

Tax Inversions: A Preliminary Review of Company Financial Data

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I. Executive summary

- (1) Tax inversions and other types of expatriation by US multinational corporations have been a controversial issue since the early 1980s, repeatedly drawing the attention of the media, policy makers and politicians. Congress and the Treasury have responded to inversion activity which has changed the nature of expatriations over time, but has not stopped them. In 2004, rules were put in place that increased the difficulty of crafting an inversion that allows a US company to avoid US taxation of foreign source income. Since that change in policy, most inversions have proceeded by US corporations being acquired by a foreign company and establishing a foreign tax home.
 - (2) In this paper, we undertake a high-level evaluation of the effects of corporate inversions by US companies since the 2004 change in the tax law. We do this by evaluating the evolution of 10 indicators (metrics) of economic contribution and business performance among companies that completed inversions between 2005 and 2013. We employ two methods in this comparison. First, we review the time path of the 10 metrics compared to their values in a baseline time period two years prior to the inversion, and relative to the values of the same metrics for companies that did not undergo an inversion during the period. We also perform regression analysis on data for the same sets of companies, using a longer window of observation and slightly different modeling approach.
 - (3) A few valuable and interesting high-level observations arise from these explorations. First, there are apparently important industry-specific differences in the inversion patterns we observe. Second, although these industry-specific differences result in some apparently conflicting consequences of inversions, the broad pattern we observe suggests that inversions do not lead to job losses, reduced investment, and weaker companies but more likely the opposite. Interestingly, among the three industrial groupings we explore (Biopharma, FIRE and Other) the most commonly “positive” inversion effects are found in the Biopharma industry sector. Of course, this sector has more inversions during our observation window than any other, so this effect may be due to the fact that this is the only industry in our sample that has sufficient data to yield relatively clear observations. That said, even this industry has only 5 inversions in the time frame, so although we believe our observations yield valuable insights, we caution against drawing sweeping conclusions based on these results.
 - (4) Finally, although we are not able to observe country-specific location of key metrics such as employment and investment among the inverting companies and their peers, we believe that the inversion-specific effect on such things would be small. Companies in competitive industries are induced by the pressures they face to organize themselves in a way that most efficiently uses their resources. As such, investments will tend to be made where the environment for payoff on those investments will be highest. So, investment decisions relative to foreign and domestic location should
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be largely independent of a company's tax home. Hence, we see our inability to assess the geographic location of certain metrics as a limitation of minimal consequence.

II. Introduction

- (5) International tax law is an involved and complex subject. Because tax payments are typically an important component of a company's costs, publicly held companies around the world invest substantial resources in complying with tax laws and to managing corporate tax liabilities. US corporate income tax rates are high compared to those of most other developed countries. One strategy that has been used by some US-based companies to manage tax liabilities, and that has recently attracted a good deal of attention from media and policy makers, is the corporate inversion (or tax inversion).
- (6) It should be noted that inversions and related relocations of headquarters functions (more broadly characterized as expatriations) are not a uniquely American activity. Companies in other countries with relatively high corporate tax rates have also sought to manage those liabilities by the strategic location of their tax homes, and movement of headquarters and operational functions from one country to another occur regularly among multinational corporations for a variety of reasons.¹
- (7) A tax-motivated inversion occurs when a company moves its tax home from one country (typically with high tax rates) to a country with lower tax rates or other more favorable tax treatment of income - such as a territorial tax system that does not tax foreign source income.²
- (8) Inversions of US companies have been in the news since at least the 1990s, with activity clustered in two "waves" as illustrated in Figure 1 below. The first of these, in what might be called the "island wave," occurred from the mid 1990s to the early 2000s as US based companies set up smaller companies in jurisdictions such as the Cayman Islands where income was taxed at a lower rate. Establishing a smaller company in a tax haven as the parent of the US company lowered corporate tax liabilities and made profits available for other uses.³ This activity prompted a moratorium on

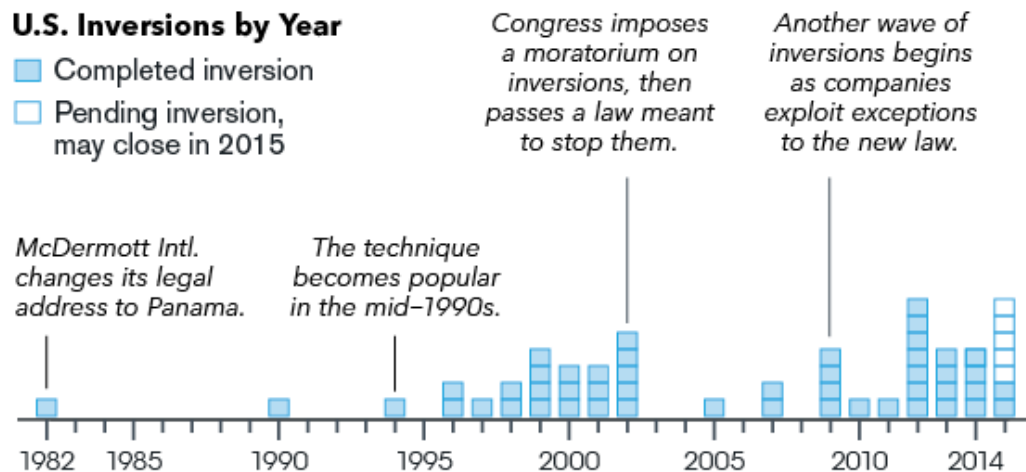
¹ Omri Marian, "Home-Country Effects of Corporate Inversions, 90 Wash. L. Rev 1 2015, provides five case studies of corporate inversions between 2002 and 2011, only one of which involved a company originally based in the US, and one of which moved to the US. Additionally, The New York Times (Nov 3, 2015, page B3) reported that a large Spanish medical company has moved its corporate treasury from Barcelona to Dublin, Ireland. Although the article indicates that the company points to operational reasons for the move, it also suggests that the company may benefit from favorable tax rates and other new tax-related policies that are being enacted in Ireland. An examination of the types and drivers of relocations of headquarters and operational functions in global companies can be found in, Julian Birkinshaw et al, "Why Do Some Multinational Corporations Relocate their Headquarters Overseas?" *Strategic Management Journal*, 27: 681-700 (2006), and in Marian supra(2015).

² A full evaluation and description of international tax systems and the regulations regarding inversions is beyond the scope of this report. Although we provide a brief summary of the 2004 revisions to tax law governing inversions in Appendix A, a more complete summary of these details can be found in Donald J. Marples and Jane G Granville, "Corporate Expatriation, Inversions, and Mergers: Tax Issues," Congressional Research Service report R43568, Nov 30, 2015.

³ See Marples et al (2015) supra, and Kevin Drawbaugh, "Corporate foreign tax moves have bedeviled U.S. for decades" Reuters Business News, Aug 18, 2014, available at: <http://www.reuters.com/article/us-usa-tax-inversion-rules-idUSKBN0GI0B020140818>. Accessed 12/11/2015.

inversions and led Congress to enact legislation in 2004 that established limits for domestic stock ownership and business organization requirements that made it more difficult to establish overseas tax homes. A brief summary of these legislative changes is provided in Appendix A.

Figure 1 - Timeline of US inversions



Source: Bloomberg Visual Data, available at: <http://www.bloomberg.com/infographics/2014-09-18/tax-runaways-tracking-inversions.html>.

- (9) As illustrated in the figure above, following the 2004 change in the tax rules inversions became less common for a time, although Lazard underwent an inversion in 2005, moving to Bermuda. Additionally in 2007 Argo Group and Western Goldfields also underwent inversions establishing tax homes in Bermuda and Canada respectively. In 2009, there were four inversions and more followed in successive years, continuing until today. The current wave of inversions has led to a great deal of commentary in the media, among the current presidential candidates and policy makers, and has resulted in a variety of legislative proposals to federal and at least one state law.⁴ A commonly expressed concern is that companies are fleeing the US in an effort to avoid tax liability at the expense of US taxpayers and the US economy.

⁴ See D. Marples and Jane Gravelle supra (2015) for a summary of proposed changes to federal law. According to the Bureau of National Affairs, the New Jersey State Assembly passed legislation (Assembly Bill No. 3624) that would require companies doing business with the State to “certify in writing that it is not an inverted domestic corporation.” Leslie A. Pappas, “New Jersey House Approves Inversion Bill,” BNA Snapshot, Dec 3, 2015.

III. Evaluating the effect of inversions

- (10) Much of the commentary and policy positioning on this issue has taken place without consideration of the evidence on the impact of tax inversions on the inverting companies, on their stakeholders or on the economy generally. Our aim in this report is to provide a high-level overview of the most recent round of inversions and to provide some insight into the effect of inversions on the companies that have taken this step. From these observations we hope to draw conclusions that will provide more evidence about the effects of inversions on companies and on the economy generally.

III.A. The existing literature on inversions

- (11) There is a substantial literature in management, economics and law about the location decisions regarding corporate headquarters, various operational functions and tax homes of multinational corporations. Most of the recent literature that focuses on tax homes and inversions in particular is legal scholarship that discusses the legislative and regulatory environment with regard to inversions, how the environment has evolved, and how corporations have responded to changes in the law or regulations.⁵
- (12) In view of the recent advent of inversions, there is not a large literature measuring their empirical effects, but there have been some notable efforts in this direction. An important empirical analysis of the causes and effects of the first wave of inversions was published by Desai and Hines (2002).⁶ Analyzing stock return and other financial data, they found that in one notable case, the market expected an expatriation to reduce corporate tax liabilities on U.S. source income, and share prices rose in response to an expatriation announcement. Moreover, they found that those firms most likely to undertake an inversion were large multinationals with extensive foreign assets and substantial debt.

⁵ In addition to articles cited throughout this monograph, examples of recent articles that discuss developments post the 2004 change in the law governing inversions include: Eric L. Talley, "Corporate Inversions and the Unbundling of Regulatory Competition," 101 *Va. L. Rev.* 1649 2015; Shane Zahrt, "Ending Corporate Inversions: Past Failures, Continued Controversy, and Proposals for Reform," 41 *Wm. Mitchell L. Rev.* 1591 2015; Joshua Simpson, "Analyzing Corporate Inversions and Proposed Changes to the Repatriation Rule," 68 *N.Y.U Ann. Surv. Am. L.* 673 2012-2013; Joseph A. Tootle, "The Regulation of Corporate Inversions and 'Substantial Business Activities'," 33 *Va. Tax Rev.* 353 2013-2014; and Jefferson P. VanderWolk, "Inversions under Section 7874 of the Internal Revenue Code: Flawed Legislation, Flawed Guidance," 30 *Nw. J. Int'l L. & Bus.* 699 2010. Selected articles focusing on earlier inversion activity and the legal environment include: Johannes Voget "Relocation of headquarters and international taxation," *Journal of Public Economics* 95 (2011) 1067-2081; Orsolya Kun, "Corporate Inversions: the Interplay of Tax, Corporate, and Economic Implications," *Delaware Journal of Corporate Law*, V 29 2004; Hale E. Shepherd, "Fight or Flight of U.S.-Based Multinational Businesses; Analyzing the Causes for, Effects of, and Solutions to the Corporate Inversion Trend," 23 *Nw. J. Int'l L. & Bus.* 551 2002-2003.

⁶ See Desai, M. A., and J. R. Hines, Jr. (2002) "Expectations and Expatriations: Tracing the Causes and Consequences of Corporate Inversions," *National Tax Journal*, 55(3), 409-440. Another paper that evaluates financial effects of earlier inversions is: Jim A. Seida et al, "Effective Tax Rate Changes and Earnings Stripping Following Corporate Inversion," *National Tax Journal* Vol LVII, No. 4 December 2004.

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- (13) Empirical examinations of the more recent inversion wave are few, but include Marin (2015)⁷ who provides a case study of five inversions (four of which are 2004 or later) and explores changes in corporate characteristics immediately after and one year following these inversions. Marian focuses on geographic segment data, to the extent it is available, exploring changes in measures such as board member nationality, employment, long lived assets and gross revenues as they occur through the inversions assessed. Some tendency is noted for economic activity to move toward the “target” country of the inversion, but it is difficult to draw general conclusions from these case studies.
- (14) The most extensive empirical examination of the recent inversion wave we are aware of is an unpublished working paper by Rao (2015).⁸ In this paper, Rao presents Compustat and other public source data on inversions of US firms occurring from 1982 to 2015 and somewhat in the flavor of Desai and Hines, explores stock market response to inversion announcements in addition to employment and investment patterns before and after inversions. Rao reports that inverters have “higher shares of employment and investment located abroad after inversion relative to changes experienced by similar non-inverting firms.”⁹
- (15) It is important that the data set used by Rao (2015) includes 39 reported expatriations over the time period we are analyzing. As detailed below, our data include 20 inversions over this time period. Rao also reports that his data set includes financial information broken down by geographic segment for the companies involved in 17 of the expatriations he examines. This allows him to draw some conclusions about the domestic v. foreign implications of the expatriations he examines. The company financial data we have does not include geography-specific segment identifiers.¹⁰

III.B. Our approach

- (16) In view of the 2004 changes in tax law regarding inversions, and the approach of our analysis that requires observation of data about the inverting company both before and after the inversion, we limit our sample to inversions that happened after 2004 and were completed no later than 2013. This latter

⁷ Supra note 1. See also Eric J. Allen and Susan C. Morse, “Tax-Haven Incorporation for U.S.-Headquartered Firms: No Exodus Yet,” *National Tax Journal*, June 2013, 66 (2), 395-420.

⁸ See Nirupama Rao, “Corporate Inversions and Economic Performance,” Unpublished manuscript, NYU Robert F. Wagner School of Public Service, September 6, 2015, available at: http://wagner.nyu.edu/files/faculty/publications/Inversions_Draft_Converted_Revised_CLEAN.pdf, most recently accessed 12/15/2015; See also Felipe Cortes et al, “Corporate Inversions: A Case of Having the Cake and Eating it Too?” Unpublished Manuscript, July 20, 2015, available at: http://apps.olin.wustl.edu/faculty/Gopalan/inversions_latest_full.pdf

⁹ Rao (2015) supra, quote is from abstract on manuscript cover page.

¹⁰ Indeed, one should be careful inferring too much about geography-specific estimates of inversion effects. The reporting of financial results by geographic segments within a multinational company is at the discretion of the reporting company, and one would not expect such reporting to be randomly distributed across companies. In fact, spot checking for financial results by geographic segment in our data gathering process identified no companies whose 10-K reports included results by geographic segment. Hence, we proceeded with our analysis without trying to identify geography-specific effects.

restriction allows us to observe data for companies at least one year after the inversion. The inverting companies we use are those tracked by Bloomberg, as presented in Figure 2.¹¹

Figure 2 - US Inverting companies, industries and year of inversion, 2005-2013

BioPharma	FIRE*	Others
Alkermes – 2011	Aon – 2012	Invitel Holdings A/S – 2009
Allergan (Actavis) – 2013	Lazard – 2005	Liberty Global plc – 2013
Jazz Pharmaceuticals – 2012	Argo Group International Holdings – 2007	Tronox Limited – 2012
Perrigo – 2013	Tower Group International – 2013	Eaton Corporation plc – 2012
Valeant Pharmaceuticals – 2010	Altisource Portfolio Solutions – 2009	Western Goldfields Inc. – 2007
		Ensco plc – 2009
		Rowan Companies plc – 2012
		D.E Master Blenders 1753 N.V. – 2012
		Tim Hortons Inc. – 2009
		Stratasys Ltd. – 2012

* The FIRE industry grouping includes companies in Finance, Insurance and Real Estate;
 Source: Bloomberg Visual Data, available at: <http://www.bloomberg.com/infographics/2014-09-18/tax-runaways-tracking-inversions.html>.

- (17) The inverting companies tracked by Bloomberg represent 15 different industries as defined by the S&P Capital IQ database. The distribution of inverting companies by industry is provided in Figure 3. For our purposes we have collapsed the five pharmaceutical and biotech companies into one industry, the five companies in the finance, insurance and real estate industries into one industry (FIRE) and we have grouped all others together in one category (Others) because there are not more than two companies in any other single industry.

¹¹ Note that in addition to inversions, Bloomberg also tracks companies that acquired foreign addresses through spinoffs or other means, such as sale to a leveraged buy out firm. To limit the differences across firm and transaction structures, we include only those companies in our sample that Bloomberg identifies as having undergone an inversion in the relevant time period.

Figure 3 - Distribution of inverting companies by industry

Inverting Company Industry	Number of Companies
Alternative Carriers	1
Biotechnology	1
Cable and Satellite	1
Commodity Chemicals	1
Electrical Components and Equipment	1
Gold	1
Insurance Brokers	1
Investment Banking and Brokerage	1
Oil and Gas Drilling	2
Packaged Foods and Meats	1
Pharmaceuticals	4
Property and Casualty Insurance	2
Real Estate Services	1
Restaurants	1
Technology Hardware, Storage and Peripherals	1
Total	20

Source: Bates White analysis of S&P Capital IQ database by McGraw Hill Financial

- (18) Ideally, in order to isolate the effect of an inversion, one would want to identify an identical set of companies to follow over time, a random selection of which underwent a corporate inversion at some fixed point in time. In those circumstances, any differences seen in company performance or characteristics might then be reasonably assumed to be associated with (if not caused by) the inversion.
- (19) Of course, one does not observe identical companies in any setting, particularly this one. And in view of the recent advent of the inversion wave we are studying, and the fact that inversions happen at different points in time, it is challenging if not impossible to wholly isolate the effect of an inversion. The best we can do is to establish certain metrics that we believe might shed light on how companies perform before and after an inversion relative to a set of peer companies.
- (20) The data available for analysis are summarized in Figure 4 below. In that figure, for each of the industry groups identified, we report the number of inverting companies for which financial data are reported in the S&P Capital IQ database. In the figure, $t=0$ represents the year in which each of the 20 inversions is reported to have taken place. Similarly, $t=1$ represents the year following the inversion, $t=2$, the second year after, and so on. Since at the time of our research the Capital IQ database includes full year data only through 2014, the number of companies for which an extended period of

observations following the inversion is limited. This will affect the results described below and the strength of the conclusions we are able to draw.

- (21) As a comparison group, for each of the inverting companies, we use the peer companies identified for in the Capital IQ database, and remove any peer that had also undergone an inversion during the time period from 2005 to 2013. In this way we avoid using inverting companies as comparators of other inverting companies.

Figure 4 - Number of inverting companies with financial data 2004-2014

Industry	Inversion Year	Number of companies with data in year of inversion and following					
		t=0	t=1	t=2	t=3	t=4	t=5+
BioPharma							
	2010	1	1	1	1	1	0
	2011	1	1	1	1	0	0
	2012	1	1	1	0	0	0
	2013	2	2	0	0	0	0
	Total	5	5	3	2	1	0
FIRE							
	2005	1	1	1	1	1	1
	2007	1	1	1	1	1	1
	2009	1	1	1	1	1	1
	2012	1	1	1	0	0	0
	2013	1	1	0	0	0	0
	Total	5	5	4	3	3	3
Other							
	2007	1	1	1	1	1	1
	2009	3	3	3	3	3	3
	2012	5	5	5	0	0	0
	2013	1	1	0	0	0	0
	Total	10	10	9	4	4	4

III.C. Financial metrics

- (22) To assess the effect of an inversion, we identify a set of metrics that are reported in financial reports of both inverting and peer companies and observe the evolution of those metrics over time, differentiating between inverters and peers. To the extent that across groups, these metrics are similar

before an inversion and different after, one can infer that the inversion played a role in the observed change.

- (23) Figure 5 presents the 10 metrics chosen for our evaluation. We break these metrics into two broad groups: those that are commonly associated with the potential economic contribution and that are more directly related to the size of a company;¹² and what we term “performance ratios” that reflect the financial health of a company and that are more independent of company size.
- (24) Related to the first category, it is reasonable to argue that, all else the same, a company that employs more people, spends more on R&D and makes larger capital investments can be thought of as contributing to growth in economic opportunities for workers and consumers in both the present and the future.

Figure 5 - Financial metrics used to compare inverting companies to their peers

Economic Contribution and Size-related Measures	Performance Ratios
Full Time Employees	Current Assets / Total Assets
R&D Expenditure	Revenue / Employee
Capital Expenditure	Altman's Z-score
Income Tax Expense	Effective Tax Rate
Total Revenue	
Market Capitalization	

- (25) The second category focuses more on the effects an inversion might have on the inverting company independent of its financial size. The distinction between these two groups of metrics is admittedly somewhat artificial as there is good reason to suggest that companies taking legitimate steps to improve corporate performance and shareholder well being are also making positive contributions to

¹² It is worth noting that since, in the post 2004 environment, inversions happen as a result of a merger, there will be a natural tendency for size-related financial measures in our first category to increase as a result of a merger. This suggests that greater emphasis should be placed on our second group of metrics. We considered ways to adjust for merger effects, but decided not to directly address it. Our reasons are that on the one hand, mergers and acquisitions are a common activity taking place among both inverting companies and non-inverting peers throughout the period of time we are examining. The exercise of identifying and evaluating which mergers and acquisitions were appropriate to account for in comparing inverting and peer companies was beyond the scope of our current exploration. Inversion-related mergers also tend to be with smaller companies, such that the direct impact of the merger on our first group of financial metrics would not necessarily be large. On the other hand, to the extent that an inversion-related merger increases the resources available to a company, those increased resources allow a company to potentially make greater economic contributions than would be possible if the merger had not occurred. The effects of any such merger related synergies would also be quite difficult to tease out given the data we have at our disposal.

economic growth and ultimately to consumer well being. The second group of metrics also includes measures that might directly shed light on the potential for an inversion to facilitate economically worthwhile investment. For example, the ratio of current assets to total assets can be seen as a measure of the extent to which “trapped cash” abroad might be freed up to be invested (or returned to shareholders).

- (26) Summary statistics for our data set are presented in Figure 6 below.¹³ There are important characteristics of our data apparent in these statistics. The first of these is the difference in the relative sizes of inverting and peer companies. In all industry groups, companies that have undergone inversions are substantially smaller than their peers that have not inverted. For example, the average of peer company employment is 2.35 times that of inverting companies and total revenue of the peer companies is 2.46 times that of inverting companies. With the exception of effective tax rates (which are largely similar between inverters and peers) the remaining metrics are of similar differences in magnitude.
- (27) The second obvious characteristic of the data is the skewness among both inverting and peer companies. For almost all these measures, means are substantially larger than medians, indicating that these distributions tend to have large right tails, or that the large companies in the data raise the average relative to the median. In our first pass at the data we consider changes in averages of the entire data set relative to a baseline period prior to the inversion.¹⁴ We consider the effect of and make some adjustments for the observed skewness in the regression analysis presented in Section V below.

¹³ Summary statistics for companies broken down by industry are provided in Figure 38 in Appendix B.

¹⁴ To evaluate the effect of skewness in the first analysis we undertake, we have separately performed the analysis in Section **Error! Reference source not found.** on a data set that eliminates the top 1% of the values in the data set, thus dramatically reducing the degree of skewness. The overall results are not substantially changed, suggesting that skewness is not a critical driver of the results we observe.

Figure 6 - Summary statistics for inverting and peer companies - all industries

Summary Statistics	Full Time Employees	Total Revenue (\$MM)	Market Cap (\$MM)	Total Assets (\$MM)	R&D Expense (\$MM)	Effective Tax Rate (%)
Inverting Companies						
Mean	10,694	\$ 2,676	\$ 6,926	\$ 6,986	\$ 140	31.56
Median	2,390	\$ 1,177	\$ 3,546	\$ 2,703	\$ 84	28.29
Minimum	3	\$ 5	\$ 51	\$ 0	\$ 5	0.39
Maximum	103,000	\$ 22,552	\$ 68,229	\$ 72,842	\$ 989	659.38
25th Percentile	952	\$ 301	\$ 1,165	\$ 745	\$ 38	19.25
75th Percentile	6,793	\$ 2,755	\$ 8,529	\$ 6,540	\$ 157	35.75
Peer Companies						
Mean	25,171	\$ 6,573	\$ 15,481	\$ 21,804	\$ 995	33.12
Median	5,096	\$ 1,153	\$ 2,383	\$ 2,059	\$ 222	28.45
Minimum	3	\$ (4)	\$ 0	\$ 0	\$ 0	0
Maximum	465,000	\$ 127,245	\$ 269,622	\$ 1,121,192	\$ 9,431	1,193.31
25th Percentile	1,000	\$ 248	\$ 577	\$ 464	\$ 37	20.04
75th Percentile	22,000	\$ 4,466	\$ 11,258	\$ 8,871	\$ 1,151	36.00

- (28) Another important characteristic of the data is that changes in these metrics around the time of an inversion depend in important circumstances on the industry, and perhaps in some cases on the companies themselves. In other words, among the post-2004 inversions, it is important to account for industry differences in assessing the effect of inversions. The differences are sufficient that it would be difficult to draw conclusions about the effect of inversions that would apply to all companies across all industries.

IV. How do financial metrics change as companies execute inversions?

- (29) In this section we present time series charts showing how each of the 10 metrics we have identified changes over the period from two years before through the year following an observed inversion. Given the differences in size between inverting companies and peers, for each group of companies, we take the average value of each metric and normalize those values to equal an index value of 100 two years prior to inversion, which serves as our baseline. We then compute changes in the average for each metric in percentages relative to the baseline period. Because these effects differ by industry, for each metric, we present a panel of charts including data for each of our three industry groups separately. In each chart, the blue lines and markers present the average change over baseline for the inverting companies and the green lines and markers present the same value for the peer companies in the same industry group.
- (30) An important limitation of this exercise is identifying the exact time of an inversion and the time frame over which an inversion's effects are appropriately measured. On the one hand, our data do not provide an exact date for the inversion, the Bloomberg data source only indicates the calendar year in which the inversion took place. We do not know when within the year the inversion was finalized. On the other hand, inversions are not simple events whose effects can be confined to a single point in time. Some effects may linger, others may take time to develop. Unfortunately many of inversions also take place late in the time period we are observing so data on longer term effects are not available for many of the companies. Other unobserved confounding influences may also interfere with our measurement. For all these reasons, it is difficult to perform a compelling "before and after" analysis, but the charts we present here do offer a meaningful preliminary view of what happens as inversions take place.
- (31) We do not report statistical significance related to the data presented in these charts. Our preliminary analysis, however, suggests that while some of the patterns, or differences between inverting and peer company groups were statistically significant, many were not. We do present statistical significance tests for our regression results in section V below.

IV.A. Economic contribution and size-related measures

- (32) In this section we review the change in metrics commonly associated with economic contributions a company offers to an economy, including those that would be directly associated with the size of the company. All else the same, companies that grow in employment, capital investment and other size related measures of health arguably make more substantial contributions to the economies in which they operate than are companies that are not growing.

IV.A.1. Full time employees

- (33) The industry-specific effects discussed above are immediately obvious in the first group of metrics, and in the full time employment measure in particular. Relative to the baseline period, employment among peer companies in the Biopharma industry was essentially flat throughout the observation period. Inverting companies in this sector grew rapidly, however, in the year before inversion, and continued to grow rapidly through the year following the inversion. This pattern suggests that inversions are related to growth in employment in the Biopharma sector. Companies that inverted were growing faster than their peers, and that growth continued after the inversion was completed.
- (34) A similar case might be made about inversion being related to growth in employment in the Other industry group of companies, except that employment was not growing in among those companies in advance of the inversions. Among the inverting companies in the Other group, employment ticks up only in the year of the inversion and grows only modestly in the following year. The non-inverting peers in this group shrink somewhat in terms of full time employment in the year of inversion and then experience growth in the year following similar to that of the inverting companies.
- (35) In contrast to the other two industry groups, employment in the FIRE industry group appears to show no meaningful difference between peers and inverters around the time of inversion. In both groups, employment remains within about 10 percent of the baseline value before, during and after the inversion.

■ Inverter ■ Peer

Figure 7 – Full time employees: Biopharma

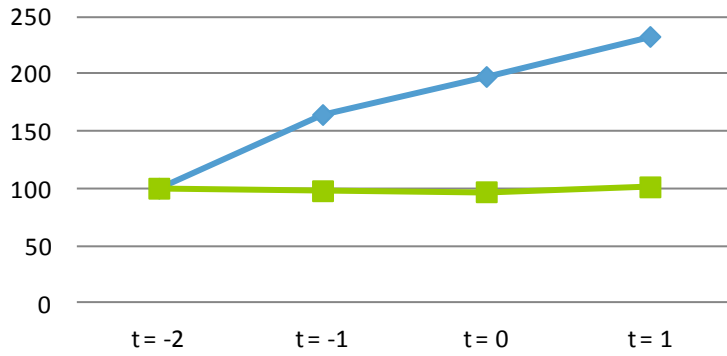


Figure 8 – Full time employees: FIRE

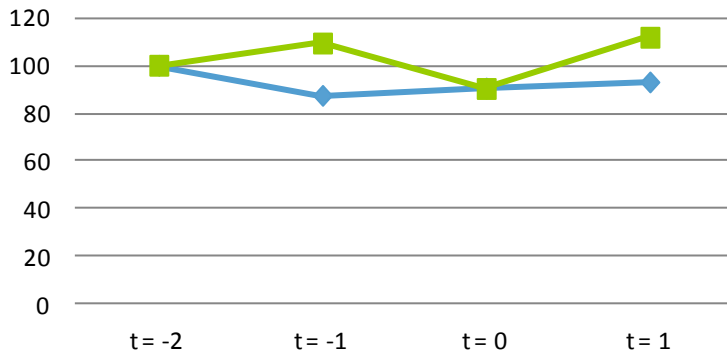
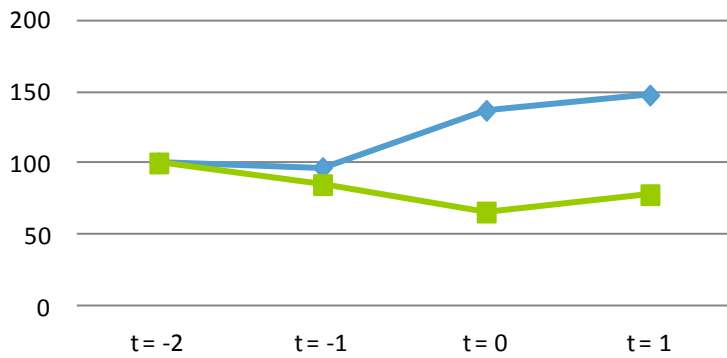


Figure 9 – Full time employees: Other



IV.A.2. R&D Expenditure

- (36) Companies in the FIRE industry in our sample did not report R&D spending so no comparison for that industry is made on this metric.
- (37) In the Biopharma sector, R&D spending grows at about the same rate for both inverting and non-inverting peer companies through the year of inversion. In the year following the inversion, however, R&D among the inverting companies grows substantially faster than it does among the peer group. The fact that R&D growth in this sector does not simply mirror the growth in employment suggests that the higher R&D spending among inverting companies is more than an artifact of size. What is driving the greater R&D spending by inverted companies is not clear from this analysis, but it does appear that inverting companies in this sector are in a position to make greater economic contributions through investments in innovation than are their non-inverting peers.
- (38) R&D by companies in the Other industry group responds quite differently than it does in the Biopharma sector. After staying roughly constant in the two years prior to the inversions, R&D spending grows more than 20% for non-inverting companies and falls more than 20% for the inverters. This is somewhat of a puzzle because there is no clear reason why the effect of an inversion on R&D spending should be so different across industries. Nevertheless, the data do suggest that inverting companies outside the Biopharma sector are less likely to grow R&D spending than are non-inverting peers. This observation calls for greater examination.

■ Inverter ■ Peer

Figure 10 – R&D Expenditure: Biopharma

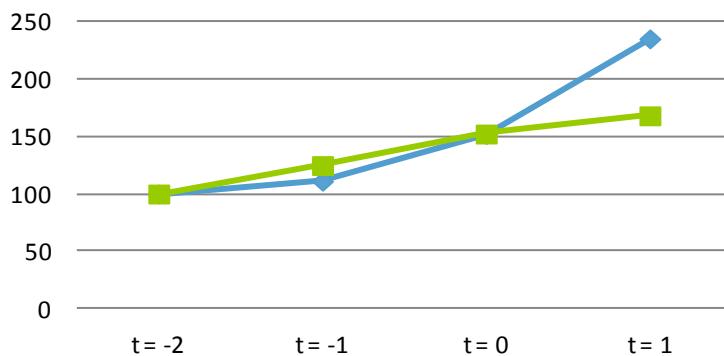
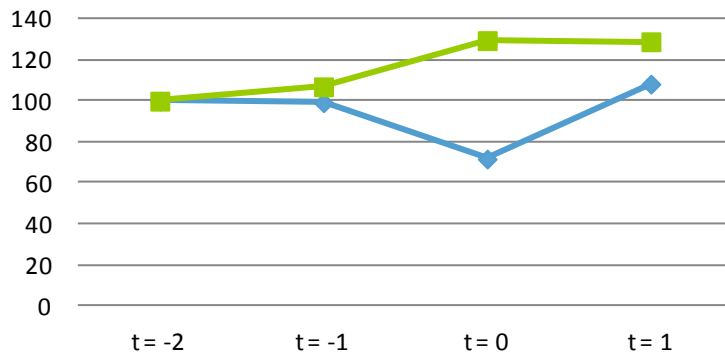


Figure 11 – R&D Expenditure: Other



IV.A.3. Capital Expenditure

- (39) Companies that make larger capital expenditures, all else the same, would tend to exhibit greater economic contributions as more or newer capital tends to increase economic growth and development.
- (40) Similar to the pattern seen in R&D spending, capital expenditures in the Biopharma industry group of inverting companies show a clear uptick relative to peers in the year following inversion, but not before then. Although there is a slight separation between inverters and peers in the year of inversion, the difference does not become pronounced until the year following.
- (41) The FIRE company group shows little difference between inverting and peer companies both before and after the inversion. This could be due to the fact that for the finance industry, capital investments are of a different nature than they are in the Biopharma industry that this metric is not a meaningful indicator for that group. Capital expenditures in the Other industry group also do not appear to be substantially affected by inversions, as the uptick in capital investments taking place in the inverting group occurs in the year prior to the inversions and moves little during and after. No matter what the explanation for the differences seen in these patterns, these differences highlight the fact that pooling the industry groups would mask effects that seem to be apparent in the Biopharma sector but less so elsewhere..

■ Inverter ■ Peer

Figure 12 – Capital Expenditure: Biopharma

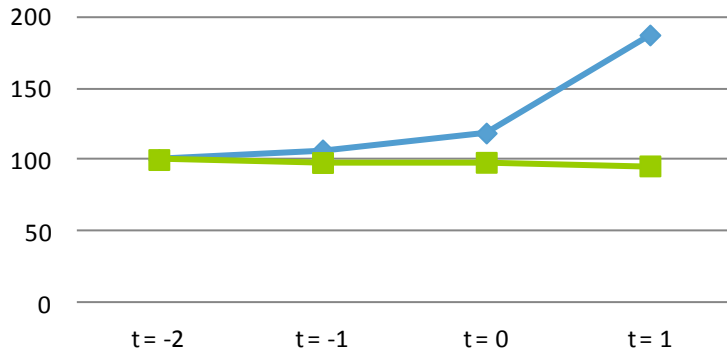


Figure 13 – Capital Expenditure: FIRE

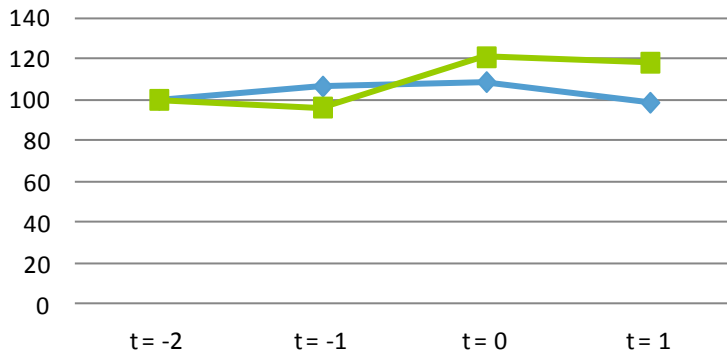
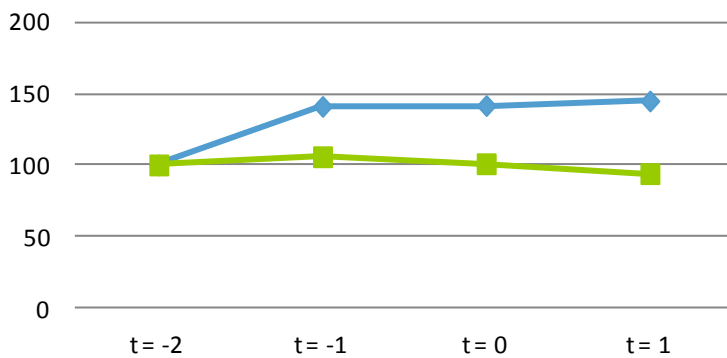


Figure 14 – Capital Expenditure: Other



IV.A.4. Income Tax Expense

- (42) Although the tax implications of inversions attract the most attention, it is not obvious that the tax effects will show up in financial data such as those that we are looking at here. Economic decisions are more likely affected by differences or changes in marginal tax rates, or rates paid on future income, than they are by levels of taxes paid or average effective rates. Moreover, reported income tax expense can be affected by the timing of various events in a corporation's flow of earnings and expenses, the availability of tax favored expenditure categories, etc.
- (43) Therefore, reported income tax expenditures may not be the clearest indicator of the tax implications of inversions. Nevertheless, in all three industry groups, tax expenditures in advance of and through the year of inversion track very closely between inverting companies and non-inverting peers. However, they all diverge noticeably in the year following the inversion. Average income tax expense falls markedly in the Biopharma group, relative to peers, while peers experience declines in income tax expense relative to inverting companies in both the FIRE and Other industry groups. It would be interesting to explore reported tax expenses company by company in this period to determine if there are specific unusual events that drive these patterns. Other than that possibility, no explanation for this pattern seems obvious.

■ Inverter ■ Peer

Figure 15 - Income Tax Expense: Biopharma

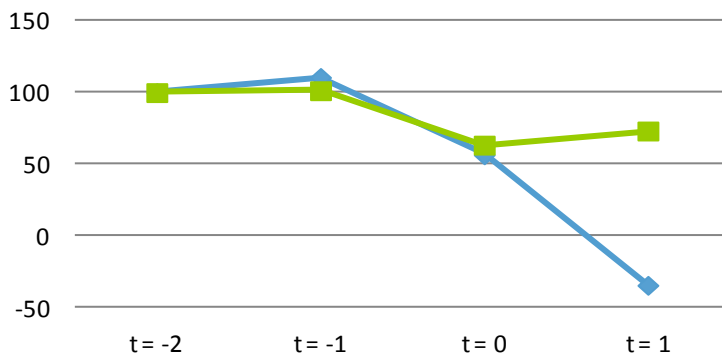


Figure 16 - Income Tax Expense: FIRE

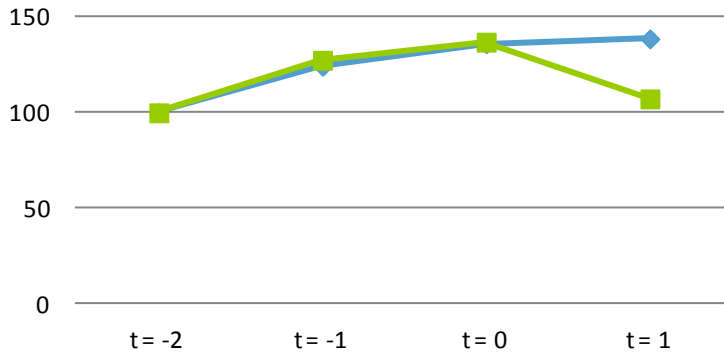
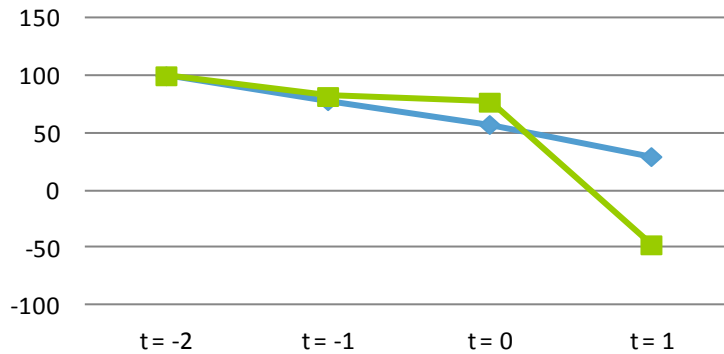


Figure 17 - Income Tax Expense: Other



IV.A.5. Total Revenue

As is full time employment, the final two metrics in this section, total revenue and market capitalization, are directly related to company size. and as mentioned previously, since inversions in the post 2004 environment generally result form a merger, it is not surprising to see indicators of size expand following an inversion. As depicted below, total revenue of inverting companies increases relative to baseline and compared to peers for the Biopharma industry group and to a lesser extent the Other industry group, but the FIRE industry group, inverters and their peers appear to experience the same level of revenue change, suggesting that the inversion has effectively no effect on revenues in this sector.

■ Inverter ■ Peer

Figure 18 - Total Revenue: Biopharma

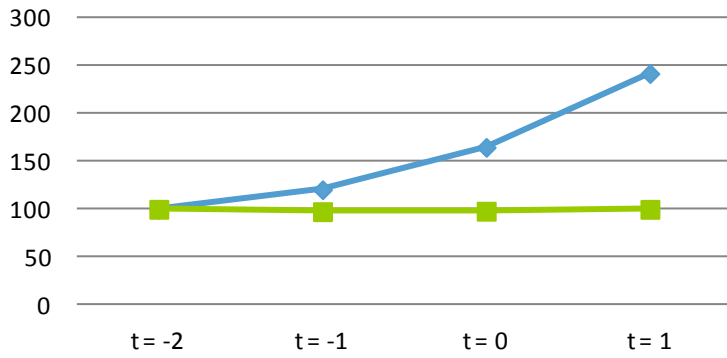


Figure 19 - Total Revenue: FIRE

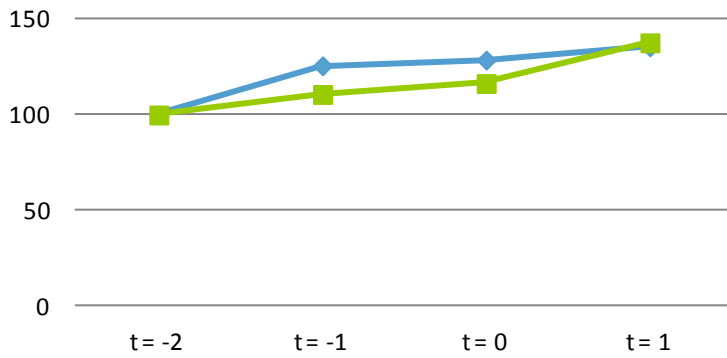
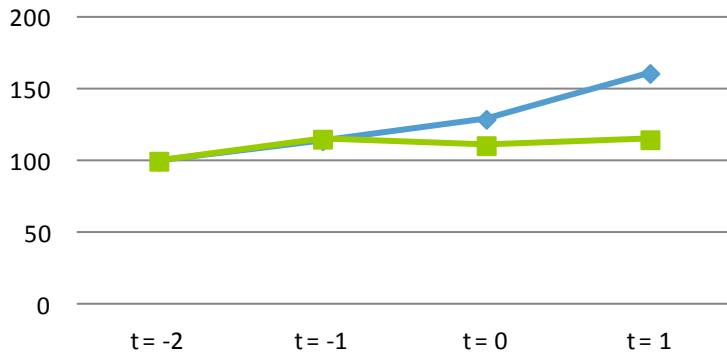


Figure 20 - Total Revenue: Other



IV.A.6. Market Capitalization

- (44) Unsurprisingly, the patterns of market capitalization are similar to those of total revenue for the Biopharma and Other industry groups, with each metric for inverting companies increasing relative to peers in the year of the inversion and after. In the FIRE sector, however, the inverting companies exhibit a marked decline in market capitalization in the year of inversion while the peers show growth over the prior year. It might be thought that the financial crisis of 2008 could play a role in this reduction, but there were no inversions in this sector in 2008, and it would seem that noninverting peers would not escape the effects of the crisis. Further examination of company-specific outcomes would be necessary to identify this result.

■ Inverter ■ Peer

Figure 21 - Market Capitalization: Biopharma

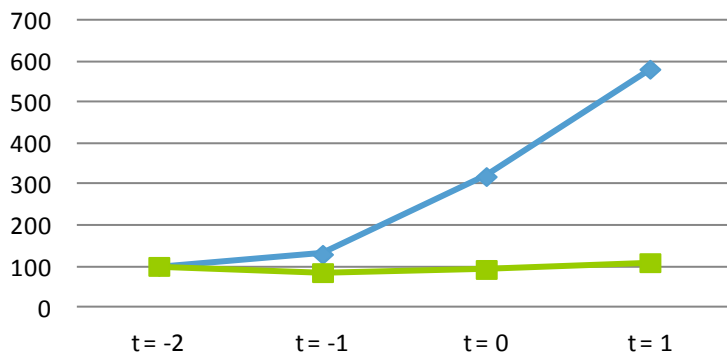


Figure 22 - Market Capitalization: FIRE

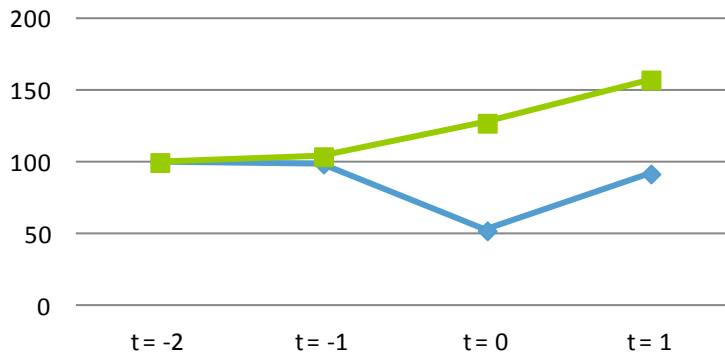
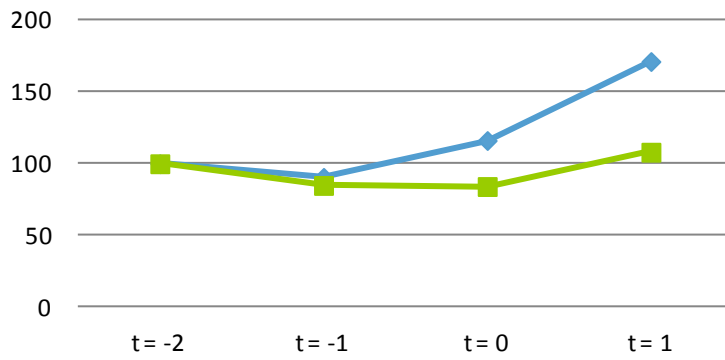


Figure 23 - Market Capitalization: Other



IV.B. Performance ratios

- (45) In this section we review measures of financial performance that are not as directly tied to firm size as are those discussed above.

IV.B.1. Current Assets/Total Assets

- (46) Conceptually, the ratio of current assets to total assets is one of the most interesting of the metrics we explore in terms of the current controversy about inversions. Given that US corporate tax rates are substantially higher than those in most developed countries, and that those rates are applied to foreign source income only when it is repatriated, foreign source income can be “trapped” abroad by the penalty that would apply if it were to be brought “home.” To the extent that inversion is a way to free such trapped cash, one might predict that inverting companies would see an increased ability to invest or otherwise use that trapped cash in productive ways. The result of using the cash would lead to a reduction in cash held by the inverting company relative to its non-inverting peer, and hence to a reduction in the share of total assets that are held as cash and cash equivalents, which are a major component of current assets.
- (47) This narrative is consistent with what we see for the inverting companies in Biopharma companies in our sample. In the year of the inversion, the ratio of current to total assets falls to roughly two-thirds of its baseline value for inverting companies, and then falls to less than half the baseline value in the year after the inversion. In contrast, noninverting peers show essentially no change in this measure through the inversion year and after.
- (48) Interestingly, the pattern is not the same for either the FIRE or Other industry groups. While inverting companies in the Other group do see a drop in this ratio in the inversion year relative to peers, that drop is not as large as it is in the Biopharma sector and it does not continue following the inversion year. Inverting companies in the FIRE group actually have a higher ratio of current to total assets than their peers in the year prior to an inversion, and that ratio grows in the year of inversion. Again, this indicates the industry specific nature of inversion and its effects.

■ Inverter ■ Peer

Figure 24 - Current Assets/Total Assets: Biopharma

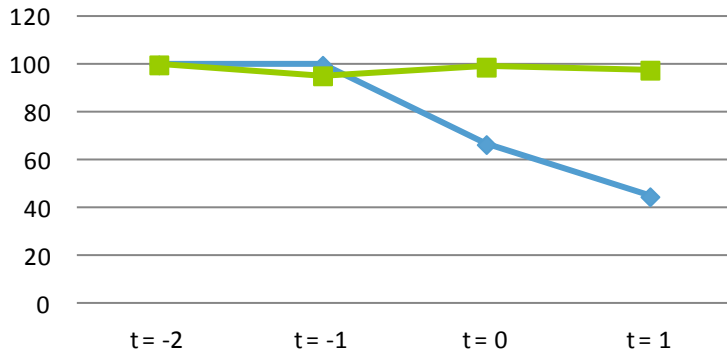


Figure 25 - Current Assets/Total Assets: FIRE

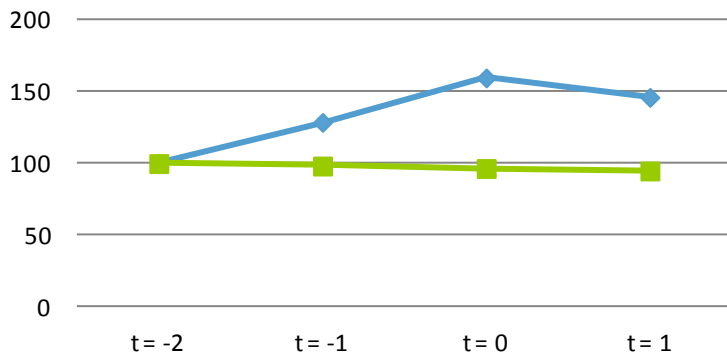
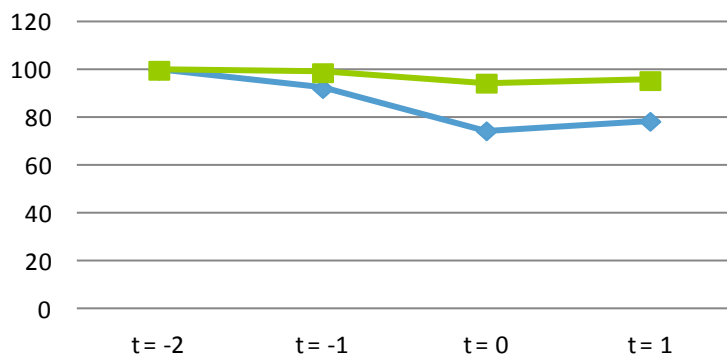


Figure 26 - Current Assets/Total Assets: Other



IV.B.2. Total Revenue per Full-time Employee

- (49) In addition to considering the effect of the inversion on revenue, which tends to be directly affected by mergers that attend inversions, revenue per employee can be thought of as a crude measure of the inversion's effect on organizational efficiency in terms of producing revenue. Of course, this is also a measure that would be easy to misinterpret since the efficiencies associated with complicated mergers typically play out over several years.
- (50) Bearing that caveat in mind, it appears that, based on this metric, inversions have little to no impact on inverting companies in any of the industry groups. In both the Biopharma and FIRE groups, inverting companies experience modest declines in this measure relative to baseline and relative to peers in the year prior to the inversion. The metric remains little changed (growing slightly) in the year of inversion, and in the Biopharma sector, it ticks up somewhat in the year following. In the Other group, the ratio for inverting companies drops relative to peers in the inversion year and rebounds to nearly match peers the year following.

■ Inverter ■ Peer

Figure 27 - Revenue per Full-time Employee: Biopharma

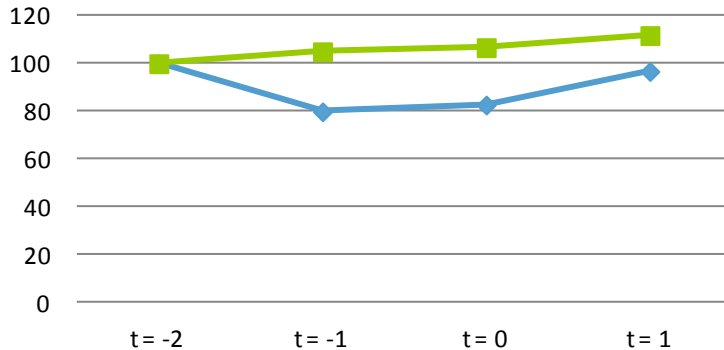


Figure 28 - Revenue per Full-time Employee: FIRE

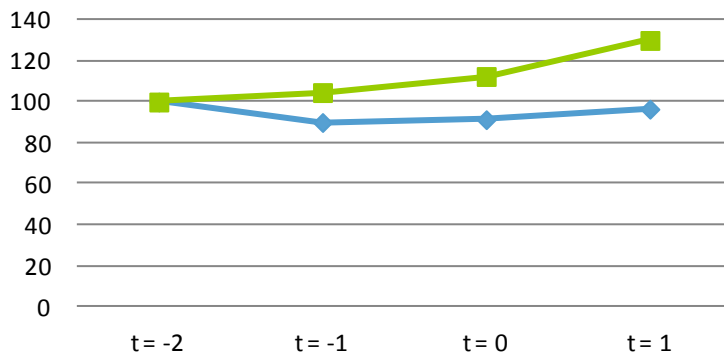
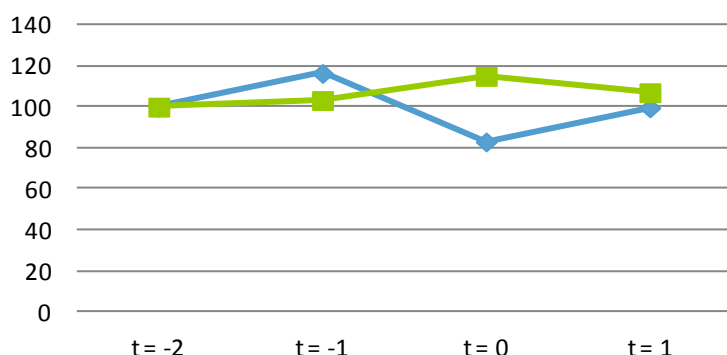


Figure 29 - Revenue per Full-time Employee: Other



IV.B.3. Altman's Z-score

- (51) Altman's Z-score is a short-term measure of bankruptcy risk. The Z-score combines five separate financial ratios into an index to predict the probability that a company will be bankrupt within two years.¹⁵ A Z-score greater than 3.0 indicates a low bankruptcy risk, where a Z-score less than 1.8 suggests a company is at a relatively high risk of bankruptcy within the next two years. A value between 1.8 and 3.0 is considered a "caution" area. The Z score was originally developed in 1968 by Edward Altman, a finance professor at the NYU Stern School of Business.
- (52) It is important to recognize that bankruptcy is not the only way in which a company can experience financial distress. All else the same it stands to reason that the risk of bankruptcy is lower for companies that rely less on debt financing, such as many companies in the Biopharma industry. When companies in this industry lose product revenue to patent expiration or otherwise, it is not uncommon for them to become takeover targets rather than to declare bankruptcy. Hence, as with other metrics we consider, the predictive power of this metric differs across industries.
- (53) That said, the Z-score for the inverting Biopharma companies is apparently higher than its peer group before the inversion, just above it in the year of inversion, and somewhat lower than the peer group in the year after the inversion. The differences during and after inversion are not large, however.
- (54) In contrast to companies in the other sectors, companies in the FIRE industry experience a large and sustained jump in Z-score in the year of inversion while peer companies see essentially no change. In the year of inversion, the average Z-score of inverters in this industry is approximately 450% of the

¹⁵ The five ratios that make up Altman's Z are: $(\text{Total Current Assets} - \text{Total Current Liabilities}) / \text{Total Assets}$; $(\text{Retained Earnings} / \text{Total Assets})$; $(\text{EBIT} / \text{Total Assets})$; $(\text{Avg Market Cap} / \text{Total Liabilities})$; and $(\text{Total Revenues} / \text{Total Assets})$

baseline level and the year after it is more than 500% above baseline. The obvious implication is that the inversions in this industry left the companies much less subject to bankruptcy risk.

- (55) Finally, inverting companies in the Other industry experience little change in Z-score during and following inversion. Non-inverting companies, on the other hand, experience large swings down and back up. It is unclear what is driving this pattern.

■ Inverter ■ Peer

Figure 30 - Altman's Z-score: Biopharma

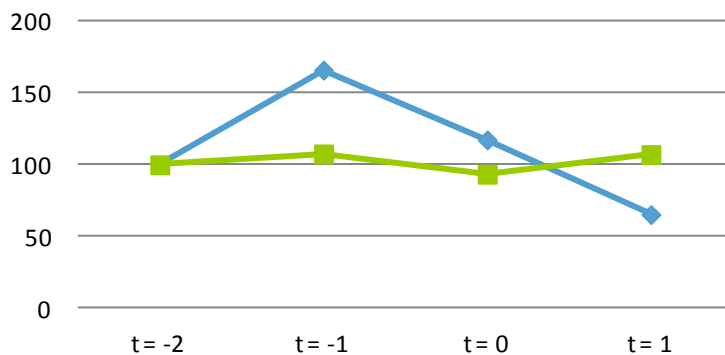


Figure 31 - Altman's Z-score: FIRE

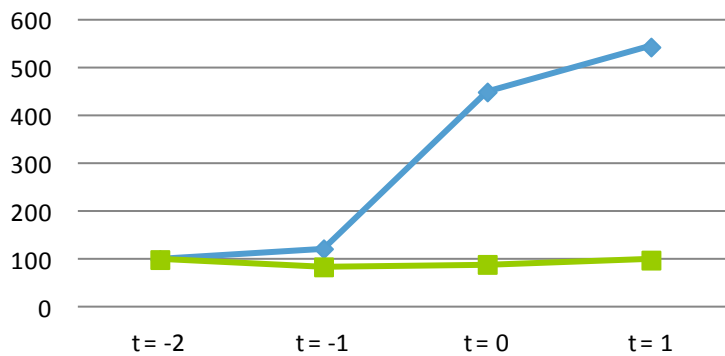
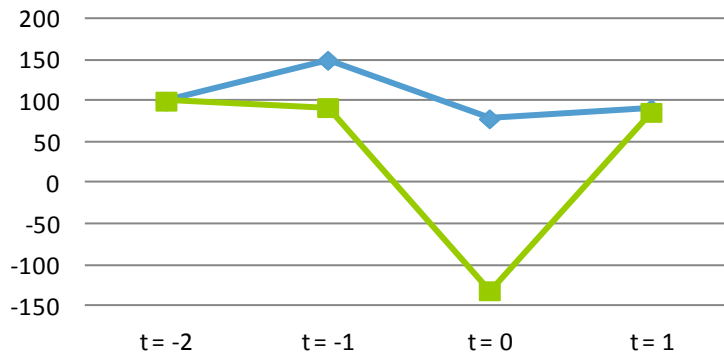


Figure 32 - Altman's Z-score: Other



IV.B.4. Effective Tax Rate

- (56) Finally, we consider changes in the effective tax rate. As discussed in section IV.A.4 above, a company's measured effective tax rate is a backward looking measure that can be affected by the timing of unusual financial events. As such it is not the best indicator of the incentive effects of tax policies. Marginal tax rates, which are not necessarily reflected in effective tax rates, are far more important. Nevertheless, in the data we have, effective tax rates are not obviously and consistently lowered among inverting companies relative to their peers.
- (57) In the Biopharma industry group, inverting companies had a higher average tax rate relative to their baseline in the year prior to an inversion than did peer companies, but that rate returned to near its baseline value in the inversion year and remained little changed in the year after. In the FIRE industry, average tax rates also rose for inverting companies in the year prior to inversion, but did not return to baseline levels during or after inversion. Inverting companies in the Other group had lower tax measured tax rates in the year prior to inversion, roughly the same (relative to baseline) as peers in the year of inversion, and then again lower rates the year following inversion.

■ Inverter ■ Peer

Figure 33 - Effective Tax Rate: Biopharma

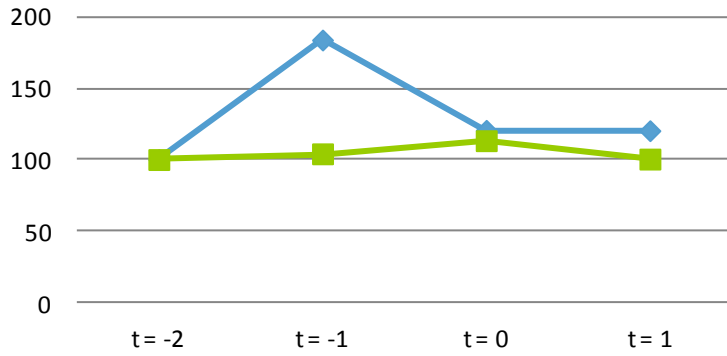


Figure 34 - Effective Tax Rate: FIRE

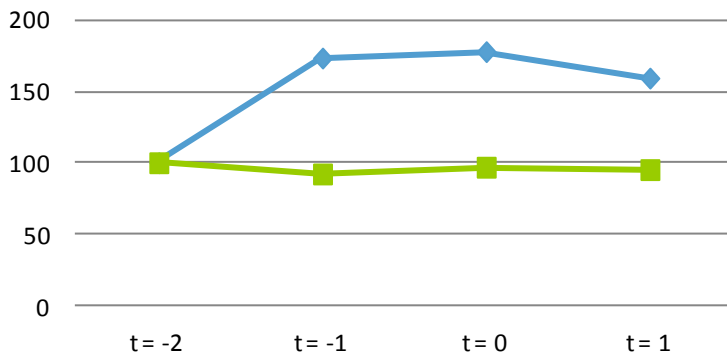
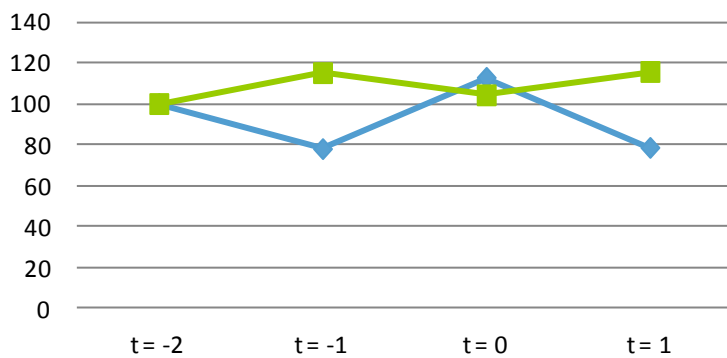


Figure 35 - Effective Tax Rate: Other



V. Regression analysis of inversion impacts

(58) In addition to the graphical review of percentage changes in metrics over time as in the previous section, we also investigate the impact of inversions in a framework of regression analysis. This approach uses a longer history of data before and after inversions thus providing a broader comparison of the inverting company metrics than is done in the previous section. We also use the regression framework to illustrate the patterns of statistical significance of the effects we observe, and to gain some insight into the robustness of our results. Although we find some interesting results, our regression analysis is preliminary and leads to additional questions that would be worth further examination..

(59) The relationship between our metrics and corporate inversions is modeled as following the equation:

$$M_{it} = A_i + B_1*(\text{inverting company indicator})_{it} + B_2*(\text{year of observation})_t + E_t$$

(60) We run this regression for each of the 10 metrics (M_{it}) we observe, where the “inverting company indicator” is set equal to one in years for which the inversion effect is being tested and zero otherwise. As discussed above, since it is difficult to know when the actual effects of an inversion should be observed, we explore four different possibilities within our data, as described below. B_1 is the parameter of interest in these regressions, which is intended to estimate the effect of an inversion on the relevant metric relative to both non-inverting peer companies and over time. In view of the differences observed across metrics by industry group, each set of regressions is run separately on each of the three industry groups described above in which we include company fixed effects. Figure 36 and Figure 37 report the estimates of B_1 and robust standard errors for the parameter estimate B_1 in each regression. Figure 36 presents results for the size related metrics and Figure 37 presents results for the performanc ratios. Asterisks above each estimate indicate statistical significance as indicated below the figure.

(61) Four different inversion evaluation thresholds are explored. Estimates in the first column of the figure treat the inversion effect as being operative in the year of the inversion and in every year thereafter. Estimates in the second column treat the inversion as not having effect during the year of inversion but only on the year following and each year thereafter. The third column treats the inversion as operating in the year of the inversion plus two following years, but not thereafter, and the fourth column treats the inversion as having an effect in only the two years after the inversion, but not in the inversion year itself. The purpose of these differing approaches is to test the robustness of the results in recognition of the fact that we do not have data on exactly when in the reported calendar year the inversion took place and we have no compelling theory to indicate when the effects of an inversion

should begin and end. We expect that would vary by individual inversion circumstance, and perhaps by industry.

- (62) Finally, in view of the extreme right skew in the distribution of the metrics, we censor the data by removing the top 1% of observations on each metric.¹⁶ And variables that are already in ratio form are left to their native values, while others are normalized to equal 100 in the year 2007. Metrics are thus measured as percentages of the 2007 baseline values.

¹⁶ Note that preliminary regressions without removing these “outliers” produced results that were quite different from those resulting from these censored regressions. We expect that further evaluation and management of high leverage outliers would further change the regression results. As such, we view these results as only suggestive. A more careful analysis would be necessary to confidently establish relationships between inversions and the metrics we observe.

Figure 36 - Regression results: Inversion effects on size-related and economic contribution metrics

Financial Metric (truncated at 99th percentile)	Industry		Inversion evaluation threshold			
			Greater than or equal to year of inversion	Greater than year of inversion	Greater than or equal to year of inversion plus 2	Greater than year of inversion plus 2
Full Time Employee	Biopharma	coef	189.523***	243.733***	49.164*	65.645**
		se	22.380	24.819	25.600	30.734
	FIRE	coef	-4.004	-16.740	23.165*	16.814
		se	12.391	12.868	12.332	14.820
	Other	coef	46.196***	49.402***	43.373***	54.992***
		se	15.197	16.345	15.846	18.659
R&D Expenditure	Biopharma	coef	43.628	51.982	32.897	41.524
		se	13.921	15.866	14.479	17.332
	FIRE	coef	n/a	n/a	n/a	n/a
		se	n/a	n/a	n/a	n/a
	Other	coef	252.782**	349.200*	252.782**	349.200*
		se	39.450	44.225	39.450	44.225
Capital Expenditure	Biopharma	coef	-177.834***	-214.440***	-122.746**	-154.497***
		se	342.119	393.273	355.427	429.186
	FIRE	coef	117.100***	177.931***	-102.368***	-73.634*
		se	34.943	34.713	32.860	39.223
	Other	coef	-88.385	-51.285	-25.159	35.501
		se	179.963	195.150	191.072	226.379
Income Tax Expense	Biopharma	coef	-226.772	-688.382	-237.353	-838.720
		se	663.511	754.387	686.541	836.468
	FIRE	coef	41.215	13.222	3.515	-38.969
		se	29.847	30.822	31.086	36.915
	Other	coef	405.210	536.468	272.226	459.440
		se	1,447.153	1,557.617	1,444.526	1,704.774
Total Revenue	Biopharma	coef	263.708***	337.742***	204.964	286.258
		se	44.235	50.185	46.924	56.086
	FIRE	coef	78.332***	79.891***	18.928	21.962
		se	15.447	15.931	16.468	19.579
	Other	coef	223.143	314.024	64.240	158.537*
		se	135.658	146.704	141.850	167.845
Market Capitalization	Biopharma	coef	774.531***	937.157***	581.275***	748.527***
		se	58.173	64.430	67.567	79.855
	FIRE	coef	-61.094	5.510	-33.365	-5.980
		se	66.455	64.044	44.003	53.888
	Other	coef	70.763**	90.796**	89.320***	126.382***
		se	36.325	40.884	37.454	44.273

Note: Within each metric and industry group, coef indicates the model's estimate of the regression parameter B_1 discussed above, se are robust standard errors; *, ** and * indicate significance at 1%, 5% and 10% respectively.**

Figure 37 - Regression results: Inversion effects on corporate performance ratios

Financial Metric (truncated at 99th percentile)	Industry	Inversion evaluation threshold				
		Greater than or equal to year of inversion	Greater than year of inversion	Greater than or equal to year of inversion plus 2	Greater than year of inversion plus 2	
Current Assets / Total Assets	Biopharma	coef	-0.119***	-0.128***	-0.119***	-0.139***
		se	0.037	0.043	0.039	0.047
	FIRE	coef	0.025	-0.004	0.037	0.016
		se	0.035	0.036	0.033	0.040
	Other	coef	-0.092***	-0.072***	-0.094***	-0.083***
		se	0.021	0.023	0.022	0.026
Revenue/Employee	Biopharma	coef	-0.005	0.032	0.034	0.094*
		se	0.042	0.048	0.043	0.052
	FIRE	coef	0.214***	0.215***	0.053	0.071
		se	0.049	0.049	0.048	0.056
	Other	coef	0.006	0.039	-0.034	-0.008
		se	0.034	0.037	0.035	0.042
Altman's Z-score	Biopharma	coef	0.733	0.036	0.691	-0.095
		se	0.880	1.010	0.911	1.099
	FIRE	coef	0.812	0.254	2.581***	2.970***
		se	0.607	0.595	0.391	0.445
	Other	coef	2.173	1.050	0.650	-0.999
		se	6.230	6.689	6.502	7.638
Effective Tax Rate	Biopharma	coef	26.114	37.183	-18.329	-34.960
		se	64.439	77.714	77.589	104.862
	FIRE	coef	30.786*	23.477	-5.201	-18.556
		se	18.318	18.388	19.104	22.638
	Other	coef	-48.164***	-68.082**	-59.635**	-103.396**
		se	148.255	166.689	160.241	200.119

Note: Within each metric and industry group, coef indicates the model's estimate of the regression parameter B_1 discussed above, se are robust standard errors; *, ** and * indicate significance at 1%, 5% and 10% respectively.**

- (63) A few broad impressions arise from the regression results above. First, although there is variation, the regression results are broadly consistent with the impressions that arise from the charts in the previous section. For example, inversions are estimated to have statistically significant positive effects on employment in the Biopharma industry for all the inversion thresholds explored and those effects are larger over the longer time period than in the immediate. For Other industry companies, the inversion effect of employment is positive and significant, but not larger over a longer time period. And the employment effects of a merger are not generally significant among the FIRE industry companies.
- (64) The regressions also indicate a positive, though not statistically significant, impact of inversions on R&D in the Biopharma sector, and contrary to what appears in the previous charts, a strong positive and statistically significant impact on R&D expenditure among the Other group companies. The coefficient estimates for capital expenditures are not consistent with what appears in the charts. The regressions also suggest that the effect of inversions on income tax expense are not statistically significant for any of the industry groups, and that inversions generally lead to increases in total revenue and market capitalization, though not all of these parameters are statistically significant.

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- (65) Among the performance ratio metrics, the regressions are generally consistent with the graphical review above, although there are some exceptions. Consistent with the charts, inversions are estimated to be significantly associated with lower ratios of current to total assets in both the Biopharma and Other industry groups, but not significantly related among the FIRE companies. This lends support to the suggestion that inversions free up “trapped” cash to be invested or spent in productive ways.
- (66) Revenue per employee is significantly higher for inverting companies in the FIRE sector over the longer time horizon, but not significant elsewhere. Altman’s Z-score is generally not significantly related to inversions, except in the immediate term in among the FIRE companies, which is consistent with the large spike in this variable seen in the charts. The effective tax rate is not significantly related to inversions in the Biopharma and FIRE industries, but is negative and significant for inverting companies in the Other sector.
- (67) A final obvious and strong impression is that the estimated effects differ substantially across industry sectors. The implication of this variation is that estimates of the effects of inversions that ignore industry differences are likely to be incorrect, and policies that are designed to influence inversion activities that do not pay attention to industry differences are likely to have unintended consequences.

VI. Conclusion

- (68) Having reviewed the data on the consequences of corporate inversions over the period from 2005 to 2013, we make two general observations. First, that there are very strong industry-specific differences in the patterns of response to inversions. Second, although these industry-specific differences result in some apparently conflicting effects, the broad patterns suggest that inversions do not lead to job losses, reduced investment, and weaker companies but more likely the opposite.
- (69) Interestingly, among the three industrial groupings we explore the most commonly “positive” inversion effects are found in the Biopharma industry sector. Of course, this sector has more inversions during our observation window than any other, so this effect may be due to the fact that this is the only industry in our sample that has sufficient data to yield relatively clear observations.
- (70) Although we are not able to observe country-specific location of key metrics such as employment and investment, we believe that the inversion specific effect on such things would be small. Companies in competitive industries are induced by the pressures they face to organize themselves in a way that most efficiently uses their resources. As such, investments will tend to be made where the environment for payoff on those investments will be highest. So, investment decisions relative to foreign and domestic operational location should be largely independent of a company’s tax home. Hence, we see our inability to assess the geographic location of certain metrics as a limitation of minimal consequence.
- (71) Finally, although this preliminary review is not intended to explore the causes and consequences of inversions in great detail, it does provide evidence that can contribute to a better understanding of the effects inversions have on companies that take this step, and it provides suggestions for additional research. Overall the evidence suggests that inversions do not cause harm to the companies involved. Neither do they appear to damage the companies’ contributions to economic growth. These and other questions that arise from this evidence merit additional exploration and discussion.

VII. Appendix A - Summary of 2004 changes to tax law related to inversions

- (72) In response to increased activity by domestic corporations that re-organized as foreign corporations (“inverted”) in the late 1990s and early 2000, Congress enacted, in 2004, a new IRS Code Section, 26 USC 7874 (or IRC 7874).¹⁷ Most notably, IRC 7874(a)(2)(B) alters the tax consequences of expatriation (including inversions) where:
- (1) At least 60 percent of the voting shares or the value of the ownership of the post-inversion entity is owned by the owners of the affected domestic corporation; or
 - (2) The post-inversion entity does not have substantial business activities in the country where it is incorporated.
- (73) Moreover, IRC 7874(b) mandates that a post-inversion entity will still incur US taxes as if it were a domestic taxpayer if the post-inversion entity is still 80 percent or more owned, either by value or control, by the affected domestic corporations.
- (74) IRC 7874 attempts to differentiate tax-motivated expatriations from acquisitions undertaken for perceived business synergies and opportunities. Implicitly, IRC 7874 assumes that transactions meeting the definitions above are undertaken primarily for tax reasons. This determination triggers certain rules under IRC 7874(e) that attempt to limit the tax benefits of these transactions.¹⁸
- (75) IRC 7874 means that a mere change in the location of incorporation of a US-headquartered business is not sufficient to avoid certain US income taxes.¹⁹ To be exempt from the restrictions of this section, a US taxpayer must show that its legacy ownership holds no more than 60% of the combined, post-inversion entity. Ownership must be diluted either through a merger with another foreign corporation or through the issuance of new shares to foreign stockholders to achieve this. When the

¹⁷ Public Law 108-357 became effective October 22, 2004 for corporations with taxable years ending after March 4, 2003. Public Law 109-135, effective December 21, 2005, amended subsection (a)(3) of this section to reflect that paragraph (1) shall not apply to any entity which is treated as a domestic corporation under subsection (b).

¹⁸ Tax credits recognized by an inverting taxpayer involved in this transaction are limited to the income or gain resulting from the transaction in a given year and the highest tax rate specified in IRC 11(b)(1), currently 35%. These credits are subsequently limited for the ten years following inversion as is the ability of the post-inversion entity to use loss carry forwards or carry backs. Similar consideration is made for partnerships. These limitations have the potential to increase US taxes that are due from the post-inversion entity.

IRC 7874 also extends the statute of limitations by which the IRS may assess any tax deficiencies resulting from the transaction to three years from the notification of the Secretary of the Treasury of the transaction. This opens the post-inversion entity to greater scrutiny by the IRS and a greater potential for audits than would otherwise occur.

¹⁹ More specifically, inversions attempt to limit US income taxes on pre-inversion foreign income earned but not yet repatriated to the US (i.e., on a foreign subsidiary’s accumulated earnings and profits).

legacy owners of the US corporation own between 60 percent and 80 percent of the post-transaction entity, they must demonstrate significant operations in the new country of incorporation.

VIII. Appendix B – Summary statistics by industry

Figure 38 - Summary statistics for sample of inverting and peer companies - By industry

Summary Statistics	Full Time Employees	Total Revenue (\$MM)	Market Cap (\$MM)	Total Assets (\$MM)	R&D Expense (\$MM)	Effective Tax Rate (%)
Inverting Companies - Biopharma						
Mean	4,409	\$ 1,736	\$ 7,091	\$ 4,652	\$ 123	27
Median	3,416	\$ 889	\$ 3,052	\$ 1,924	\$ 85	27
Minimum	185	\$ 21	\$ 56	\$ 107	\$ 14	0
Maximum	21,600	\$ 13,062	\$ 68,229	\$ 52,529	\$ 989	62
25th Percentile	760	\$ 272	\$ 1,446	\$ 569	\$ 66	16
75th Percentile	6,030	\$ 2,268	\$ 7,493	\$ 3,472	\$ 128	37
Peer Companies - Biopharma						
Mean	19,720	\$ 7,758	\$ 26,120	\$ 16,187	\$ 1,280	24
Median	9,564	\$ 2,519	\$ 9,196	\$ 4,618	\$ 389	23
Minimum	35	\$ (4)	\$ 29	\$ 8	\$ 1	0
Maximum	122,000	\$ 65,165	\$ 269,622	\$ 212,949	\$ 9,431	186
25th Percentile	1,847	\$ 498	\$ 2,503	\$ 864	\$ 82	16
75th Percentile	35,089	\$ 12,173	\$ 35,719	\$ 23,740	\$ 1,488	31

Summary Statistics	Full Time Employees	Total Revenue (\$MM)	Market Cap (\$MM)	Total Assets (\$MM)	R&D Expense (\$MM)	Effective Tax Rate (%)
Inverting Companies - FIRE						
Mean	13,950	\$ 2,716	\$ 5,197	\$ 8,500	-	26
Median	2,332	\$ 1,331	\$ 2,065	\$ 3,461	-	26
Minimum	234	\$ 33	\$ 194	\$ 77	-	1
Maximum	68,633	\$ 12,019	\$ 27,040	\$ 30,486	-	101
25th Percentile	1,181	\$ 568	\$ 873	\$ 1,701	-	19
75th Percentile	9,313	\$ 1,923	\$ 7,529	\$ 6,793	-	34
Peer Companies - FIRE						
Mean	8,821	\$ 2,843	\$ 6,059	\$ 45,334	-	29
Median	2,100	\$ 919	\$ 1,349	\$ 2,736	-	29
Minimum	59	\$ 0	\$ 0	\$ 1	-	0
Maximum	79,044	\$ 45,987	\$ 91,504	\$ 1,121,192	-	105
25th Percentile	741	\$ 322	\$ 598	\$ 906	-	23
75th Percentile	5,745	\$ 1,712	\$ 3,746	\$ 7,543	-	35

Summary Statistics	Full Time Employees	Total Revenue (\$MM)	Market Cap (\$MM)	Total Assets (\$MM)	R&D Expense (\$MM)	Effective Tax Rate (%)
Inverting Companies - Other						
Mean	12,560	\$ 3,144	\$ 7,698	\$ 7,488	\$ 177	37
Median	2,623	\$ 1,271	\$ 4,400	\$ 2,309	\$ 52	30
Minimum	3	\$ 5	\$ 51	\$ 0	\$ 5	1
Maximum	103,000	\$ 22,552	\$ 43,707	\$ 72,842	\$ 647	659
25th Percentile	700	\$ 215	\$ 698	\$ 1,098	\$ 8	24
75th Percentile	7,810	\$ 3,142	\$ 9,787	\$ 7,138	\$ 335	36
Peer Companies - Other						
Mean	36,241	\$ 7,877	\$ 14,443	\$ 13,040	\$ 453	40
Median	7,356	\$ 1,021	\$ 1,664	\$ 1,267	\$ 41	31
Minimum	3	\$ 0	\$ 1	\$ 0	\$ 0	0
Maximum	465,000	\$ 127,245	\$ 234,241	\$ 278,026	\$ 3,686	1,193
25th Percentile	985	\$ 172	\$ 297	\$ 197	\$ 10	22
75th Percentile	26,250	\$ 4,200	\$ 9,009	\$ 6,104	\$ 257	37