What Drives Corporate Inversions?

International Evidence

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Abstract

Using hand-collected data on 691 corporate inversions from 11 home countries into 45 host destinations in 1996-2013, we document that corporations invert to destinations with lower tax rates and similar governance standards. Indeed, passage of bilateral double taxation treaties (DTTs), which provide tax incentives for inversions, and bilateral tax information exchange agreements (TIEAs), which improve transparency of tax havens, leads to an increase in corporate inversions. Further, shareholders support tax-driven inversions but shun inversions into weakly governed countries: A 1% point lower tax rate in the host destination (vis-à-vis the home country) is associated with a 0.6% drop in effective tax rates and a 0.4% increase in firm value, respectively. Institutional ownership only increases when firms invert into well-governed tax havens. Our findings suggest that corporate inversions, despite their negative publicity, are typically in shareholders' interest.

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1. Introduction

The first inversion took place in 1982, when a Louisiana-based construction firm, J. Ray McDermott & Company, flipped its corporate structure so that one of its cash-rich Panama-based subsidiaries became the new parent firm. The shareholders of the original Louisiana-based firm had their shares exchanged for shares in the new parent, which paid very little income taxes due to the territorial tax system in Panama. Inversions, as shown in this early case, allow companies to save taxes by changing their country of incorporation without changing their physical headquarters, management, or ownership.[1]

Corporate inversions have recently surged in the United States. In 2014 alone, U.S. firms worth over half a trillion dollars announced their intention to invert (Babkin, Glover, and Levine, 2015). Among the deals that received substantial media attention is the Pfizer–Allergan merger announced in 2015. Had this merger been completed, it could have cut Pfizer's effective tax rate from 26% to 15% in 2017, reducing the company's tax burden by $2.1 billion in that year alone.

Policymakers, however, have long considered inversion firms as 'unpatriotic corporate deserters' for their potential to dodge domestic tax obligations.[2] In April 2016, the U.S. Department of the Treasury proposed new rules making the Pfizer–Allergan deal and other similar deals more difficult. Subsequently, Pfizer announced its withdrawal from the deal, resulting in Allergan's share price tumbling by 21% in after-hours trading. This share price reaction at least partly reflects the abandonment of the potential tax savings.

The Pfizer–Allergan deal illustrates that tax motives may drive corporate inversion decisions,

[1] In the U.S., inversions have invoked sharp response from the government ever since the first such deal by McDermott. In particular, the American Jobs Creation Act of 2004 (JOBS Act, P.L. 108-357) restricts firms' ability to save taxes through inversions without changing ownership. Specifically, under the provisions of the Act, inverted corporations are treated as U.S. corporations for tax purposes if more than 80% of their shareholders are U.S.-based.
[2] The OECD Base Erosion and Profit Shifting report (http://www.oecd.org/ctp/ beps-2014-deliverables-explanatory-statement.pdf) states the realigning of taxation and economic activities as a key priority for governments.

and that such decisions may benefit shareholders. However, inversions into foreign countries may also increase monitoring costs and provide an opportunity for expropriating minority shareholders. Specifically, channels used to hide resources from tax authorities may also be used to tunnel resources out of corporations into the pockets of controlling shareholders or managers. Desai, Dyck, and Zingales (2007), for instance, show that for Russian oil firms, increased tax enforcement reduces tax avoidance, but this negative effect on value is more than offset by the reduction in stealing from minority shareholders. If in minority shareholders' interests, inversions therefore should occur into strongly governed countries.

In this paper, we study whether tax and governance considerations stimulate and facilitate firms' inversion decisions, as well as whether inversion decisions align with managers' objectives to maximize firm value. Our preferred definition of an inversion requires a firm to change its country of incorporation. This definition broadly follows the literature. For instance, Cortes, Gomes and Gopalan (2014), who focus on inversions by U.S. firms, define inversions as changes in incorporation country while remaining listed in the U.S.. At the same time, our definition allows us to trace inversions for a global sample of firms.

We hand-collect data on 691 corporate inversions from 11 home countries into 45 host destinations for the 1996-2013 period. Our sample illustrates that corporate inversions are not merely a U.S. phenomenon. Indeed, less than one-third of our inversions are conducted by U.S. firms. Additionally, our sample allows us to provide a rich description of country characteristics that drive inversion decisions. Importantly for identification, we can exploit time series home country-host destination pair (henceforth country-pair) variation in tax and governance characteristics.

We start by documenting the country characteristics that are associated with the likelihood

that firms from a given country (home country) invert to a host destination. Not surprisingly, suggestive of tax motives being associated with inversion flows, country-pair tax rate differentials are correlated with inversion flows. The lower the taxes are in host destination (relative to home countries), the more inversions that occur. Moreover, while the average host destination has slightly lower governance standards than the average home country, the majority of inversions occur between home countries and host destinations with similar governance standards.[3] This evidence aligns with studies that find strong governance motives for cross-listings and cross-border mergers and acquisitions (e.g., Coffee, 1999; Doidge, Karolyi, and Stulz, 2004; Rossi and Volpin, 2004; Siegel, 2005). Besides these tax and governance characteristics, we document a positive association between geographic proximity and inversion flows, as well as between trade flows and inversion flows.

The evidence stated so far may be plagued by omitted variables, such as other country-pair characteristics potentially driving our results. To alleviate this concern, we exploit two experiments affecting tax motives and governance motives at the country-pair level, respectively. This analysis benefits from both the time series and the international nature of our data since the events we capture are unique to the home countries and host destinations in a given year.

Our first experiment utilizes the passage of bilateral double taxation treaties (DTTs). DTTs ensure that taxes paid in one country can be used to offset taxes in another location. Among others, DTTs affect taxes on dividend gains, interest, and royalties. Importantly, inversions are not typically associated with changes in the shareholder base: existing shareholders will benefit from DTTs because DTTs result in dividend tax reductions. The passage of DTTs therefore makes tax-driven inversions more attractive. Indeed, we observe a noticeable and statistically

[3] We measure governance by corruption levels and voice and accountability, although our results are robust to a range of alternative governance measures.

significant increase in the number of inversions after passage of DTTs. When two countries sign a DTT, the number of inversions between these country-pairs increases by 2.8% after controlling for other country-level drivers; it increases 2.1% when we control for country-pair fixed effects.

Our second experiment is on the passage of tax information exchange agreements (TIEAs). TIEAs are bilateral agreements between two territories, at least one of them a tax haven, allowing for the exchange of information relevant in tax investigations. They constitute an improvement in governance of tax havens through increasing the transparency of tax havens: TIEAs improve the ability of signatory countries to monitor each other and therefore increase incentives to invert if inversions are in shareholders' interests. Indeed, we document that the number of inversions between country-pairs goes up by 5% after bilateral TIEAs are signed when we control for other country drivers; they increase 5.5% when we control for country-pair fixed effects.

Next, we provide associations between firm characteristics and inversion decisions. Firms that conduct inversions are cash-rich, smaller, and have lower leverage. Additionally, among firms that invert, those that are likely to benefit more from tax savings — those with high effective tax rates and high debt ratios — choose tax havens over non-tax havens as their host destinations. Also, firms that invert tend to have stronger governance indicated fewer closely-held shares and more ADR listings.

Finally, we link the corporate inversion motives to inversion outcomes. We find that inversions into low-tax countries are associated with declines in effective tax rates and a positive firm value reaction, supporting the concept that inversions are at least partly tax-driven. Economically, a 1 percentage point lower tax rate in the host destination (vis-à-vis the home country) is associated with a 0.6% drop in effective tax rates and a 0.4% increase in firm value;

inversions into tax havens are accompanied by a 5.4 percentage point decrease in effective tax rates and a 14.4% increase in value. We also find that inversions into well-governed countries are associated with a 3.5 to 4.3 percentage point increase in institutional ownership. Yet, in line with the concept that inversions into countries with weak governance standards may be associated with increased monitoring costs and potential expropriation of minority shareholders, institutional investors withdraw from firms inverting into countries with low governance standards.

While our results line up with the notion that managers act in the interest of their shareholders, we refrain from advocating a causal interpretation of these firm-level results. In order to address some of the concerns that may arise from differences between firms that invert and those that do not, we match inverted firms to control firms by country, industry, and size prior to each inversion. Our results are robust to employing a sample of inverted and matched control firms. Of course, the decision to invert may ultimately be associated with firm characteristics that are hard to observe.

Taken together, our study contributes to the literature by providing novel evidence on country- and firm-level determinants of corporate inversions in an international setting. Using two natural experiments at the country-pair level, we systematically document that countries attract inversions not merely by offering low tax rates but also by providing strong governance standards. Shareholders appear to applaud corporate inversions that save taxes and avoid those that are potentially driven by expropriation motives.

Our study complements a growing body of literature that has focused explicitly on tax motives as primary drivers of inversions out of the U.S.. Specifically, Desai and Hines (2002) conclude that tax motives explain 26 corporate inversions of U.S. multinationals in the 1982–

2002 period. Seida and Wempe (2004) show that 12 inversions of U.S. firms in the 1993-2002 period lowered firms' effective tax rates, a result confirmed by Cortes, Gomes and Gopalan (2014) over the 1996-2013 period. Evidence on the stock price reaction to corporate inversions is mixed. Seida and Wempe (2004) document that the firm value reaction to inversions reflects reductions in effective tax rates. Yet, analyzing stock price reactions around the announcement dates and board of director approval dates of 20 U.S. inversions between 1983 and 2002, Cloyd, Mills and Weaver (2003) find no such effect, and Bailey and Liu (2014) find offshore incorporations to be associated with lower Tobin's q.

Our paper also contributes to the vast international literature on differences in mandatory/voluntary disclosure rules, in securities regulation/enforcement, and in governance standards. Since disclosure standards and other capital market characteristics vary widely across countries, a global setting offers a rich environment to study the effects of corporate inversions and how they may be linked to country/industry/firm characteristics. Leuz, Lins, and Warnock (2007) show that foreign firms that have poor governance attract fewer institutional investors, especially if they are from poorly governed countries. Similarly, Lang, Lins and Miller (2003), Doidge, Karolyi, and Stulz (2004), Bailey, Karolyi, and Salva (2006), and Hail and Leuz (2009) show that foreign firms with cross listings in the U.S. have higher valuations especially if they are from poorly-governed countries. Our study complements these studies and finds that institutional investors and shareholders react to inversion decisions differently depending on the governance standards of the host countries.

Finally, our evidence has important implications for the current policy debate on taxes and inversions. Although firms that invert are often portrayed as unpatriotic, poorly run firms by the media and policymakers, these negative connotations reflect tax collectors' perspectives rather

than shareholders' perspectives. Ultimately, our setting is reflective of the possible tensions between firms making decisions in shareholders' interests and governments seeking to correct distributive failures, as for instance discussed in Bénabou and Tirole (2010). Our evidence suggests that inversions are corporate actions conducted by well-run firms; shareholders appear to incorporate an inversion's potential to reduce taxes into stock prices but also respond to agency conflicts that may arise from inversions into poorly governed countries.

The paper is organized as follows. In Section 2, we describe the data and provide summary statistics. In Section 3, we examine country characteristics that are correlated with corporate cross-border inversions, as well as provide the results of cross-sectional and time-series analyses that use natural experiments. In Section 4, we present inversion firm characteristics. Section 5 analyzes cross-border inversion outcomes. The final section concludes.

2. Data

In this section, following a description of our hand-collected sample of corporate cross-border inversions, we introduce our country- and firm-level variables.

2.1 *Corporate Cross-Border Inversions*

We identify corporate inversion events through changes in the first two digits of firms' ISIN identifiers, i.e., changes in the country code, over the 1995-2013 period.[4] Data on changes in ISINs are obtained from SIX Financial Information, a Swiss-based data company that sources information directly from over 1,500 global exchanges, multilateral trading facilities, and institutional contributors. First, we remove investment trusts/funds and pension funds from the data. Second, because ISIN changes could also be related to mere changes in stock exchange listings, we collect data from SIX Financial Information on effective dates and types of corporate actions that lead to changes in country of incorporation. In order to isolate domicile changes, we

[4] ISIN assigns country codes according to the location of a company's head office (source: http://www.isin.org/isin/).

focus on two sets of corporate actions: mergers and reorganizations.[5] A reorganization is defined as the formation of a new holding company, or a restructuring that results in change of the shareholder rights. Finally, we cross-check the validity of the dates and corporate actions for all North American firms in our sample by going through company filings on SEC's EDGAR database. This step again ensures that our final sample does not contain changes in ISINs that are unrelated to corporate inversions.

We focus on corporate inversions of firms out of 11 major OECD countries: Australia, Canada, France, Germany, Italy, Netherlands, Spain, Sweden, Switzerland, U.K., and U.S. These countries contain the most acquisitive firms in the sample over the 1990-2007 period (Erel, Liao, and Weisbach, 2012).

Table 1 provides the number of corporate inversions in 1995-2013 by country-pair. The results show that there are 691 inversions, 340 through mergers and 351 through reorganizations. The majority of inversions are conducted by firms that invert out of Canada (284) the U.S. (218), and the U.K. (104). Host destinations include 45 countries and non-sovereign territories, 20 of which are classified as tax havens based on Dharmapala and Hines's (2009) definition.[6]

On average, 38% of the inversion transactions involve a tax haven. Host destinations with the strongest inflows are the U.S. (188) and Canada (86), as well as tax havens such as Bermuda (66), the Cayman Islands (42), and the British Virgin Islands (58). Six of the top ten host countries are tax havens. Moreover, geography matters as evidenced by strong flows from Canada to the U.S. (171) and vice versa (76). Importantly, inversions flow into a wide range of

[5] Besides mergers and reorganiztions, a range of other corporate actions lead to ISIN changes, e.g. demergers, name changes, exchange/over-stamping, purchase/exchange offers, reinvestments, reverse splits, rights issues, reverse splits, spin-offs, and stock distributions.

[6] Tax havens include: Bermuda, Virgin Islands, Cayman Islands, Ireland, Luxembourg, Switzerland, Singapore, Marshall Islands, Isle of Man, Anguilla, Bahamas, Antigua and Barbuda, Belize, Cyprus, Liechtenstein, Malta, Panama, and Saint Kitts and Nevis.

destinations, as opposed to just a few.

There is also large variation across home countries as to the relative importance of mergers and reorganization as modes of inversion. For example, less than 50% of all corporate inversion deals out of the U.K. and Canada are through mergers, whereas more than 90% of all inversions out of France, Italy, and Spain are through mergers. The significance of reorganizations as a mode of inversion becomes clear when we study host destinations: For most of the tax havens, inversions through mergers are much less likely than inversions through reorganizations, with the exception of Ireland, the Marshall Islands, Panama, Singapore, and Switzerland.

--- Table 1 about here ---

Panel A of Figure 1 shows the annual number of corporate cross-border inversions in 1996-2013. There are ~20 inversions between 1997 and 2007, and ~30 inversions per year from 2008 to 2013. The time variation in inversion activity depicted in Figure 1 mitigates concerns that corporate inversions might be centered around a certain point in time, such as the recent global financial crisis. Similarly, while there is some time variation in the number of mergers and reorganizations, there do not appear to be associated trends in any period of time.

--- Figure 1 about here ---

In Panel B of Figure 1, we focus on corporate inversions into tax havens. Whereas mergers are a more popular mode of transition when we consider all inversions, reorganizations dominate when we consider only inversions into tax havens. The disparity between the two modes is especially large after 2007, which is the onset of the global financial crisis.

2.2 *Country Characteristics*

We next describe the country characteristics that may be associated with or drive corporate inversion activity. Double taxation treaties and trade flow data are obtained from the UNCTAD

and UN COMTRADE databases, respectively. Data on tax information exchange agreements and corporate tax rates are provided by the OECD. For non-OECD countries, we compile corporate tax rates using KPMG reports and country websites. Geographical distances between country-pairs are calculated using the latitude and longitude of the capital cities. We obtain country-level governance, economic, and financial development variables from the World Bank WDI database. Governance variables measure the quality of country governance and include aspects such as corruption and voice and accountability (Kaufmann, Kraay, and Mastruzzi, 2009). Finally, the quality index of merger laws provides a measure of the severity of merger laws regarding antitrust and competition issues in the country (Bris, Cabolis and Janowski, 2010).

We report descriptive statistics for country variables in Table 2. Panel A reports time series observations (averaged over the available years for each country), and Panel B reports differences at the home country-host destination level.

--- Table 2 about here ---

As per Panel A, statutory corporate tax rates in the sample range from 0% to 38%, with a mean of 22% (median of 26%). GDP per capita is lowest for Ghana ($533) and highest for Liechtenstein ($102,115), with an average around $30,000. GDP growth ranges between 0.59% and 7.46%, with a mean of 2.95%. Market capitalization is, on average, 76% of GDP while average market turnover is 62%. For governance variables, the lowest scores are for Malaysia and Papua New Guinea (low voice and accountability and high corruption) and the highest score is for Finland (high voice and accountability and low corruption). Merger quality is static and ranges between 0 and 4.

When we compare characteristics at the country-pair level, we find that host destinations have significantly lower tax rates than home countries, with a mean difference of 11.84% and a median difference of 4.50%, both significant at the 1% level (Panel B). The median difference in the tax rate is much larger for inversions via reorganizations relative to inversions via mergers (10% vs. 3.9%). On average, tax havens score lower in terms of governance. This is not surprising since the majority of firms are inverting out of the U.S., the U.K., and Canada, all of which have relatively strong governance. The differences in governance are much more pronounced among inversions via reorganizations than for inversions via mergers. While, on average, host destinations have higher GDP per capita (potentially reflecting the fact that a considerable fraction of host countries constitute tax havens), they have lower market development (measured by market capitalization and turnover, both scaled by GDP). Finally, host destinations score higher on the merger quality index, which is usually associated with a higher propensity of cross-border mergers (Bris, Cabolis and Janowski, 2010).

2.3 *Firm Characteristics*

Our main data source for firm-level characteristics is Datastream/Worldscope, which provides financial data for public firms. We obtain firm-level data on all available firms in Worldscope. To minimize the potential influence of extreme observations as well as data reporting errors, we winsorize all continuous variables at the 1st and 99th percentiles. We calculate fundamental financial ratios as a percentage of total assets or total sales. We provide the details on the calculation of all variables in the Appendix.

Panel C of Table 2 reports the summary statistics of firms in Worldscope between 1985 and 2014. The mean (median) value of total assets of firms is $1.8 billion ($172 million), reflecting that the firm size distribution is skewed. The average leverage ratio is ~51%, the

median ROA is ~3%, while the median Tobin's q is 1.27. These numbers are consistent with studies that reported financial ratios based on Worldscope data (e.g., Daske et al., 2008). The median cash ratio is 12%, net cash flows constitute 5% of sales, and net sales are 73% of total assets. Investments (measured by capital expenditures) are 5% (median of 4%) of total assets and intangible assets are 8% (median of 2%) of total assets. Dividend yield has a mean of 3.2% (median of 0.23%) and the average effective tax rate is 17.9%. Insider ownership for Worldscope firms seems to be high on average, around 45%. We obtain institutional ownership data from Capital IQ; the average firm has 15% institutional ownership (median of 5%).

We are able to match 46% of our inversion firms to Datastream/Worldscope firms using their old ISINs. In order to reduce sample attrition, we match the remaining inversion firms to S&P Capital IQ (CIQ) and construct the accounting measures described above from that data source. Even though matching with Capital IQ data allows us to match almost all remaining inversion firms (we cannot match 2% of inversion firms), we lose roughly 40% of all inversions to insufficient data.[7] We discuss the characteristics of the inversion firms in detail in Section 4.

3. Country Characteristics and Corporate Inversions

In this section, we examine country characteristics and the occurrence of corporate cross-border inversions. As outlined above, if corporate inversions are in the interest of shareholders, we should observe that inversion activity is associated with tax and governance motives. First, we show correlations between country characteristics and inversions. Second, we examine cross-sectional country-pair differences and inversion flows. Third, we provide our strongest evidence, which is based on time series changes in country-pair tax and governance differences provided by bilateral DTTs and TIEAs. Last, we provide the results of robustness tests.

[7] Such high fractions of firms lost to data availability are not uncommon in international studies. Some inversion firms are small listed firms, others are private by the time they invert.

3.1 *Correlations*

We start by documenting correlations between country characteristics and the occurrence of corporate cross-border inversions. One caveat is that our sets of home countries are those that contain the largest number of acquisitive firms over the 1990-2007 period (Erel, Liao, and Weisbach, 2012). Therefore, we encourage caution when interpreting our results.

--- Table 3 about here ---

In Table 3, we focus on the characteristics of the host destinations and the number of corporate inversions they attract. Again in line with corporate inversions being tax-motivated, we document a negative correlation between corporate tax rates in the host destination and the number of inversions; this correlation is driven by reorganizations. Our governance measures are positively correlated with the number of inversions, which suggests that strong governance (or at least small difference in governance standards) attracts corporate inversions. Finally, wealthy hosts with low growth rates and well-developed capital markets also seem to attract inversions.

3.2 *Cross-sectional Regressions*

We have so far established that tax rates and country governance correlate with the number of corporate inversions at the home and host level. We now employ cross-sectional regressions to examine whether home country characteristics, host destination characteristics, and the difference between them provide explanatory power for the direction of cross-border inversion flows.

In Panel A of Table 4, we employ a number of dependent variables to measure corporate inversion flows. In the regression for the results in columns (1) and (2), the dependent variable is the logarithm of one plus the total number of inversions in 1995-2013 (Xij) in which firm i changed its country of domicile to host j (where $i \neq j$). Next, we use the ratio of the total number

of inversion deals in 1995-2013 (*Xij*) scaled by sum of all inversions into host *j* and report the results in columns (3) and (4). Finally, we use the logarithm of one plus the total number of inversion deals in 1995-2013 (*Xi*) in which the company comes from home country *i* and report the results in columns (5) and (6). Using different denominators in the dependent variables allows us to implicitly control for both home and host country factors that will influence the volume of inversion deals. In all regression, we include host-country fixed effects, control for home country characteristics, and focus on country-pair differences.[8]

--- Table 4 about here ---

We find that tax motives are associated with corporate inversions. More inversions occur between country-pairs where the host provides a relative tax advantage as measured by the difference between home and host corporate tax rates (columns (1) and (2)).[9] In line with our main prediction on country-level governance, we document more inversions between country-pairs that have relatively similar governance standards; hosts with lower governance standards attract fewer inversions.

In addition, we test whether other country characteristics attract corporate inversion flows. First, inversions may be associated with higher transaction costs due to their cross-border locations. Indeed, we document fewer inversions as the distance between home and host increases. Second, we document a higher number of corporate inversions in home countries that are economically more developed and have higher growth rates.

[8] This method helps us minimize loss of sample size. While the country-level control variables are mostly available for home countries, they are missing for some of the small host destinations. In unreported tables, we also check whether our results are robust to alternative clustering, such as cluster at the home country or host country level. The results are similar to those reported here.

[9] We also examine whether tax differences on their own without other country characteristics provide explanatory power for inversion flows and find that they are statistically and economically significant.

We next test whether these results are robust to alternative measures of inversion flows. Specifically, we study whether the fraction of inversions directed toward a certain host destination and the total number of inversions from a certain home country are due to the home characteristics and country-pair differences. The results in columns (3)-(6) in Panel A of Table 4 confirm our previous results.

We repeat our analysis using probit regressions and report the results in Panel B of Table 4. In the regression for columns (1) and (2), the dependent variable is a dummy variable that equals to 1 if a country-pair experienced at least one inversion over the sample period. Our previous evidence from Panel A of Table 4 is confirmed: Tax rate and governance differences between the host destination and the home country are significantly related to the occurrence of at least one inversion. Columns (3)-(6) present the results of an examination of the drivers of different types of inversions, notably reverse mergers (columns (3)-(4)) and reorganizations (columns (5)-(6)). Again, consistent with the overall pattern, firms are more likely to invert into hosts with lower tax rates than their country.[10] Regarding governance concerns, low governance differences remain important in increasing the likelihood of inversions via reorganizations.

Note that probit regressions in Panel B of Table 4 treat all countries with corporate inversions the same, unlike in Panel A where countries that have larger number of inversion deals, such as U.S. and U.K., will have a higher weight in determining the regression coefficients. Nonetheless, in unreported results, we show that our results hold when we exclude the U.S./U.K. as home countries and all our results remain consistent. We also examine whether tax havens are driving our results and find that all continue to hold when we exclude tax havens as hosts.

[10] The global markets for mergers and acquisitions are responsive to tax considerations (e.g., Huizinga and Voget, 2009; Voget, 2011; Huizinga, Voget, and Wagner, 2012).

3.3 *A Natural Experiment Approach: Double Taxation Treaties and Tax Information Exchange Agreements*

We have documented that (i) a high potential for tax savings and (ii) low governance differences between home countries and host destinations are associated with inversion activity. These country-pair differences, however, may be correlated with other omitted country-pair differences that are associated with inversion flows. To alleviate these concerns, we examine whether changes in country-pair characteristics can drive inversion activity.

One potential source of variation in tax and governance characteristics is provided by changes at the home or host level. However, such variation could be associated with other country-level developments that drive inversion activity. We therefore identify settings in which tax and governance characteristics change bilaterally (i.e., at the country-pair level).

First, we focus on the tax motives of firms by studying the number of corporate inversions around the passage of DTTs. DTTs are agreements between two countries that reciprocally agree on reduced withholding tax rates and on a more lenient double tax relief regime. The passage of such treaties constitutes a motive for corporate inversions since the profitability of a tax inversion also depends on the dividend repatriation tax rates of the host, as well as the double taxation relief between the home and the host.[11] Notably, inversions are not typically associated with changes in the shareholder base.

Figure 2 shows the number of inversions between country-pairs around years in which bilateral DTTs were signed in absolute terms (Panel A) and relative to a set of control country-pairs normalized by the average number of inversions prior to the passage of a DTT (Panel B). Treated country-pairs are pairs of countries that signed DTTs. Control country-pairs are pairs of

[11] Davies, Norback and Tekin-Koru (2009) show that bilateral tax treaties increase the probability of investment in a foreign country by multinational firms.

home countries and other countries that never signed a DTT around the time home countries signed a DTT. As is apparent from Figure 2, there is a noticeable increase in the number of corporate inversions around the passage of DTTs and this increase is sustained in the years after passage.

--- Figure 2 about here ---

Second, we study passage of TIEAs. These are bilateral agreements between two territories, at least one of them a tax haven, allowing for the exchange of information relevant in tax investigations. TIEAs constitute an improvement in governance through increasing the transparency of tax havens but may be used to re-assess corporate taxes. However, the effect of TIEAs on transparency likely outweighs the effect of TIEAs on taxes (e.g., Bennedsen and Zeume, 2015).

If inversions are in shareholders' interests, improvements in country-pair governance likely increase the incentive for corporate inversions. Figure 3 shows the number of inversions between country-pairs around years in which bilateral TIEAs were signed in absolute terms (Panel A) and relative to a set of control country-pairs normalized by the average number of inversions prior to the passage of a TIEA (Panel B). Treated country-pairs are those that signed TIEAs. Control country-pairs are pairs of home countries and other countries that never signed any TIEAs around the time home countries signed a TIEA. Figure 3 documents a noticeable increase in the number of inversions around the passage of TIEAs. While this increase peaks in the year of passage and the year thereafter, the increase in inversions relative to control firms is sustained throughout the years after passage.

--- Figure 3 about here ---

We investigate whether the signing of DTTs and TIEAs is associated with other changes in

country-pair characteristics. We estimate a specification in which the dependent variable is the logarithm of one plus total number of inversion deals between an ordered particular country-pair in a given year between 1995 and 2013 (*Xijt*). Control variables include time-varying country-level characteristics and country-pair fixed effects. Our sample is a balanced panel that consists of country-pairs with one observation per year for each pair, for a total of 9,196 observations.

We report these estimates in Panel A of Table 5. We show that the number of inversions between country-pairs increases after these pairs sign a DTT (column (1)) or a TIEA (column (2)) even after including both home country, host destination, and time fixed effects. We then include additional country-pair characteristics in the regression, such as geographic distance and time-varying differences in economic development (columns (3)-(4)) and find that our results continue to hold. We additionally control for the volume of bilateral trade between the two (columns (5)-(6)), defined as the ratio of imports between home and host countries scaled by the total amount of imports by home countries, the stock market turnover, and the merger quality index of the home country. These results suggest even higher economic magnitudes of double taxation treaties and TIEAs on inversion flows. The number of inversions increases by 2.8% and 5% when two entities sign a double taxation treaty and a TIEA, respectively.

We next add country-pair fixed effects to the regression to alleviate concerns that fixed country-pair characteristics are associated with the likelihood of signing a TIEA and affect inversion activity at the same time. This specification allows us to exploit only time series variation in the signing treaties between countries while controlling for cross-country differences. In columns (7)-(12), we again find consistent results as those reported in columns (1)-(6). The number of corporate inversions increases by 2.1% and 5.5% when two countries sign a double taxation treaty and a TIEA, respectively.

Panel B of Table 5 presents probit regression results. The dependent variable is equal to one if there is an inversion in a given year and zero otherwise. We include no fixed effects in the regression for columns (1)-(6). In the regressions for columns (7)-(12), we include home, host, and time fixed effects. The results are mostly consistent with our findings in Panel A except for columns (5) and (10). Note that one caveat of the probit regressions is that, unlike the flows used in Panel A, the home and host with an inversion deal are treated the same without regards to the number of deals. We find that geographic distance clearly hinders inversion flows. We also find that inversions are more likely among those that trade frequently with one another.

--- Table 5 about here ---

3.4 *Robustness*

In this section, we examine the robustness of the results to alternative choices. Table 6 contains estimates of equations similar to those used for the results in Table 5

For Table 6, we estimate two additional measures of inversion flows: the ratio of the total number of inversion deals in a given year between 1995 and 2013 (*Xijt*) scaled by sum of the number of all inversion deals in the home country *i* (*Xi*) and similarly by the total number of all inversion deals in both the home and host countries (*Xi*+ *Xj*). The results in Panel A show that using these alternative flows, the coefficients on both TIEA and DTT remain significant.

In Panel B of Table 6, we focus on drivers of different types of inversions, notably reverse mergers (columns (1), (2), (5), and (6)) and reorganizations (columns (3), (4), (7), and (8)). The dependent variable is equal to one if there is any merger or reorganization inversion between a given country-pair in a given year and zero otherwise. We find that a double taxation treaty is not significantly predictive of the propensity of these modes to drive inversions. However, TIEA remains significantly positive, especially for reorganizations. This evidence is consistent with

our previous finding that reorganization is a more popular mode of inversion into tax havens, especially into those that implement better governance standards through TIEAs.

--- Table 6 about here ---

4. Firm Characteristics

We have established country and country-pair characteristics that attract corporate cross-border inversions. We next examine what are the characteristics of the firms that invert after controlling for country and time fixed effects. To estimate the factors that affect the likelihood of an inversion, one would ideally like to consider every possible firm that could conceivably change their country of incorporation and estimate the likelihood that any of them actually does.

We consider the sample of all publicly traded firms from Worldscope, and estimate the characteristics of the firms that engaged in corporate inversions between 1995 and 2013. We control for industry, country, and year fixed effects in the regression. We estimate a probit model for firm-level determinants of inversion deals and present the results in columns (1) and (2) in Table 7. The merger results are in columns (3) and (4), the reorganizations results are in columns (5) and (6), and the results for those that moved to tax havens are in columns (7) and (8)).

--- Table 7 about here ---

We find that firms that conduct inversions are more likely from countries with high tax rates, have much lower closely-held shares, more ADR listings, and hold more cash. High cash holdings are consistent with prior studies. Foley et al. (2007) show that U.S. multinationals hold more cash abroad due to the high repatriation taxes. Hanlon, Lester, and Verdi (2015) show that the locked-out cash often leads managers to invest in value-destroying acquisitions overseas. Additionally, firms that engage in corporate inversions are substantially smaller, more levered,

and pay lower dividends. Low dividend payout ratios despite high cash holdings are also in line with tax concerns of dividend repatriation prior to inversions. This evidence suggests that these firms are well run and that managers are more likely to be acting in the best interests of the shareholders.

Among firms that invert, roughly 50% engage in reverse mergers as opposed to reorganizations. One in three firms inverts to a tax haven. In columns (3)-(8) in Table 7, we examine the determinants of these specific types of inversions. We first examine whether firms that inverted through engaging in cross-border mergers are different from others (columns (3) and (4)). Indeed, firms that inverted through cross-border mergers are larger, hold more cash, and have higher investment-intensity, and more intangibles. They are also more likely from countries with higher tax rates. Since tax avoidance strategies such as transfer pricing is facilitated by the use of intangible assets, these results are consistent with the tax motives. Columns (5) and (6) present the results for firms that inverted through reorganizations. Not surprisingly, these are smaller firms, with higher levels of debt, higher effective tax rates, lower sales, and lower dividend payouts. Interestingly, these firms have lower insider ownership and higher probability of having an ADR.

Finally, we examine whether firms that invert to tax havens are different from others (columns (7) and (8) of Table 7). We find that those firms that are likely to benefit more from tax savings (with high debt ratios, high ETRs, and higher taxes in their home countries) choose tax havens over non-tax havens as their host destinations, consistent with the notion that tax haven activities can serve as a substitute for the tax shields (Graham and Tucker, 2006). Overall, these firms are more similar to those that inverted through reorganization, consistent with our earlier finding that reorganization is a popular mode used for inversion when firms invert to tax havens.

These firms characteristics are also consistent with Grubert (2003) and Seida and Wempe (2004), among others, who find that majority of the artificial income shifting from high-tax to low-tax locations is due to transfers of intangibles and the allocation of debt.

5. Corporate Outcomes around Inversions

In this section, we study firm characteristics around corporate cross-border inversions. It is important to point out that we are not attempting to make a causal statement about the effect of corporate inversions on firm outcomes. Rather, we aim to affirm our earlier findings that both tax rates and governance are important in determining inversion motives and consequences.

We analyze firm characteristics around inversions by constructing a panel of firms for 1985-2014. In order to address a range of concerns arising from the fact that certain firm characteristics are predictive of inversion activity (see Table 7), we employ firm fixed effects. Furthermore, in order to address the concern that industry- or country-level shocks at specific points in time may impact both inversion decisions and changes in firm characteristics, we also control for *country x industry x year* fixed effects. Last but not least, because inverted firms may behave differently from non-inverted firms over time, we repeat our analysis on a subset of inverted firms and control firms that are matched to inverted firms based on host destination's, 2-digit SIC code, and firm size two years prior to the inversion. Additionally, we require that the control firms have a sufficient time series of relevant accounting data. Throughout, we identify inversion outcomes using an *After Inversion* dummy, which equals one for firms that inverted in the years following the inversion (including the year of inversion).[12] In a similar fashion, we identify control firms using a *Control After* dummy in the full sample analysis.

In Panel A of Table 8, we explore tax outcomes. The dependent variable is the effective tax

[12] Results are robust to focusing on two-year and five-year event windows, suggesting that observed effects are immediate.

rate (ETR), calculated as the total income tax expense divided by income before taxes. In order to test whether tax motives are associated with lower taxes, we interact the *After Inversion* dummy with two tax measures: the percentage tax rate differences between home country and host destination, and a dummy variable that equals one if the host is a tax haven.

--- Table 8 about here ---

While corporate inversions do not appear to be associated with *changes* in effective tax rates on average, they are associated with a *decline* in effective tax rates when the difference between home country tax rate and host destination tax rate is larger, and when hosts are tax havens. This is in line with the concept of tax motives. Economically, a 1 percentage point increase in the tax gap between home and host is associated with a 0.1 percentage point or 0.6% (=0.1/0.179) decline in effective tax rates. Moreover, a decline in country-level tax rates by 4.5 percentage points (the inversion country-pair median) is associated with a 0.45 percentage point or 2.5% decrease in effective tax rates. Firms that invert to tax havens also experience an economically important decrease in effective tax rates of 5.4 percentage points.

We next examine whether a decrease in effective tax rates is associated with an increase in firm value. In Panel B of Table 8, we find that, on average, corporate inversions are not associated with changes in Tobin's q. However, inversions into low-tax destinations are indeed supported by shareholders. A 1 percentage point larger tax gap between home and host is associated with a 0.4% (=0.007/1.629) increase in Tobin's q; compared to control firms, inversions into tax havens are associated with an average increase in Tobin's q by 14.4% (=0.235/1.629). The economic magnitude is smaller than the 17% cross-listing premium found in Doidge, Karolyi, and Stulz (2004) and larger than the magnitudes found by those studying the valuation of corporate governance in the international context. For example, Aggarwal et al.

(2010) find that decreasing an average firm's governance score by the average governance gap between an international firm and a matching U.S. firm reduces Tobin's q by 6.2%. Durnev and Kim (2005) find that a one standard deviation increase in comprehensive governance scores results in a 9% increase in Tobin's q. The evidence so far is in line with the concept that inversions that are likely tax driven lead to a decrease in effective tax rates, which is supported by shareholders.

In addition to the tax motives, we document above that governance provides explanatory power for cross-border inversion flows. We next examine governance outcomes at the firm level. Past studies have shown that institutional investors provide effective monitoring (e.g., Gillan and Starks, 2003; Hartzell and Starks, 2003) and impose better governance (Ferreira and Matos, 2008; Ferreira, Massa, and Matos, 2009; Aggarwal et al., 2011). Given a typically limited coverage of international firms by other governance measures, we focus on institutional ownership as a proxy for firm-level governance quality.

--- Table 9 about here ---

The results in Table 9 show that overall, corporate inversions are followed by an increase in institutional ownership. Yet institutional owners appear to withdraw from inversions into weakly governed locals, as proxied by corruption and voice and accountability. Indeed, inversions into strongly governed countries are associated with a 3.5 to 4.3 percentage point increase in institutional ownership. Yet inverting to Brazil (anti-corruption level of -0.14 in 2006) instead of France (with anti-corruption level of 1.46 in 2006) is associated with a drop in institutional ownership of 7.2 percentage points (0.045*(1.46+0.14)) relative to inversions into hosts with similar anti-corruption levels. This result aligns with the concept that institutional owners may associate inversions into weakly governed entities with potential agency conflicts.

6. Conclusion

Using a unique international dataset of corporate inversions from 11 home countries to 45 host destinations over the 1996-2013 period, we have identified characteristics and drivers of corporate inversions. We document that inversions are not solely driven by tax but also by governance motives. Additionally, our data reveal that corporate inversions are neither a recent occurrence nor strictly a U.S. phenomenon. We also find that firms that invert to hosts with tax advantages indeed decrease their effective tax rates significantly, and experience an increase in firm value. While inversions are associated with an increase in institutional ownership on average, institutional owners divest from firms that invert into poorly governed locales.

In light of the many high-profile cases of recent inversions, our paper takes an important first step in understanding the drivers of inversion flows. Even though the media and policymakers typically portray corporate inversions as unpatriotic, inversion decisions seem to align with shareholders' interests. This is evident from our finding that inversion flows respond to improved transparency between firms' home country and host destination. Our results highlight the tension between firms making decisions in shareholders' interest and governments seeking to correct distributive failures.

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Table 1: Number of Inversions

The table provides the number of corporate inversions by home country and host destination. The data consists of firms from 11 OECD countries that changed domicile through mergers or reorganizations in 1995-2013. Total number of inversions and mergers (# and % of total) are also provided. An $^{+}$ indicates a tax haven based on Dharmapala and Hines (2009).

	Home Country													
Host Destination	Australia	Canada	France	Germany	Italy	Netherl.	Spain	Sweden	Switzerl.	U.K.	U.S.	Total	Merg #	Merg %
Anguilla^{+}	0	1	0	0	0	0	0	0	0	0	2	3	0	0%
Antigua^{+}	0	0	0	0	0	0	0	0	0	0	1	1	0	0%
Australia	0	13	0	0	0	0	0	0	0	2	1	16	8	50%
Austria	0	0	1	1	0	0	0	0	0	2	0	4	2	50%
Bahamas^{+}	0	0	0	0	0	0	0	0	0	0	2	2	0	0%
Belgium	0	0	1	0	0	1	0	0	0	0	3	5	3	60%
Belize^{+}	0	0	0	0	0	0	0	0	0	1	0	1	0	0%
Bermuda^{+}	6	16	0	0	0	0	0	0	0	14	30	66	28	42%
Brazil	0	1	0	0	0	0	0	0	0	0	0	1	1	100%
Canada	8	0	0	0	0	0	0	0	0	2	76	86	60	70%
Cayman Islands^{+}	2	14	0	0	0	0	0	0	0	3	23	42	13	31%
Curaçao	0	0	0	0	0	0	0	0	0	0	1	1	1	100%
Cyprus^{+}	0	1	0	0	0	0	0	0	0	0	0	1	0	0%
Falkland Islands	0	0	0	0	0	0	0	0	0	1	0	1	1	100%
Finland	0	0	0	0	0	0	0	4	0	0	0	4	4	100%
France	0	1	0	0	0	0	0	0	0	6	0	7	6	86%
Germany	0	2	0	0	1	0	0	0	0	1	1	5	5	100%
Ghana	0	1	0	0	0	0	0	0	0	0	0	1	1	100%
Greece	0	0	0	0	0	0	0	0	0	1	0	1	0	0%
Guernsey	0	3	0	0	0	0	0	0	0	5	1	9	2	22%
Ireland^{+}	0	4	0	0	0	0	0	0	0	21	5	30	25	83%
Isle of Man^{+}	1	0	0	0	0	0	0	0	0	4	0	5	0	0%
Israel	0	0	0	0	0	0	0	0	0	0	6	6	6	100%
Italy	0	0	0	1	0	0	1	0	0	0	0	2	2	100%
Jersey	1	9	0	0	0	0	0	0	0	14	1	25	3	12%
Liechtenstein^{+}	0	0	0	0	0	0	0	0	1	0	0	1	0	0%
Luxembourg^{+}	0	2	13	0	0	10	0	1	0	3	0	29	23	79%
Malaysia	0	0	0	0	0	0	0	0	0	0	1	1	0	0%
Malta^{+}	0	0	0	0	0	0	0	0	0	1	0	1	0	0%
Marshall Islands^{+}	0	0	0	0	0	0	0	0	0	0	6	6	5	83%
Netherlands	0	1	1	0	2	0	0	1	0	2	3	10	8	80%
New Zealand	1	0	0	0	0	0	0	0	0	0	0	1	0	0%
Norway	0	0	0	0	0	0	0	1	0	0	0	1	1	100%
Panama^{+}	0	0	0	0	0	0	0	0	1	0	0	1	1	100%
Papua New Guinea	2	0	0	0	0	0	0	0	0	0	0	2	2	100%
Philippines	0	0	0	0	0	0	0	0	0	0	1	1	0	0%
Puerto Rico	0	0	0	0	0	0	0	0	0	0	2	2	0	0%
Saint Kitts^{+}	0	0	0	0	0	0	0	0	0	0	1	1	0	0%
Singapore^{+}	0	1	0	0	0	0	0	0	0	1	5	7	4	57%
Spain	0	0	0	0	0	0	0	0	0	1	0	1	0	0%
Sweden	0	3	0	0	0	0	0	0	0	1	0	4	2	50%
Switzerland^{+}	0	2	0	1	0	0	0	2	0	2	5	12	6	50%
UK	7	11	0	1	1	1	0	2	3	0	13	39	28	72%
US	2	171	0	0	2	0	0	0	0	13	0	188	78	41%
Virgin Islands^{+}	0	27	0	0	0	0	0	0	0	3	28	58	11	19%
Total	30	284	16	4	6	12	1	11	5	104	218	691	340	49%
% Tax Haven	30%	24%	81%	25%	0%	83%	0%	27%	50%	50%	49%	38%	-	-
Merger (#)	19	121	15	3	6	7	1	9	3	34	122	340	-	-
Merger (%)	63%	43%	94%	75%	100%	58%	100%	82%	60%	33%	56%	49%	-	-

Table 2: Sample Characteristics

The table provides country characteristics (Panel A) and country characteristics at the inversion level (Panel B), along with firm characteristics (Panel C). Panel A and B reports summary statistics of country variables for home country and host destination. Time series variables are averaged over the available years for each country. Refer to the Appendix for variable definitions. Panel B reports summary statistics of country characteristics at the inversion level along with the median differences for mergers and reorganizations. Significance levels of the differences in median are based on the Wilcoxon signed-rank test. The symbols ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Panel C provides the characteristics of firms from Worldscope population for 1985-2014. All variables are winsorized at the 1% level and time series variables are averaged over the available years for each firm. The means, medians, 25th percentile, 75th percentile, standard deviations, and total number of firms are reported. Refer to the Appendix for variable definitions.

Panel A: Country characteristics at the country level

Country-level						
Variables	**Mean**	**Median**	**Min**	**Max**	**Std. Dev.**	***N***
Corporate Taxes (%)	22.03	26.00	0.00	38.26	12.52	45
GDP per Capita ($)	30,191	30,411	532.50	102,115	22,545	37
GDP Growth (%)	2.95	2.47	0.59	7.46	1.62	37
Market Cap/GDP (%)	76.31	62.29	5.874	204.47	48.76	31
Turnover (%)	61.70	54.05	0.177	174.87	47.84	31
Corruption	1.16	1.33	-0.95	2.39	0.92	39
Voice and Accountability	1.05	1.20	-0.34	1.62	0.52	39
Merger Quality Index	2.13	2.00	0.00	4.00	1.01	23

Panel B: Country characteristics at the inversion level

Inversion-level						
Difference Variables	**All Inversions**			**Merger**	**Reorg**	**Difference**
(Home-Host)	**Mean**	**Median**	***N***			**(*P*-value)**
Corporate Taxes (%)	11.84***	4.50***	691	3.90***	10.00***	*(0.006)*
GDP per Capita ($)	-6,411***	-7,495***	543	-7,057***	-7,907***	*(0.005)*
GDP Growth (%)	-0.09	-0.05	543	0.05	-0.17	*(0.856)*
Market Cap/GDP (%)	8.95***	5.79***	471	12.20***	-2.40	*(0.077)*
Turnover (%)	17.72***	17.82***	478	50.72***	-52.81	*(0.000)*
Corruption	0.19***	0.20***	582	0.10***	0.33***	*(0.001)*
Voice and Accountability	0.15***	0.22***	582	0.08***	0.26***	*(0.000)*
Merger Quality Index	-0.24***	-1.00***	432	0.00	-1.00***	*(0.021)*

Panel C: Firm characteristics

Variables	Mean	Median	P25	P75	Std. Dev.	*N*
Total Assets (in$ mil)	1,753.21	171.77	47.44	672.35	6,491.16	35,540
Total Debt Ratio	0.510	0.513	0.349	0.667	0.227	35,540
Interest Expense	0.117	0.077	0.006	0.198	0.193	35,134
Cash	0.172	0.124	0.058	0.231	0.159	35,538
Cash Flows	-0.328	0.054	-0.003	0.125	2.639	33,990
Sales	0.833	0.725	0.296	1.167	0.693	35,501
Market-to-Book (MTB)	2.649	1.759	1.103	3.040	2.886	34,709
Dividend Yield (%)	3.210	0.228	0.000	1.631	8.972	34,755
ROA(%)	-0.054	3.237	-0.197	6.599	15.218	35,403
Tobin's q	1.629	1.265	1.014	1.833	1.164	34,724
Investment	0.052	0.040	0.016	0.071	0.049	35,382
Intangible Assets	0.083	0.021	0.003	0.102	0.133	35,142
Insider Ownership (%)	44.702	45.041	26.742	62.075	22.808	31,807
Institutional Ownership	0.148	0.054	0.013	0.172	0.219	41,348
Effective Tax Rate (ETR)	0.179	0.166	0.078	0.260	0.135	31,645

Table 3: Country Characteristics and Inversion Activity

This table reports pairwise correlations between inversion activity and host destination characteristics. Inversion activity is measured by the natural logarithm of the number of inversions, reverse mergers, and reorganizations attracted by host countries. Refer to the Appendix for the variable definitions.

	LN(1+#Inversions)	LN(1+#Mergers)	LN(1+#Reorgs)	# Observations
Corporate Taxes	-0.27	0.09	-0.40	45
GDP per Capita	0.44	0.29	0.27	37
GDP Growth	-0.12	-0.09	0.08	37
Market Cap / GDP	0.35	0.23	-0.05	31
Turnover	0.19	0.01	-0.07	31
Corruption	0.44	0.27	0.12	39
Voice and Accountability	0.36	0.25	0.12	39
Merger Quality Index	0.33	0.25	-0.05	23

Table 4: Cross-sectional Analysis of the Determinants of Corporate Inversion

This table presents estimates of cross-sectional OLS (Panel A) and probit (Panel B) regressions of cross-border corporate inversions in country-pairs. In columns (1)-(2) of Panel A, the dependent variable is the logarithm of one plus total number of inversion deals in 1995-2013 (X_{ij}) in which the firm comes country *i* changed its domicile to another locale *j* (where $i \neq j$). In the regressions for columns (3) and (4), we examine the ratio of the total number of inversion deals between 1995 and 2013 (X_{ij}) scaled by sum of the number of inversions into the host destination *j*. In the regressions for columns (5) and (6), we study the logarithm of one plus the number of inversions in 1995-2013 (X_i) in which the company comes from country *i*. In the regressions for columns (1)-(2) of Panel B, the dependent variable is a dummy equal to one if there is any inversion deal between a given country pair and zero otherwise. In the regressions for columns (3)-(4) ((5)-(6)), the dependent variable is a dummy equal to one if there is any inversion deal through reverse merger (reorganization) between a country-pair and zero otherwise. Refer to the Appendix for variable definitions. In both panels, the host (*j*) fixed effects are included in all regressions. The standard errors in parentheses are clustered at both the home and host levels. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: OLS Regressions

	(1)	(2)	(3)	(4)	(5)	(6)
	$ln(1+X_{ij})$	$ln(1+X_{ij})$	X_{ij}/X_j	X_{ij}/X_j	$ln(1+X_i)$	$ln(1+X_i)$
% Tax (Home less Host)	0.070***	0.062***	0.021***	0.018***	0.403***	0.385***
	(0.0124)	(0.0105)	(0.0033)	(0.0031)	(0.0386)	(0.0331)
Geographic Distance	-0.084**	-0.081***	-0.035***	-0.034***	-0.109***	-0.102***
	(0.0325)	(0.0309)	(0.0031)	(0.0024)	(0.0340)	(0.0316)
Log(GDP per capita (Home))	0.010**	0.011**	0.006**	0.006***	0.075**	0.077**
	(0.0050)	(0.0047)	(0.0025)	(0.0022)	(0.0307)	(0.0339)
GDP Growth (Home)	0.669***	0.600***	0.232***	0.211***	2.219***	2.050***
	(0.2021)	(0.1603)	(0.0299)	(0.0126)	(0.6044)	(0.4456)
% Turnover (Home)	-0.016***	-0.014***	-0.004***	-0.004***	-0.081***	-0.078***
	(0.0041)	(0.0042)	(0.0007)	(0.0010)	(0.0139)	(0.0139)
Quality Index (Home)	0.576***	0.487***	0.167***	0.137***	2.401***	2.184***
	(0.1421)	(0.1353)	(0.0233)	(0.0373)	(0.5370)	(0.4658)
Corruption (Home less Host)	-0.495**		-0.174***		-1.203*	
	(0.2143)		(0.0575)		(0.6843)	
Voice and Accountability (Home less Host)		-1.433***		-0.527***		-3.466**
		(0.4487)		(0.1132)		(1.3808)
Observations	418	418	418	418	418	418
R^2	0.400	0.403	0.212	0.218	0.837	0.840

Panel B: Probit Regressions

	(1)	(2)	(3)	(4)	(5)	(6)
	Dep=1 if there is an inversion deal between country *i* and *j*		Dep=1 if there is a merger inversion deal between country *i* and *j*		Dep=1 if there is a reorganization inversion deal between country *i* and *j*	
% Tax (Home less Host)	0.217***	0.194***	0.151***	0.159***	0.365**	0.280***
	(0.0495)	(0.0561)	(0.0519)	(0.0579)	(0.1741)	(0.0904)
Geographic Distance	-0.222***	-0.212***	-0.173***	-0.155***	-0.218***	-0.215***
	(0.0401)	(0.0357)	(0.0486)	(0.0457)	(0.0643)	(0.0582)
Log(GDP per capita (Home))	0.043*	0.041*	0.032	0.026	0.111	0.086***
	(0.0229)	(0.0211)	(0.0281)	(0.0262)	(0.0750)	(0.0234)
GDP Growth (Home)	1.843***	1.601***	1.406***	1.068***	2.571***	2.290***
	(0.4081)	(0.2638)	(0.4706)	(0.3367)	(0.7160)	(0.5057)
% Turnover (Home)	-0.050***	-0.045***	-0.034***	-0.030**	-0.084***	-0.067***
	(0.0103)	(0.0104)	(0.0132)	(0.0122)	(0.0245)	(0.0119)
Quality Index (Home)	1.697***	1.389***	0.989**	0.756*	2.698***	2.119***
	(0.3110)	(0.2969)	(0.4586)	(0.3979)	(0.4919)	(0.3803)
Corruption (Home less Host)	-1.345**		-1.018		-1.852*	
	(0.6253)		(0.6447)		(0.9787)	
Voice and Accountability (Home less Host)		-3.448**		-1.310		-4.618***
		(1.4234)		(1.7765)		(1.6933)
Fixed Effects	Host	Host	Host	Host	Host	Host
Observations	418	418	287	287	321	321

Table 5: Panel Analysis of the Determinants of Corporate Inversion

This table presents estimates of pooled time series and cross-sectional regression results of cross-border corporate inversions. Panel A presents OLS regression results where the dependent variable is the logarithm of one plus total number of inversion deals in a given year between 1995 and 2013 (X_{ijt}) in which the firm is from country *i* and changed its domicile to host destination *j* (where $i \neq j$) in year *t*. Panel B presents probit regression results, where the dependent variable is equal to one if there is an inversion between a given country-pair in a given year and zero otherwise. Refer to the Appendix for variable definitions. Heteroscedasticity-corrected standard errors are in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: OLS Regressions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Double Taxation Treaty	0.022***		0.019***		0.028***		0.041***		0.016		0.021*	
	(0.0066)		(0.0067)		(0.0071)		(0.0100)		(0.0105)		(0.0109)	
TIEA		0.045***		0.037**		0.050***		0.062***		0.042***		0.055***
		(0.0160)		(0.0158)		(0.0176)		(0.0123)		(0.0125)		(0.0142)
Geographic Distance			-0.015***	-0.015***	-0.004***	-0.004***						
			(0.0018)	(0.0018)	(0.0014)	(0.0014)						
Log(GDP per capita (Home))			0.003***	0.003**	0.005***	0.004***			0.004***	0.004***	0.003***	0.003***
			(0.0012)	(0.0012)	(0.0011)	(0.0012)			(0.0005)	(0.0005)	(0.0006)	(0.0006)
GDP Growth (Home)			-0.003*	-0.003	-0.004**	-0.004**			-0.002**	-0.001*	-0.001	-0.001
			(0.0018)	(0.0018)	(0.0017)	(0.0017)			(0.0009)	(0.0008)	(0.0009)	(0.0008)
Import Ratio					4.970***	4.958***					-3.071**	-3.044**
					(0.6476)	(0.6473)					(1.2556)	(1.2564)
% Turnover (Home)					0.239***	0.234***					0.164***	0.185***
					(0.0833)	(0.0828)					(0.0572)	(0.0583)
Quality Index (Home)					0.005	0.008						
					(0.0088)	(0.0088)						
Fixed Effects	Home, Host & Time	Home, Host & Time	Home, Host & Time	Home, Host & Time	Home, Host & Time	Home, Host & Time	Country-Pair	Country-Pair	Country-Pair	Country-Pair	Country-Pair	Country-Pair
Observations	9,196	9,196	9,196	9,196	8,712	8,712	9,196	9,196	9,196	9,196	8,712	8,712
R^2	0.130	0.131	0.148	0.149	0.281	0.281	0.471	0.473	0.476	0.477	0.497	0.499

Panel B: Probit Regressions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Double Taxation Treaty	0.131**		0.110**		-0.062		0.367**		0.443**		0.459**	
	(0.0510)		(0.0529)		(0.0590)		(0.1735)		(0.1902)		(0.1867)	
TIEA		0.626***		0.581***		0.781***		0.209*		0.143		0.257*
		(0.0847)		(0.0861)		(0.0942)		(0.1254)		(0.1332)		(0.1404)
Geographic Distance			-0.051***	-0.051***	-0.023**	-0.018*			-0.167***	-0.163***	-0.136***	-0.132***
			(0.0100)	(0.0102)	(0.0105)	(0.0107)			(0.0179)	(0.0176)	(0.0194)	(0.0195)
Log(GDP per capita (Home))			0.016***	0.014***	0.012***	0.009***			0.045	0.045	0.052	0.050
			(0.0020)	(0.0021)	(0.0025)	(0.0026)			(0.0465)	(0.0467)	(0.0481)	(0.0482)
GDP Growth (Home)			0.014	0.022	0.019	0.029**			-0.038	-0.039	-0.024	-0.023
			(0.0131)	(0.0135)	(0.0142)	(0.0147)			(0.0354)	(0.0355)	(0.0373)	(0.0373)
Import Ratio					8.958***	9.477***					7.714***	7.504***
					(0.8522)	(0.8772)					(2.0039)	(1.9375)
% Turnover (Home)					2.608***	2.413***					0.919	0.864
					(0.4651)	(0.4765)					(0.9032)	(0.8950)
Quality Index (Home)					0.051	0.067					-0.159	-0.143
					(0.0436)	(0.0434)					(0.2464)	(0.2462)
Fixed Effects	No	No	No	No	No	No	Home, Host & Time	Home, Host & Time	Home, Host & Time	Home, Host & Time	Home, Host & Time	Home, Host & Time
Observations	9,196	9,196	9,196	9,196	8,712	8,712	9,196	9,196	9,196	9,196	8,118	8,118

Table 6: Panel Analysis of the Determinants of Corporate Inversion: Robustness

This table presents estimates of pooled time series and cross-sectional regressions of cross-border corporate inversions. Panel A presents OLS regressions results for two measures of inversion flows: the ratio of the total number of inversion deals in a given year between 1995 and 2013 (X_{ijt}) scaled by sum of the number of inversions in the home country *i* (X_i) and by the number of inversions in both the home and host ($X_i + X_j$). Panel B presents probit regression results. The regressions for columns (1), (2), (5), (6) ((3), (4), (7), (8)) employ a dependent variable equal to one if there is an inversion through reverse mergers (reorganizations) between a given country-pair in a given year. Refer to the Appendix for variable definitions. Heteroscedasticity-corrected standard errors are in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: OLS regressions with Alternative Proxies

	(1) X_{ijt}/ X_i	(2) X_{ijt}/ X_i	(3) $X_{ijt}/ (X_i+ X_j)$	(4) $X_{ijt}/ (X_i+ X_j)$	(5) X_{ijt}/ X_i	(6) X_{ijt}/ X_i	(7) $X_{ijt}/ (X_i+ X_j)$	(8) $X_{ijt}/ (X_i+ X_j)$
Double Taxation Treaty	0.001***		0.000**		0.002**		0.001**	
	(0.0004)		(0.0002)		(0.0007)		(0.0003)	
TIEA		0.001*		0.001**		0.001**		0.001***
		(0.0005)		(0.0002)		(0.0005)		(0.0002)
Geographic Distance	-0.000**	-0.000**	-0.000**	-0.000**				
	(0.0001)	(0.0001)	(0.0000)	(0.0000)				
Log(GDP per capita (Home))	0.000*	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0000)	(0.0000)
GDP Growth (Home)	-0.000	-0.000	-0.000	-0.000	0.000	0.000	0.000	0.000
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0000)	(0.0000)
Import Ratio	0.083***	0.083***	0.056***	0.055***	-0.148	-0.146	-0.066*	-0.065*
	(0.0184)	(0.0183)	(0.0105)	(0.0105)	(0.1078)	(0.1073)	(0.0382)	(0.0381)
% Turnover (Home)	0.012	0.012	0.005*	0.005*	0.009	0.009	0.004**	0.005**
	(0.0083)	(0.0083)	(0.0029)	(0.0029)	(0.0057)	(0.0058)	(0.0021)	(0.0021)
Quality Index (Home)	-0.002**	-0.002**	-0.001*	-0.001				
	(0.0008)	(0.0007)	(0.0003)	(0.0003)				
Fixed Effects	Home, Host & time	Home, Host & time	Home, Host & time	Home, Host & time	Country Pair	Country Pair	Country Pair	Country Pair
Observations	8,712	8,712	8,712	8,712	8,712	8,712	8,712	8,712
R^2	0.025	0.024	0.039	0.039	0.090	0.090	0.114	0.114

Panel B: Probit Regressions for Inversions through Mergers and Reorganizations

	(1) merger	(2) merger	(3) reorg	(4) reorg	(5) merger	(6) merger	(7) reorg	(8) reorg
Double Taxation Treaty	0.044		-0.230***		0.256		0.350	
	(0.0709)		(0.0766)		(0.1927)		(0.2859)	
TIEA		0.285*		1.005***		-0.349		0.381**
		(0.1479)		(0.1026)		(0.2177)		(0.1631)
Geographic Distance	-0.009	-0.007	-0.040***	-0.033**	-0.100***	-0.106***	-0.152***	-0.147***
	(0.0118)	(0.0119)	(0.0154)	(0.0155)	(0.0221)	(0.0224)	(0.0278)	(0.0276)
Log(GDP per capita (Home))	0.016***	0.015***	0.006**	0.001	0.053	0.057	-0.000	0.004
	(0.0030)	(0.0031)	(0.0028)	(0.0031)	(0.0535)	(0.0542)	(0.0825)	(0.0832)
GDP Growth (Home)	0.055***	0.057***	-0.007	0.010	0.009	0.008	-0.021	-0.017
	(0.0191)	(0.0193)	(0.0167)	(0.0178)	(0.0441)	(0.0441)	(0.0526)	(0.0529)
Import Ratio	10.327***	10.693***	9.120***	9.255***	10.057***	9.803***	7.375***	7.214***
	(0.9365)	(0.9491)	(0.9170)	(0.9452)	(1.9494)	(1.8823)	(1.8665)	(1.8706)
% Turnover (Home)	2.869***	2.843***	1.931***	1.547***	0.548	0.552	0.279	0.251
	(0.5638)	(0.5675)	(0.5703)	(0.5999)	(1.1217)	(1.1132)	(1.2421)	(1.2357)
Quality Index (Home)	-0.037	-0.034	0.147**	0.169***	-0.063	-0.079	-0.010	-0.028
	(0.0506)	(0.0511)	(0.0571)	(0.0555)	(0.2785)	(0.2823)	(0.3935)	(0.3946)
Fixed Effects	No	No	No	No	Home, Host & Time	Home, Host & Time	Home, Host & Time	Home, Host & Time
Observations	8,712	8,712	8,712	8,712	5,760	5,760	3,906	3,906

Table 7: Firm-level Determinants of Corporate Inversion

This table reports probit estimates for firm-level determinants of corporate inversions. Dependent variable: (i) equals to one if the firm engaged in corporate inversions in 1995-2013 and zero otherwise; (ii) equals to one if the firm engaged in corporate inversions via mergers in 1995-2013 and zero otherwise; (iii) equals to one if the firm engaged in corporate inversions via reorganization in 1995-2013 and zero otherwise; and (iv) equals to one if the firm inverted to a tax haven in 1995-2013 and zero otherwise. The sample is based on all publicly traded firms in Worldscope. Refer to the Appendix for variable definitions. Heteroscedasticity-corrected standard errors are in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	1 if inverted; 0 otherwise		1 if inverted via merger; 0 otherwise		1 if inverted via reorg; 0 otherwise		1 if inverted to tax-haven; 0 otherwise	
Ln($TA)	-0.026*	-0.025**	0.041**	0.051***	-0.141***	-0.192***	-0.073***	-0.084***
	(0.0138)	(0.0118)	(0.0134)	(0.0109)	(0.0307)	(0.0254)	(0.0239)	(0.0214)
Total Debt	0.208**	0.171*	0.096	-0.027	0.327	0.534***	0.693***	0.737***
Ratio	(0.1031)	(0.0896)	(0.1205)	(0.1029)	(0.2379)	(0.1638)	(0.1671)	(0.1401)
Interest	0.014	0.074	-0.013	0.052	0.129	0.138*	-0.031	0.069
Expense	(0.0608)	(0.0492)	(0.0764)	(0.0602)	(0.1258)	(0.0737)	(0.0812)	(0.0747)
Cash	0.362***	0.354***	0.811**	0.872***	0.002	-0.253	-0.087	-0.202
	(0.1390)	(0.1170)	(0.1567)	(0.1371)	(0.3053)	(0.2456)	(0.2059)	(0.1776)
Cash Flow	-0.000	-0.011	-0.017*	-0.001	0.079	-0.021*	0.024	-0.017*
	(0.0094)	(0.0076)	(0.0093)	(0.0085)	(0.0498)	(0.0111)	(0.0180)	(0.0100)
Sales	-0.154***	-0.102***	0.034	0.069*	-0.396***	-0.409***	-0.359***	-0.269***
	(0.0470)	(0.0383)	(0.0464)	(0.0376)	(0.1177)	(0.1020)	(0.0735)	(0.0606)
Tobin's Q	0.004	-0.001	0.006	0.004	-0.009	-0.014	-0.011	-0.015*
	(0.0046)	(0.0042)	(0.0050)	(0.0044)	(0.0134)	(0.0125)	(0.0087)	(0.0085)
Dividend	-0.021	-0.038**	-0.003	-0.027*	-0.148***	-0.057***	-0.350***	-0.305***
Yield(%)	(0.0174)	(0.0166)	(0.0051)	(0.0162)	(0.0547)	(0.0190)	(0.1048)	(0.0932)
ROA	0.000	0.001	-0.001	-0.002**	0.002	0.007***	-0.001	0.002
	(0.0012)	(0.0010)	(0.0013)	(0.0011)	(0.0034)	(0.0023)	(0.0020)	(0.0017)
Investment	0.150	0.212**	0.375**	0.538***	0.388	0.192	0.275*	0.112
	(0.1249)	(0.1016)	(0.1494)	(0.1261)	(0.2758)	(0.1643)	(0.1472)	(0.1286)
Intangible	0.196	0.304***	0.714**	0.785***	-0.352	-0.122	0.106	0.173
	(0.1398)	(0.1167)	(0.1630)	(0.1393)	(0.2966)	(0.2140)	(0.2050)	(0.1731)
Insider	-0.002*	-0.005***	-0.000	-0.003***	-0.003	-0.007***	-0.005***	-0.008***
	(0.0009)	(0.0008)	(0.0010)	(0.0009)	(0.0022)	(0.0018)	(0.0019)	(0.0017)
ADR	0.301***	0.113*	0.021	-0.266***	0.915***	0.944***	0.415***	0.305***
	(0.0769)	(0.0650)	(0.1007)	(0.0890)	(0.1473)	(0.1080)	(0.1346)	(0.1090)
ETR	0.333***		0.077		0.605***		0.366***	
	(0.0476)		(0.0969)		(0.0853)		(0.0589)	
% Tax		0.005**		0.009***		-0.007***		0.008**
		(0.0019)		(0.0026)		(0.0020)		(0.0032)
Sector FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country	Yes	No	Yes	No	Yes	No	Yes	No
Observatio	68,981	99,079	66,334	95,979	16,049	63,912	36,044	60,980

Table 8: Firm-level Inversion Outcomes: Taxes and Valuation

This table reports OLS estimates for firm-level outcomes of corporate inversions. The sample period is 1985-2014. The sample includes publicly listed firms from 11 countries. Panel A presents outcome regression results where the dependent variable is the effective tax rate. Panel B presents regression results where the dependent variable is Tobin's q. *After Inversion* is a dummy equal to one for firms that inverted in years following the inversion (including the year of inversion). *Control After* is a dummy equal to one for control firms in years after their corresponding treated firms invert. Control firms are matched to inverted firms two years prior to inversion based on country, 2-digit industry SIC code, and size. The regressions for columns (1)-(3) use the full Worldscope sample and in the regressions for columns (4)-(6), we restrict the sample to inverted and control firms. Refer to the Appendix for variable definitions. Standard errors are clustered at the home country level. *t*-statistics are in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Effective Tax Rates

	(1)	(2)	(3)	(4)	(5)	(6)
		Full Sample			Inverted Firms & Control Sample	
After Inversion	0.009	0.021**	0.020*	-0.002	0.012	0.009
	(0.78)	(2.41)	(1.92)	(-0.10)	(1.01)	(0.58)
*After Inversion * % Tax difference (Home less Host)*		-0.001***			-0.002***	
		(-2.28)			(-2.39)	
*After Inversion * Tax Haven Host*			-0.054**			-0.056**
			(-2.26)			(-2.46)
Control After	0.017**	0.017**	0.017**			
	(2.42)	(2.42)	(2.42)			
Ln($TA)	0.014***	0.014***	0.014***	0.024***	0.024***	0.024***
	(4.62)	(4.62)	(4.62)	(6.32)	(6.20)	(6.21)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Country x Industry x Year FE	Yes	Yes	Yes	No	No	No
Year FE	-	-	-	Yes	Yes	Yes
Observations	417976	417976	417976	7260	7260	7260
R^2	0.388	0.388	0.388	0.332	0.333	0.332

Panel B: Tobin's q

	(1)	(2)	(3)	(4)	(5)	(6)
		Full Sample			Inverted Firms & Control Sample	
After Inversion	-0.063	-0.109	-0.095	0.019	-0.018	-0.018
	(-0.84)	(-1.61)	(-1.02)	(0.29)	(-0.27)	(-0.24)
*After Inversion **		0.007***			0.005***	
% Tax difference (Home less Host)		(4.08)			(2.83)	
*After Inversion **			0.225			0.235*
Tax Haven Host			(1.24)			(1.71)
Control After	-0.135	-0.135	-0.135			
	(-1.60)	(-1.60)	(-1.60)			
Ln($TA)	-0.359***	-0.359***	-0.359***	-0.498***	-0.496***	-0.497***
	(-9.86)	(-9.85)	(-9.85)	(-25.45)	(-25.35)	(-25.08)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Country x Industry x Year FE	Yes	Yes	Yes	No	No	No
Year FE	-	-	-	Yes	Yes	Yes
Observations	461,393	461,393	461,393	8,214	8,214	8,214
R^2	0.605	0.605	0.605	0.572	0.572	0.573

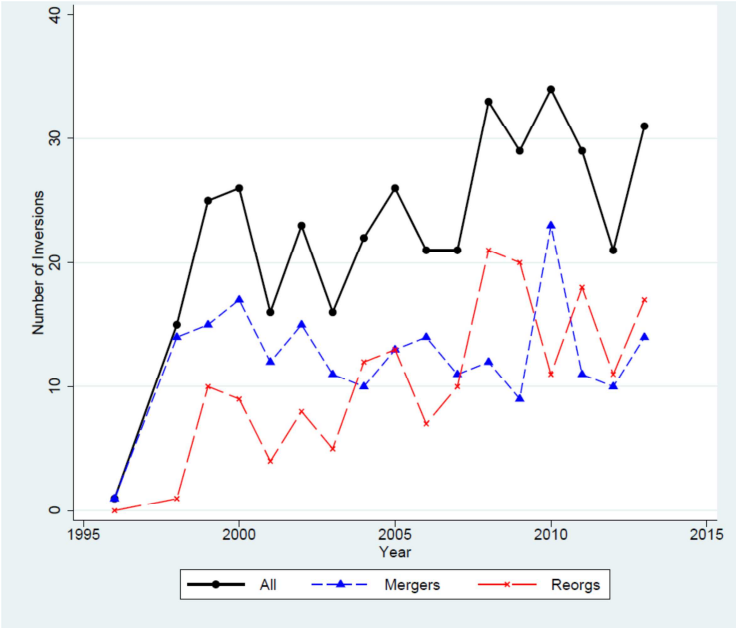
Table 9: Firm-level Inversion Outcomes: Institutional Ownership and Country-level Governance
This table reports OLS estimates for firm-level outcomes of corporate inversions where the dependent variable is the institutional ownership. *After Inversion* is a dummy equal to one for firms that inverted in years following the inversion (including the year of inversion). *Control After* is a dummy equal to one for control firms in years after their corresponding treated firms invert. Control firms are matched to inverted firms two years prior to inversion based on country, 2-digit industry SIC code, and size. The regressions for columns (1)-(3) use the full Worldscope sample and in the regressions for columns (4)-(6), we restrict the sample to inverted and control firms. Refer to the Appendix for variable definitions. Standard errors are clustered at the home country level. *t*-statistics are in parentheses. *, ** and *** denote statistical significance at the 10%, 5% and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
		Full Sample			Inverted Firms & Control Sample	
After Inversion	0.027	0.035*	0.041**	0.031**	0.038***	0.043***
	(1.10)	(1.65)	(2.13)	(2.46)	(2.71)	(3.43)
*After Inversion * Corruption (Home less Host)*		-0.045**			-0.020	
		(-2.02)			(-0.95)	
*After Inversion * Voice & Accountability (Home less Host)*			-0.096***			-0.062***
			(-4.65)			(-3.29)
Control After	-0.016	-0.016	-0.016			
	(-1.21)	(-1.20)	(-1.20)			
Ln($TA)	0.044***	0.044***	0.044***	0.043***	0.043***	0.043***
	(3.02)	(3.00)	(3.00)	(4.45)	(3.94)	(4.00)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Country x Industry x Year FE	Yes	Yes	Yes	No	No	No
Year FE	-	-	-	Yes	Yes	Yes
Observations	215,072	214,786	214,786	4,374	4,088	4,088
R^2	0.921	0.921	0.921	0.901	0.906	0.906

Figure 1: Number of Corporate Cross-Border Inversions over time

This figure shows the total number of cross-border corporate inversions (Panel A) and the number of inversions where the host destination is a tax haven (Panel B). The sample period is 1996-2013. Tax havens are territories listed in Desai et al. (2009).

Panel A: Number of Inversions over Time



Panel B: Number of Inversions into Tax Havens

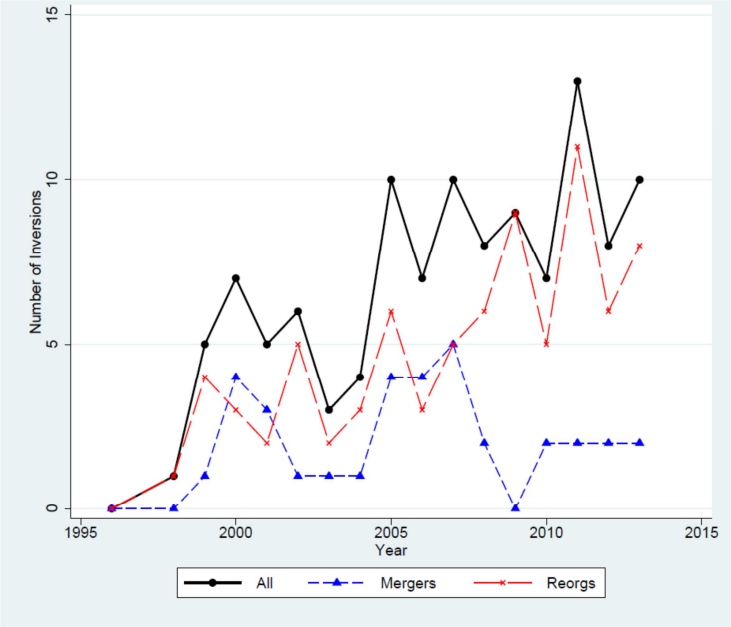
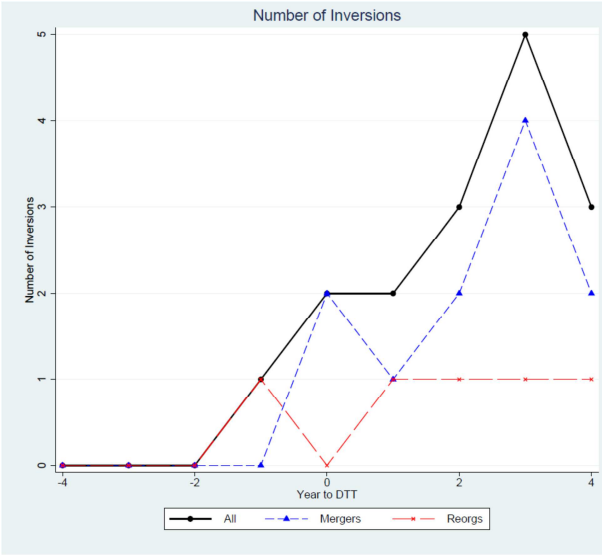


Figure 2: Number of Inversions around Passage of Double Taxation Treaties

This figure shows the evolution of corporate cross-border inversions around passage of double taxation treaties (DTTs). The list of bilateral DTTs is obtained from the United Nations Conference on Trade and Development (UNCTAD). Panel A depicts the number of inversions between two signatory countries in the years prior and after signing a DTT. Panel B compares the evolution of inversions between country-pairs affected by DTTs (treated) and country-pairs unaffected by DTTs (control). Treated pairs are pairs of countries that signed DTTs. Control pairs are pairs of (home) countries and other countries that never signed a DTT.

Panel A:



Panel B:

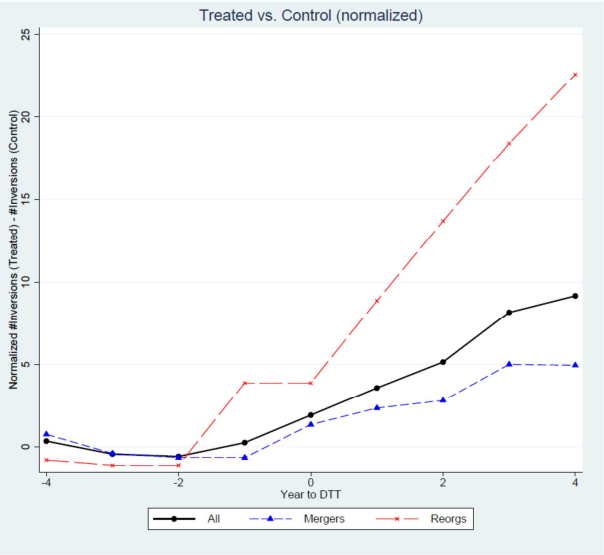
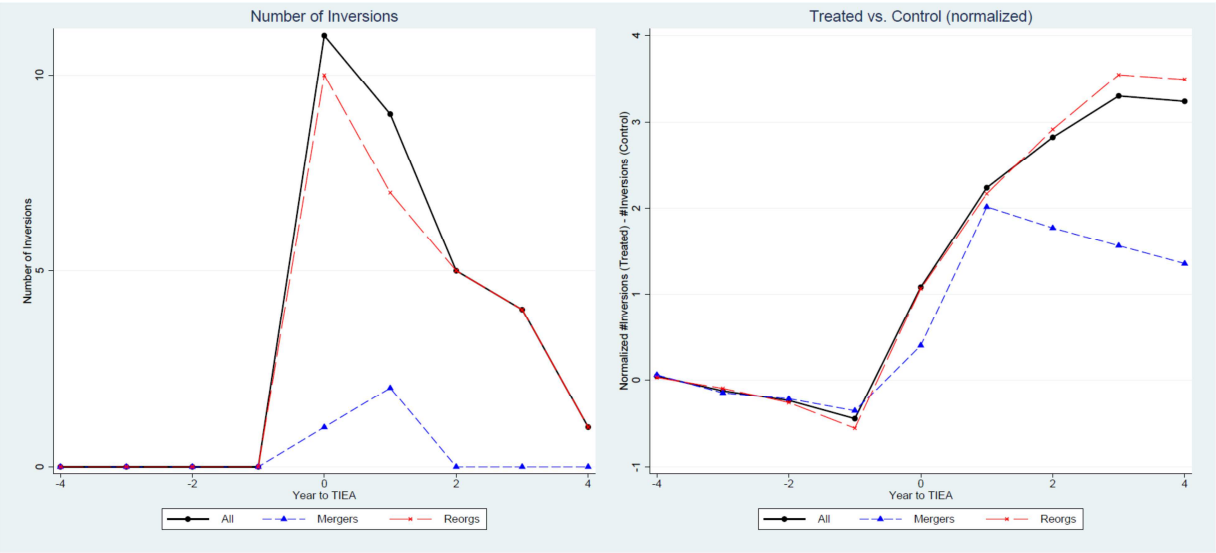


Figure 3: Number of Inversions around Passage of Tax Information Exchange Agreements
This figure shows the evolution of corporate cross-border inversions around passage of tax information exchange agreements (TIEAs). The list of bilateral TIEAs is obtained from the OECD. Panel A depicts the number of inversions between one signatory country (non-tax haven) and another signatory destination (tax haven) in the years before and after signing a TIEA. Panel B shows how the evolution of inversions between country-pairs affect by TIEAs (treated) and country-pairs unaffected by TIEAs (control). Treated country-pairs are those that signed a TIEA. Control pairs are those where one country is a non-haven that signed a TIEA and the other is a tax haven with whom no TIEA was signed. The number of inversions in the treated and control sample are normalized by the average number of inversions prior to passage of TIEAs.

Panel A: **Panel B:**



Appendix: Variable Definitions and Sources

Variable	Definition	Source
Country Level		
DTT (Dummy)	Dummy equals 1 if a double taxation treaty exists between the country pair , zero otherwise	UNCTAD
TIEA (Dummy)	Dummy equals 1 if a tax information exchange agreement exists between the country pair, zero otherwise.	OECD
Import Ratio	Ratio of imports between OD and ND to total imports by OD.	UN COMTRADE
Geographic Distance	The Great Circle Distance between the capitals of countries *i* and *j*. We obtain latitude and longitude of capital cities of each country. We then apply the standard formula: 3963.0 * arccos [sin(lat1) * sin(lat2) + cos(lat1) * cos(lat2) * cos (lon2 - lon1)], where lon and lat are the longitudes and latitudes of the acquirer country ("1" suffix) and the target country ("2" suffix) locations, respectively.	http://www.mapsofworld.com/utilities/world-latitude-longitude.htm
Corruption	Reflects perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests.	WGI, World Bank Kaufmann, Kraay and Mastruzzi (2009)
Voice and Accountability	Reflects perceptions of the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media.	WGI, World Bank Kaufmann, Kraay and Mastruzzi (2009)
GDP Per Capita	Gross domestic product per capita measured in 2007 U.S. dollars. Data frequency is annual.	WDI, World Bank
GDP Growth	Average annual real growth rate of the gross domestic product in 2007 U.S. dollars. Data frequency is annual.	WDI, World Bank
% Market Capitalization	Calculated as the share price times the number of shares outstanding scaled by GDP. Data frequency is annual.	WDI, World Bank
% Turnover	Annual stock market turnover defined as trading volume divided by number of float shares.	WDI, World Bank
Merger Quality Index	Assigns a value of 1 to a country with: pre-merger notification requirements, post- merger notification requirements, mandatory nature of the pre-merger notification and penalties imposed for lack of notification.	Bris, Cabolis and Janowski (2010), White and Case 2003-2004 Edition of the Worldwide Antitrust Merger Notification Requirements, Cicero (2001), National Regulators, and ISSA Handbook
%Tax Home (Host)	Statutory corporate tax rate (%) in home (host).	KPMG, OECD, and various websites
Tax Haven Host	Dummy equals 1 if (host) is a tax haven, zero otherwise.	Desai and Dharmapala (2009)

Firm Level		
Total Assets	$ Millions- measured in logs.	Worldscope, Capital IQ
Total Debt Ratio	Total liabilities divided by total assets.	Worldscope, Capital IQ
Interest Expense	Interest expense divided by EBIT.	Worldscope, Capital IQ
Current Ratio	Current assets divided by total assets.	Worldscope, Capital IQ
Cash	Cash divided by total assets.	Worldscope, Capital IQ
Cash Flows	Cash flows divided by sales.	Worldscope, Capital IQ
Sales	Sales divided by total assets.	Worldscope, Capital IQ
Dividend Yield	Dividend divided by price.	Worldscope, Capital IQ
ROA	Net income divided by total assets.	Worldscope, Capital IQ
Tobin's q	Market value of equity plus total assets minus book value of equity, divided by total assets.	Worldscope, Capital IQ
Investment	Capital expenditures divided by total assets.	Worldscope, Capital IQ
Intangible Assets	Intangible assets divided by total assets.	Worldscope, Capital IQ
Insider Ownership (%)	It represents shares held by insiders. It includes but is not restricted to: shares held by officers, directors, and their immediate families; shares held in trust; shares of the company held by any other corporation; shares held by pension/benefit plans; shares held by individuals who hold 5% or more of the outstanding shares. It excludes: shares under option exercisable within 60 days; shares held in a fiduciary capacity; preferred stock or debentures that are convertible into common shares. For Japanese firms, it represents the holdings of the 10 largest shareholders. For companies with more than one class of common stock, closely held shares for each class are added together.	Worldscope, Capital IQ
ETR	Effective tax rate-total income tax expense divided by income before taxes	Worldscope, Capital IQ
Institutional Ownership	Percentage of shares owned by institutions such as mutual funds, pension funds, bank trusts, and insurance companies around the world.	Capital IQ