.9519667

This model also results in an extremely low p-value for the likelihood ratio test, but it is interesting to note changes in the significance of control variables that result from using the

nominal tax difference as opposed to the effective tax rate differential. The tax rate differential remains significant at the 1% level, leading to the conclusion that there is a statistically significant positive relationship between the nominal tax rate differential and the likelihood that a cross-border acquisition is an inversion. This means that cross-border acquisitions involving targets from countries with lower nominal tax rates are more likely to be structured as inversions, certainly a logical conclusion.

Interestingly, in this specification, a company's EPS is significant at the 10% level, leading us to conclude that there exists a statistically significantly positive relationship between a company's earnings per share and the likelihood that it is part of an inversion. This means that given a cross-border acquisition of targets from two countries with the exact same nominal difference in corporate tax rates, the acquisition of the company with the higher earnings per share is more likely to be part of an inversion.

Again, we conclude that the difference between a target company operating in a territorial versus worldwide tax regime is insignificant, and the characteristic variables remain insignificant in this specification as well. As opposed to the marginal tax rate differential specification, the level of shareholder equity is not statistically significant in predicting tax inversions out of cross-border acquisitions in this model.

We now present Figure 6, which shows the marginal effects of each independent variable.

Figure 6

	Delta-method					[95% Conf. Interval]	
	dy/dx	Std. Err.	z	P> z			
POTENTIAL_DIFF	.0078604	.002949	2.67	0.008	.0020804	.0136403	
iWORLDWIDE	.0358492	.0491855	0.73	0.466	-.0605526	.132251	
HDI	1.424917	.888896	1.60	0.109	-.3172871	3.167121	
ENGLISH	.0379824	.0300692	1.26	0.207	-.0209521	.0969169	
SALES	-4.06e-07	7.91e-06	-0.05	0.959	-.0000159	.0000151	
SALES_GROWTH	-.1242014	.1037624	-1.20	0.231	-.3275719	.0791691	
EPS	.0032403	.0018829	1.72	0.085	-.00045	.0069307	
ASSETS	-6.88e-06	.0000119	-0.58	0.562	-.0000302	.0000164	
MKT_CAP	.0000178	.0000354	0.50	0.616	-.0000516	.0000872	
TOBINS_Q	.000184	.0223759	0.01	0.993	-.043672	.04404	
EV_SALES	-.0014259	.0074203	-0.19	0.848	-.0159693	.0131176	
EBITDA_MGN	.0390816	.0678377	0.58	0.565	-.0938778	.172041	
EV	-8.53e-06	.0000357	-0.24	0.811	-.0000785	.0000614	
TOTAL_DEBT	.0000138	.0000402	0.34	0.732	-.0000651	.0000927	
SHAREHOLDER_EQUITY	.000012	.0000224	0.54	0.592	-.0000318	.0000558	
DEBT_TO_EQUITY	.0066008	.0080491	0.82	0.412	-.0091752	.0223767	
TGT_GDP	.0187923	.0120267	1.56	0.118	-.0047796	.0423642	
TGT_UNEMPLOYMENT	.006944	.0053558	1.30	0.195	-.0035532	.0174411	
US_GDP	.0080651	.032342	0.25	0.803	-.055324	.0714541	
US_UNEMPLOYMENT	-.012996	.0095682	-1.36	0.174	-.0317493	.0057574	

The marginal effect of a 1 percentage point increase in the nominal tax rate differential at its mean is a .8% increase in the likelihood that the cross-border acquisition is structured as a tax inversion, and a \$1 increase in the target company's EPS at its mean leads to a .32% increase in the likelihood that that firm's acquisition is part of a tax inversion.

Selected Likelihood Ratio Tests

We again perform likelihood ratio tests on the specification to examine the extent to which various categories of variables are statistically significant in predicting whether or not a cross-border acquisition is part of a tax inversion.

Figure 7 – Likelihood Ratio Test for Country Characteristic Significance

```
. lrtest unrestricted2 .
```

```
Likelihood-ratio test                LR chi2(2) =    11.49  
(Assumption: . nested in unrestricted2)  Prob > chi2 =    0.0032
```

The extremely low p-value in Figure 7 indicates that despite being insignificant on their own, the combination of “country characteristic” variables, HDI_i and $ENGLISH_i$, are statistically significant in predicting inversion. This means that in the context of nominal, rather than effective, differentials, the target country’s quality of life and whether or not its citizens speak English are significant in predicting inversion. Consider two countries, both of which have a 10% corporate tax rate, but one has a low standard of living, and uneducated citizens who don’t speak English while the other enjoys highly educated, English-speaking citizens and a high standard of living. It is likely to conclude that if a firm in each of these countries is acquired by an American company, the tax inversion is more likely to take place in the latter country.

Figure 8 – Likelihood Ratio Test for Capital Structure Significance

```
. lrtest unrestricted2 .
```

```
Likelihood-ratio test                LR chi2(3) =     0.92  
(Assumption: . nested in unrestricted2)  Prob > chi2 =    0.8205
```

Figure 8 above offers another different conclusion from Specification 1, as the very high p-value lets us conclude that there is not a statistically significant relationship between capital structure and the likelihood of inversion. This means that when the nominal tax differential is taken into account, the target’s capital structure is not significant, despite its statistical significance when the observed marginal tax rate differential is taken into account.

IX. Conclusion

Tax inversion represents a very real and serious threat to the United States economy. For decades, regulators have enacted legislation aimed at curbing corporate expatriation, but the maneuver is as popular now as it has ever been. NPV analysis proves that motivation exists for companies to expatriate both on a run-rate tax differential basis and a locked-out earnings basis, and the longer it takes Congress to reduce the corporate income tax rate, the higher the net present value of those benefits.

We observe specific ways in which firms mitigate downside risks to inversion: companies that operate in markets without easily-available substitutes tend to pursue inversion more frequently, and these firms will use target companies in countries similar to the United States from a cultural and capital markets perspective to invert as a means to mitigate integration risk.

Econometric analysis leads us to conclude that run-rate tax differentials, rather than whether or not the target resides in a territorial tax system, serves as the key motivation for companies to pursue inversions. As a result of this conclusion, we recommend that legislators enact a tax holiday, greatly reducing the near-term benefits of corporate inversion. This will serve to keep the most successful American companies in the United States while Congress works with a new executive branch to reduce the corporate tax rate, a move that would allow the American economy to return to its spot as a competitive business environment for the most important companies in the world.

X. Appendix

Table 1 – Total Sample Descriptive Statistics

	High	Low	Mean	Median	Standard Deviation	Coefficient of Variation
Target Tax Rate	40.69%	0.00%	25.73%	26.00%	5.81%	22.58%
Nominal Tax Break	35.00%	-5.69%	9.27%	9.00%	5.81%	62.65%
Potential ETR Differential	23.60%	-8.61%	0.72%	0.00%	3.48%	485.43%
Sales	29,267.38	0.26	1,433.99	291.79	3,636.06	253.56%
3-Year Sales Growth	24.06%	-0.22%	0.29%	0.09%	1.64%	563.81%
EPS	94.71	(12.49)	0.78	0.17	6.45	823.54%
Total Assets	52,758.00	10.01	2,188.42	427.38	5,605.24	256.13%
Market Cap	68,445.32	3.60	1,836.21	333.39	5,976.05	325.45%
Tobin's Q	4.41	0.02	1.09	0.86	0.81	74.23%
Enterprise Value/Sales	67.24	0.14	2.63	1.41	5.60	212.92%
EBITDA Margin	0.89%	-9.62%	0.09%	0.13%	0.70%	796.95%
EBIT Margin	0.67%	-9.81%	-0.01%	0.08%	0.72%	-9755.33%
Enterprise Value	83,729.82	11.79	2,424.59	388.65	7,719.17	318.37%
Total Debt	18,851.19	0.00	734.00	37.37	2,383.03	324.67%
Total Shareholder Equity	28,335.50	(600.00)	767.78	201.51	2,158.25	281.10%
Debt/Equity Ratio	14.64%	-21.45%	0.60%	0.27%	2.52%	420.79%
Cash	1,890.91	0.00	162.75	39.19	310.16	190.57%
Target GDP Growth	9.48%	-9.13%	1.97%	1.90%	2.26%	114.59%
Target Unemployment Rate	26.30%	0.03%	5.37%	5.70%	4.08%	76.01%
USA GDP Growth	2.50%	0.02%	1.70%	2.20%	0.95%	55.62%
USA Unemployment	9.70%	0.05%	6.13%	7.40%	3.44%	56.14%
Human Development Index	0.94	0.60	0.87	0.90	0.08	8.83%

Table 2 – Tax Inversion Descriptive Statistics

	High	Low	Mean	Median	Standard Deviation	Coefficient of Variation
Target Tax Rate	31.00%	12.50%	19.03%	20.00%	6.35%	33.37%
Nominal Tax Break	22.50%	4.00%	15.97%	15.00%	6.35%	39.76%
Potential ETR Differential	23.60%	-8.61%	10.28%	11.30%	8.89%	86.53%
Sales	10,307.00	210.35	3,282.97	2,541.00	3,246.20	98.88%
3-Year Sales Growth	0.54%	-0.07%	0.09%	0.01%	0.16%	179.31%
EPS	3.89	(0.95)	1.73	2.03	1.54	88.63%
Total Assets	52,758.00	607.62	8,737.19	2,696.59	13,392.61	153.28%
Market Cap	68,445.32	650.30	11,900.71	3,015.88	19,173.43	161.11%
Tobin's Q	3.62	0.24	1.31	1.30	0.76	57.61%
Enterprise Value/Sales	8.47	0.68	3.42	2.89	2.28	66.68%
EBITDA Margin	0.52%	-0.02%	0.24%	0.25%	0.17%	70.93%
EBIT Margin	0.35%	-0.41%	0.11%	0.15%	0.19%	178.86%
Enterprise Value	83,729.82	705.53	14,563.41	6,516.88	23,742.17	163.03%
Total Debt	15,531.10	0.00	2,998.20	600.59	4,962.97	165.53%
Total Shareholder Equity	28,335.50	(600.00)	3,835.49	712.30	6,898.18	179.85%
Debt/Equity Ratio	6.54%	-6.63%	0.66%	0.53%	2.46%	372.43%
Cash	1,581.00	25.47	434.43	250.00	449.10	103.38%
Target GDP Growth	5.20%	0.00%	1.67%	1.40%	1.77%	105.63%
Target Unemployment Rate	14.70%	0.05%	6.42%	6.90%	5.48%	85.35%
USA GDP Growth	2.50%	0.02%	1.44%	2.20%	1.11%	76.87%
USA Unemployment	9.70%	0.05%	4.82%	6.20%	3.79%	78.48%
Human Development Index	0.92	0.88	0.91	0.91	0.01	0.94%

Table 3 – Regular Outbound M&A Descriptive Statistics

	High	Low	Mean	Median	Standard Deviation	Coefficient of Variation
Target Tax Rate	40.69%	0.00%	26.26%	26.00%	5.46%	20.79%
Nominal Tax Break	35.00%	-5.69%	8.74%	9.00%	5.46%	62.43%
Sales	29,267.38	0.26	1,287.95	270.52	3,632.21	282.01%
3-Year Sales Growth	24.06%	-0.22%	0.31%	0.09%	1.70%	554.01%
EPS	94.71	(12.49)	0.72	0.16	6.67	930.38%
Total Assets	29,482.96	10.01	1,694.91	360.58	4,197.18	247.64%
Market Cap	13,497.32	3.60	1,031.89	285.66	2,045.29	198.21%
Tobin's Q	4.41	0.02	1.06	0.84	0.81	76.19%
Enterprise Value/Sales	67.24	0.14	2.57	1.27	5.77	224.68%
EBITDA Margin	0.89%	-9.62%	0.07%	0.12%	0.72%	988.34%
EBIT Margin	0.67%	-9.81%	-0.02%	0.07%	0.75%	4112.71%
Enterprise Value	32,488.33	11.79	1,468.62	338.23	3,499.49	238.28%
Total Debt	18,851.19	0.00	567.55	34.04	1,986.88	350.08%
Total Shareholder Equity	5,722.76	(321.71)	535.12	174.74	937.37	175.17%
Debt/Equity Ratio	14.64%	-21.45%	0.60%	0.25%	2.53%	423.85%
Cash	1,890.91	0.00	141.57	32.60	288.42	203.73%
Target GDP Growth	9.48%	-9.13%	2.01%	1.90%	2.29%	114.02%
Target Unemployment Rate	26.30%	0.03%	5.34%	5.65%	3.97%	74.24%
USA GDP Growth	2.50%	0.02%	1.73%	2.30%	0.93%	53.75%
USA Unemployment	9.70%	0.05%	6.29%	7.40%	3.40%	54.17%
Human Development Index	0.94	0.60	0.87	0.90	0.08	9.10%

Table 4 – Industry Breakdown

	% of Total Sample	% of Tax Inversions	% of Regular M&A
MEDTECH	5.7%	23.5%	4.4%
FERTILIZER	0.4%	5.9%	0.0%
INDUSTRIAL	9.4%	5.9%	9.7%
TELECOM	6.1%	5.9%	6.2%
PHARMA	8.2%	35.3%	6.2%
ENERGY	7.4%	11.8%	7.0%
TECH	15.2%	0.0%	16.3%
PAPER, PACKAGING AND FORESTRY	2.5%	0.0%	2.6%
BIOTECH	2.0%	5.9%	1.8%
SEMICONDUCTOR	1.6%	0.0%	1.8%
TRANSPO	4.1%	0.0%	4.4%
SERVICES	2.9%	0.0%	3.1%
ENTERTAINMENT	1.6%	0.0%	1.8%
CONSULTING	1.6%	0.0%	1.8%
FOOD AND HOSPITALITY	3.7%	5.9%	3.5%
CHEMICALS	2.0%	0.0%	2.2%
FINANCE	4.1%	0.0%	4.4%
INSURANCE	1.6%	0.0%	1.8%
AGRICULTURE	1.6%	0.0%	1.8%
REAL ESTATE	1.6%	0.0%	1.8%
METALS AND MINING	2.9%	0.0%	3.1%
STORAGE	0.4%	0.0%	0.4%
SOFTWARE	4.9%	0.0%	5.3%
RETAIL	4.9%	0.0%	5.3%
WATER	0.4%	0.0%	0.4%
DISTRIBUTION	0.8%	0.0%	0.9%
AUTO	1.2%	0.0%	1.3%
HEALTHCARE	0.4%	0.0%	0.4%
HR	0.4%	0.0%	0.4%

Table 5 – Country Breakdown

	% of Total Sample	% of Inversions	% of Traditionals
AUSTRALIA	7.0%	0.0%	7.5%
BELGIUM	1.2%	0.0%	1.3%
BERMUDA	0.4%	0.0%	0.4%
BRAZIL	3.3%	0.0%	3.5%
CANADA	14.3%	17.6%	14.1%
CHILE	2.0%	0.0%	2.2%
CHINA	6.6%	0.0%	7.0%
COLOMBIA	0.4%	0.0%	0.4%
DENMARK	1.2%	0.0%	1.3%
EGYPT	0.4%	0.0%	0.4%
ESTONIA	0.4%	0.0%	0.4%
FINLAND	1.2%	5.9%	0.9%
FRANCE	2.9%	0.0%	3.1%
GERMANY	5.3%	0.0%	5.7%
GREECE	0.8%	0.0%	0.9%
HONG KONG	1.6%	0.0%	1.8%
INDIA	2.5%	0.0%	2.6%
Indonesia	0.4%	0.0%	0.4%
IRELAND	2.9%	41.2%	0.0%
ISRAEL	4.5%	0.0%	4.8%
ITALY	0.8%	0.0%	0.9%
JAPAN	4.1%	0.0%	4.4%
MALAYSIA	0.4%	0.0%	0.4%
MEXICO	0.4%	0.0%	0.4%
NETHERLANDS	4.1%	11.8%	3.5%
Norway	0.8%	0.0%	0.9%
POLAND	1.6%	0.0%	1.8%
RUSSIA	0.4%	0.0%	0.4%
SINGAPORE	0.8%	0.0%	0.9%
SOUTH AFRICA	0.8%	0.0%	0.9%
SOUTH KOREA	0.4%	0.0%	0.4%
SPAIN	0.4%	0.0%	0.4%
SWEDEN	3.3%	0.0%	3.5%
SWITZERLAND	0.8%	0.0%	0.9%
TAIWAN	2.9%	0.0%	3.1%
Thailand	0.4%	0.0%	0.4%
TURKEY	0.4%	0.0%	0.4%
UNITED KINGDOM	17.6%	23.5%	17.2%

Table 6 – Inversion Sample Considerations

	#	%
English-Speaking	15	88.2%
Worldwide	7	41.2%

Table 7 – Traditional Outbound M&A Sample Considerations

	#	%
English-Speaking	91	40.1%
Worldwide	20	8.8%

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