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CORPORATE INVERSIONS AND ECONOMIC PERFORMANCE

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This paper assesses the economic factors associated with corporate inversions, including the 48 inversions that have occurred since the analysis of Desai and Hines (2002). The analysis presented here is observational, not causal, as it examines how the business activities of firms that chose to invert changed after expatriation. In addition to statistically assessing the equity market's reaction to inversion announcements, this paper examines how firms alter their patterns of employment and investment after inversion. In particular, the paper follows how the foreign shares of an inverting firm's employment and investment change following inversion, relative to comparable non-inverting firms. The behavior of inverting firms following expatriation is assessed going back to 1980 as well as only after the 2004 policy change, which made expatriation through merger with a foreign firm with substantive foreign business activities more attractive. The results suggest that inverting firms have higher shares of their employees and capital expenditures located abroad after inversion relative to changes experienced by similar non-inverting firms. Further, these increases are not attributable to one-time changes due to the inclusion of a new foreign partner's existing workforce and ongoing investments; foreign shares of employment and investment are higher two or more years after inversion relative to the first year after inversion when any one-time increases would occur.

Keywords: corporate inversion, offshoring

JEL Codes: H87, H25, F23, G34

I. INTRODUCTION

News that a U.S. firm has decided to invert, that is re-incorporate as a foreign firm, is generally met with concerns regarding the causes, such as the relatively high U.S. corporate tax rate and system of taxing worldwide income, and the consequences of such tax policy, which include worries about the offshoring of jobs. Repeated attempts by Congress through legislation and the executive branch through regulations to stem

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the flow of firms abroad have not stopped the expatriation of U.S. firms. Recent inversions, such as the expatriation of Medtronic Inc. to Ireland and Burger King Worldwide Inc. to Canada, have renewed calls for both measures to directly curtail the tax benefits of inverting and more comprehensive tax reform that would reduce U.S. marginal tax rates in order to make the United States a more hospitable incorporation location.

The first U.S. inversion, the move by Louisiana-based construction company McDermott International Inc. to Panama in 1982, was quickly followed by the addition of §1248(i) to the tax code. The new provision disallowed inversions of the same form as McDermott's re-domiciliation. Legislative reaction to Helen of Troy Ltd.'s 1994 expatriation from El Paso to Bermuda brought new tax treatment under §367, which made shareholders of a U.S. target firm liable for taxes on gains between the share purchase price at the time of inversion and their existing cost-basis if the transferring U.S. shareholders owned more than 50 percent of the new corporation. The late 1990s and early 2000s brought a spate of new inversions, including the notable expatriation of Tyco International in 1997.[1] These inversions led Congress to add new anti-inversion provisions to the 2004 American Jobs Creation Act, creating §7874 of the Internal Revenue Code. These measures became the primary corporate-level anti-inversion provisions and aimed to disallow inversions where a U.S. firm simply re-incorporated abroad without a substantial business presence in the foreign jurisdiction.

The adoption of §7874 raised the threshold for expatriation. Under §7874, if the U.S. target firm's shareholders own at least 60 percent but less than 80 percent of the new inverted firm, the new foreign firm has acquired substantially all of the assets of the U.S. target and the new firm lacks substantial business activities in the new foreign jurisdiction of incorporation, then for a 10-year period after the inversion, the U.S. target firm will be subject to U.S. corporate income taxes on its "inversion gain." [2, 3] After years of case-by-case evaluations of the tax implications of potential inversions, in 2012, the IRS issued new guidance that requires at least 25 percent of a company's employees, assets, and income to be located in or to be derived from the new country of incorporation for the firm to no longer be considered a U.S. firm for tax purposes. The dynamic effect of this measure aimed at immediately slowing inversions was to make substantive mergers more likely.

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[1] According to Avi-Yonah (2002, p. 1794), "Until Tyco inverted successfully in 1997, investment bankers generally assumed that a U.S. company would pay an unacceptable price in its share value if it reincorporated in Bermuda … But after Tyco, it became clear that share prices do not drop as a result of reincorporation." On the other hand, Hanlon and Slemrod (2009) found that a company's stock price declines on average when there is media coverage of its use of tax shelters. The decline is smaller, however, for firms that are viewed to be less tax aggressive. Desai and Dharmapala (2009) similarly found that tax avoidance is not simply a transfer of resources from the state to shareholders due to governance issues and agency problems.

[2] For an excellent overview of inversion transactions, see New York State Bar Association Tax Section (2002). For additional detail on §7874, see New York State Bar Association Tax Section (2014).

[3] Under §7874, if the U.S. target's shareholders own 80 percent or more of the new firm, then it will be treated like a domestic firm for U.S. tax purposes.

By enacting §7874 to prevent inversions that were simply a change of address and not a move abroad for business reasons, policymakers made mergers with substantive foreign firms more attractive to firms looking to invert for tax purposes. First, merging with a substantive foreign firm first makes it more likely that the shareholders of the U.S. target firm will own less than 60 percent of the new firm — the key threshold for §7874 to apply. Second, merging with a substantive foreign firm makes it more likely that the newly inverted combined firm will have enough foreign business activity to meet the new 25 percent "bright-line" test the U.S. Department of the Treasury introduced in 2012.

The measures of §7874 may have deterred self-inversions successfully, but they may have made the loss of U.S. business activity more likely. The substantive foreign companies U.S. firms now merge with are more likely to have existing plants, research centers, or sales forces in the foreign jurisdiction. With these operations and facilities already in place, foreign merger partners may demand that more business activity be moved abroad or that marginal increases in business activity be located abroad. Furthermore, firms may locate new or existing operations abroad to reduce U.S.-source income still subject to U.S. corporate tax rates even after inversion.

This paper assesses the economic factors associated with corporate inversions, including the 48 inversions that have occurred since the analysis of Desai and Hines (2002). In addition to statistically assessing the equity market's reaction to inversion announcements, this paper examines how firms alter their patterns of employment and investment after inversion. In particular, the paper examines how the foreign shares of an inverting firm's employment and investment change following inversion, relative to comparable non-inverting firms. The behavior of inverting firms following expatriation is assessed going back to 1980, as well as only after the 2004 policy change. The results suggest that inverting firms have higher shares of the employees and capital expenditures located abroad after inversion relative to changes experienced by similar non-inverting firms. Firms that inverted after 2004 drive these effects, suggesting that regulatory policy did in fact affect the nature of inversions and associated post-inversion behavior. These increases are not attributable to one-time changes due to the inclusion of a new foreign partner's existing workforce and ongoing investments; foreign shares of employment and investment are higher two or more years after inversion relative to the first year after inversion when any one-time increases would occur.

It is important to note that the analysis presented here is observational and simply examines how the business activities of firms that chose to invert changed after expatriation. It follows firms for whom inversion was optimal. The results do not inform our view of the impact of inversion on a random firm or even a firm on the margin of inverting. The behavior pattern we observe is not necessarily causal. Rather than inversion leading to higher foreign shares of employment and investment, it may well be true that firms that planned to increase their foreign activities choose to invert; that is, causality could run in the reverse direction. Alternatively, both expatriating and increased foreign activities may be driven by a third outside factor. While we cannot attribute the changes in foreign employment and investment shares following inversion to the act

of inverting, the analysis illustrates how the business activities of these inverting firms changed following inversion.

The following section of the paper describes the U.S. tax system's treatment of international income and the incentives for expatriation it creates. It also details stock market reactions to inversion announcements. Section III describes the data used in the analysis and the empirical strategy. Section IV reports how real economy outcomes like employment and investment differ post-inversion. Section V concludes.

II. THE TAXATION OF FOREIGN INCOME AND INCENTIVES TO INVERT

Corporate income earned abroad by U.S. multinational corporations is potentially subject to both U.S. taxation and taxation by foreign governments. The United States has to a worldwide tax system, taxing earnings of U.S. corporations regardless of where they are earned, while much of the world has implemented territorial tax systems. This discrepancy creates incentives for U.S. firms to invert, that is, to expatriate and incorporate in a foreign country.[4] Policy attempts to avoid costly double taxation of such income form the crux of the complications of international taxation. These rules and their implications are discussed below.

A. U.S. Taxation of Foreign Income

To prevent the same income from being subject to multiple taxes, the United States allows firms to claim tax credits for income and related taxes paid to foreign governments.[5] For example, a U.S. firm subject to the 35 percent U.S. corporate tax rate earning $100 in profits in a foreign country with a 15 percent corporate tax rate could potentially make use of foreign tax credits. Rather than owing $35 in taxes to the U.S. government on $100 of income earned abroad, the U.S. firm would only need to remit $20 to the U.S. Treasury if it paid $15 in foreign taxes on that income. The firm can claim a foreign tax credit for the income taxes paid to the foreign government, offsetting $15 of U.S. tax liabilities and thus only owing $20 in U.S. taxes. Foreign tax credits in this case do not reduce the total tax burden — the firms still remits 35 percent of its income in taxes — but they do reduce the U.S. share of taxes remitted.[6]

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[4] In addition to the United States, Chile, Greece, Ireland, Israel, South Korea, and Mexico all use worldwide tax systems. Both the United Kingdom and Japan transitioned to a territorial system in 2009. It should be noted that the possibilities (discussed below) for tax deferral and cross-crediting of foreign tax credits may imply that tax rates for some firms are lower under worldwide taxation than they would be under a purely territorial system.

[5] For more detail on the necessary characteristics for a foreign tax to be eligible for foreign tax credits, see West and Varma (2012).

[6] A U.S. firm can directly claim foreign tax credits for foreign taxes it itself pays. A U.S. corporation can also claim "indirect" or "deemed" foreign tax credits if it owns at least 10 percent of a foreign corporation that pays foreign taxes; it can only claim these credits, however, when the foreign income earned by the subsidiary is distributed to the U.S. parent or included in the U.S. corporation's income under Subpart F of the U.S. tax code.

U.S. taxes are not necessarily owed in the year foreign income is earned. U.S. multinationals can defer any U.S. taxes owed on foreign subsidiary profits until the foreign subsidiary distributes the earnings back to the U.S. parent as dividends. However, Subpart F income — which is typically income of a controlled foreign corporation that is relatively movable across tax jurisdictions, such as insurance income — is not subject to deferral. For income not subject to Subpart F, the firm must also wait until distribution to claim any accompanying foreign tax credits. Generally, the share of a foreign subsidiary's total earnings deemed distributed to the U.S. parent determines the share of foreign taxes paid that can be claimed as foreign tax credits. For example, if the U.S. cooperation's foreign subsidiary in the example above is not subject to Subpart F and only distributes $34 of after-tax earnings back to its U.S. parent and re-invests the remaining $51 in its own operations, then the U.S. parent is eligible for only a fraction of the potential $15 foreign tax credit. The U.S. parent can only claim $6 (=15 × (34/85)) in foreign tax credits. Deferral is only available on active business profits of a foreign-incorporated affiliate. Earnings from affiliates that are not separately incorporated abroad are immediately subject to U.S. taxation.

Controlled foreign corporations — foreign corporations that are at least half owned by U.S. individuals or corporations with each stakeholder owning at least 10 percent — are subject to additional provisions to limit attempts by U.S. firms to delay the distribution of foreign profits subject to very low tax rates to the U.S. parent. Under Subpart F certain types of foreign income are deemed distributed when earned and thus are subject to U.S. taxes regardless of whether they are repatriated to the U.S. parent.[7] U.S. firms are not subject to Subpart F and can indefinitely defer remitting U.S. taxes on income earned abroad if the subsidiaries generating the income have active business operations and the profits are re-invested in active business lines of the subsidiary.

Foreign tax credits are limited to the U.S. tax liability on foreign-source income. This limit prevents tax credits earned on income abroad from offsetting taxes owed on income earned in the United States. For example, the foreign tax credit limit on $100 of foreign-source income is $35 if the firm is subject to the 35 percent corporate tax rate. If a firm has paid less than $35 in foreign taxes, it is not foreign tax credit limited and can claim credits for all of the foreign taxes paid. It is said to have "deficit foreign tax credits." These are the firms for whom the U.S. system of taxing worldwide income is most onerous and expatriation is most attractive. If the firm operates in a foreign jurisdiction with tax rates that exceed the U.S. rate, that is, if the firm has paid more than $35 in foreign taxes, then it is credit limited. Such a firm can claim a maximum of $35 in foreign tax credits that year. The difference between a firm's credit limit and the foreign taxes it has paid is its "excess foreign tax credits." A firm's excess foreign tax credits measure the excess taxes it has paid to foreign governments relative to U.S.

[7] Income subject to immediate taxation under Subpart F includes income used to insure against U.S. risk, foreign base company income that arises from using a foreign subsidiary for international transactions that are not directly connected to the subsidiary's country, income from passive investments like securities, income invested in U.S. property, and, interestingly, income used to pay bribes to foreign officials.

tax obligations (before foreign tax credits) on income earned abroad. Firms can carry excess foreign tax credits back up to two years or carry them forward up to five years; because the credits are not adjusted for inflation, the time value of money makes it most attractive to carry excess credits back rather than forward.[8]

A firm's foreign tax credit limit is not determined country-by-country but instead on a worldwide basis. A firm's excess foreign tax credits are the sum of all income taxes paid to foreign governments less the U.S. obligation on foreign-source income. Tax payments exceeding U.S. obligations in one foreign country can offset U.S. taxes that would otherwise be owed on income earned in a country with lower taxes than the United States.[9] This worldwide averaging reduces the likelihood of excess foreign tax credits, reducing the tax cost of remaining incorporated in the United States while having active foreign business operations.

Foreign tax credits are also affected by allocation rules that allocate certain expenses incurred in the United States between domestic and foreign income. These expenses include interest payments, research and developments expenditures, and overhead costs. Even if incurred in the United States, these expenses are believed to aid operations both in the United States and abroad. Following this logic, shares of each of these expenses must be allocated to domestic and foreign income according to specific formulas. Interest expenses are divided between foreign and domestic income according to the share of assets held in the United States versus abroad. Research and development and general overhead are allocated between foreign- and domestic-source income according to a formula that depends on both where the activity is conducted and the share of sales that is foreign versus domestic.[10] These allocation rules reduce a firm's foreign tax credit limit: expenses allocated to foreign income reduce foreign income and thus reduce the associated U.S. tax obligation and foreign tax credit limit. These rules adversely affect firms with excess foreign tax credits — as expenses are allocated to foreign income, their foreign tax credits are further limited. They have no such effect on firms that pay less than the U.S. obligation in foreign taxes and thus have deficit foreign tax credits.

This system of taxing income earned abroad by U.S. firms and then offering foreign tax credits for taxes paid to foreign jurisdictions makes U.S. incorporation (with its

[8] Firms subject to the corporate AMT have an additional limitation since their combined net operating loss and foreign tax credit tax reductions cannot amount to more than 90 percent of their AMT tax liabilities. Because income subject to the AMT is taxed at a relatively low 20 percent marginal tax rate, a firm subject to the AMT will have more excess foreign tax credits for the same income from the same foreign jurisdictions than a non-AMT firm.

[9] One limitation of cross-country crediting is the allocation of foreign income into baskets based on how the income was earned. The baskets separate income earned from active business operations from passive income and income earned from specific activities that may be subject to particularly high foreign tax rates, such as shipping, oil production, and others. For more detail on these baskets and the implications of allocation, see Desai and Hines (1999). The 2004 American Jobs Creation Act consolidated a number of baskets making it less likely that a firm would have excess foreign tax credits.

[10] These allocation formulas have been subject to frequent changes. Hines, Hubbard, and Slemrod (1993) assesses the impact of the allocation formula for research and development expenses.

obligation to pay U.S. corporate taxes) disadvantageous for firms that face low tax rates abroad. Any stock of un-repatriated earnings abroad makes expatriation even more immediately advantageous as the firm can avoid all U.S. taxes on this accumulated income.[11]

B. Incentives to Invert

Expatriation or inversion describes the relocation of a corporation's legal domicile from the United States to a lower-tax foreign nation. Inversions often do not involve the relocation of a firm's corporate headquarters, only a change in its legal domicile. There are three potential sources of tax advantages from inverting.[12] First, the inverted firm can establish new foreign operations without being subject to controlled foreign corporation rules. In fact, the tax saving may be significant enough to justify moving existing foreign operations held by the U.S. firm to the new parent, even though these transfers are generally taxable at the corporate level. Once the assets and the business lines are no longer owned by a U.S.-incorporated firm, they are no longer subject to U.S. taxation, specifically the firm no longer owes residual U.S. taxes on what had been foreign-source income.[13] Second, there is the possibility of tax savings on U.S.-source income. Any means of reducing the profits booked by U.S. affiliates, such as paying the foreign parent tax deductible interest or royalties through a treaty jurisdiction like Barbados or Luxembourg, or using advantageous transfer pricing, will reduce U.S corporate tax liabilities once the firm has re-domiciled out the American worldwide tax system. Seida and Wempe (2004) show firm effective tax rates decline substantially after inversion, which they infer is largely due to earnings stripping. Finally, inverting can facilitate a firm's use of unrepatriated foreign earnings for the inverting acquisition or in subsequent deals.[14, 15]

Tax factors have been shown to affect who chooses to invert. Voget (2011) finds that repatriation taxes weigh on expatriation decisions, with a 10-percentage-point increase

[11] For more on the electability of corporate residency and the incidence of trapped old equity, see Shaviro (2010).

[12] There is reason to believe that many U.S. corporations could benefit from incorporating elsewhere. Collins and Shackelford (2003) find that companies domiciled in the United States face higher tax burdens than both U.S. domestic-only companies and Canadian multinationals (though they face similar tax burdens to British multinationals).

[13] The United States withhold taxes on certain interest payments, dividend distributions, and royalties to individuals and firms in other countries. Though withholding may apply, the tax rates applied are often reduced if the receiving individual or firm resides in a country with which the United States has a tax treaty, sometimes to zero.

[14] The use of "locked-out" overseas cash was one reason cited for Pfizer's recent interest in acquiring UK-based AstraZeneca. According to Pfizer Chief Financial Officer Frank D'Amelio, "[Relocating] would still allow me to access the offshore funds and do it in a tax-efficient way," as more than 70 percent of Pfizer's $49 billion in cash was held abroad (Hoffman, 2014).

[15] Interestingly, Atlshuler, Newlon, and Randolph (1995) shows that tax rate changes only affect earnings repatriation behavior of U.S. firms when the changes in rates are temporary rather than permanent.

in taxes increasing the share of relocating multinational firms by 2.2 percentage points. Recent work by Chorvat (2015) suggests that inverting particularly benefits firms with intangible assets.

C. A Brief History of Inversions and Anti-Inversion Regulations

Firms have used different types of transactions over the years to invert. A table describing the set of inversions analyzed, providing the date of announcement, transaction detail, a description of the firm's line of business, as well as whether the firm reports the segment data necessary for the regression analysis is available online.[16] The first inversion occurred in 1982 when McDermott, a Louisiana-based construction company, changed its legal domicile to Panama. The corporation's Panamanian subsidiary served as a holding company for all of McDermott's foreign operations and had built up significant profits on which the firm was reluctant to pay U.S. corporate taxes. McDermott chose instead to invert its corporate structure by making its Panamanian subsidiary the new parent of its U.S. operations. Inverting allowed McDermott to distribute its foreign profits to its shareholders as dividends while avoiding U.S. corporate taxes. This notable event led to the addition of §1248(i) to the tax code, which prevented future inversions of the same form as the McDermott transaction. The next inversion, Helen of Troy's 1994 expatriation from El Paso to Bermuda via the creation of a new subsidiary that then became the parent, brought new regulatory rules. Additional regulations under §367 of the Internal Revenue Code imposed shareholder taxes on transfers of appreciated property to a foreign corporation in an otherwise tax-free transaction if U.S. transferors owned at least 50 percent of the new firm after the transaction. These §367 regulations were of course less effective in discouraging inversions where shareholders had little accumulated gains or were not subject to U.S. taxes.

A rash of inversions in the late 1990s and early 2000s, including the notable expatriations of Tyco International and Stanley Works, led Congress to add new anti-inversion provisions to the 2004 American Jobs Creation Act. The measures of §7874 were made retroactive to 2003. §7874 became the primary corporate-level provision aimed at discouraging inversions, though §367 can still apply at the shareholder level. The section has two subparts §7874(a) and §7874(b), which apply under different inversion conditions and have differing tax implications.

If an inversion meets the three conditions that make it subject to §7874(a), then for a 10-year period after the inversion the U.S. target firm will be subject to U.S. corporate income taxes on its "inversion gain," which are gains related to certain asset transfers and licenses. The three requisite conditions for §7874(a) to apply are: (1) a foreign corporation acquires substantially all of the assets of a domestic target; (2) after the acquisition, former shareholders of the target firm own at least 60 percent of the foreign firm; and importantly, (3) after the acquisition, the firm does not have "substantial busi-

[16] Please see the online appendix available at: http://wagner.nyu.edu/files/faculty/publications/OnlineAppendix.pdf.

ness activities" in the foreign jurisdiction. Alternatively, if after the inversion former shareholders of the target firm own at least 80 percent of the foreign firm, then §7874(b) applies. If §7874(b) applies, then the inverted firm will be treated like a domestic firm for tax purposes.

Prior to the 2004 law that changed the tax treatment of expatriating firms, there were measures to limit the ability of firms moving their domiciles outside of the United States to do business with the federal government. The 2002 law creating the Department of Homeland Security forbade the new agency from contracting with inverted firms; subsequent spending bills have extended the ban to all federal agencies.[17]

American corporations were soon inverting by making use of the "substantial business activities" exception of §7874, leading the Internal Revenue Service to release several sets of temporary regulations between 2006 and 2012 that clarified and further limited the exception. In Internal Revenue Service (2006), the IRS identified two separate tests that could be used to identify whether a firm was eligible for the "substantial business activities" exception: (1) the "safe harbor test," which required 10 percent of a corporation's employees, assets, and sales to be located in its new country of incorporation; and (2) the "facts and circumstances test," which would require all corporations that did not pass the "safe harbor test" to be evaluated on a case-by-case basis. The IRS quickly deemed the "safe harbor test" to be too expansive and repealed it in 2009. In Internal Revenue Service (2012), the IRS also replaced the "facts and circumstances test" with a "bright line test" that required at least 25 percent of the company's employees, assets, and income to be located in or derived from its new country of corporation.

In September 2014, the U.S. Treasury issued a notice intended to reduce the tax benefits of inverted corporations.[18] More recently, members of Congress have considered new legislation to stanch the flow of firms abroad. The Stop Corporate Inversions Act of 2015 proposes amending §7874 to apply to all inversions where company management is located primarily within the U.S. after the transaction and the company has significant business activities located within the U.S.

III. DATA AND EMPIRICAL STRATEGY

The data used in this study come from corporate announcements and financial data from public sources. Inversion dates were collected from firm announcements generally found among each firm's investor relations documents. Stock market return data come

[17] In 2006, the prohibition was extended to apply to the Departments of Transportation, Treasury, and Housing and Urban Development, the Judiciary, and independent agencies. The Consolidated Appropriations Act of 2008 prohibited all federal agencies from contracting with inverted firms; this has been renewed in subsequent appropriations acts.

[18] More specifically, the notice limited a corporation's ability to restructure a foreign subsidiary in order to access its earnings tax-free and to access those earnings by having the foreign subsidiary make a tax-free "hopscotch loan" (to the foreign parent instead of the U.S. parent). It also eliminated the cash-free transfer of cash or property to the new foreign parent company and strengthened the requirement that former shareholders must own less than 80 percent of the new company. For further detail please see U.S. Department of the Treasury Notice 2014–52.

from Center for Research in Security Prices (CRSP) at the University of Chicago Booth School of Business. The annual financial statement data are from corporate 10-Ks filings as reported by Compustat. In addition to general balance sheet and income statement data, the study draws on fields from Compustat's Historical Segments Data (hereafter referred to as "Segments data"), which provides business and geographic segment detail for over 70 percent of the companies in Compustat's North America database. It is important to note that the Segments data are self-reported by corporations, meaning that reporting is voluntary and not based on standardized definitions of lines-of-business or geographic areas.[19] The lack of standardization is not especially problematical, as this investigation focuses exclusively on distinctions between domestic and foreign activities, which are classifications less susceptible to subjectivity.[20]

A more pressing concern is that geographic breakdowns are provided voluntarily: Segment data are only detailed by firms willing to reveal these disaggregations. Firms that decide that the differences between their foreign and domestic operations are immaterial, irrelevant, or politically sensitive can and will opt to not report these details. Thus, these data are clearly a self-selected sample.

To draw meaningful comparisons, a sample of non-inverting firms was assembled based on characteristics not used as outcomes of interest or explanatory variables in the analysis. Like Desai and Hines (2002), the comparison sample here is selected based on the frequency with which the firm reports export sales. Annual financial data were drawn from Compustat beginning in 1980, roughly three years prior to the first inversion, through 2014, the last full calendar year at the time of this study. Of the 59 inversions recorded for this period, 27 report sufficient foreign employment data, and 20 report sufficient foreign capital expenditures to be included the regression analysis.

A. Sample Details and Summary Statistics

Table 1 details how the final sample for the regression analysis compares to the broader Compustat database in terms of key balance sheet and income statement items. These summary statistics provide a sense of how firms that report sufficient segment data and meet other data requirements for the analysis differ from the average firm in the Compustat database.

The top panel of Table 1 describes the Compustat universe over the sample period. The Compustat database describes Total Assets for 316,564 firm-years between January 1980 and December 2014. This broad sample has mean Total Assets of $5,098 billion with an interquartile range of $17.9 billion to $814.7 billion. Total Long-Term Debt

[19] That is, the countries and regions included in, for example, the "Asia Pacific" non-domestic segment may differ by company.

[20] For each segment that a firm reports data, Compustat provides a field labeling the segment "domestic" or "non- domestic." These are the designations used here to determine whether a segment is foreign or domestic.

Table 1

Sample Comparison, January 1980–February 2015 ($Billions)

	Observations	Mean	P25	P50	P75	P90
Full sample						
Total assets	316,564	5,098	17.88	121.3	814.7	4,180
Total long-term debt	315,420	895.1	0.03	7.15	135.9	889.6
Total revenue	314,358	1,624	10.63	75.45	490.2	2,393
Net income	314,938	88.22	–1.76	1.54	20.91	134.5
Segment sample						
Total assets	227,238	3,353	17.07	104.0	711.9	6,872
Total long-term debt	226,805	766.1	0.12	7.16	240.6	1,511
Total revenue	226,543	1,753	13.67	92.22	571.8	2,724
Net income	226,539	91.83	–1.40	1.54	22.11	144.1
Geographic segment sample						
Total assets	50,965	6,102	48.19	302.5	1,816	8,370
Total long-term debt	50,847	1,559	0.14	28.17	479.0	2,054
Total revenue	50,926	3,002	34.89	224.9	1,197	5,157
Net income	50,927	172.8	–3.77	4.31	56.73	303.1
Regression sample						
Total assets	4,319	4,017	16.92	98.00	759.2	4,387
Total long-term debt	4,305	1,032	0.00	2.60	119.4	953.5
Total revenue	4,319	2,379	17.16	90.21	731.7	3,475
Net income	4,319	1722.2	–2.70	1.07	23.77	220.7

Notes: Each panel reports the means of the nominal values of the variables as reported by Compustat in billions of U.S. dollars. The top panel refers to the entire Compustat database of annual financial filings between January 1980 and February 2015. The second panel restricts the sample to firm-years that are successfully matched between the Compustat annual financials and the Compustat Historical Segments data. The third panel further restricts the sample to firms that invert and non-inverting firms that report export data for at least half of the years they are in the Compustat database. The bottom panel further restricts the sample to firms that report exports sales data for at least half of the years that Compustat provides their 10-K financial data.

averages $895.1 billion with a median of only $7.2 billion. The average Total Revenue is roughly $1,624 billion although average Net Income is $88.2 billion. All four distributions are heavily right-skewed. The second panel of Table 1 describes the subset of firm-year observations that are successfully merged with segment data from Compustat's Historical Segment Data. A firm-year observation will be successfully merged if that firm reports either business line or geographic segment data in that year. Roughly 30 percent of firm-years in the Compustat universe cannot be successfully matched because they do not report any kind of segment data. This matched sample is on average characterized by lower assets and less debt than the broader Compustat sample, while revenue and net income levels are much more similar (and somewhat higher). The third panel describes the set of firms that report geographic segment details in at least some years between 1980 and 2014. Nearly 80 percent of firm-years that include any segment data report only line-of business. The subset of firms that do report geographic segment data have more assets, more debt, greater revenue, and higher net income on average. This is true throughout the distribution (except that the 25th percentile of firms in this sample are less profitable than firms that report any kind of segment data).

The bottom panel of Table 1 describes the sample used in the regression analysis. This sample consists of firms that invert (and report geographic segment data) and non-inverting firms deemed to have significant enough international activity to be comparable to firms that choose to invert. It is important that the criteria used for selecting these non-inverters be unrelated to the dependent or explanatory variables used in the regression analysis. The sample of non-inverting firms is restricted to firms that report export sales for at least half of the years that their 10-K data are reported by Compustat. These are the firms I consider most comparable to firms that choose to invert, as they demonstrate meaningful foreign activity and could potentially engage in the types of foreign employment and investment that are the outcomes of interest in the analysis.[21] The sample used in the regression analysis is actually more similar in terms of medians to the broad Compustat sample and the sample that reports any kind of segment data than the general subsample that reports geographic data. The regression sample has average Total Assets of $4,017, roughly 80 of the broader Compustat sample described in the top panel. Its average Total Long-Term Debt ($1,032) is somewhat higher than the full sample, while its average Total Revenue ($2,379) and Net Income ($172.2) are meaningfully higher than the broader sample.

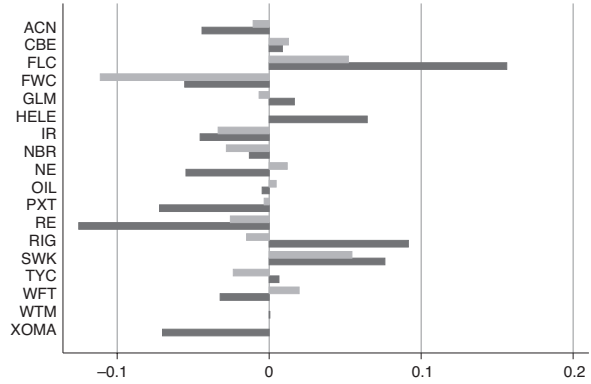
B. Market Reactions to Inversion Announcements

The reaction of the stock market to a firm's announcement that it plans to invert provides a useful measure of the change in expected after-tax cash flows related to the inversion. Figure 1 describes the near-term market reaction to the inversion announcements of 42 firms. The raw percentage changes in share prices are plotted, unadjusted for the performance of the general market for greater transparency. The upper and lower bars for each firm respectively report the one-day and five-day percentage changes in

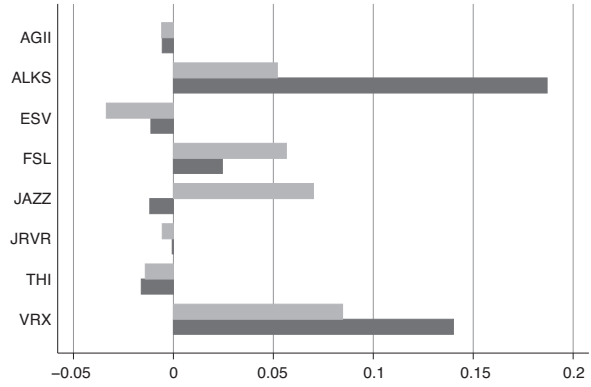
[21] Desai and Hines (2002) restricted their sample of comparable non-inverting firms to those that continuously provided export data from 1992 until 1998, seven years in the middle of their sample period.

Figure 1

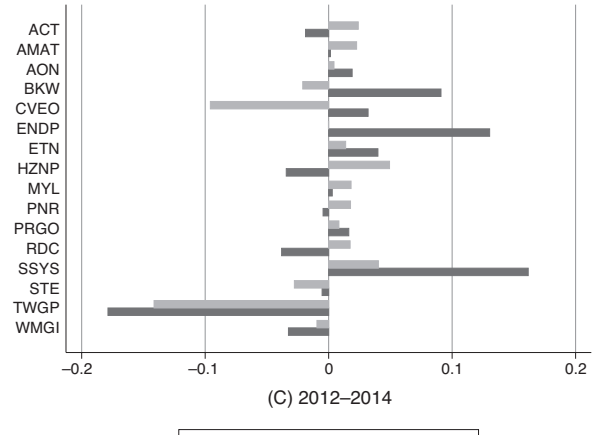
One-Day and Five-Day Share Price Percentage Increase, 1982–2014



(A) 1982–2003



(B) 2004–2011



(C) 2012–2014

equity share prices following the announcement.[22] The top panel describes inversions between 1982 and 2003, the middle panel inversions between 2004 and 2011, and the bottom panel inversions between 2012 and 2014. As the bars indicate market reactions are mixed for all three figures, meaning that during the periods prior to the adoption of §7874, after the adoption of §7874, and before and after the bright-line test, the market believed in many cases that the expected costs related to expatriating, including any applicable corporate and shareholder capital gain taxes, outweighed the anticipated benefits.

C. Empirical Strategy

Beyond the financial markets reaction to a firm's inversion announcement, this study is concerned with the impact of inversion on other aspects of a firm's economic performance. In particular, as detailed in Section II.A, the U.S. system of taxing the foreign income of U.S. corporations and taxing the U.S. income of foreign corporations creates strong incentives to invert and then move economic activity abroad following inversion. Reincorporation abroad can potentially only mean a change of address but not substantive changes in the way a firm does business. In this case, while the expatriation will affect the amount of tax revenue raised by taxing authorities in different jurisdictions, it will not change the way factors are employed by the firms in the United States or abroad. On the other hand, if expatriation affects the firm's operations, there may be real economic consequences to the change of address. The empirical analysis below specifically assesses how the share of a firm's employees that is located outside of the United States and how the share of its capital expenditures outside of the United States change following inversion.

It is important to note that the empirical analysis provides only observational insight. The estimates simply report how the employment and investment patterns of firms that chose to invert evolved following the expatriation. The estimated coefficients do not have a causal interpretation. Firms that have undertaken inversions systematically differ from firms that have not chosen to invert in observable and unobservable dimensions. The behavior of inverting firms after expatriation does not suggest how inversion would affect a random U.S. corporation or even a firm on the margin of inverting. Nonetheless, understanding how firms that found it advantageous to re-incorporate outside of the United States altered their investment and employment patterns provides us with a sense of the aftermath of expatriation for these firms.[23] Moreover, if changes in the rules

[22] The one-day change is the return on the next trading day following the inversion announcement while the five-day change is the cumulative return over the following five days.

[23] As the results are observational, it would be incorrect to interpret the post-inversion behavior of inverting firms as an effect caused by inversion. It could be true that planned offshoring of employees or investment made inversion more attractive to these firms and thus caused them to invert. Or, a confounding factor could be at work, making capital expenditures, hiring abroad and expatriation more attractive. The existence or direction of a causal link is not discernible from the observational nature of this study.

governing inversion affected the post-inversion behavior of expatriating firms, we can potentially better understand how policy choices have affected inversions.

The empirical analysis attempts to understand whether firms increase their foreign shares of employment and investment after inversion and whether these shares continue to increase or decrease in the following years. The first set of regressions simply assesses whether foreign employment and capital expenditure shares are higher in the years after inversion compared to the years prior to inversion, relative to a set of similar firms that chose not to invert but were impacted by the same general business climate as the inverting firms. The non-inverting sample of firms controls for trends and economic forces generally affecting the location of employees and investment during the sample period. These regressions have the general form

$$(1) \quad Y_{it} = \alpha + \beta_0 Inversion_i + \beta_1 Inversion_i \times Post_{it} + \delta_t + X_{it\gamma} + \varepsilon_{it},$$

where Y_{it} is either the ratio of employees of foreign segments to total employees across all of a firm's geographic segments or the ratio of capital expenditures of foreign segments to total capital expenditures across all of a firm's geographic segments. In addition to the constant term (α), and year fixed effects (δ_t), some regression specifications include time-varying firm controls, X_{it}. They key regressor of interest, $Inversion_i \times Post_{it}$, is an interaction between a dummy variable equal to one if firm i inverts at some point between 1980 and 2014 and the time-varying variable $Post_{it}$, which equals one if firm i inverted in a year prior to t. Thus, the interaction term is equal to one for observations describing an inverting firm in its post-inversion years. The regression also includes the main effect, $Inversion_i$. In some specifications, the constant and $Inversion_i$, the dummy variable equal to one if a firm ever inverts, are replaced by firm fixed effects.

The coefficient β_1 in effect measures how the average foreign share of employment (or investment) in the years after inversion compares to the average share in the years prior to inversion, relative to how the shares changed for non-inverting firms. This regression essentially assesses whether firms are different after they invert in terms of where they employ workers and incur capital expenditures.

Of course a U.S. firm that combines with a foreign firm is likely to report more foreign employees and investment following inversion, as it will include the foreign firm's existing employees and ongoing foreign investment along with its own in the years after inverting. Such a one-time aggregation impact does not necessarily mean the operations that the U.S. firm undertook before inversion have somehow geographically changed after expatriation. To better understand how foreign employment and investment shares evolve following inversion, I focus on the post-inversion period and estimate the following regression model, where the year of inversion is denoted by τ,

$$(2) \quad Y_{it} = \alpha_i + \beta Inversion_i \times PostTwo_{it} + \delta_t + X_{it\gamma} + \varepsilon_{it} \quad \forall_t \geq \tau + 1.$$

The dependent variable, Y_{it}, in (2) again is the foreign share of employees or the foreign share of capital expenditures. Here, however, the sample is limited to at least one year

after inversion for all inverting firms. Firm fixed effects, α_i, control for unobservable differences across firms, while year fixed effects, δ_t, control non-parametrically for common annual factors affecting all firms. Time-varying controls, X_{it}, are added as well. The regressor of interest, $Inversion_i \times PostTwo_{it}$, is an interaction between the inversion dummy, equal to one if a firm ever inverts between 1980 and 2014, and a new time-varying variable $PostTwo_{it}$, which equals one if year t is at least two years after firm i's year of inversion, τ.

As inverting firms are only included in the analysis starting one year after the inversion and the interaction term is turned on for inverting firms starting two years after inversion, β measures whether inverting firms have higher shares of foreign employment or investment two or more years after inversions compared to the year immediately after inversion, relative to the changes experienced by non-inverting firms. The one-year buffer excludes the aggregation effect a firm may experience immediately upon inversion when a newly acquired foreign firm's existing foreign employees and investment are consolidated into reported totals. Effectively, β measures whether or not inverting firms continue to increase or decrease their foreign shares of employment and investment in the years after they have expatriated. If β is significant and positive, then we can conclude that any increase in foreign employment and foreign investment shares detected in estimates of (1) are not just a one-time event due to reporting changes, but that these shares continue to grow following inversion. Growing foreign employment and investment shares suggest that newly inverted firms' business activities are increasingly located abroad, meaning that a change of address is associated with continuing changes in where factors are employed. Robust standard errors are reported for all specifications.

IV. RESULTS

Tables 2 and 3 report OLS estimates of (1) and describe how the foreign shares of employment and investment of expatriating firms compare before and after inversion, relative to non-inverting firms. Tables 4 and 5 report estimates of (2) with Table 4 detailing the main results and Table 5 providing robustness checks.

The ratio of the number of foreign employees to the total number of employees across all geographic segments is the outcome of interest for all specifications detailed in Table 2. The specification of Column 1 includes year fixed effects but no other regressors, meaning that the comparison between inverting and non-inverting firms accounts for the general time trend non-linearly, but controls for no other factors. The coefficient on *Inversion* reports the level difference in employee location patterns of firms that invert (the main effect of being an inverter), while the coefficient on the interaction term, *Post* × *Inversion*, reports how inverting firms' foreign employment shares differ after inversion, relative to non-inverting firms. The coefficient on *Post* × *Inversion*, 0.44 (0.04), suggests an unreasonably large increase in the average share of employees located abroad after inversion, but the estimate is likely confounded by unobserved heterogeneity between firms. Column 2 adds firm fixed effects to the regression model

Table 2

Post-Inversion Foreign Employment Share

	(1) Time Fixed Effects	(2) Time, Firm Fixed Effects	(3) Added Controls	(4) Pre-2004	(5) Post-2004
Inversion	0.04				
	(0.03)				
Inversion × Post	0.44***	0.11***	0.12***	–0.08	0.12***
	(0.04)	(0.03)	(0.03)	(0.09)	(0.04)
Log(Total Assets)			0.00	0.04***	0.22***
			(0.01)	(0.02)	(0.01)
Debt-to-Asset Ratio			0.21***	–0.10**	–0.22***
			(0.03)	(0.04)	(0.06)
Year fixed effects	Y	Y	Y	Y	Y
Firm fixed effects	N	Y	Y	Y	Y
Constant	0.33	0.43**	0.10	–0.08	–2.03***
	(0.54)	(0.20)	(0.32)	(0.20)	(0.16)
Observations	4,319	4,319	4,304	2,038	1,906
Firms	775	775	775	683	372
R^2	0.19	0.36	0.37	0.10	0.48

Notes: For each regression above the dependent variable is the share of employees attributed to a non-domestic segment. Column 1 includes only year fixed effects. Column 2 adds firm fixed effects. Additional controls, the natural log of total assets and the ratio of total long-term debt to total assets are added in Column 3. Columns 4 and 5 split the sample between years prior to 2004 and the years after 2004 (omitting 2004 data). All regressions are weighted by average total assets by firm. Asterisks denote significance at the 10 percent (*), 5 percent (**), and 1 percent (***) levels.

to control for systematic firm differences, precluding the *Inversion* dummy variable. Limiting the analysis to within-firm variation yields an estimate that suggests that firms that invert locate 11 percent more of their employees abroad in the post-inversion period, relative to firms that do not invert. Column 3 adds controls for time-varying firm characteristics, the natural log of total assets, and the ratio of total long-term debt to total assets. The results are not economically or statistically different. The final two columns of Table 2 divide the sample between years prior to 2004 (Column 4) and years after 2004 (Column 5). These specifications examine whether the increase in foreign employment experienced by inverting firms following expatriation is related to the 2004 policy change that required inverting firms to have substantive business activities in

Table 3

Post-Inversion Foreign Investment (CAPX) Share

	(1) Time Fixed Effects	(2) Time, Firm Fixed Effects	(3) Added Controls	(4) Pre-2004	(5) Post-2004
Inversion	0.02				
	(0.03)				
Inversion × Post	0.42***	0.08**	0.06*	–0.42***	0.21***
	(0.04)	(0.03)	(0.03)	(0.06)	(0.04)
Log(Total Assets)			0.00	0.02*	–0.02
			(0.01)	(0.01)	(0.01)
Debt-to-Asset Ratio			0.23***	0.11**	0.04
			(0.03)	(0.04)	(0.05)
Year fixed effects	Y	Y	Y	Y	Y
Firm fixed effects	N	Y	Y	Y	Y
Constant	0.28***	–0.05***	–0.10*	–0.07	0.61***
	(0.03)	(0.02)	(0.05)	(0.08)	(0.13)
Observations	4,230	4,230	4,222	2,539	1,376
Firms	761	761	761	705	274
R^2	0.13	0.37	0.37	0.37	0.22

Notes: For each regression above the dependent variable is the share of capital expenditures attributed to a non-domestic segment. Column 1 includes only year fixed effects. Column 2 adds firm fixed effects. Additional controls, the natural log of total assets and the ratio of total long-term debt to total assets are added in Column 3. Columns 4 and 5 split the sample between years prior to 2004 and the years after 2004 (omitting 2004 data). All regressions are weighted by average total assets by firm. Asterisks denote significance at the 10 percent (*), 5 percent (**), and 1 percent (***) levels.

their new jurisdiction of incorporation.[24] In the pre-2004 period, the coefficient on the interaction term *Post × Inversion* is not statistically significant, meaning that prior to 2004 the share of an inverting firm's employees located abroad was not systematically different following inversion. After the 2004 policy change, however, estimates sug-

[24] It would be natural to also examine how the foreign shares of investment and employment compared before and after the 2012 regulatory change that replaced the facts and circumstances test with a bright-line test requiring that 25 percent of the new firm's employees, assets, and revenues be located in or generated in the new foreign jurisdiction. Unfortunately, the segment data only describe six firms that inverted after 2012 with four total observations describing their post-2012 employment and investment shares. At this time, there are simply too little data describing firm behavior following inversions after the new regulation to evaluate the implications of the policy change.

Table 4

Changes in Foreign Employment and Investment Shares After Inversion, Main Results

	Employment		Investment	
	(1) Whole Period	(2) Post-2004	(3) Whole Period	(4) Post-2004
Inversion × PostTwo	–0.03	0.09***	0.13	0.31***
	(0.02)	(0.04)	(0.16)	(0.08)
Log(Total Assets)	0.04*	0.25***	0.01	–0.02
	(0.02)	(0.08)	(0.02)	(0.03)
Debt-to-Asset Ratio	0.27**	–0.25	0.19*	–0.12
	(0.11)	(0.16)	(0.10)	(0.15)
Constant	–0.01	–2.55***	–0.19	0.49
	(0.39)	(0.89)	(0.21)	(0.30)
Observations	4,195	1,861	4,123	1,346
Firms	757	363	748	268
R^2	0.43	0.54	0.42	0.29

Notes: The dependent variable is the share of employees (Columns 1 and 2) or the share of investment (Columns 3 and 4) attributed to a non-domestic segment. Columns 1 and 3 use observations from all years 1980 through 2014 while columns 2 and 4 are limited to observations after 2004 and only examine firms that invert after 2004. All regressions are weighted by average firm total assets and include year fixed effects, the natural log of total assets, and the ratio of total long-term debt to total assets as controls. Asterisks denote significance at the 10 percent (*), 5 percent (**), and 1 percent (***) levels.

gest that inverting firms increase their foreign employee shares by 12 percent. In other words, the increase in foreign employee share estimated in Columns 1–3 are entirely attributable to the behavior of firms that invert after 2004. In prior years, firms invert, but any change in their share of employees located abroad is not statistically discernible.

Table 3 reports OLS estimates of (1) with the foreign share of firm capital expenditures as the dependent variable. Again Column 1 only includes year dummies as controls, while firm fixed effects are added starting with Column 2, precluding the inclusion of the *Inversion* dummy variable in these specifications. Adding firm fixed effects reduces the coefficient on the regressor of the interest, the interaction term *Post* × *Inversion*, from 0.42 (0.04) to 0.08 (0.03). The estimate suggests that inverting is associated with firms making 8 percent more of their capital expenditures abroad. Adding controls shrinks the coefficient to 0.06 (0.03) but does not render it economically or statistically dissimilar. Dividing the sample reveals very different patterns before and after 2004. Prior to the policy change, firms that inverted on average invested less overseas after expatriating

Table 5

Changes in Foreign Employment and Investment Shares After Inversion, Robustness

	Employment		Investment	
	(1) Whole Period	(2) Post-2004	(3) Whole Period	(4) Post-2004
A: Requiring More Frequent Exports Sales Data				
Inversion × PostTwo	0.02	0.10***	0.16	0.29***
	(0.02)	(0.03)	(0.14)	(0.07)
Log(Total Assets)	0.05***	0.23***	0.01	0.01
	(0.02)	(0.05)	(0.03)	(0.01)
Debt-to-Asset Ratio	0.31***	–0.28	0.08	0.02
	(0.10)	(0.17)	(0.06)	(0.03)
Constant	–0.75***	–2.64***	–0.05	0.05
	(0.25)	(0.65)	(0.22)	(0.09)
Observations	1,956	803	2,050	602
Firms	390	158	404	121
R^2	0.75	0.86	0.33	0.36
B: Dropping the Most Leveraged Firms				
Inversion × PostTwo	–0.03	0.09**	0.12	0.33***
	(0.03)	(0.04)	(0.16)	(0.09)
Log(Total Assets)	0.04	0.26***	0.01	–0.02
	(0.02)	(0.08)	(0.02)	(0.03)
Debt-to-asset ratio	0.32**	–0.35*	0.29*	–0.22
	(0.13)	(0.20)	(0.15)	(0.25)
Constant	–0.34	–2.51***	–0.17	0.45
	(0.29)	(0.89)	(0.23)	(0.27)
Observations	3,985	1,765	3,918	1,267
Firms	734	354	726	260
R^2	0.43	0.55	0.42	0.30

Notes: The dependent variable is the share of employees (Columns 1 and 2) or the share of investment (Columns 3 and 4) attributed to a non-domestic segment. Columns 1 and 3 use observations from all years 1980 through 2014 while Columns 2 and 4 are limited to observations after 2004 and only examine firms that invert after 2004. The upper panel reports regression results from a sample where the non-inverting firms that serve as a comparison group for the inverting firms report export sales in at least 75 percent of the years they report other financial data to Compustat. The lower panel drops the 5 percent most leveraged firms as measured by their debt-to-asset ratio. All regressions are weighted by average firm total assets and include year fixed effects, the natural log of total assets, and the ratio of total long-term debt to total assets as controls. Asterisks denote significance at the 10 percent (*), 5 percent (**), and 1 percent (***) levels.

than they did prior to inversion. After 2004, the sign on the coefficient changes sign, meaning that firms tend to have a higher foreign share of investment following inversion.

As noted above, inverting firms that merge with foreign firms are likely to realize a one-time time increase in employees and investment located abroad as they start including the existing workforce and on-going investments of the foreign firm in their reported data. Table 4 reports OLS estimates of (2). Estimates of (2) reveal how the foreign shares of employment and investment of expatriating firms grew or shrank over the post-inversion period beginning at least a year after inversion. The regressor of interest is the interaction term, $Inversion_i \times PostTwo_{it}$. Its coefficient reveals how the foreign share of employment or investment increases two or more years after inversion compared to the year just after inversion, relative to non-inverting firms. In Columns 1 and 2, the dependent variable is the foreign share of employment, while for Columns 3 and 4 the outcome of interest is the foreign share of capital expenditures. Columns 1 and 3 use data from the entire 1980 to 2014 sample period. Columns 2 and 4 limit the sample of inverting firms to just those that invert after 2004 — they thus only include data beginning in 2005. For Columns 2 and 4, the comparison sample of non-inverting firms is limited to firm-year observations from 2005 and after.

Over the full sample period, the coefficient on $Inversion_i \times PostTwo_{it}$ is not significant for either the foreign share of employment (Column 1) or the foreign share of investment (Column 3). This means that over the full period inverting firms do not on average increase their foreign employment or investment shares in the years following inversion in a way that is statistically distinct from changes among the pool of non-inverting firms. The coefficient on $Inversion_i \times PostTwo_{it}$ is significant in both Columns 2 and 4 where the sample is limited to inversions after the 2004 policy change. The positive coefficients show that inverting firms continued to increase their foreign shares of employment and investment two or more years after their expatriation, relative to non-inverting firms. That is, the increases in foreign employment and investment shares seen in Tables 3 and 4 are not due to one-time reporting changes, but in the post-2004 period signify enduring and continued increases in the fractions of the inverted firms' employees and capital expenditures located abroad.

The set of firms that do not invert in this period play a key role as the comparison group relative to which the changes experienced by inverting firms are assessed. The set of non-inverting firms was chosen based on the frequency with which they report export sales. Firms that do not invert but report export sales in at least half of the years for which they report other data to Compustat were deemed to be internationally active enough to be comparable to the set of firms that do choose to invert. Table 5 assesses the robustness of the results reported in Table 4 to alternative selection criteria. The specifications reported in Columns 1–4 are identical to those of Table 4. In panel A, the sample of non-inverting firms is limited to firms that report export sales in at least 75 percent of the years that they report other financial data. This sample of firms shows more consistent international activity and thus should be even more comparable to firms that choose to expatriate. While the estimates are slightly different (though not statistically distinct) from those of Table 4, the pattern of coefficients on

$Inversion_i \times PostTwo_{it}$ is very much the same. Only after 2004 do firms that invert continue to increase their foreign shares of employment and investment after their first year with a non-U.S. domicile. Panel B examines the sensitivity of the results to outlier observations in terms of debt-to-asset ratios. The 5 percent most leveraged firms, that is, firms with debt-to-asset ratios exceeding 0.56, are dropped. These firms may have unusually high debt loads because they are in distress or in other atypical circumstances that make them less suitable members of the comparison sample of non-inverting firms. As the pattern of coefficients reported in panel B shows, the results of Table 4 are not driven by the behavior of these highly leveraged firms.

V. CONCLUSION

Starting with the first inversions of the 1980s and continuing through the most recent spate in 2014 and 2015, expatriations by U.S. firms have drawn the attention of policymakers, prompting calls for new policies to prevent inversions or dampen the incentives to invert through broader corporate tax reform. This paper assesses the economic performance of inverting firms. Data show that the market reaction to a firm's announcement of its intent to invert is largely mixed in terms of one-day and five-day returns. The reaction was mixed prior to, as well as after, the 2004 legislation that made substantive mergers with foreign firms more attractive.

Geographic segment data reported by some firms as part of their financial statements is used to assess how the location of employees and capital expenditures changes after inversion. The empirical results show that inverting firms increase their foreign shares of employment and inversion after expatriation, relative to a comparison sample of non-inverting firms. These results are entirely driven by the behavior of firms that invert after 2004, when I.R.C. §7874, which made substantive mergers with foreign firms a preferable and easier method of inverting, was adopted. Comparing the foreign shares of employment and investment two or more years after inversion to the shares the year following inversion suggests that these shares continue to grow after any reporting changes following inversion.

These results do require many important caveats. First, only some firms break their employment and capital expenditures down by geographic segment. Firms may consider the materiality, as well as the political sensitivity, of reporting such disaggregated data, making the available data potentially not representative of the entire sample. Second, the analysis simply tracks the operations of firms for whom it was optimal to invert. Despite the careful construction of the comparison group of non-inverting firms and the robustness of the results to alternative selection criteria, this study is only observational. The results cannot be interpreted as causal — the employment and investment pattern changes cannot be considered the consequence of inverting. Third, the fact that foreign operations increased after inversion following the adoption of §7874 in 2004 does not necessarily mean the new law changed the behavior of firms that were planning to invert. It could simply be that the new law had a selection effect where the set of firms

inverting was different than under the previous law. Finally, it is important to note that the analysis only assesses how firms that are generally deemed "inverters" behave following inversion. Though the set of inversions assessed here is generally agreed upon and is consistent with respected media sources,[25] the sample does not describe all transactions that involve a change of domicile out of the United States. As regulations regarding the U.S. tax treatment of expatriating firms have changed, which transactions are considered inversions has also changed. Additionally, mergers that result in a change of domicile but may not involve a low-tax jurisdiction, such as Daimler-Benz AG's 1998 purchase of Chrysler Corp., are not considered. Future research considering these business-motivated expatriations would help broaden our understanding of how economic performance changes after inversion versus simply changing domicile.

Though the paucity of data makes it difficult to draw strong conclusions from this empirical evidence, the pattern of increased foreign shares of employment and investment after inversion following the adoption of §7874 in 2004 is consistent in various specifications and robustness checks. The evidence suggests that the measure aimed at reducing inversions by disallowing simple re-incorporations abroad may have had unintended consequences. In trying to prevent the loss of tax revenue and potentially business activity that accompany expatriations, §7874 motivated firms to engage in mergers with foreign firms that have substantial foreign operations; these existing foreign operations may have reduced the cost of locating new projects in the foreign jurisdiction. In other words, measures aimed at disallowing "easy" inversions may have made the re-location of employees and investment to foreign jurisdictions after inversion more likely.

The broader implications of these results is that legislation that is narrowly focused on preventing inversions via specific transactions can run the risk of motivating transactions that have other unanticipated consequences. Specific rules targeted at particular inversion methods may have the consequence of encouraging behavior that avoids the regulations but entails actions that have other negative consequences for the U.S. economy. The empirical results reported here are largely suggestive, but they do raise questions regarding the wisdom of constructing policy to stop particular expatriations.

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[25] For example, see Mider's (2014) Pulitzer-winning series for Bloomberg News.

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