

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 countries over the last two decades, we document that corporations invert to countries with lower tax rates and similar governance standards. Indeed, passage of bilateral Double Taxation Treaties (DTTs), which provide additional tax incentives for inversions, is associated with an increase in corporate inversion activity. Similarly, passage of bilateral Tax Information Exchange Agreements (TIEAs), which improve transparency of tax havens, leads to an increase in corporate inversion flows. Further, shareholders applaud tax-driven inversions but shun inversions into weakly governed countries: A 1% point lower tax rate in the host country (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 increases when firms invert into well-governed countries but declines when firms invert into weakly governed countries. Our findings align with the notion that inversions, despite their negative publicity in media and political debate, are in shareholders' interest.

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1. Introduction

In 1982, a Louisiana-based construction firm, *McDermott International*, converted one of its cash-rich Panama-based subsidiaries into the new parent firm of *McDermott International*. The shareholders of the original Louisiana-based firm had their shares exchanged for shares in the Panamanian company, 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 physical headquarters, management, or ownership.¹

More recently, corporate inversions have enjoyed a surge in popularity among firms. 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. This deal could have cut Pfizer’s effective tax rate from 26% to 15% in 2017, saving the company approximately \$2.1bn in taxes in that year alone.

Policy makers, however, have long considered inversion firms as ‘unpatriotic corporate deserters’ for their potential to dodge domestic tax obligations.² In April 2016, the US Treasury Department proposed new rules making the *Pfizer – Allergan* deal and deals alike much harder. Subsequently, Pfizer announced its withdrawal from the deal, resulting in Allergan’s share price tumbling by 21 percent in after-hours trading. This share price reaction at least partly reflects the potential tax savings forgone by the abandonment of the deal.

The *Pfizer – Allergan* deal described above illustrates that tax motives may drive corporate inversion decisions, and that such decisions may be in shareholders’ interest. However, on the

¹ In the US, 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 US corporations for tax purposes if more than 80% of their shareholders are US-based.

² The OECD *Base Erosion and Profit Shifting* report (<http://www.oecd.org/ctp/beps-2014-deliverables-explanatory-statement.pdf>), e.g., states the realigning of taxation and economic activities as a key priority for governments.

flipside, inversions into foreign countries may also increase monitoring costs and provide scope for expropriating minority shareholders. Specifically, channels used to hide resources from tax authorities may be used to tunnel resources out of corporations into the pockets of controlling shareholders or managers.³ If in minority shareholders' interest, inversions therefore should occur into strongly governed countries.

In this paper, we study whether tax considerations and governance considerations explain firms' inversion decisions – and whether inversion decisions align with managers' objective to maximize firm value. Our preferred definition of an inversion requires a firm to change its country of incorporation, both to be consistent with prior studies and to use a tractable approach for as large a sample as possible across countries.⁴ We hand-collect data on 691 corporate inversions from 11 home countries into 45 host countries over the 1996-2013 period. Our international sample immediately lends itself to illustrating that corporate inversions are not merely a US phenomenon.⁵ Indeed, less than one third of our inversions are conducted by US 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 country-pair variation in tax and governance characteristics.

We start by documenting country characteristics associated with the likelihood that firms from a given country (home country) invert into another country (host country). Suggestive of

³ Desai, Dyck, and Zingales (2007), for instance, show that increased tax enforcement in Russia leads to an increase in value of Russian oil firms: Increased tax enforcement may reduce tax avoidance, but this negative effect on value is more than offset by the reduction in stealing from minority shareholders.

⁴ This definition broadly follows the literature. Cortes et al. (2014), who focus on inversions by US firms, for instance, define inversions as changes in incorporation country while remaining cross-listed in the US.

⁵ Past studies have focused on firms that inverted out of the US for tax reasons. For example, Desai and Hines (2002) study 26 corporate inversions of U.S. multinationals in the 1982–2002 period. Seida and Wempe (2004) examine the consequences of 12 inversions in the 1993–2002 period. Cloyd et al. (2003) analyze stock price reactions around the announcement and board of director approval dates of 20 U.S. inversions between 1983 and 2002. Cortes et al. (2014) investigate the consequences of U.S. corporate inversions over the 1996-2013 period.

tax motives being associated with inversion flows, country-pair tax rate differentials explain inversion flows. The lower the taxes are in host countries (relative to home countries), the more inversions occurred over the last two decades. Moreover, while the average host country has slightly lower governance standards than the average home country, the majority of inversions occur between home and host countries with similar governance standards.⁶ 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.

Our evidence 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 and host countries 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 due in another country. 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 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 and 2.1% when we control for country-pair fixed effects.

⁶ We measure governance by corruption levels and voice & accountability though our results are robust to a range of alternative governance measures. This evidence on inversion flows aligns with prior studies that find strong governance motives for cross-listings and cross-border M&As (e.g., Coffee (1999) and Rossi and Volpin (2004)).

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 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 and 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 countries. Also, firms that invert tend to be more strongly governed as evidenced by lower closely-held shares and more ADR listings.

Finally, we link these 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 notion that inversions are at least partly tax-driven. Economically, a 1 percentage point lower tax rate in the host country (*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.⁷ We also find that inversions into well-governed countries are associated with

⁷ This finding is not at odds with prior evidence that firms incorporated in offshore financial centers have a lower Tobin's Q (e.g. Bailey and Liu, 2014). Much rather, our results suggest that firms' decision to invert is accompanied

a 3.5 to 4.3 percentage point increase in institutional ownership. Yet, in line with the notion 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, we provide novel evidence on country- and firm-level determinants of corporate inversions in an international setting. Using two natural experiments that affect tax motives and governance motives at the country-pair level, we systematically document that countries attract inversions by offering low tax rates and strong governance standards. Shareholders appear to applaud corporate inversions when tax driven – and shun those that are potentially driven by expropriation motives.

Our evidence contributes to the current policy debate on taxes and inversions. Though firms that invert are often portrayed as unpatriotic, poorly run firms by the media and policymakers, these negative connotations reflect tax collectors' perspective rather than shareholders' perspective. Ultimately, our setting is reflective of the possible tensions between firms making decisions in shareholders' interest and governments seeking to correct distributive failures, as for

by an increase in Tobin's Q relative to such firms' Tobin's Q before the inversion, while the average Tobin's Q of firms that invert may still be lower than that of other firms.

instance discussed in Bénabou and Tirole (2010). Our evidence entertains the idea that inversions are corporate actions conducted by well-run firms; shareholders appear to incorporate inversions' potential to save taxes into stock prices but also respond to agency conflicts that may arise from inversions into poorly governed countries.

2. Data

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

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.⁸ 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 our sample. Second, because ISIN changes could also be related to mere changes in stock exchange listings, we collect data on effective dates and types of corporate actions that lead to changes in country of incorporation. In order to isolate domicile changes, we focus on two sets of corporate actions: mergers and reorganizations.⁹ A reorganization is defined as the formation of a new holding company, or a restructuring which 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

⁸ ISIN assigns country codes according to the location of a company's head office (Source: <http://www.isin.org/isin/>).

⁹ Overall set of corporate actions that lead to ISIN changes include merger, reorganization, demerger, name change, exchange/over-stamping, purchase/exchange offer, reinvestment, reverse split, rights issue, special rights issue, reverse split, spin-off, and stock distribution.

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. Our sample countries are those that have been the most acquisitive countries over the 1990-2007 period (Erel, Liao and Weisbach (2012)). Thus, our sample includes firms from the following home countries: Australia, Canada, France, Germany, Italy, Netherlands, Spain, Sweden, Switzerland, U.K., and U.S..

Table 1 tabulates the number of inversions between 1995 and 2013 by home–host country pair. We have a total number of 691 inversions, 340 through mergers and 351 through reorganizations. The majority of inversions are conducted by firms that invert out of Canada (284) and the U.S. (218), followed by the U.K. (104). Host countries include 45 territories, 20 of them classified as tax havens based on Dharmapala and Hines (2009) definition.¹⁰

On average, 38% of the inversion transactions involve a tax-haven country. Host countries with the strongest inflows are the US (188) and Canada (86), as well as tax haven countries 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 US (171) and vice versa (76). Importantly, inversions flow into a wide range of countries, as opposed to few specific destinations.

There is also large variation across countries in the relative importance of mergers and reorganization as modes of inversion. For example, less than 50% of all inversion deals out of

¹⁰ Tax Haven countries are: Bermuda, Virgin Islands, Cayman Islands, Ireland, Luxembourg, Switzerland, Singapore, Marshall Islands, Isle of Man, Anguilla, Bahamas, Antigua and Barbuda, Belize, Cyprus, Liechtenstein, Malta, Panama, Saint Kitts and Nevis.

the U.K. and Canada are through mergers whereas more than 90% of all inversion deals out of France, Italy and Spain are through mergers. The significance of reorganizations as a mode of inversion becomes clear when we study host countries: For most of the tax-haven countries, 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 between 1996 and 2013. We observe around 20 inversions between 1997 and 2007, and around 30 inversions per year thereafter. The time variation in inversion activity depicted in Figure 1 alleviates concerns that events might be centered around a certain point in time, such as the financial crisis. Similarly, while there is some time variation in the number of mergers and reorganizations, there do not appear to be trends towards either of these types of inversions in any period of time.

--- Figure 1 about here ---

Panel B focuses on inversions into tax havens. Whereas mergers are a more popular mode of transition when we consider all inversions, reorganizations become more popular when we consider only inversions into tax havens. The disparity between the two modes is especially large after 2007, which happens to be the onset of the global financial crisis.

2.2 Country characteristics

We now describe country characteristics used in our analysis that may be associated with, or drive inversion activity. Double tax treaties and trade flows are obtained from the UNCTAD and 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 the longitude of capital cities of each country. We obtain country-level governance, economic and financial development variables from Worldbank WDI database. Governance variables increase in the quality of country governance and include aspects such as Corruption and Voice and Accountability (see Kaufmann et al. (2009)). Finally, the quality index of merger laws provides a measure of severity of merger laws regarding antitrust and competition issues in the country (Bris et al. (2010)).

We report descriptive statistics for country variables in Panel A of Table 2. The top panel reports time-series observations (averaged over the available years for each country), and the bottom panel reports differences between home- and host-country pairs at the inversion-level.

--- Table 2 about here ---

Statutory corporate tax rates 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% to 7.46% with a mean of 2.95%. Market capitalization is, on average, 76% of GDP and average market turnover is 62%. For governance variables, the minimum score is for Malaysia and Papua New Guinea (low voice and accountability and high corruption) and the maximum 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 countries 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 1% level. The median difference in tax rate is much larger for inversions via reorganizations relative to mergers (10% versus 3.9%). On average, host

countries score lower in terms of country-level governance. This is not surprising since the majority of firms are inverting out of the US, the UK, and Canada, all of which are countries with relatively strong governance. The differences in governance are much more pronounced among inversions via reorganizations than for inversions via mergers. While, on average, host countries have higher GDP per capita (potentially reflecting the fact that a considerable fraction of host countries constitutes tax havens), they have lower market development (measured by market capitalization and turnover, both scaled by GDP). Finally, host countries score higher on the merger quality index which is usually associated with a higher propensity of cross-border mergers (see Bris et al. 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 percentage of total assets or total sales. We provide the details on the calculation of all variables in the Appendix.

Panel B of Table 2 reports summary statistics of firms in the Worldscope population 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 around 51%, the median ROA is around 3% while the median Tobin's Q is 1.27. These numbers are consistent with studies that previously reported financial ratios based on Worldscope data (see for example, 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%, and the average firm has 15% institutional ownership (median of 5%).¹¹

We are able to match 46% of our inversion firms to Datastream/Worldscope using firms' 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 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 availability.¹² We discuss the characteristics of inversion firms in detail in Section 4.

3. Country characteristics and corporate inversions

In this section, we study country characteristics and the occurrence of corporate cross-border inversions. As outlined above, if 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 Double Tax Treaties (DTTs) and Tax Information Exchange Agreements (TIEAs). Last, we provide results of robustness tests.

3.1 Correlations

¹¹ We obtained total institutional ownership data from Capital IQ.

¹² 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.

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 is selected to be those that have been the most acquisitive countries over the 1990-2007 period (Erel, Liao and Weisbach (2012)). Therefore we encourage caution when interpreting our results beyond our sample countries.

--- Table 3 about here ---

In Table 3, we focus on characteristics of host countries and the number of inversions they attract. Again in line with inversions being tax-motivated, we document a negative correlation between corporate tax rates in the host country and the number of inversions; this correlation is driven by reorganizations. Our governance measures are positively correlated with the number of inversions; this is suggestive evidence that strong governance (or at least small difference in governance standards) attracts inversions. Finally, wealthy host countries 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 levels of tax rates and country governance correlate with the number of inversions at the home and host country-level. We now employ cross-sectional regressions to examine whether home country characteristics, host country characteristics, and the difference between home and host country characteristics explain the direction of cross-border inversion flows.

In Panel A of Table 4, our dependent variable measures inversion flows between home and host countries. In Columns (1) and (2) of Panel A, the dependent variable is the logarithm of one plus total number of inversion deals between 1995 and 2013 (X_{ij}) in which the company comes

from home country i and changed its domicile to host country j (where $i \neq j$). Columns (3) and (4) examine the ratio of the total number of inversion deals between 1995 and 2013 (X_{ij}) scaled by sum of the number of all inversion deals into the host country j . Columns (5) and (6) study the logarithm of one plus the total number of inversion deals between 1995 and 2013 (X_i) in which the company comes from home country i . 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 columns, we include host-country fixed effects, control for home country characteristics and focus on country pair differences.¹³ We report the standard errors in parentheses, which are clustered at both home and host country level.¹⁴

--- Table 4 about here ---

We find that tax motives are associated with inversion flows. More inversions occur between country pairs where the host country provides a relative tax advantage as measured by the difference between home and host country corporate tax rates (Columns 1 and 2).¹⁵ In line with our main prediction on country-level governance, we document more inversions between country pairs that have relatively similar governance standards; host countries with lower governance standards attract fewer inversions.

In addition, we test whether other country characteristics attract inversion flows. First, we conjecture that inversions may be associated with higher transaction costs when home and host countries are geographically apart. Indeed, we document fewer inversions as the distance

¹³ 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 countries in our sample.

¹⁴ 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.

¹⁵ In unreported tables, we also examine whether tax differences on their own without other country characteristics explain inversion flows and find that they are statistically and economically significant.

between home and host country increases. Second, we document a higher number of inversions out of home countries that are economically more developed and have higher growth rates.

Columns (3) to (6) in Panel A then test whether these results are robust to alternative measures of inversion flows. Specifically, we study whether the fraction of inversions aimed at a certain host country (Columns 3 and 4) and the total number of inversions from a certain home country (Columns 5 and 6) are explained by home characteristics and country-pair differences. We confirm our previous results.

In Panel B of Table 4, we repeat our analysis using Probit regressions. In Columns (1) and (2), the dependent variable of interest is a dummy variable that equals to 1 if a country pair experienced at least one inversion over the sample period. Our previous evidence is confirmed: Tax rate differences and governance differences between the host country and the home country are significantly related to the occurrence of at least one inversion. The last four columns of Table 4 focus on 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 host countries with lower tax rates than their home countries.¹⁶ Low governance differences remain important in maximizing the likelihood of inversions via reorganizations.

Note that Probit regressions treat all countries with inversions deals the same, unlike in Panel A where countries that have larger number of inversion deals, such as US and UK, will have a higher weight in determining the regression coefficients. Nonetheless, in unreported regressions, we test whether our results hold when we exclude the US/UK as home countries and all our

¹⁶ Prior studies have also established that global markets for mergers and acquisitions are responsive to tax considerations (see for example, Huizinga and Voget ,2009, Huizinga, Voget and Wagner, 2012 and Voget, 2011).

results remain consistent. We also test whether tax-haven countries are driving our results and find that all of our results continue to hold when we exclude tax havens as host countries.

3.3 Evidence from Double Taxation Treaties and Tax Information Exchange Agreements

We have so far documented that (i) high potential for tax savings and (ii) low governance differences between home and host countries 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 now provide experimental evidence that 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-country level. However, a valid concern with such variation is that it 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 by studying the number of inversions around the passage of Double Tax Treaties (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 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 reliefs between the home and the host countries.¹⁷ Notably, inversions are not typically associated with changes in the shareholder base.

¹⁷ Davies et al. (2009) show that bilateral tax treaties increase probability of investment in a foreign country by multinational firms.

Figure 2 shows the number of inversions between country pairs around years in which bilateral DTTs were signed in absolute terms (left) and relative to a set of control country pairs normalized by the average number of inversions prior to the passage of a DTT (right). Treated country pairs are pairs of countries that signed DTTs. Control country pairs are pairs of 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 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 Tax Information Exchange Agreements (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 transparency of tax havens but may be used to re-assess corporate taxes. However, the literature has shown that the effect of TIEAs on transparency likely outweighs the effect of TIEAs on taxes (see e.g. Bennesen 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 (left) and relative to a set of control country pairs normalized by the average number of inversions prior to the passage of a TIEA (right). Treated country pairs are pairs of countries 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 ---

One might potentially argue that the signing of DTTs and TIEAs is associated with other changes in country-pair characteristics. We investigate this possibility further in Table 5. 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 (X_{ijt}). 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 country pair, for a total of 9,196 observations.

We report these estimates in Panel A. We show that the number of inversions between country pairs increases after these country pairs sign a DTT (Column 1) or a TIEA (Column 2) even after including both home and host country and time fixed effects. We then include additional country-pair characteristics such as geographic distance and time-varying differences in economic development (Columns 3-4) and find that our results continue to hold. In Columns 5 and 6, we additionally control for the volume of bilateral trade between the two countries, 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 controls suggest even higher economic magnitudes of double taxation treaties and TIEAs on inversion flows. The number of inversions increase by 2.8% and 5% when two countries sign a double taxation treaty and a TIEA, respectively.

In Columns 7 to 12, we include country-pair fixed effects, alleviating 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. We again find consistent results as before. The number of inversions increase by 2.1% and 5.5% when two countries sign a double taxation treaty and a TIEA, respectively.

Panel B presents probit regressions where the dependent variable is equal to one if there is any inversion deal between a given country pair in a given year and zero otherwise. In Columns 1 to 6, we include no fixed effects and in Columns 7 to 12, we include both home and host country 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, all countries with an inversion deal are treated the same without regards to the number of deals. Among the control variables, geographic distance clearly hinders inversion flows and inversions are more likely among countries that trade commonly with one another.

--- Table 5 about here ---

3.4 Robustness

To perform the analyses presented above, we had to make a number of choices about the specifications. Table 6 contains estimates of equations similar to those reported in Tables 5 to examine the robustness of the results to alternative choices.

In Panel A of 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 (X_{ijt}) scaled by sum of the number of all inversion deals in the home country i (X_i) and similarly by the total number of

all inversion deals in both the home and host countries ($X_i + X_j$). 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 deal between a given country pair in a given year and zero otherwise. Here, double taxation treaty is mostly insignificant to predict the propensity of these modes of inversion. 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 haven countries, and especially into those that implement better governance standards through TIEAs.

--- Table 6 about here ---

4. Firm characteristics

We have so far established country and country-pair characteristics that attract corporate cross-border inversions. A natural follow-up question to ask is 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. In Table 7, we estimate a probit model for firm-level determinants of inversion deals (Columns 1 and 2), those using mergers (Columns 3 and 4) and reorganizations (Columns 5 and

6) respectively, and those that moved to tax havens (Columns 7 and 8). We control for industry-, country-, and year- fixed effects.

--- 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 US multinationals hold more cash abroad due to the high repatriation taxes. 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.¹⁸ These evidence suggest 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 inversions is aimed at tax havens. In Columns (3) to (8), we examine determinants of these specific types of inversions separately. 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

¹⁸ Hanlon, Lester and Verdi (2015) recently show the negative impact of locked-out cash due to repatriation tax costs on firm investment activity.

dividend payout. Interestingly, these firms have lower insider ownership and higher probability of having an ADR.

Finally, we check how firms that invert to tax-havens differ from others. 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 countries, 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-haven countries. These firms characteristics are also consistent with prior studies which argue that majority of the artificial income shifting from high-tax to low-tax countries is due to transfers of intangibles and the allocation of debt (see, for example, Grubert (2003) and Seida and Wempe (2004)).

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. Much rather, we aim to affirm our earlier findings that both tax and governance are important in determining inversion motives and consequences.

We analyze firm characteristics around inversions by constructing a panel of firms from 1985-2014. In order to address a range of concerns arising from the fact that certain firm characteristics predict inversion activity (see Table 7 above), we employ firm fixed effects. Furthermore, in order to address the concern that industry- or country-level shocks at specific points in time may explain 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 additionally repeat our analysis on a subset of inverted firms and control firms that are matched to inverted firms based on (host) country, 2-digit SIC code, and firm size two years prior to the inversion. Additionally, we require that 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 years following the inversion (including the year of inversion).¹⁹ 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 Effective Tax 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, namely, the percentage tax rate differences between home and host country and, a dummy variable that equals one if the host country is a tax haven.

--- Table 8 about here ---

While 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 country tax rate is larger, and when host countries are tax havens. This is in line with the notion of tax motives. Economically, a 1 percentage point increase in the tax gap between home and host country is associated with a 0.1 percentage point or 0.6% ($=0.1/0.179$) decline in effective tax rates. More illustratively, a decrease 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-haven countries

¹⁹ Results are robust to focusing on 2-year and 5-year event windows, suggesting that observed effects are immediate.

also experience an economically important decrease of effective tax rates of 5.4 percentage points.

Unless inversions are accompanied by very substantial costs, a decrease in effective tax rates should be associated with an increase in firm value. In Panel B of Table 8, we find that, on average, inversions are not associated with changes in Tobin's Q. However, inversions into low-tax regimes are indeed applauded by shareholders. A 1 percentage point larger tax gap between home and host country 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 in papers 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 US firm reduces Tobin's Q by 6.2%. Durnev and Kim (2005) find that a one standard deviation increase in the comprehensive governance scores results in a 9% increase in Tobin's Q. The evidence so far is in line with the notion that inversions that are likely tax driven lead to a decrease in effective tax rates, which is applauded by shareholders.

In addition to the tax motives, in the previous section, we documented that governance explains cross-border inversion flows. We now further analyze governance outcomes at the firm-level. Past studies have shown that institutional investors provide effective monitoring (see for example, Gillan and Starks, 2003, and Hartzell and Starks, 2003) and impose better governance (Ferreira and Matos, 2008, Ferreira, Massa, and Matos, 2009, and 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 and report the results in Table 9.

--- Table 9 about here ---

We find that overall, inversions are followed by an increase in institutional ownership. Yet institutional owners do seem to withdraw from inversions into weakly governed countries, as proxied by corruption and voice and accountability. Indeed, inversions into equally strongly governed countries are associated with a 3.5 to 4.3 percentage points 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 ($0.045 \times (1.46 + 0.14)$) relative to inversions into countries of similar anti-corruption levels. This result aligns with the notion that institutional owners may associate inversions into weakly governed countries with potential agency conflicts.

6. Conclusion

In this paper, we have identified characteristics and drivers of inversion flows between 11 home countries and 45 host countries over the 1996-2013 period. We document that tax motives and governance motives are two key drivers of inversion flows. Additionally, our data reveals that inversions are neither a recent phenomenon nor a US phenomenon. We also find that firms that invert to host countries with tax advantage indeed manage to decrease their effective tax rates significantly, and experience an increase in firm value. While inversions are associated with an increase in institutional ownership following these events on average, institutional owners divest from firms that invert into poorly governed countries.

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 media and policy makers portray inversions as unpatriotic, inversion decisions seem to align with shareholders' interest. This is evident from our finding that inversion flows respond to improved transparency between firms' home country and potential host countries. 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 by Country Pair

The table tabulates the number of corporate inversions by home and host country pairs. The data consists of firms from 11 OECD countries that changed domicile through mergers or reorganizations in years between 1995 and 2013. Total number of inversions and mergers (# and % of total) are also summarized by home and host country. Countries with * are tax-haven countries based on Dharmapala and Hines (2009).

Host Country	Home Country											Total	Merg #	Merg %
	Australia	Canada	France	Germany	Italy	Netherl.	Spain	Sweden	Switzerl.	UK	US			
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 summarizes country (Panel A) and firm characteristics (Panel B). Panel A reports means, medians, minimums, maximums, standard deviations of country variables for home and host countries in our sample. The countries are listed in Table 1. Time-series variables are averaged over the available years for each country. Refer to Appendix for variable definitions. It also reports the mean and median differences in country-level variables for all inversions. The median differences are reported for mergers and reorganizations. The significance level of median is based on Wilcoxon signed-rank test. Tests of median differences are based on Wilcoxon rank sum test. *P-values* are reported. The symbols ***, ** and * denote significance at 1, 5 and 10 percent levels, respectively. Panel B summarizes characteristics of firms from Worldscope population for years between 1985-2014. All variables are winsorized at 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 Appendix for the definition of variables.

Panel A: Country characteristics

<i>Country-level</i>						
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

<i>Inversion-level</i>						
Difference Variables (Home-Host)	All Inversions			Merger	Reorg	Difference
	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 B: 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 country characteristics. Inversion activity is measured by the natural logarithm of the number of inversions, reverse mergers, and reorganizations attracted by host countries. Refer to Appendix for the definition of variables.

	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 between 1995 and 2013 (X_{ij}) in which the company comes from country i and changed its domicile to country j (where $i \neq j$). Columns (3) and (4) examine the ratio of the total number of inversion deals between 1995 and 2013 (X_{ij}) scaled by sum of the number of all inversion deals into the (Host) country j . Columns (5) and (6) study the logarithm of one plus the total number of inversion deals between 1995 and 2013 (X_i) in which the company comes from country i . In 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 Columns 3 and 4 (5 and 6), the dependent variable is a dummy equal to one if there is any inversion deal through reverse merger (reorganization) between a given country pair and zero otherwise. Refer to Appendix for the definition of control variables. In both panels, host country (j) fixed effects are included in all columns. The standard errors in parentheses are clustered at both home and host country level. ***, **, 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*** (0.0124)	0.062*** (0.0105)	0.021*** (0.0033)	0.018*** (0.0031)	0.403*** (0.0386)	0.385*** (0.0331)
Geographic Distance	-0.084** (0.0325)	-0.081*** (0.0309)	-0.035*** (0.0031)	-0.034*** (0.0024)	-0.109*** (0.0340)	-0.102*** (0.0316)
Log(GDP per capita (Home))	0.010** (0.0050)	0.011** (0.0047)	0.006** (0.0025)	0.006*** (0.0022)	0.075** (0.0307)	0.077** (0.0339)
GDP Growth (Home)	0.669*** (0.2021)	0.600*** (0.1603)	0.232*** (0.0299)	0.211*** (0.0126)	2.219*** (0.6044)	2.050*** (0.4456)
% Turnover (Home)	-0.016*** (0.0041)	-0.014*** (0.0042)	-0.004*** (0.0007)	-0.004*** (0.0010)	-0.081*** (0.0139)	-0.078*** (0.0139)
Quality Index (Home)	0.576*** (0.1421)	0.487*** (0.1353)	0.167*** (0.0233)	0.137*** (0.0373)	2.401*** (0.5370)	2.184*** (0.4658)
Corruption (Home less Host)	-0.495** (0.2143)		-0.174*** (0.0575)		-1.203* (0.6843)	
Voice and Accountability (Home less Host)		-1.433*** (0.4487)		-0.527*** (0.1132)		-3.466** (1.3808)
Observations	418	418	418	418	418	418
R-squared	0.400	0.403	0.212	0.218	0.837	0.840

Panel B: Probit Regressions

	(1) Dep=1 if there is an inversion deal between country <i>i</i> and <i>j</i>	(2) Dep=1 if there is an inversion deal between country <i>i</i> and <i>j</i>	(3) Dep=1 if there is a merger inversion deal between country <i>i</i> and <i>j</i>	(4) Dep=1 if there is a merger inversion deal between country <i>i</i> and <i>j</i>	(5) Dep=1 if there is a reorganization inversion deal between country <i>i</i> and <i>j</i>	(6) Dep=1 if there is a reorganization inversion deal between country <i>i</i> and <i>j</i>
% Tax (Home less Host)	0.217*** (0.0495)	0.194*** (0.0561)	0.151*** (0.0519)	0.159*** (0.0579)	0.365** (0.1741)	0.280*** (0.0904)
Geographic Distance	-0.222*** (0.0401)	-0.212*** (0.0357)	-0.173*** (0.0486)	-0.155*** (0.0457)	-0.218*** (0.0643)	-0.215*** (0.0582)
Log(GDP per capita (Home))	0.043* (0.0229)	0.041* (0.0211)	0.032 (0.0281)	0.026 (0.0262)	0.111 (0.0750)	0.086*** (0.0234)
GDP Growth (Home)	1.843*** (0.4081)	1.601*** (0.2638)	1.406*** (0.4706)	1.068*** (0.3367)	2.571*** (0.7160)	2.290*** (0.5057)
% Turnover (Home)	-0.050*** (0.0103)	-0.045*** (0.0104)	-0.034*** (0.0132)	-0.030** (0.0122)	-0.084*** (0.0245)	-0.067*** (0.0119)
Quality Index (Home)	1.697*** (0.3110)	1.389*** (0.2969)	0.989** (0.4586)	0.756* (0.3979)	2.698*** (0.4919)	2.119*** (0.3803)
Corruption (Home less Host)	-1.345** (0.6253)		-1.018 (0.6447)		-1.852* (0.9787)	
Voice and Accountability (Home less Host)		-3.448** (1.4234)		-1.310 (1.7765)		-4.618*** (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 regressions of cross-border corporate inversion in country pairs. Panel A presents OLS regressions 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 company comes from country i and changed its domicile to country j (where $i \neq j$) in year t . Panel B presents probit regressions where the dependent variable is equal to one if there is any inversion deal between a given country pair in a given year and zero otherwise. Refer to Appendix for the definition of variables. Heteroskedasticity corrected standard errors are in parentheses. The symbols ***, **, and * denote statistical significance at the 1%, 5% and 10% levels.

Panel A: OLS Regressions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Double Taxation	0.022***		0.019***		0.028***		0.041***		0.016		0.021*	
Treaty	(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-squared	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** (0.0510)		0.110** (0.0529)		-0.062 (0.0590)		0.367** (0.1735)		0.443** (0.1902)		0.459** (0.1867)	
TIEA		0.626*** (0.0847)		0.581*** (0.0861)		0.781*** (0.0942)		0.209* (0.1254)		0.143 (0.1332)		0.257* (0.1404)
Geographic Distance			-0.051*** (0.0100)	-0.051*** (0.0102)	-0.023** (0.0105)	-0.018* (0.0107)			-0.167*** (0.0179)	-0.163*** (0.0176)	-0.136*** (0.0194)	-0.132*** (0.0195)
Log(GDP per capita (Home))			0.016*** (0.0020)	0.014*** (0.0021)	0.012*** (0.0025)	0.009*** (0.0026)			0.045 (0.0465)	0.045 (0.0467)	0.052 (0.0481)	0.050 (0.0482)
GDP Growth (Home)			0.014 (0.0131)	0.022 (0.0135)	0.019 (0.0142)	0.029** (0.0147)			-0.038 (0.0354)	-0.039 (0.0355)	-0.024 (0.0373)	-0.023 (0.0373)
Import Ratio					8.958*** (0.8522)	9.477*** (0.8772)					7.714*** (2.0039)	7.504*** (1.9375)
% Turnover (Home)					2.608*** (0.4651)	2.413*** (0.4765)					0.919 (0.9032)	0.864 (0.8950)
Quality Index (Home)					0.051 (0.0436)	0.067 (0.0434)					-0.159 (0.2464)	-0.143 (0.2462)
Fixed Effects	No	No	No	No	No	No	Home, Host Home, Host Home, Host Home, Host Home, Host Home, Host	& time	& time	& time	& time	& 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 inversion in country pairs. Panel A presents OLS regressions where we examine 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 all inversion deals in the home country i (X_i) and similarly by the total number of all inversion deals in both the home and host countries ($X_i + X_j$). Panel B presents probit regressions. Columns 1,2,5,6 (3,4,7,8) employ a dependent variable equals to one if there is any inversion deal through reverse mergers (reorganizations) between a given country pair in a given year. Refer to Appendix for the definition of variables. Heteroskedasticity corrected standard errors are in parentheses. The symbols ***, **, and * denote statistical significance at the 1%, 5% and 10% levels.

Panel A: OLS regressions with Alternative Proxies

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	X_{ijt}/X_i	X_{ijt}/X_i	$X_{ijt}/(X_i+X_j)$	$X_{ijt}/(X_i+X_j)$	X_{ijt}/X_i	X_{ijt}/X_i	$X_{ijt}/(X_i+X_j)$	$X_{ijt}/(X_i+X_j)$
Double Taxation Treaty TIEA	0.001*** (0.0004)		0.000** (0.0002)		0.002** (0.0007)		0.001** (0.0003)	
		0.001* (0.0005)		0.001** (0.0002)		0.001** (0.0005)		0.001*** (0.0002)
Geographic Distance	-0.000** (0.0001)	-0.000** (0.0001)	-0.000** (0.0000)	-0.000** (0.0000)				
Log(GDP per capita (Home))	0.000* (0.0001)	0.000 (0.0001)	0.000 (0.0001)	0.000 (0.0001)	0.000 (0.0001)	0.000 (0.0001)	0.000 (0.0000)	0.000 (0.0000)
GDP Growth (Home)	-0.000 (0.0001)	-0.000 (0.0001)	-0.000 (0.0001)	-0.000 (0.0001)	0.000 (0.0001)	0.000 (0.0001)	0.000 (0.0000)	0.000 (0.0000)
Import Ratio	0.083*** (0.0184)	0.083*** (0.0183)	0.056*** (0.0105)	0.055*** (0.0105)	-0.148 (0.1078)	-0.146 (0.1073)	-0.066* (0.0382)	-0.065* (0.0381)
% Turnover (Home)	0.012 (0.0083)	0.012 (0.0083)	0.005* (0.0029)	0.005* (0.0029)	0.009 (0.0057)	0.009 (0.0058)	0.004** (0.0021)	0.005** (0.0021)
Quality Index (Home)	-0.002** (0.0008)	-0.002** (0.0007)	-0.001* (0.0003)	-0.001 (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-squared	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)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	merger	merger	reorg	reorg	merger	merger	reorg	reorg
Double Taxation Treaty	0.044 (0.0709)		-0.230*** (0.0766)		0.256 (0.1927)		0.350 (0.2859)	
TIEA		0.285* (0.1479)		1.005*** (0.1026)		-0.349 (0.2177)		0.381** (0.1631)
Geographic Distance	-0.009 (0.0118)	-0.007 (0.0119)	-0.040*** (0.0154)	-0.033** (0.0155)	-0.100*** (0.0221)	-0.106*** (0.0224)	-0.152*** (0.0278)	-0.147*** (0.0276)
Log(GDP per capita (Home))	0.016*** (0.0030)	0.015*** (0.0031)	0.006** (0.0028)	0.001 (0.0031)	0.053 (0.0535)	0.057 (0.0542)	-0.000 (0.0825)	0.004 (0.0832)
GDP Growth (Home)	0.055*** (0.0191)	0.057*** (0.0193)	-0.007 (0.0167)	0.010 (0.0178)	0.009 (0.0441)	0.008 (0.0441)	-0.021 (0.0526)	-0.017 (0.0529)
Import Ratio	10.327*** (0.9365)	10.693*** (0.9491)	9.120*** (0.9170)	9.255*** (0.9452)	10.057*** (1.9494)	9.803*** (1.8823)	7.375*** (1.8665)	7.214*** (1.8706)
% Turnover (Home)	2.869*** (0.5638)	2.843*** (0.5675)	1.931*** (0.5703)	1.547*** (0.5999)	0.548 (1.1217)	0.552 (1.1132)	0.279 (1.2421)	0.251 (1.2357)
Quality Index (Home)	-0.037 (0.0506)	-0.034 (0.0511)	0.147** (0.0571)	0.169*** (0.0555)	-0.063 (0.2785)	-0.079 (0.2823)	-0.010 (0.3935)	-0.028 (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 between 1995-2013 and zero otherwise (ii) equals to one if the firm engaged in corporate inversions via merger between 1995-2013 and zero otherwise (iii) equals to one if the firm engaged in corporate inversions via reorganization between 1995-2013 and zero otherwise (iv) equals to one if the firm inverted to a tax-haven country between 1995-2013 and zero otherwise. The sample is based on all publicly traded firms in Worldscope. Refer to Appendix for the definition of variables. Heteroskedasticity corrected standard errors are in parentheses. The symbols ***, **, and * denote statistical significance at the 1%, 5% and 10% levels.

	(1) 1 if inverted; 0 otherwise	(2)	(3) 1 if inverted via merger; 0 otherwise	(4)	(5) 1 if inverted via reorg; 0 otherwise	(6)	(7) 1 if inverted to tax-haven; 0 otherwise	(8)
Ln(\$TA)	-0.026* (0.0138)	-0.025** (0.0118)	0.041*** (0.0134)	0.051*** (0.0109)	-0.141*** (0.0307)	-0.192*** (0.0254)	-0.073*** (0.0239)	-0.084*** (0.0214)
Total Debt Ratio	0.208** (0.1031)	0.171* (0.0896)	0.096 (0.1205)	-0.027 (0.1029)	0.327 (0.2379)	0.534*** (0.1638)	0.693*** (0.1671)	0.737*** (0.1401)
Interest Expense	0.014 (0.0608)	0.074 (0.0492)	-0.013 (0.0764)	0.052 (0.0602)	0.129 (0.1258)	0.138* (0.0737)	-0.031 (0.0812)	0.069 (0.0747)
Cash	0.362*** (0.1390)	0.354*** (0.1170)	0.811*** (0.1567)	0.872*** (0.1371)	0.002 (0.3053)	-0.253 (0.2456)	-0.087 (0.2059)	-0.202 (0.1776)
Cash Flow	-0.000 (0.0094)	-0.011 (0.0076)	-0.017* (0.0093)	-0.001 (0.0085)	0.079 (0.0498)	-0.021* (0.0111)	0.024 (0.0180)	-0.017* (0.0100)
Sales	-0.154*** (0.0470)	-0.102*** (0.0383)	0.034 (0.0464)	0.069* (0.0376)	-0.396*** (0.1177)	-0.409*** (0.1020)	-0.359*** (0.0735)	-0.269*** (0.0606)
Tobin's Q	0.004 (0.0046)	-0.001 (0.0042)	0.006 (0.0050)	0.004 (0.0044)	-0.009 (0.0134)	-0.014 (0.0125)	-0.011 (0.0087)	-0.015* (0.0085)
Dividend Yield(%)	-0.021 (0.0174)	-0.038** (0.0166)	-0.003 (0.0051)	-0.027* (0.0162)	-0.148*** (0.0547)	-0.057*** (0.0190)	-0.350*** (0.1048)	-0.305*** (0.0932)
ROA	0.000 (0.0012)	0.001 (0.0010)	-0.001 (0.0013)	-0.002** (0.0011)	0.002 (0.0034)	0.007*** (0.0023)	-0.001 (0.0020)	0.002 (0.0017)
Investment	0.150 (0.1249)	0.212** (0.1016)	0.375** (0.1494)	0.538*** (0.1261)	0.388 (0.2758)	0.192 (0.1643)	0.275* (0.1472)	0.112 (0.1286)
Intangible Assets	0.196 (0.1398)	0.304*** (0.1167)	0.714*** (0.1630)	0.785*** (0.1393)	-0.352 (0.2966)	-0.122 (0.2140)	0.106 (0.2050)	0.173 (0.1731)
Insider Ownership(%)	-0.002* (0.0009)	-0.005*** (0.0008)	-0.000 (0.0010)	-0.003*** (0.0009)	-0.003 (0.0022)	-0.007*** (0.0018)	-0.005*** (0.0019)	-0.008*** (0.0017)
ADR	0.301*** (0.0769)	0.113* (0.0650)	0.021 (0.1007)	-0.266*** (0.0890)	0.915*** (0.1473)	0.944*** (0.1080)	0.415*** (0.1346)	0.305*** (0.1090)
ETR	0.333*** (0.0476)		0.077 (0.0969)		0.605*** (0.0853)		0.366*** (0.0589)	
% Tax (Home)		0.005** (0.0019)		0.009*** (0.0026)		-0.007*** (0.0020)		0.008** (0.0032)
Sector FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FEs	Yes	No	Yes	No	Yes	No	Yes	No
Observations	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 sample countries. Panel A presents outcome regressions where the dependent variable is the effective tax rate and Panel B presents regressions 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. Columns (1)-(3) use the full Worldscope sample and columns (4)-(6) restrict the sample to inverted and control firms. Refer to Appendix for the definition of variables. Standard errors are clustered at the home country level. *t*-statistics are given in parentheses; *, ** and *** denote significance at (respectively) the 10%, 5% and 1% level.

Panel A: Effective Tax Rates

	(1)	(2)	(3)	(4)	(5)	(6)
	Full Sample			Inverted Firms & Control Sample		
After Inversion	0.009 (0.78)	0.021** (2.41)	0.020* (1.92)	-0.002 (-0.10)	0.012 (1.01)	0.009 (0.58)
After Inversion * % Tax difference (Home less Host)		-0.001*** (-2.28)			-0.002*** (-2.39)	
After Inversion * Tax Haven Host			-0.054** (-2.26)			-0.056** (-2.46)
Control After	0.017** (2.42)	0.017** (2.42)	0.017** (2.42)			
Ln(\$TA)	0.014*** (4.62)	0.014*** (4.62)	0.014*** (4.62)	0.024*** (6.32)	0.024*** (6.20)	0.024*** (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-squared	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 (-0.84)	-0.109 (-1.61)	-0.095 (-1.02)	0.019 (0.29)	-0.018 (-0.27)	-0.018 (-0.24)
After Inversion *		0.007*** (4.08)			0.005*** (2.83)	
% Tax difference (Home less Host)			0.225 (1.24)			0.235* (1.71)
After Inversion *						
Tax Haven Host						
Control After	-0.135 (-1.60)	-0.135 (-1.60)	-0.135 (-1.60)			
Ln(\$TA)	-0.359*** (-9.86)	-0.359*** (-9.85)	-0.359*** (-9.85)	-0.498*** (-25.45)	-0.496*** (-25.35)	-0.497*** (-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-squared	0.605	0.605	0.605	0.572	0.572	0.573

Table 9 Firm-level Inversion Outcomes: Institutional Ownership and Country-level Governance

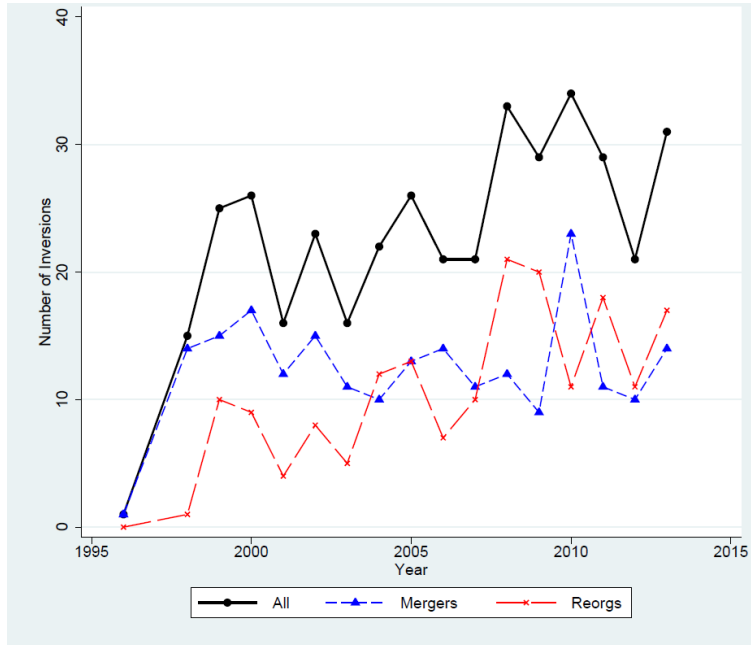
This table reports OLS estimates for firm-level outcomes of corporate inversions where the dependent variable is the institutional ownership. *After Inversion* is a dummy equal to one for firms that inverted in years following the inversion (including the year of inversion). *Control After* is a dummy 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. Columns (1)-(3) use the full Worldscope sample and columns (4)-(6) restrict the sample to inverted and control firms. Refer to Appendix for the definition of variables. Standard errors are clustered at the home country level. *t*-statistics are given in parentheses; *, ** and *** denote significance at (respectively) the 10%, 5% and 1% level.

	(1)	(2)	(3)	(4)	(5)	(6)
	Full Sample			Inverted Firms & Control Sample		
After Inversion	0.027 (1.10)	0.035* (1.65)	0.041** (2.13)	0.031** (2.46)	0.038*** (2.71)	0.043*** (3.43)
After Inversion * Corruption (Home less Host)		-0.045** (-2.02)			-0.020 (-0.95)	
After Inversion * Voice & Accountability (Home less Host)			-0.096*** (-4.65)			-0.062*** (-3.29)
Control After	-0.016 (-1.21)	-0.016 (-1.20)	-0.016 (-1.20)			
Ln(\$TA)	0.044*** (3.02)	0.044*** (3.00)	0.044*** (3.00)	0.043*** (4.45)	0.043*** (3.94)	0.043*** (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-squared	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 country 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

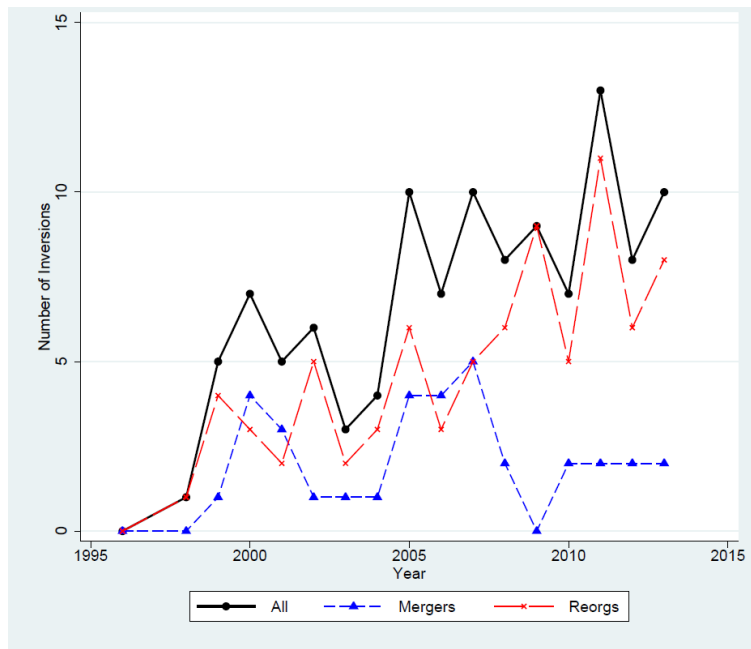


Figure 2: Number of Inversions around passage of Double Taxation Treaties (DTTs)

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). The left panel depicts the number of inversions between two signatory countries in the years prior and after signing a DTT. The right panel 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.

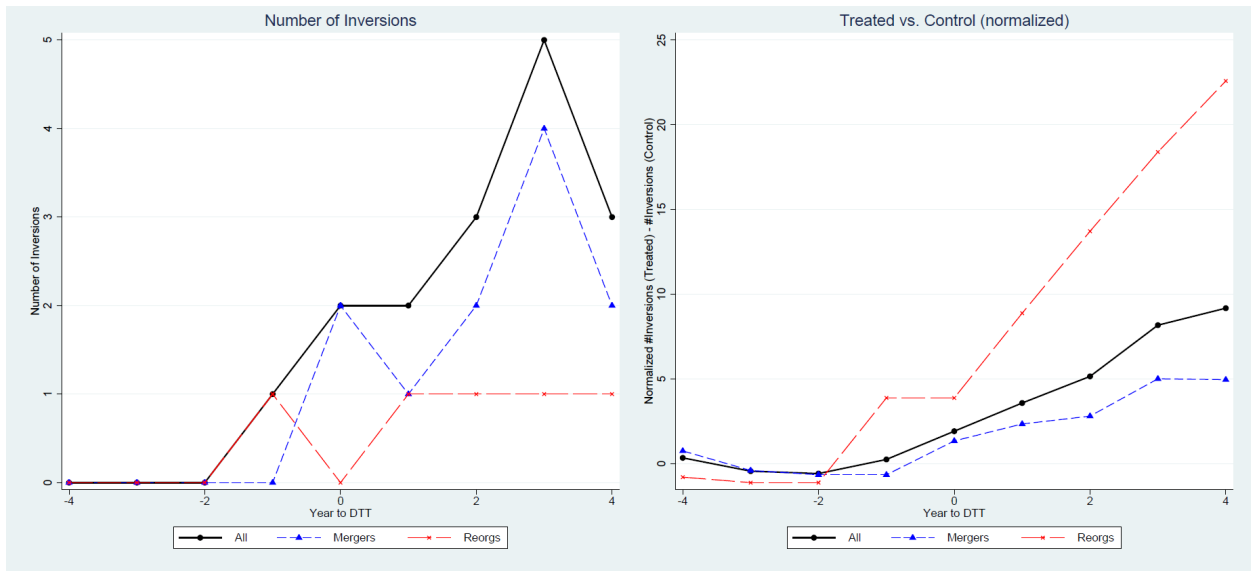
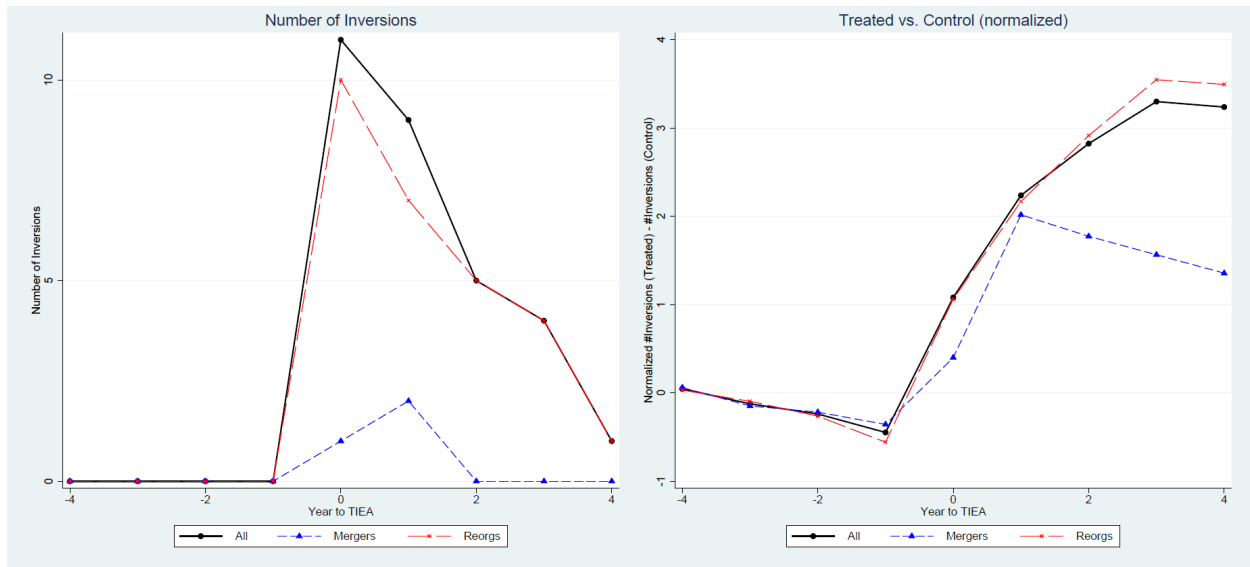


Figure 3: Number of Inversions around passage of Tax Information Exchange Agreements (TIEAs)

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. The left panel depicts the number of inversions between one signatory country (non-tax haven) and another signatory country (tax haven) in the years prior and after signing a TIEA. The right panel compares the evolution of inversions between country pairs affect by TIEAs (*treated*) and country pairs unaffected by TIEAs (*control*). Treated country pairs are those pairs of countries that signed a TIEA. Control pairs are pairs of countries where one country is a non-haven that signed a TIEA and the other country is a 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.



Appendix - Variable definitions and sources

Variable	Definition	Source
Country-level		
DTT (Dummy)	Dummy equals 1 if a double tax 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	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: $3963.0 * \arccos [\sin(\text{lat1}) * \sin(\text{lat2}) + \cos(\text{lat1}) * \cos(\text{lat2}) * \cos(\text{lon2} - \text{lon1})]$, 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, Worldbank (Kaufmann et al.(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, Worldbank (Kaufmann et al.(2009))
GDP per capita	Gross domestic product per capita measured in 2007 U.S. dollars. Data frequency is annual.	WDI, Worldbank
GDP growth	Average annual real growth rate of the gross domestic product in 2007 U.S. dollars. Data frequency is annual.	WDI, Worldbank
% Market Capitalization	Calculated as the share price times the number of shares outstanding scaled by GDP. Data frequency is annual.	WDI, Worldbank
% Turnover	Annual stock market turnover defined as trading volume divided by number of float shares.	WDI, Worldbank
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 et al. (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) Country	KPMG, OECD and various websites
Tax Haven Host	Dummy equals 1 if (Host) is a tax haven, zero otherwise	Desai 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, all 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
