# Escape from the USA: Government Debt to GDP Ratio, Country Tax Competitiveness, and U.S.-OECD Cross-border Acquisitions

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**Abstract**

Statutory tax rates of a country do not reflect a country's true tax competitiveness, we propose and show that government debt to GDP ratio (GOVDEBT) of a country is a better proxy for its tax competitiveness. Using a comprehensive sample of 1,884 completed cross-border acquisition transactions from the U.S. to other OECD countries, we document that the U.S.-target country GOVDEBT difference is significantly and positively related to both deal announcement return and post-deal tax saving of the acquirer. The GOVDEBT difference is also significantly and positively related to U.S.-target country deal flow. The findings remain robust when we control for the potential endogeneity of GOVDEBT difference. Our findings strongly suggest that tax avoidance is an important driver of U.S.-OECD cross-border deal flow and it increases shareholder wealth for U.S. acquirers.

*"It's a rock-solid fact that the U.S. corporate statutory tax rate is the highest among developed nations and is significantly higher than the average. …… There is, however, an unsettled debate over whether and by how much the U.S. corporate effective tax rate is higher than effective tax rates outside the United States. Effective tax rates seek to measure how much businesses really pay after all deductions and credits are considered."*

*-- Martin Sullivan, Forbes*

## 1. Introduction

It is well known that statutory corporate tax rates of a country do not capture its true tax competitiveness since the nominal statutory rates do not reflect various time-varying tax breaks, deductions, exemptions, and credits offered by a country's tax authorities. For example, Germany and Luxemburg have almost the same statutory corporate income tax rate (Germany 30.2% and Luxemburg 29.2%) in 2013. Nevertheless, Luxemburg's effective corporate income tax rate is much lower than that of Germany as a result of the former's numerous tax exemptions, deductions and credits [Mintz, and Chen 2014]. In fact, Luxemburg is often considered a tax haven by international investors. Besides corporate income tax, shareholders face many other types of taxes such as taxes on dividends and capital gains, general sales tax, property tax, transaction stamp tax, and so on.[1] Thus, it is very difficult, if not impossible, for researchers, media reporters and policy makers to know the effective total tax burdens on firms operated in different countries.

This issue is further complicated by the fact that firms in different countries have very different tax disclosure practices, which significantly reduces data comparability across countries. In fact, the Organization for Economic Co-operation and Development's (OECD) Base Erosion and Profit Shifting (BEPS) project intends to promote common disclosure rules to give tax authorities early access to information on aggressive tax arrangements.

In this paper, we study whether differences in cross-country tax competitiveness drive U.S. outbound M&A acquisitions. We focus on U.S. outbound deals as the U.S. tax system is regarded as one of the least competitive system within the 34 OECD countries. Starting from 2014, Tax Foundation provides tax competitiveness scores for all OECD countries based on over 40 tax policy variables, including corporate income taxes, individual income and payroll taxes, consumption taxes, property taxes, and the treatment of foreign earnings. The U.S. ends up placing 32nd among the 34 industrialized nations, ranking near the bottom for tax

[1] For example, the Netherlands allows firms to reduce taxes on dividends and capital gains from subsidiaries and has a wide range of treaties that reduce taxes GRAVELLE, J. G. "Tax Havens: International Tax Avoidance and Evasion." *Congressional Research Service* (2015)..

competitiveness in 2014 and 2015 [Erb 2014, Pomerleau, and Cole 2015, Pomerleau, and Lundeen 2014].

Furthermore, the U.S. tax system has two competitive disadvantages compared to the tax systems of other OECD countries. First, it has the highest combined income tax rate (39% in 2015) in the OECD. Second, it has a *worldwide tax system* that taxes income of U.S. headquartered firms that is earned both in the U.S. and abroad.[2] The income tax owed on earnings abroad can be deferred until it is repatriated by bringing it back to the U.S.. When earnings are repatriated, the U.S. tax law allows a foreign tax credit to alleviate concerns of double taxation. A firm can reduce its amount of U.S. tax by the amount already taxed by a foreign country [Barrasso 2012, Matheson et al. 2013].[3] Second, in contrast to the U.S., 26 OECD countries have territorial tax systems. Under such a system, the U.S. would tax only the income earned in the U.S. and exempt most of the income earned abroad.[4]

We propose to use a country's government debt to GDP ratio (GOVDEBT) as a proxy for its true tax competitiveness. We argue that high levels of government debt are negatively associated with a country's tax competiveness.

Spending cuts and tax increases are two of the major debt reducing policy options available to governments when dealing with rising debt. Cutting spending can be tolerable when targeting programs and expenditures that do not damage economic growth and productivity severely such as unemployment benefits, military spending or government bureaucracies [IMF 1996]. However, reducing spending has its limits. Cutting federal funds in key areas such as research and development and infrastructure harms future productivity since the private sector won't step up if the government withdraws its investment.

Raising taxes, trimming tax credits and exemptions and hence increasing the effective tax burden is another option to reduce government debt. Former chairwoman of the Council of Economic Advisers, Christina Romer, states in a New York Times essay: "[…] n*early every economist I know agrees that the best way to raise (government) revenue would be limit tax breaks for households and corporations*." Romer [2011] further argues that tax increases would be less harmful to the economy then a spending cut as government spending helps improve future productivity. A tax increase by 1 percent of the nation's economic output

[2] The U.K. (21% in 2014) and Ireland (12.5% in 2014) for example have the lowest combined income tax rates in the OECD.

[3] "*Example:* A corporation in the 35 percent tax bracket repatriates $1 million of income earned abroad, it would owe $350,000 in U.S. tax. But it has already paid $200,000 in tax to the country where the income was earned at that country's 20 percent rate. It would owe the U.S. government another 15 percent ($150,000) in order to bring the total tax paid on the $1 million of income to the U.S. 35 percent tax rate." [Barrosso 2012]. This would result in the firm paying the same amount in total taxes as it would if it earned the income in the U.S.

[4] Seven OECD nations have a worldwide tax system: Chile, Greece, Ireland, Korea, Mexico, Poland and the U.S. (Matheson et al. 2013).

would reduce GDP by the same percentage after 18 months. However, a spending cut by 1 percent would reduce GDP by 1.5 percent. Thus, governments should reduce debt by raising taxes rather than through spending cuts.

Romer, and Romer [2010] find that deficit reduction packages in the U.S. between the 1980s and 1990s such as the Tax Equity and Fiscal Responsibility Tax Act of 1982 or the Onmibus Budget Reconciliation Act of 1993 were accompanied with spending cuts that are generally small relative to the tax increases. The latter is associated with few adverse consequences and known as one of the most successful deficit reduction reform. The authors' main results show that deficit-driven tax increases have little negative impact on output.

Recent developments in Greece, Brazil and the United States show that tax increases are one of the major policy actions, if not the most important one, to reduce high levels of government debt. In 2016, Greece passed among other things, key tax hikes in exchange for much-needed bailout loans and debt relief. Tax changes include an increase in value-added tax by one point to 24 percent, an extension of the existing tax on real estate and a raise in duty on fuel and tobacco [Reuters 2016]. In 2015, Brazilian lawmakers reduced tax subsidies for the chemical industry, cut refunds to exporters of manufactured goods and raised the capital gains tax to up to 30% to deal with its exploding debt-to-GDP ratio of 67 percent [Guardian 2015, Levin, and Xie 2016].

Former chairman of the Council of Economic Advisers, Edward P. Lazear, forecasts major tax increases in the United States to deal with the $14 trillion in public debt. Historically, higher taxes were often the consequences following a high level of debt-to-GDP ratio and successful tools to deal with rising debt. In the current election year, the Democrats are explicit in wanting higher taxes including a 4% surcharge on incomes over $5 million, higher capital gains taxes, capped deductions, taxing capital gains and dividends as ordinary income and expanding the estate tax [Lazear 2016].

To empirically verify GOVDEBT as a valid tax competitiveness proxy, we collect country tax competitiveness scores for OECD countries from Tax Foundation. In his seminal paper, Diamond [1965] develops a neoclassical growth model and shows that taxes are needed to finance government debt interest payments. Thus, high government debt should be negatively related to a country's tax competitiveness. We find that the correlation between the difference in GOVDEBT between the U.S. and another OECD country and their difference in tax competitiveness scores is as high as 41%.[5] By contrast, the correlation between the

[5] Note that when calculating the tax competitiveness score difference between the U.S. and another OECD country, we multiply the initial tax competitiveness scores by -1 so that larger values indicate *less* competitive tax systems. The U.S. ranks the 32th among the 34 OECD countries. See Appendix B.

statutory corporate income tax rate difference between the U.S. and another OECD country and their difference in tax competitiveness scores is only 25%.

As a better tax competitiveness proxy, the data for GOVDEBT is also widely available and covers several decades for all OECD countries. Using GOVDEBT as a proxy for a country's tax competitiveness, we address the following questions. Is U.S.-OECD tax competitiveness difference related to deal announcement returns and post-deal tax savings of the U.S. acquirers for U.S.-OECD outbound cross-border acquisitions? Is U.S.-OECD tax competitiveness difference related to U.S.-OECD cross-border acquisition deal flow?

These questions are especially important due to the recent development in tax-motivated cross-border outbound acquisitions from the U.S. to other countries. By acquiring a foreign target company, a U.S. company can shift its profits overseas and thus avoid U.S. taxes through internal transfer pricing and/or moving its operations abroad. It can then use these profits to invest overseas and/or repatriate the profits back to the U.S. under various non-recognition provisions allowed by U.S. tax code and regulations.[6] An extreme form of tax-motivated outbound acquisitions, tax-inversion acquisition deals, results in the U.S. firm changing its legal domicile to the more tax competitive target firm country and thus entirely avoid paying U.S. taxes for all of its non-U.S. operations and profits.[7]

Using a comprehensive sample of 1,884 completed cross-border acquisitions from the U.S. to other OECD countries announced between 1996 to 2013, we find that the U.S.-target country GOVDEBT difference is significantly and positively related to deal announcement return of the U.S. acquirer. A one-standard-deviation increase in GOVDEBT difference is on average related to a 1.34% increase in acquirer three-day cumulative abnormal return around

[6] Such transactions often result in the U.S. parent receiving cash, notes or other property from the overseas subsidiaries that are not recognized as dividend or gain to the U.S. parent. Also, many repatriation transactions from foreign subsidiaries to the U.S. parent are disguised as loans to the U.S. parent. See the written testimony of Samuel Maruca, Director of Transfer Pricing Operations of Internal Revenue Service (IRS), to the U.S. Congress (http://www.hsgac.senate.gov/subcommittees/investigations/hearings/offshore-profit-shifting-and-the-us-tax-code_-part-2).

[7] According to a Wall Street Journal article RAICE, S. "How Tax Inversions Became the Hottest Trend in M&A." *The Wall Street Journal* (2014)."tax inversions have been a major driver in cross-border deal making, accounting for 66% of proposed U.S. outbound deals this year, according to Thomson Reuters." See http://www.wsj.com/articles/how-tax-inversions-became-the-hottest-trend-in-m-a-1407240175. In 1996, the U.S. government issued anti-inversion rules, but inversions continued. This prompted the government to release new rules in 2004. The American Jobs Creation Act of 2004 ended corporate tax inversion to a foreign country with no real business activity. However, the law allows tax inversions as long as there is real business operation in the foreign country and the former U.S. parent company owns less than 80% of the combined firm. As a response, corporate tax advisors created various techniques to inflate the size of the combined firm or to reduce the size of the U.S. parent MCKINNON, J. D. and D. PALETTA. "Obama Administration Issues New Rules to Combat Tax Inversions." Ibid.. As a result, the U.S. government had to announce new rules to further discourage tax-inversion motivated deals. After the new rules were released, U.S. pharmaceutical company Pfizer immediately terminated its US$160 billion agreement to acquire Irish pharmaceutical company Allergan and change the combined firm's legal domicile to Ireland, suggesting that the acquisition is mainly tax-motivated.

the deal announcement. For an average acquirer in our sample, this amounts to an increase in shareholder value of US$147 million. Our results are important as they are different from the findings in the previous M&A literature stating that acquirer deal announcement returns are on average insignificantly different from zero [Andrade et al. 2001] [Betton et al. 2008]. For example, Karolyi, and Taboada [2014] find that acquirers in their sample of cross-border bank acquisitions (which may not involve a U.S. firm as a takeover target or acquirer) have either negative or not significant announcement returns.

Furthermore, we find that the U.S.-target country GOVDEBT difference is significantly and positively related to the U.S. acquirer's tax saving post deal completion. A one-standard-deviation increase in GOVDEBT difference is on average related to a 0.70% reduction in annual cash tax paid as a percentage of total assets and a 2.47% increase in annual total tax avoidance as a percentage of total assets for the three years after deal completion. For an average acquirer in our sample, this amounts to a cash tax saving of US$148.21 million per year and a total tax avoidance of US$522.97 million per year. Consistent with the notion that statutory tax rate is a bad proxy for tax competitiveness; we find that U.S.-target country statutory corporate income tax rate difference has no effect on either the deal announcement return or the post-deal tax savings of the acquirer.

Our results are robust to controlling for the U.S.-target country corporate governance strength difference, market valuation difference, market performance difference, development difference, growth difference, bilateral trade, a battery of firm characteristics, a battery of deal characteristics, target country fixed effects, acquirer industry fixed effects and year fixed effects. To further alleviate the concern of omitted-variable bias, we use historical (i.e., five years before the deal announcement) government debt difference and public social expenditures difference to instrument for GOVDEBT difference in two-stage instrumental variable regressions. A country with high historical government debt and public social expenditures will tend to have weak tax competitiveness (i.e., high GOVDEBT), but historical government debt difference and public social expenditures difference are unlikely to directly affect acquisition deal announcement returns and post-deal tax savings (other than through the tax competitiveness channel). We verify that the two instruments pass both the relevance (weak instrument) test and the exclusion (overidentification) test.

Our results remain robust or even become stronger in two-stage instrumental variable regressions, suggesting that the uncovered relationships are unlikely driven by omitted variable bias. Consistent with GOVDEBT being a better proxy for country tax competitiveness, we further find that the positive effect of U.S.-target country GOVDEBT difference on acquirer deal announcement return is significantly greater when the acquisition

is a tax-inversion deal, through which the acquirer changes its legal domicile to the target country.

Finally, we find that the U.S.-target country GOVDEBT difference is significantly and positively related to U.S.-target country deal flow. A one-standard-deviation increase in GOVDEBT difference between the U.S. and a target OECD country is on average related to a 2.33% increase in the number of cross-border acquisitions from the U.S. to that target OECD country as a percentage of all domestic and cross-border acquisitions in that country. This finding remains robust when we control for U.S.-target country statutory corporate income tax rate difference, corporate governance strength difference, market valuation difference, market performance difference, development difference, growth difference, bilateral trade, religion, legal system, language, geographical distance, whether the two countries share common border, whether the two countries have colonial link, and year fixed effects. The finding remains robust when we use two-stage instrumental variable regressions with historical government debt difference and public social expenditures difference as instruments for GOVDEBT difference. Our finding strongly suggests that country tax competitiveness difference is an important driver of cross-border acquisition deal flow.

Despite the recent development in tax-motivated outbound acquisitions from the U.S. to lower-tax countries, there are few studies in the literature that directly studies the role tax avoidance plays in such acquisitions. Based on a sample of U.S. domestic acquisitions, Hayn [1989] finds that tax attributes (e.g., net operating loss carryforwards and unused tax credits) of target firms are significantly associated with the abnormal returns to shareholders of both target and acquiring firms. Desai, and Hines [2002] examine the role of taxation in 26 tax inversions of U.S. multinationals in the 1982 to 2002 period and confirm that inversions yield tax benefits to inverting firms. However, only three inversions in their sample are acquisition-related. Huizinga, and Voget [2009] find that the parent-subsidiary structure of multinational firms created by cross-border acquisitions is affected by the prospect of international double taxation. Specifically, the likelihood of parent firm location in a country following a cross-border acquisition is reduced by high international double taxation of foreign-source income. At the same time, countries with high international double taxation attract smaller numbers of parent firms. Our study contributes to this developing literature by showing that GOVDEBT is a better measure of a country's tax competitiveness and higher U.S.-target country GOVDEBT difference leads to higher acquirer deal announcement returns and post-deal tax savings for U.S. acquirers and greater U.S.-target country outbound acquisition deal flow.

Our study is also related to the literature on cross-border mergers and acquisitions (M&As). For example, using a sample of cross-border acquisitions in 49 major countries in

period 1990 to 2002, Rossi, and Volpin [2004] find that acquirers tend to be domiciled in countries with higher investor protection than target countries, suggesting that firms opt out of weak corporate governance regime via cross-border M&A transactions. Erel et al. [2012] analyze a sample of 56,978 cross-border M&As between 1990 and 2007. They find that geography, the quality of accounting disclosure, and bilateral trade increase the likelihood of mergers between two countries. Moreover, acquirers tend to be located in countries whose stock market has increased in value, whose currency has recently appreciated, and that have a relatively high market-to-book value. Karolyi, and Taboada [2014] find that differences in bank regulations influence cross-border bank acquisition flows and the share price reactions to cross-border deal announcements. Using a sample of 7,297 domestic and 916 majority cross-border bank acquisitions announced between 1995 and 2012, they find that bank acquisition flows involve acquirers from countries with stronger regulations than their targets. Moreover, target and aggregate abnormal returns around deal announcements are positive and larger when acquirers come from more restrictive bank regulatory environments.

Finally, our study is related to the literature on tax and foreign direct investment (FDI) [Altshuler et al. 2001, Boskin, and Gale 1987, Grubert, and Mutti 1991, Hartman 1984, Hines 1996, Hines, and Rice 1994, Slemrod 1990, Young 1988]. This literature generally documents that increase in local tax rate discourages FDI. However, the literature does not distinguish between FDI due to M&As and other components of FDI.

The rest of the paper is organized as follows. Section 2 describes the data and their sources. Section 3 investigates the effect of U.S.-target country GOVDEBT difference on deal announcement return and post-deal tax saving of the acquirer. Section 4 studies the effect of U.S.-target country GOVDEBT difference on U.S.-target country cross-border deal flow. Section 5 concludes.

## 2. Sample Formation

### *2.1. Our Sample for Deal Flow Analysis*

We obtain a large and comprehensive sample of completed outbound M&A transactions from the U.S. to other OECD countries from the Thomson One Banker SDC database for the period 1996-2013.[8] We impose the following filters to obtain our final sample: 1) the deal is classified as "Acquisition of Assets (AA)", "Merger (M)," or "Acquisition of Majority Interest (AM)" by the data provider;[9] 2) the acquirer is domiciled in the U.S.; 3) the acquirer holds less than 50% of the shares of the target firm before deal announcement and ends up owning more than 50% of the shares of the target firm through the deal; 4) the deal value is at least US$1 million; 5) the target firm is domiciled in a non-U.S. OECD country; 6) the target firm is a public firm, a private firm, or a subsidiary; 7) multiple deals announced by the same acquirer on the same day are excluded. Our initial sample for the U.S.-OECD outbound deal flow analysis consists of 5,261 completed deals. Following Karolyi, and Taboada [2014], we construct a variable, *Cross-border flow*, which is the number of cross-border majority acquisitions in which the acquirer is from the U.S. and the target is from a non-U.S. OECD country in a year, as the percentage of the total number of all domestic and cross-border majority acquisitions in that target country during that year. The mean (median) of *Cross-border flow* is 11.91% (9.38%) with the standard deviation being 11.88% for all target country-year observations in our sample (Panel B of Table 2).

Table 1 provides a sample overview by year (Panel A) and by target country (Panel B). We see a wave of outbound transactions in the period 1998-2001 around the time of the Internet bubble and another wave in the period 2004-2007 preceding the recent financial crisis. The most important target countries are the United Kingdom, Canada, Germany, Australia, France, and the Netherlands.

### *2.2. Our Sample for Cross-Sectional Return and Tax Saving Analysis*

For the cross-sectional acquirer deal announcement return and post-deal tax saving analysis, we impose the additional requirement that the acquirer is a U.S. public firm listed on the AMEX, NYSE, or NASDAQ with available stock return and financial data. Following prior work [Chen et al. 2007, Karolyi, and Taboada 2014] we use two acquirer deal announcement return measures: *CAR(-1; 1) and MAR(-1; 1). CAR(-1; 1)* is the cumulative abnormal return (in percentage points) of the acquirer from one day before to one day after

[8] We focus on this sample period since KAUFMAN, D.; A. KRAAY and M. MASTRUZZI. "Governance Matters VIII- Aggregate and Individual Governance Indicators, 1996-2008." *Policy Research Working Paper* (2009).governance indicators for OECD countries, which we use to construct an importance control variable in this study, are available only during this period.

[9] According to Netter, Stegemoller, and Wintoki (2011), these three deal forms capture about 98% of M&A deals covered by the Thomson One Banker SDC database during the period 1992-2009.

the deal announcement date (day *0*), where daily abnormal stock returns are computed using the market model and the CRSP value-weighted market returns, with the estimation window being days (-200, -60) prior to the deal announcement date [Chen, Harford, and Li 2007]. *MAR(-1; 1)* is the cumulative abnormal return (in percentage points) of the acquirer from one day before to one day after the deal announcement date (day *0*), where daily abnormal stock return is calculated by subtracting the CRSP value-weighted market return from the stock return of the acquirer.

Following prior literature [Andrade, Mitchel, and Stafford 2001, Moeller et al. 2004], we control for the following acquirer characteristics variables in our cross-sectional regressions: firm size (*Firm size*), return on assets (*ROA*), market to book equity ratio (*MTB*), leverage ratio (*Leverage*), past stock return (*Past return*), and institutional ownership of top five institutional investors (*Top5 institutions*). We further control for the following deal characteristics variables in our cross-sectional regressions: An indicator for all-cash deal (*All cash*), an indicator for all-stock deal (*All stock*), an indicator for diversifying transaction (*Diversifying*), an indicator for tender offer (*Tender offer*), the deal size relative to the acquirer's total assets (*Relativesize*), an indicator for private target (*Private target*), and an indicator for subsidiary target (*Subsidiary target*). Stock return data is obtained from The Center for Research in Security Prices (CRSP), financial data from Compustat as of the year-end prior to the announcement of the deal, and deal data from the Thomson One Banker SDC database.

The requirement of available acquirer stock return and financial data as well as deal data reduces our cross-sectional regression sample to 1,884 transactions, among which 23 are tax-inversion transactions (i.e., the acquirer changes its legal domicile to the target firm's country after the deal completion). We identify inversion deals by studying the legal domicile of the acquirer before and after the deal through the Compustat database and also manually cross-checking with the Bloomberg Inversion Tracking database. The indicator variable, *Inversion*, equals 1 if the deal is an inversion deal and equals 0 otherwise.

All country level variables are computed as differences between the U.S. and the target OECD country. Our country tax competitiveness proxy, *GOVDEBT-1* (*GOVDEBT-5*), is the central government debt as a percentage of GDP in the year before (five years before) the deal announcement year. The data is from the OECD Statistics database. *Kaufman* is the average of all six Kaufman, Kraay, and Mastruzzi [2009] governance indicators in the year before the deal announcement year, which captures a country's corporate governance strength[Karolyi, and Taboada 2014]. *Pubexpend-2* is the sum of public social expenditures (scaled by GDP) in the two years before the deal announcement year. *Tax* (in percentage) is

the country statutory corporate income tax rate in the deal announcement year. Data for both *Pubexpend-2* and *Tax* is obtained from the OECD Statistics database. *Market MTB* is the country's value-weighted market-to-book equity ratio and *Market R12* the country's annual real stock market returns [Erel, Liao, and Weisbach 2012]. Data for both variables were obtained from Datastream for the year before the deal announcement year. *GDP per capita* is the log of real GDP (current US$) divided by the average population. *GDP growth* is the annual growth in real GDP. Both variables are obtained from the World Development Indicators. *Bilateral trade* is obtained from the IMF's Direction of Trade Statistics and is the maximum of bilateral import and export between a country pair in a year. These three variables are again measured in the year before the deal announcement year.

We use three variables to measure acquirer post-deal tax savings. The first variable, *ΔCTXD3,* is the post-deal change in the dollar amount of cash tax paid by the acquirer, which is the average amount of cash tax paid in the three fiscal years after the deal completion minus the average amount of cash tax paid in the three fiscal years before the deal announcement. The second variable, *ΔCTXD/AT3*, is the post-deal change in the amount of cash tax paid scaled by the acquirer's total assets, which is the average cash tax paid as a percentage of total assets in the three fiscal years after the deal completion minus the average cash tax paid as a percentage of total assets in the three fiscal years before the deal announcement.[10] The third variable, *ΔAVOIDANCE3*, is the post-deal change in total tax avoidance scaled by the acquirer's total assets, which is the average total tax avoidance as a percentage of total assets in the three fiscal years after the deal completion minus the total tax avoidance as a percentage of total assets in the three fiscal years before the deal announcement. Following Frank et al. [2009], total tax avoidance as a percentage of total assets in a fiscal year (*AVOIDANCE*) is calculated as (pre-tax book income - ((current federal tax expense + current foreign tax expense) / statutory tax rate)) - (deferred tax expense / statutory tax rate), scaled by lagged total assets. The first two variables, *ΔCTXD* and *ΔCTXD/AT*, capture the post-deal cash tax savings of acquirers, with negative values indicating post-deal reductions in cash tax paid. The third variable, *ΔAVOIDANCE*, captures the post-deal total tax avoidance of acquirers, with positive values indicating post-deal increases in total tax avoidance. Data used to construct these variables are obtained from Compustat.

[10] Note that we use total assets instead of pre-tax income as the scaler of cash tax paid because total assets are more difficult to manipulate. After deal completion, the U.S. acquirer can shift its profits overseas and reduce pre-tax income via, for example, internal transfer pricing.

*2.3. Summary Statistics*

Table 2 provides summary statistics for all variables used in our study. All continuous variables are winsorized at the 1st and 99th percentiles. Panel A presents summary statistics for acquirer characteristics. Our acquirers are large and profitable U.S. public firms. In particular, the acquirers have average (median) total assets of US$21,172 million (US$929 million), reflected in constant 2013 U.S. dollars. The mean (median) acquirer *ROA* is 0.03 (0.05) and the mean (median) past stock return is 37.40% (17.76%). Panel B presents summary statistics for deal characteristics. As we can see, almost 40% of deals are all-cash transactions and 6% are all-stock deals. 44% of deals are diversifying transactions, where the acquirer and the target have different two-digit SIC codes. The mean (median) *Relativesize* is 0.20 (0.05). Half of the target firms are private firms and 37% of the target firms are subsidiary firms. Thus, only around one tenth of the target firms are public firms.

Panel C presents summary statistics for the country level variables, which are computed as the difference between the U.S. and another OECD country. In particular, the mean (median) *GOVDEBT-1* is -0.74% (-3.98%) while the standard deviation is 23.49%, suggesting very large cross-sectional variations in U.S.-target country government debt difference compared with the mean and median. The mean (median) country statutory corporate income tax rate difference, *Tax*, is 5.95% (7.00%) while the standard deviation is 2.83%, suggesting that the U.S. generally has higher statutory corporate income tax rates than the other OECD countries.

Panel D presents summary statistics for acquirer deal announcement returns. The means and medians of acquirer deal announcement return variables are positive and statistically significant at the 1% level, suggesting U.S.-OECD outbound acquisitions are on average value creating for U.S. shareholders. For example, the mean (median) of *CAR(-1; 1)* is 0.77% (0.43%). This is in contrast with the finding in the M&A literature that acquirer deal announcement returns are on average insignificantly different from zero [Andrade, Mitchel, and Stafford 2001, Betton, Eckbo, and Thorburn 2008]. For example, Karolyi, and Taboada [2014] find that acquirers in their sample of cross-border bank acquisitions (which may not involve a U.S. firm as a takeover target or acquirer) on average have zero deal announcement returns.

Panel E presents the summary statistics of the acquirer tax saving variables. Looking at the change from three years before the deal announcement to three years after the deal completion, the mean (median) $\Delta$CTXD3 is US$72.29 million (US$5.75 million), the mean (median) $\Delta$CTXD/AT3 is 1.23% (0.55%), and the mean (median) $\Delta$AVOIDANCE3 is -

1.09% (0.08%). The standard deviations of these variables are all very large compared to their respective means and medians, suggesting very large cross-sectional variations.

Panel F presents the summary statistics of U.S.-target country GOVDEBT difference by country pair. As we can see, the governments of Belgium, France, Greece, Hungary, Israel, Italy, Japan, Portugal and the United Kingdom appear to be more indebted than the U.S. government.

## 3. The Effect of U.S.-Target Country GOVDEBT Difference on Acquirer Deal Announcement Return and Post-deal Tax Saving

### *3.1. Validation of GOVDEBT as a Tax Competitiveness Measure*

Starting from 2014, Tax Foundation provides tax competitiveness scores for all OECD countries based on a comprehensive list of over 40 tax policy variables. We collect country tax competitiveness scores for OECD countries from Tax Foundation for year 2014 and 2015 (see Table A1 in the Appendix). Panel A of Table 3 presents the correlations of government debt as a percentage of GDP (*GOVDEBT*), country tax competitiveness score (*TAXCOMPET*), and country statutory corporate income tax rate (*Tax*). All variables are measured as the differences between the U.S. and a non-U.S. OECD country. When calculating the correlation between *GOVDEBT* and *TAXCOMPET*, *GOVDEBT* is the average difference in year 2012 and 2013 and *TAXCOMPET* is measured as of 2014 (results are very similar if we use the average *TAXCOMPET* in year 2014 and 2015 instead). We multiply tax competitiveness scores by -1 before computing *TAXCOMPET* so that the difference will be positive if the U.S. is less tax-competitive than another OECD country. Correlations between *GOVDEBT* and *Tax* are calculated over the entire sample period 1996-2013 since the data for *Tax* is available over the entire sample period.

As we can see, the correlation between *GOVDEBT* and *TAXCOMPET* is as high as 41%. By contrast, the correlation between *Tax* and *TAXCOMPET* is only 25%, and the correlation between *GOVDEBT* and *Tax* is only 15%. All of the correlations are highly statistically significant at the 1% level. This finding suggests that *GOVDEBT* is a better proxy for country tax competitiveness than statutory corporate income tax rate.

### *3.1. The Effect of GOVDEBT on Acquirer Deal Announcement Return*

Using multivariate OLS regressions, we next examine the effect of the pre-acquisition U.S.-target country government debt to GDP difference, *GOVDEBT-1,* on acquirer deal announcement returns. To alleviate the concern for omitted variable bias, we control for a

battery of country level variables including the U.S.-target country statutory corporate income tax rate difference (*Tax*), corporate governance strength difference (*Kaufman*), market valuation difference (*Market MTB*), market performance difference (*Market R12*), development difference (*GDP per capita*), growth difference (*GDP growth*), and bilateral trade (*Bilateral trade*), acquirer characteristics variables including firm size (*Firm size*), profitability (*ROA*), market-to-book equity ratio (*MTB*), leverage (*Leverage*), past stock return (*Past return*), and institutional ownership (*Top5 institutions*), and deal characteristics variables including the all-cash indicator (*All cash*), all-stock indicator (*All stock*), diversifying-deal indicator (*Diversifying*), tender-offer indicator (*Tender offer*), deal size relative to acquirer total assets (*Relative size*), private-target indicator (*Private target*) and subsidiary-target indicator (*Subsidiary target*). We further include target country fixed effects, acquirer industry fixed effects and year fixed effects. Following Erel, Liao, and Weisbach [2012] and Karolyi, and Taboada [2014], we cluster the standard errors at the target country level. The results are presented in Panel A of Table 4.

Column 1 and 2 show that *GOVDEBT-1* is significantly and positively related acquirer deal announcement return measured at the 1% level for the three-day event window. The economic magnitude is large as well. A one-standard-deviation increase in government debt to GDP difference is on average related to a 1.08% (23.49*0.046%) increase in acquirer three-day cumulative abnormal return around the deal announcement. For an average acquirer in our sample, this amounts to an increase in shareholder value of US$119 million (11,007.22 million*1.08%). By contrast, the U.S.-target country statutory corporate income tax rate difference, *Tax*, is insignificant across all models, suggesting that it is not a good tax competitiveness proxy.

In terms of the control variables, we find that firm size and diversifying deal are negatively related to acquirer deal announcement returns, while tender offer, relative deal size, private target and subsidiary target are positively related to acquirer deal announcement returns. The findings on the control variables are generally consistent with those documented in the M&A literature [Betton, Eckbo, and Thorburn 2008, Fuller et al. 2002, Harford 1999, Moeller, Schlingemann, and Stulz 2004].

As a further validity check, we use country tax competitiveness difference from Tax Foundation, *TAXCOMPET*, instead of *GOVDEBT-1*, in acquirer deal announcement return regressions. If *GOVDEBT-1* is a proxy for country tax competitiveness difference, we conjecture that *TAXCOMPET* should be positively related to acquirer deal announcement returns as well. Since data for *TAXCOMPET* is only available in 2014 and 2015, we use *TAXCOMPET* in 2014 to match with all sample deals announced in the period 2012-2013. By

doing so, we assume a degree of stickiness in countries' degree of tax competitiveness. The comparison of the 2014 and 2015 tax data confirms this assumption. The results are presented in Panel B of Table 3. Although the sample size becomes much smaller, *TAXCOMPET* is also positively and significantly loaded across all four acquirer deal announcement return regressions, consistent with our conjecture.

### *3.2. The Effect of GOVDEBT on Acquirer Post-Deal Tax Saving*

Next, we examine the effect of *GOVDEBT-1* on acquirer post-deal tax savings using multivariate regressions. The dependent variables are the three acquirer post-deal tax saving measures, $\Delta CTXD3$, $\Delta CTXD/AT3$, and $\Delta AVOIDANCE3$, described in Section 2. Similar to the deal announcement return regressions, we include country level controls, acquirer characteristics and deal characteristics as well as target country fixed effects, acquirer industry fixed effects and year fixed effects in the regression models. To account for the potential mean reversion of firm cash tax payment and total tax avoidance, we further include as additional control the pre-acquisition level of cash tax paid (*CTXD-3*), cash tax paid as a percentage of total assets (*CTXD/AT-3*), or total tax avoidance as a percentage of total assets (*AVOIDANCE3*) averaged over the three years immediately before the deal announcement. Standard errors are clustered at the target country level [Erel, Liao, and Weisbach 2012, Karolyi, and Taboada 2014]. The results are presented in Table 5.

### *3.3. Two-Stage Instrumental Variable Regressions*

Although we include a battery of country-level, firm-level and deal-level controls as well as country, industry and year fixed effects across all regression models, there is still a potential concern that some unknown omitted variables are correlated with both the pre-acquisition U.S.-target country GOVDEBT difference and acquirer deal announcement returns or post-deal tax savings. In this section, we employ the instrumental variable regression approach to extract the exogenous component of GOVDEBT difference and relate it to acquirer deal announcement returns or post-deal tax savings. We need instrumental variables that are related to pre-acquisition U.S.-target country tax competitiveness difference (as proxied by *GOVDEBT-1*) but are not related to acquirer deal announcement return or post-deal tax saving (other than through the tax competitiveness channel).

We use two instrumental variables, historical government debt difference (*GOVDEBT-5*) and public social expenditures difference (*Pubexpend-2*), to instrument for pre-acquisition U.S.-target country GOVDEBT difference. *GOVDEBT-5* is the historical U.S.-target country GOVDEBT difference five years before the deal announcement year. *Pubexpend-2* is the sum of public social expenditures (scaled by GDP) two years before the deal announcement year. We argue that a country with both high historical government debt and high public social expenditures will tend to have weak current tax competitiveness (i.e., as proxied by high current government debt), but historical government debt difference and public social expenditures difference between the U.S. and the target country are unlikely to directly affect acquirer deal announcement returns and post-deal tax savings in U.S. outbound acquisitions (other than through affecting current U.S.-target country tax competitiveness difference). We follow the approach by Field et al. [2013] who study the effects of busy directors post-IPO (five or 10 years following the IPO). Their instrumental variables include a dummy variable for the presence of busy directors at the IPO as there is little reason to expect busy boards to directly influence firm value several years after the IPO.

Column 1 in Panel B of Table 4 presents the first-stage result of regressing *GOVDEBT-1* on the two instrumental variables plus control variables and fixed effects using our full sample. As expected, both instruments are significantly and positively related to *GOVDEBT-1* at least at the 5% level. Column 2 and 3 in Panel B of Table 4 (columns 4-6 of Table 5) present the second-stage result of regressing acquirer deal announcement return measures (post-deal tax saving measures) on the exogenous (fitted) component of *GOVDEBT-1* plus controls and fixed effects.[11]

The Angrist-Pischke F-statistic and Hansen J-statistic indicate the regressions are well specified. The p-values of Angrist-Pischke's *F* test statistic for weak instrument are 0.000 in all regression models, strongly rejecting the null hypothesis that the instruments are weak (note that critical values for the p-values are from Stock, and Yogo [2005]. The p-values of Hansen's *J* overidentification test statistic are very large across all regression models, indicating that the two instruments are uncorrelated with the error terms of the second-stage regressions [Hansen 1982]. Thus, the weak-instrument and overidentification test statistics suggest that the relevance and exclusion conditions are both satisfied for our two-stage instrumental variable regressions. Importantly, Panel column 2 and 3 in Panel B of Table 4 and column 4-6 of Table 5 show that our main findings do not change in any qualitative manner (the results even get stronger) when we use the exogenous (fitted) component of

[11] Since the first-stage results of these 2SLS regression models are all very similar to that in Panel C of Table 4, they are omitted from reporting for brevity but are available from us upon request.

*GOVDEBT-1* in the regressions, suggesting that the findings are unlikely to be driven by some unknown omitted variables.

It is clear that the coefficient of *GOVDEBT-1* is negative when *ΔCTXD3* an *ΔCTXD/AT3* is the dependent variables and positive when *ΔAVOIDANCE3* are the dependent variables; moreover, the coefficient of *GOVDEBT-1* is statistically significant in 5 out of the six regression models. Consistent with our expectation, pre-acquisition U.S.-target country government debt to GDP difference is also significantly related to the U.S. acquirer's post-deal tax saving benefits. For example, column 5 of Table 5 shows that a one-standard-deviation increase in GOVDEBT difference is, on average, related to a 0.70% reduction (23.49*(-0.030%)) in annual cash tax paid and a 2.47% increase (23.49*0.105%) in annual total tax avoidance (column 6), as a percentage of total assets, for the three years after deal completion (compared with the three years before deal announcement). For an average acquirer in our sample, this amounts to a cash tax payment reduction of US$148 million per year and a total tax avoidance increase of US$329 million per year (the mean acquirer total assets is US$22,231 million, as shown in Panel A of Table 2). Consistent with statutory tax rate being a bad tax competitiveness proxy, we again find that the coefficient of U.S.-target country statutory corporate income tax rate difference, *Tax*, is insignificant across all models in Table 5.

In terms of the control variables (column 5 and 6), we find that the coefficient of acquirer leverage is significantly negative when *ΔCTXD/AT3* is the dependent variable and that the coefficient of acquirer firm size significantly positive when *ΔAVOIDANCE3* is the dependent variables, suggesting that larger acquirers and acquirers with higher leverage ratios are better able to capture post-deal tax saving benefits. The coefficient of ROA is significantly positive when *ΔCTXD/AT3*, and *ΔAVOIDANCE3* are the dependent variables, suggesting that after deal completion, profitable firms experience both an increase in cash tax paid and an increase in total tax avoidance, as a percentage of total assets. The other control variables yield either mixed or insignificant results.

To summarize, we find that the pre-acquisition U.S.-target country GOVDEBT difference is significantly and positively related to both deal announcement return and post-deal tax saving of the U.S. acquirer.

*3.4. Tax-Inversion Deals*

As discussed earlier, tax-inversion acquisition deals result in the U.S. firm changing its legal domicile to the more tax-competitive target firm country after deal completion and thus entirely avoid paying U.S. taxes for all of its non-U.S. operations and profits. Therefore, since US.-target country government debt difference is a better proxy for country tax competitiveness difference, we expect the effect of *GOVDEBT-1* on acquirer deal announcement return should be larger when the acquisition is a tax-inversion deal. To examine this conjecture, we regress the acquirer deal announcement return measures on *GOVDEBT-1*, the *Inversion* indicator, and their interaction terms plus controls and fixed effects in multivariate regressions. The results are presented in column 3 and 4 in Panel A of Table 4.

In addition to the fact that *GOVDEBT-1* is positively loaded in all regression models, we find that the coefficients of both *GOVDEBT-1*Inversion* and *Inversion* are significantly positive at the 1% level across all regression models, consistent with our expectation. Thus, the positive effect of U.S.-target country GOVDEBT difference on acquirer deal announcement return is indeed larger when the acquisition is a tax-inversion transaction, through which the acquirer changes its legal domicile and completely avoids paying U.S. taxes for all of its non-U.S. operations.[12]

## 4. The Effect of U.S.-Target Country GOVDEBT Difference on Cross-border Deal Flow

In this section, we examine the effect of U.S.-target country GOVDEBT difference on U.S.-target country cross-border acquisition deal flow. Since our earlier evidence suggests that U.S.-target country GOVDEBT difference is a better proxy for U.S.-target country tax competitiveness difference, we hence expect it to also be positively related to U.S.-OECD country cross-border acquisition deal flow if U.S. firms (partially) opt out of the less tax-competitive U.S. system via outbound acquisitions into the more tax-competitive OECD countries.

Following Karolyi, and Taboada [2014], our dependent variable in the deal flow regressions, *Cross-border flow*, is measured as the number of cross-border majority acquisitions in which the acquirer is from the U.S. and the target is from a non-U.S. OECD country in a year, as the percentage of the total number of all domestic and cross-border

[12] We cannot examine the impact of *Inversion* on acquirer post-deal tax savings because we check and find that after deal completion, the information to construct the acquirer cash tax payment and total tax avoidance measures is missing for all of these tax-inversion deals in our sample.

majority acquisitions in that target country during that year. In all regressions, we also control for a battery of country level variables including the U.S.-target country statutory corporate income tax rate difference (*Tax-1*), corporate governance strength difference (*Kaufman*), market valuation difference (*Market MTB*), market performance difference (*Market R12*), development difference (*GDP per capita*), growth difference (*GDP growth*), bilateral trade (*Bilateral trade*), religion indicator (*Same religion*), legal system indicator (*Same law*), language indicator (*Same language*), geographical distance (*Distance*), the indicators of whether the two countries share common border (*Sharing border*) and whether the two countries have colonial link (*Colonial link*), as well as year fixed effects. Standard errors are again clustered at the target country level. Table 6 presents the results.

The OLS regression result is presented in column 2. We find that the U.S.-target country GOVDEBT difference (*GOVDEBT-1*) is significantly and positively related to the one-year-ahead U.S.-target country acquisition deal flow at the 5% level. A one-standard-deviation increase in GOVDEBT difference between the U.S. and a target OECD country is, on average, related to a 2.16% increase in the number of cross-border acquisitions from the U.S. to that target OECD country as a percentage of all domestic and cross-border acquisitions in that country (23.49*0.092%) during the next year. We also use two-stage instrumental variable regression (2SLS) with historical government debt difference (*GOVDEBT-5*) and public social expenditures difference (*Pubexpend-2*) as instruments for GOVDEBT difference. The p-value of Angrist-Pischke's *F* test statistic for weak instrument is 0.000, rejecting the null hypothesis that the instruments are weak. The p-value of Hansen's *J* overidentification test statistic is 0.281, indicating that the two instruments are uncorrelated with the error term of the second-stage regression. Importantly, the first-stage of the 2SLS regression in column 1 shows that the two instruments are positively and significantly related to U.S.-target country GOVDEBT difference; column 3 shows the second-stage of the 2SLS regression. The exogenous (fitted) component of *GOVDEBT*-1 continues to be positively and significantly related to the dependent variable, *Cross-border flow*, at the 5% level.

To summarize, our finding suggests that country tax competitiveness difference is an important driver of cross-border acquisition deal flow.

## 5. Conclusion

In this paper, we propose and verify that a country's government debt to GDP ratio (GOVDEBT) is a better proxy than statutory corporate income tax rate for the country's true tax competitiveness. The data for GOVDEBT is also widely available and covers several

decades for all OECD countries. Using GOVDEBT as a proxy for country tax competitiveness, we address the following important questions. Is U.S.-OECD tax competitiveness difference related to deal announcement returns and post-deal tax savings of the U.S. acquirers for U.S.-OECD outbound cross-border acquisitions? Is U.S.-OECD tax competitiveness difference related to U.S.-OECD cross-border acquisition deal flow?

Using a comprehensive sample of completed cross-border outbound acquisitions from the U.S. to other OECD countries announced in the period 1996 to 2013, we find that the U.S.-target country GOVDEBT difference is significantly and positively related to deal announcement return and post-deal tax saving of the U.S. acquirer. Our results are robust to controlling for a battery of country level characteristics, firm characteristics, and deal characteristics as well as target country fixed effects, acquirer industry fixed effects and year fixed effects. Our results remain robust in two-stage instrumental variable regressions, suggesting that the uncovered relationships are unlikely driven by omitted variable bias. Consistent with GOVDEBT being a better proxy for country tax competitiveness, we further find that the positive effect of U.S.-target country GOVDEBT difference on acquirer deal announcement return is significantly greater when the acquisition is a tax-inversion deal, through which the acquirer changes its legal domicile to the target country and entirely avoid paying U.S. taxes for its non-U.S. operations.

Finally, we find that the U.S.-target country GOVDEBT difference is significantly and positively related to U.S.-target country outbound deal flow. This finding on deal flow is robust to controlling for a battery of country level characteristics plus year fixed effects. The finding remains robust when we use two-stage instrumental variable regression. Our finding strongly suggests that country tax competitiveness difference is an important driver of cross-border acquisition deal flow.

The U.S. regulators responded to the recent episode of tax-motivated outbound transactions by imposing a series of new rules to block such deals (for example, the anti-inversion rules in 1996, the American Jobs Creation Act of 2004, and the new rules to further discourage tax-inversion motivated deals in 2016). An important policy implication from our study is that, instead of introducing new rules to block tax-motivated outbound transactions, the best way to solve the problem once and for all is to make the U.S. system more tax competitive and hence level the playing field between the U.S. and other developed countries. This will diminish the economic incentives for U.S. companies to move overseas with the purpose of avoiding unfavorable U.S. taxes. Without solving the fundamental incentive problem, U.S. firms will surely find new creative ways to move overseas despite the new rules introduced by the government.

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**Table 1. Cross-border acquisitions within OECD countries, 1996-2013.**

The sample consists of all completed outbound M&A transactions from the U.S. to other OECD countries from the Thomson One Banker SDC database for the period 1996-2013 with the selection criteria as follows: 1) the deal is classified as "Acquisition of Assets (AA)", "Merger (M)," or "Acquisition of Majority Interest (AM)" by the data provider; 2) the acquirer is domiciled in the U.S.; 3) the acquirer holds less than 50% of the shares of the target firm before deal announcement and ends up owning more than 50% of the shares of the target firm through the deal; 4) the deal value is at least US$1 million; 5) the target firm is domiciled in a non-U.S. OECD country; 6) the target firm is a public firm, a private firm, or a subsidiary; 7) multiple deals announced by the same acquirer on the same day are excluded. Panel A shows all announced deals by year. Panel B presents all completed deals by year. Panel C shows all announced deals by target country and Panel D shows all completed deals by target country. Reported values are in constant (2013) U.S. dollars.

| **Panel A - Announced deals by year** | | | |
|---|---|---|---|
| **Year** | **Total announced** | **Total value (US$M)** | **Mean value (US$M)** |
| 1996 | 270 | $43,811.19 | $162.26 |
| 1997 | 387 | $82,024.37 | $211.95 |
| 1998 | 518 | $129,136.70 | $249.30 |
| 1999 | 431 | $157,168.90 | $364.66 |
| 2000 | 441 | $119,670.40 | $271.36 |
| 2001 | 308 | $114,959.70 | $373.25 |
| 2002 | 257 | $54,391.20 | $211.64 |
| 2003 | 256 | $70,465.73 | $275.26 |
| 2004 | 329 | $90,074.84 | $273.78 |
| 2005 | 360 | $109,711.50 | $304.75 |
| 2006 | 391 | $216,862.20 | $554.63 |
| 2007 | 395 | $265,958.90 | $673.31 |
| 2008 | 287 | $82,057.21 | $285.91 |
| 2009 | 178 | $72,590.52 | $407.81 |
| 2010 | 271 | $76,393.18 | $281.89 |
| 2011 | 285 | $105,990.40 | $371.90 |
| 2012 | 288 | $122,574.20 | $425.60 |
| 2013 | 270 | $92,813.49 | $343.75 |
| Total (Average) | 5,922 | $2,006,654.63 | $335.72 |

| Panel B - Completed deals by year | | | |
|---|---|---|---|
| **Year** | **# Completed** | **Total value (US$M)** | **Mean value (US$M)** |
| 1996 | 237 | $32,469.78 | $137.00 |
| 1997 | 348 | $71,945.71 | $206.74 |
| 1998 | 452 | $119,976.30 | $265.43 |
| 1999 | 381 | $139,690.90 | $366.64 |
| 2000 | 391 | $98,648.31 | $252.30 |
| 2001 | 275 | $106,190.10 | $386.15 |
| 2002 | 227 | $46,280.59 | $203.88 |
| 2003 | 229 | $67,698.88 | $295.63 |
| 2004 | 293 | $79,495.23 | $271.31 |
| 2005 | 336 | $101,967.90 | $303.48 |
| 2006 | 355 | $142,881.60 | $402.48 |
| 2007 | 358 | $190,466.80 | $532.03 |
| 2008 | 244 | $52,594.66 | $215.55 |
| 2009 | 158 | $71,225.98 | $450.80 |
| 2010 | 240 | $63,670.09 | $265.29 |
| 2011 | 246 | $101,623.80 | $413.10 |
| 2012 | 257 | $104,800.00 | $407.78 |
| 2013 | 234 | $69,202.46 | $295.74 |
| Total (Average) | 5,261 | $1,660,829.09 | $315.07 |

| Panel C - Announced deals by target country | | | |
|---|---|---|---|
| **Target** | **Total announced** | **Total value (US$M)** | **Mean value (US$M)** |
| Australia | 407 | $123,137.40 | $302.55 |
| Austria | 24 | $7,286.40 | $303.60 |
| Belgium | 69 | $30,271.22 | $438.71 |
| Canada | 1,314 | $386,281.30 | $293.97 |
| Chile | 37 | $5,733.01 | $154.95 |
| Czech Republic | 21 | $5,621.46 | $267.69 |
| Denmark | 63 | $14,117.06 | $224.08 |
| Estonia | 1 | $6.26 | $6.26 |
| Finland | 46 | $13,069.28 | $284.11 |
| France | 347 | $77,945.26 | $224.63 |
| Germany | 470 | $166,470.50 | $354.19 |
| Greece | 9 | $3,907.29 | $434.14 |
| Hungary | 17 | $1,897.69 | $111.63 |
| Iceland | 3 | $887.80 | $295.93 |
| Ireland | 96 | $39,971.29 | $416.37 |
| Israel | 163 | $29,223.85 | $179.29 |
| Italy | 130 | $39,999.53 | $307.69 |
| Japan | 86 | $50,595.19 | $588.32 |
| Korea, Rep. | 88 | $30,071.59 | $341.72 |
| Luxembourg | 19 | $19,297.36 | $1,015.65 |
| Mexico | 144 | $44,272.62 | $307.45 |
| Netherlands | 197 | $144,027.30 | $731.10 |
| New Zealand | 54 | $5,691.34 | $105.40 |
| Norway | 86 | $32,010.31 | $372.21 |
| Poland | 27 | $7,318.09 | $271.04 |
| Portugal | 6 | $811.19 | $135.20 |
| Slovak Republic | 3 | $805.78 | $268.59 |
| Slovenia | 1 | $116.66 | $116.66 |
| Spain | 129 | $25,138.83 | $194.87 |
| Sweden | 153 | $57,343.52 | $374.79 |
| Switzerland | 120 | $67,278.27 | $560.65 |
| Turkey | 9 | $364.36 | $40.48 |

| | | | |
|---|---|---|---|
| United Kingdom | 1,583 | $575,685.80 | $363.67 |
| Total (Average) | 5,922 | $2,006,654.78 | $314.78 |

| Panel D - Completed deals by target country | | | |
|---|---|---|---|
| **Target:** | **# Completed** | **Total Value (US$M)** | **Mean Value (US$M)** |
| Australia | 357 | $77,473.38 | $217.01 |
| Austria | 21 | $7,033.94 | $334.95 |
| Belgium | 62 | $26,717.13 | $430.92 |
| Canada | 1,115 | $291,279.90 | $261.24 |
| Chile | 30 | $5,119.62 | $170.65 |
| Czech Republic | 21 | $5,621.46 | $267.69 |
| Denmark | 62 | $14,047.87 | $226.58 |
| Estonia | 1 | $6.26 | $6.26 |
| Finland | 43 | $12,552.81 | $291.93 |
| France | 319 | $72,789.59 | $228.18 |
| Germany | 436 | $154,780.50 | $355.00 |
| Greece | 4 | $2,221.49 | $555.37 |
| Hungary | 17 | $1,897.69 | $111.63 |
| Iceland | 3 | $887.80 | $295.93 |
| Ireland | 84 | $32,596.42 | $388.05 |
| Israel | 141 | $27,868.13 | $197.65 |
| Italy | 113 | $37,971.91 | $336.03 |
| Japan | 80 | $40,778.85 | $509.74 |
| Korea, Rep. | 58 | $18,606.10 | $320.79 |
| Luxembourg | 15 | $19,102.67 | $1,273.51 |
| Mexico | 119 | $39,536.42 | $332.24 |
| Netherlands | 179 | $130,364.00 | $728.29 |
| New Zealand | 48 | $4,625.18 | $96.36 |
| Norway | 69 | $21,016.57 | $304.59 |
| Poland | 23 | $4,846.88 | $210.73 |
| Portugal | 5 | $294.47 | $58.89 |
| Slovak Republic | 2 | $803.27 | $401.63 |
| Slovenia | 1 | $116.66 | $116.66 |
| Spain | 122 | $24,812.57 | $203.38 |
| Sweden | 144 | $56,055.91 | $389.28 |
| Switzerland | 107 | $62,009.97 | $579.53 |
| Turkey | 8 | $279.09 | $34.89 |

| | | | |
|---|---|---|---|
| United Kingdom | 1,452 | $466,714.40 | $321.43 |
| Total (Average) | 5,261 | $1,660,828.89 | $319.91 |

**Table 2. Descriptive statistics of acquirer characteristics and country level variables.**

The table shows summary statistics of the main variables. All variables are winsorized at the top/bottom 1% of the distribution. Panel A shows descriptive statistics of the acquirers in majority cross-border acquisitions. Data is as of the year-end prior to the announcement of the deal. See Appendix A for variable definitions. Panel B presents descriptive statistics of deal characteristics. Panel C shows country level characteristics. All country level variables are computed as differences between the acquirer country (U.S.) and the target country. Panel D shows descriptive statistics of announcement returns (CARs, MARs) for acquirers in completed cross-border majority acquisitions announced between 1996 and 2013. Panel E shows summary statistics of our tax avoidance measures. Panel F shows summary statistics on *GOVDEBT-1* by country pair. Detailed definitions of all variables are found in Appendix A.

| **Panel A - Acquirer characteristics** | | | | | | |
|---|---|---|---|---|---|---|
| | **Obs** | **Mean** | **Median** | **StdDev** | **Minimum** | **Maximum** |
| Total Assets | 1,884 | 21,172.71 | 929.68 | 129342.56 | 1.86 | 2031989.00 |
| Firm size | 1,884 | 7.10 | 6.98 | 2.10 | 1.63 | 13.21 |
| Leverage | 1,884 | 0.26 | 0.22 | 0.24 | 0.00 | 0.97 |
| Market value | 1,884 | 11,007.22 | 1,279.654 | 3,7381.1 | 3.65 | 467,092.9 |
| MTB | 1,884 | 4.07 | 2.68 | 4.64 | 0.57 | 31.70 |
| Past return | 1,884 | 37.40 | 17.76 | 84.74 | -77.44 | 450.00 |
| ROA | 1,884 | 0.02 | 0.05 | 0.15 | -1.10 | 0.26 |
| Top5 institutions | 1,884 | 0.26 | 0.26 | 0.10 | 0.00 | 0.56 |

| **Panel B - Deal characteristics** | | | | | | |
|---|---|---|---|---|---|---|
| | **Obs** | **Mean** | **Median** | **StdDev** | **Minimum** | **Maximum** |
| All cash | 1,884 | 0.38 | 0.00 | 0.49 | 0.00 | 1.00 |
| All stock | 1,884 | 0.06 | 0.00 | 0.24 | 0.00 | 1.00 |
| Diversifying | 1,884 | 0.44 | 0.00 | 0.50 | 0.00 | 1.00 |
| Inversion | 1,884 | 0.00 | 0.00 | 0.04 | 0.00 | 1.00 |
| Private target | 1,884 | 0.51 | 1.00 | 0.50 | 0.00 | 1.00 |
| Relative size | 1,884 | 0.20 | 0.05 | 0.56 | 0.00 | 8.09 |
| Subsidiary target | 1,884 | 0.37 | 0.00 | 0.48 | 0.00 | 1.00 |
| Tender offer | 1,884 | 0.06 | 0.00 | 0.23 | 0.00 | 1.00 |
| Cross-border flow | 345 | 11.91 | 9.38 | 11.18 | 0 | 85.71 |

| Panel C - Country level characteristics | | | | | | |
|---|---|---|---|---|---|---|
| | **Obs** | **Mean** | **Median** | **StdDev** | **Minimum** | **Maximum** |
| Bilateral trade | 1,884 | 0.10 | 0.06 | 0.11 | 0.00 | 0.31 |
| GOVDEBT-1 | 1,884 | -0.74 | -3.98 | 23.49 | -91.11 | 73.42 |
| GOVDEBT-1*Inversion | 1,884 | -0.02 | 0.00 | 0.63 | -26.18 | 0.57 |
| GOVDEBT-5 | 1,776 | -3.82 | -5.19 | 20.74 | -91.11 | 46.42 |
| GDP growth | 1,884 | 0.17 | 0.21 | 1.62 | -5.65 | 8.43 |
| GDP per capita | 1,884 | 0.27 | 0.24 | 0.19 | -0.44 | 1.34 |
| Kaufman | 1,884 | -0.12 | -0.20 | 0.35 | -0.64 | 1.59 |
| Market MTB | 1,884 | 0.84 | 0.62 | 0.78 | -0.95 | 3.31 |
| Market R12 | 1,884 | -2.15 | -1.46 | 14.18 | -89.27 | 51.52 |
| PUBEXPEND-2 | 1,883 | -3.53 | -3.43 | 4.06 | -11.47 | 6.80 |
| Tax | 1,884 | 5.95 | 7.00 | 2.83 | 1.00 | 10.00 |

| Panel D - Announcement returns | | | | | | |
|---|---|---|---|---|---|---|
| | **Obs** | **Mean** | **Median** | **StdDev** | **Minimum** | **Maximum** |
| CAR(-1; 1) | 1,884 | 0.77 | 0.43 | 6.37 | -20.02 | 27.28 |
| MAR(-1; 1) | 1,884 | 0.96 | 0.53 | 6.45 | -19.97 | 27.92 |

| Panel E - Tax avoidance measures | | | | | | |
|---|---|---|---|---|---|---|
| | **Obs** | **Mean** | **Median** | **StdDev** | **Minimum** | **Maximum** |
| ΔAVOIDANCE3 | 1,018 | -1.09 | 0.08 | 12.80 | -61.81 | 57.36 |
| ΔAVOIDANCE-3 | 1,455 | -2.17 | 1.01 | 16.54 | -121.37 | 25.28 |
| ΔCTXD3 | 1,190 | 72.29 | 5.75 | 267.96 | -484.33 | 1560.00 |
| ΔCTXD-3 | 1,669 | 146.90 | 14.74 | 419.48 | -2.79 | 2683.33 |
| ΔCTXD/AT3 | 1,190 | 1.23 | 0.55 | 2.92 | -5.73 | 17.14 |
| ΔCTXD/AT-3 | 1,669 | 1.79 | 1.37 | 1.67 | -0.35 | 8.28 |

| Panel F - Central government debt - country pairs | | | | | |
|---|---|---|---|---|---|
| **Country pair** | **Mean** | **Median** | **StdDev** | **Minimum** | **Maximum** |
| USA - Australia | 33.58 | 29.84 | 10.47 | 22.86 | 59.59 |
| USA - Austria | -9.49 | -11.34 | 15.83 | -25.97 | 17.02 |
| USA - Belgium | -43.85 | -56.17 | 27.17 | -66.72 | 4.84 |
| USA - Canada | 5.93 | 3.94 | 14.54 | -7.79 | 40.78 |
| USA - Chile | 35.01 | 35.01 | 0.00 | 35.01 | 35.01 |
| USA - Czech Republic | 25.46 | 19.11 | 17.78 | 11.14 | 53.78 |
| USA - Denmark | 2.98 | 3.32 | 24.51 | -25.84 | 42.17 |
| USA - Finland | -1.71 | -5.88 | 16.88 | -19.66 | 43.28 |
| USA - France | -9.25 | -15.94 | 8.55 | -17.13 | 7.48 |
| USA - Germany | 5.69 | -3.62 | 13.86 | -5.19 | 39.10 |
| USA - Greece | -76.13 | -70.91 | 9.04 | -86.57 | -70.91 |
| USA - Hungary | -18.80 | -21.34 | 13.44 | -33.34 | 9.62 |
| USA - Ireland | 1.58 | 3.43 | 11.24 | -26.18 | 15.87 |
| USA - Israel | -47.58 | -54.21 | 15.21 | -62.95 | -13.44 |
| USA - Italy | -58.22 | -61.42 | 11.74 | -70.25 | -18.76 |
| USA - Japan | -77.93 | -90.48 | 21.92 | -91.11 | -16.18 |
| USA - Korea, Rep. | 12.71 | 12.33 | 7.12 | 5.97 | 29.34 |
| USA - Luxembourg | 42.42 | 35.40 | 13.38 | 34.58 | 73.22 |
| USA - Mexico | 16.08 | 15.38 | 5.16 | 11.30 | 33.81 |
| USA - Netherlands | -2.88 | -7.71 | 10.47 | -10.26 | 28.35 |
| USA - New Zealand | 13.26 | 12.31 | 9.29 | -0.03 | 30.82 |
| USA - Norway | 28.14 | 23.57 | 18.13 | 14.21 | 73.42 |
| USA - Poland | -0.57 | -6.02 | 10.20 | -10.08 | 11.60 |
| USA - Portugal | -27.97 | -28.70 | 4.14 | -31.69 | -23.51 |
| USA - Spain | 5.87 | -0.21 | 17.19 | -13.29 | 35.55 |
| USA - Sweden | -0.98 | -10.08 | 27.92 | -28.77 | 58.99 |
| USA - Switzerland | 25.08 | 18.95 | 19.75 | 5.03 | 65.87 |
| USA - United Kingdom | -8.09 | -5.93 | 6.64 | -24.26 | -2.89 |

**Table 3. Correlations matrix and cumulative abnormal returns.**

The table shows the correlations matrix. All country level variables are computed as differences between the acquirer country (U.S.) and the target country. Correlations between *GOVDEBT* and *TAXCOMPET* are as of 2012 and 2013. *TAXCOMPET* is measured as of 2014. Correlations between *GOVDEBT* and Tax are calculated over the period 1996-2013. Correlations *TAXCOMPET* and *Tax* are as of 2014. *TAXCOMPET* measures the business competitiveness of national tax systems as of 2014 and was obtained from the Tax Foundation. Note that we changed the sign of *TAXCOMPET* by multiplying the initial value by minus 1. Thus, large values indicate a less competitive tax system. Panel B presents results from OLS regressions over the period 2012-2013. The dependent variables represent cumulative abnormal returns (CAR and MAR) for acquirers over the period t= -1 to t= +1 around the announcement day. *CAR(-1; 1)* is the cumulative abnormal return (in percentage points) of the acquirer from one day before to one day after the deal announcement date (day *0*), where daily abnormal stock returns are computed using the market model and the CRSP value-weighted market returns, with the estimation window being days (-200, -60) prior to the deal announcement date (Chen, Harford, and Li (2007)). *MAR(-1; 1)* is the cumulative abnormal return (in percentage points) of the acquirer from one day before to one day after the deal announcement date (day *0*), where daily abnormal stock return is calculated by subtracting the CRSP value-weighted market return from the stock return of the acquirer. All returns for U.S. firms are obtained from CRSP. Independent variables are computed as differences between the acquirer country (U.S.) and the target country. Detailed definitions of all variables are found in Appendix A. We include target country, acquirer industry and year fixed effects (not shown) in all regressions and cluster standard errors by target country. Heteroskedasticity robust standard errors are reported in parentheses. * , ** , *** indicate significance at the 10%, 5%, and 1% level, respectively.

**Panel A - Correlations matrix**

| | TAXCOMPET | GOVDEBT | Tax |
|---|---|---|---|
| TAXCOMPET | 1 | | |
| GOVDEBT | 0.41*** | 1 | |
| Tax | 0.25*** | 0.15*** | 1 |

| Panel B - OLS regressions | | |
|---|---|---|
| | **1** | **2** |
| | **CAR(-1; 1)** | **MAR(-1: 1)** |
| TAXCOMPET | 7.224** | 6.853* |
| | (3.498) | (3.435) |
| Market MTB | 19.892** | 18.524** |
| | (9.111) | (8.731) |
| Market R12 | -0.372* | -0.373* |
| | (0.195) | (0.191) |
| Kaufman | 98.152** | 92.387* |
| | (47.249) | (45.640) |
| GDP per capita | -384.829* | -371.103* |
| | (193.917) | (191.622) |
| GDP growth | 2.283** | 2.167** |
| | (0.970) | (0.923) |
| Bilateral trade | -677.976*** | -638.495*** |
| | (196.827) | (192.118) |
| Firm size | 0.009 | 0.045 |
| | (0.242) | (0.242) |
| ROA | -8.917*** | -8.074** |
| | (3.111) | (3.002) |
| MTB | -0.010 | 0.005 |
| | (0.154) | (0.165) |
| Leverage | 4.294 | 4.028 |
| | (2.987) | (3.256) |
| Past return | 0.021 | 0.025 |
| | (0.026) | (0.026) |
| Top5 institutions | 9.652** | 10.200*** |
| | (3.462) | (3.303) |
| All cash | -0.358 | -0.527 |
| | (1.011) | (1.053) |
| All stock | -7.070 | -6.870 |
| | (6.283) | (6.450) |

| | | |
|---|---|---|
| Diversifying | -0.659 | -0.867 |
| | (1.023) | (0.898) |
| Tender offer | -8.626* | -9.255* |
| | (4.418) | (4.748) |
| Relative size | 4.893** | 4.826** |
| | (2.235) | (2.329) |
| Private target | -1.576 | -1.787 |
| | (2.879) | (2.919) |
| Subsidiary target | -0.633 | -0.811 |
| | (3.359) | (3.369) |
| Constant | -103.615** | -96.642** |
| | (45.184) | (44.367) |
| Target country fixed effects | Yes | Yes |
| Year fixed effects | Yes | Yes |
| Observations | 224 | 224 |
| Adjusted R-squared | 0.008 | 0.014 |

**Table 4. Regressions of cumulative abnormal returns.**

Panel A show results from OLS regressions over the period 1996-2013. We add two other independent variables in column 3 and 4 in Panel A. An indicator variable equal to one if the deal is an inversion deal (*Inversion*), and zero otherwise. Furthermore, we interact our central government debt variable with the inversion indicator (*GOVDEBT-1*Inversion*). The dependent variables represent cumulative abnormal returns (CAR and MAR) for acquirers over the period t= -1 to t= +1 around the announcement day. *CAR(-1; 1)* is the cumulative abnormal return (in percentage points) of the acquirer from one day before to one day after the deal announcement date (day *0*), where daily abnormal stock returns are computed using the market model and the CRSP value-weighted market returns, with the estimation window being days (-200, -60) prior to the deal announcement date (Chen, Harford, and Li (2007)). *MAR(-1; 1)* is the cumulative abnormal return (in percentage points) of the acquirer from one day before to one day after the deal announcement date (day *0*), where daily abnormal stock return is calculated by subtracting the CRSP value-weighted market return from the stock return of the acquirer. All returns for U.S. firms are obtained from CRSP. Independent variables are computed as differences between the acquirer country (U.S.) and the target country. Column 1 in Panel B shows first-stage results of 2SLS regressions using *GOVDEBT-1* as the dependent variable. Column 2 and 3 present results from 2SLS regressions of cumulative abnormal returns for acquirers in cross-border acquisitions over the period 1996-2013. To address endogeneity concerns, we instrument the central government debt variable (*GOVDEBT-1*) using the central government debt in the five fiscal years and the sum of public social expenditures (*PUBEXPEND-2*) in two fiscal years before the deal announcement year. We report adjusted R2 that account for degrees of freedom in the 2SLS regressions. The Hansen test of overidentifying restrictions assesses the joint null hypothesis that the instruments (IVs) are valid instruments, or uncorrelated with the error term, and that the excluded instruments are correctly excluded from the estimated equation. Under the null, the test statistic is distributed as chi-squared ( $\chi$ 2) in the number of overidentifying restrictions. A rejection casts doubt on the validity of the instruments. The first-stage F statistic is Angrist-Pischke' s (AP) diagnostic for whether a particular endogenous regressor is weakly identified (critical values for the p-values from Stock and Yogo, 2005). Detailed definitions of all variables are found in Appendix A. We include target country, acquirer industry and year fixed effects (not shown) in all regressions and cluster standard errors by target country. Heteroskedasticity robust standard errors are reported in parentheses. * , ** , *** indicate significance at the 10%, 5%, and 1% level, respectively.

| Panel A | | | | |
|---|---|---|---|---|
| | **1** | **2** | **3** | **4** |
| | **CAR (-1;1)** | **MAR (-1;1)** | **CAR (-1;1)** | **MAR (-1;1)** |
| GOVDEBT-1 | 0.046*** | 0.043*** | 0.045*** | 0.042*** |
| | (0.013) | (0.013) | (0.014) | (0.014) |
| GOVDEBT-1*Inversion | | | 0.418*** | 0.410*** |
| | | | (0.048) | (0.050) |
| Inversion | | | 6.610*** | 6.921*** |
| | | | (0.818) | (0.740) |
| Tax | -0.144 | -0.093 | -0.141 | -0.089 |
| | (0.090) | (0.095) | (0.091) | (0.095) |
| Market MTB | -1.018* | -0.985 | -1.031* | -0.999 |
| | (0.572) | (0.599) | (0.572) | (0.599) |
| Market R12 | -0.013 | -0.009 | -0.013 | -0.009 |
| | (0.015) | (0.013) | (0.015) | (0.013) |
| Kaufman | 3.754* | 4.143* | 3.727* | 4.123* |
| | (1.971) | (2.028) | (1.975) | (2.034) |
| GDP per capita | 7.637* | 7.578 | 7.538* | 7.508 |
| | (4.273) | (4.763) | (4.272) | (4.762) |
| GDP growth | 0.066 | 0.030 | 0.068 | 0.031 |
| | (0.107) | (0.102) | (0.107) | (0.103) |
| Bilateral trade | -11.320 | -7.213 | -11.828 | -7.789 |
| | (18.737) | (17.558) | (18.586) | (17.464) |
| Firm size | -0.152* | -0.155** | -0.153* | -0.156** |
| | (0.078) | (0.063) | (0.078) | (0.064) |
| ROA | -3.279 | -3.345 | -3.252 | -3.320 |
| | (2.515) | (2.433) | (2.521) | (2.440) |
| MTB | 0.029 | 0.027 | 0.030 | 0.028 |
| | (0.020) | (0.023) | (0.020) | (0.022) |
| Leverage | 0.471 | 0.684 | 0.504 | 0.717 |
| | (0.729) | (0.687) | (0.736) | (0.695) |
| Past return | -0.001 | 0.001 | -0.001 | 0.001 |

| | | | | |
|---|---|---|---|---|
| | (0.003) | (0.003) | (0.003) | (0.003) |
| Top5 institutions | -2.328 | -2.106 | -2.404 | -2.181 |
| | (1.453) | (1.553) | (1.459) | (1.560) |
| All cash | 0.047 | -0.058 | 0.054 | -0.050 |
| | (0.282) | (0.309) | (0.281) | (0.308) |
| All stock | -1.497 | -1.441 | -1.491 | -1.431 |
| | (1.161) | (0.966) | (1.159) | (0.966) |
| Diversifying | -0.589** | -0.666*** | -0.591** | -0.667*** |
| | (0.230) | (0.217) | (0.231) | (0.217) |
| Tender offer | 0.955* | 1.296** | 0.936 | 1.285** |
| | (0.543) | (0.567) | (0.549) | (0.575) |
| Relative size | 0.926* | 0.924* | 0.909* | 0.904* |
| | (0.471) | (0.483) | (0.471) | (0.482) |
| Private target | 1.320* | 1.481** | 1.309* | 1.478** |
| | (0.644) | (0.626) | (0.658) | (0.642) |
| Subsidiary target | 1.795** | 2.054** | 1.770** | 2.037** |
| | (0.802) | (0.776) | (0.817) | (0.794) |
| Constant | -1.621 | 1.178 | -1.594 | 1.196 |
| | (2.747) | (2.738) | (2.729) | (2.723) |
| Target country fixed effects | Yes | Yes | Yes | Yes |
| Year fixed effects | Yes | Yes | Yes | Yes |
| Observations | 1,884 | 1,884 | 1,884 | 1,884 |
| Adjusted R-squared | 0.008 | 0.007 | 0.008 | 0.007 |

| | Panel B | | |
|---|---|---|---|
| | **1** | **2** | **3** |
| | **1st Stage** | **2nd Stage** | **2nd Stage** |
| | **GOVDEBT-1** | **CAR (-1;1)** | **MAR (-1;1)** |
| PUBEXPEND-2 | 4.320** | | |
| | (1.822) | | |
| GOVDEBT-5 | 0.659*** | | |
| | (0.078) | | |
| GOVDEBT-1 | | 0.057*** | 0.058*** |
| | | (0.020) | (0.019) |
| Tax | -0.412 | -0.109 | -0.049 |
| | (0.798) | (0.108) | (0.108) |
| Market MTB | -5.988*** | -0.528 | -0.385 |
| | (1.426) | (0.450) | (0.486) |
| Market R12 | 0.133** | -0.028*** | -0.024** |
| | (0.049) | (0.010) | (0.010) |
| Kaufman | -23.772** | 3.393* | 3.726* |
| | (10.802) | (1.846) | (1.954) |
| GDP per capita | -64.899** | 3.116 | 3.272 |
| | (27.916) | (3.720) | (3.754) |
| GDP growth | -0.337 | 0.027 | -0.017 |
| | (0.430) | (0.082) | (0.086) |
| Bilateral trade | -2.851 | -8.142 | -3.365 |
| | (105.081) | (22.522) | (21.984) |
| Firm size | 0.011 | -0.134* | -0.147** |
| | (0.110) | (0.073) | (0.069) |
| ROA | -2.981** | -2.881 | -2.917 |
| | (1.258) | (2.245) | (2.130) |
| MTB | 0.014 | 0.047** | 0.041* |
| | (0.035) | (0.020) | (0.022) |
| Leverage | -1.691** | 0.386 | 0.698 |
| | (0.657) | (0.724) | (0.718) |

| | | | |
|---|---|---|---|
| Past return | 0.002 | 0.000 | 0.002 |
| | (0.002) | (0.003) | (0.004) |
| Top5 institutions | -0.814 | -1.524 | -1.333 |
| | (1.096) | (1.708) | (1.742) |
| All cash | -0.149 | 0.035 | -0.046 |
| | (0.227) | (0.245) | (0.256) |
| All stock | 0.395 | -1.647 | -1.499 |
| | (0.518) | (1.297) | (1.079) |
| Diversifying | 0.059 | -0.623*** | -0.709*** |
| | (0.218) | (0.231) | (0.223) |
| Tender offer | 0.884 | 1.558** | 1.971*** |
| | (0.819) | (0.692) | (0.704) |
| Relative size | -0.179 | 0.991** | 0.959** |
| | (0.296) | (0.398) | (0.417) |
| Private target | 1.221 | 1.498** | 1.626** |
| | (0.900) | (0.697) | (0.648) |
| Subsidiary target | 0.838 | 2.076** | 2.310*** |
| | (0.802) | (0.929) | (0.874) |
| Constant | 41.476* | | |
| | (22.680) | | |
| Target country fixed effects | Yes | Yes | Yes |
| Year fixed effects | Yes | Yes | Yes |
| Observations | 1,849 | 1775 | 1775 |
| Adjusted R-squared | 0.942 | 0.082 | 0.083 |
| 1st stage F-statistic (p-value) | | 0 | 0 |
| Hansen J-statistic ($\chi 2$) | | 0.234 | 0.05 |
| p-value | | 0.629 | 0.823 |

**Table 5. Regressions of various tax avoidance measures.**

The table shows regression results using various tax avoidance measures for the three years after deal completion. Columns 1-3 show results from OLS regressions and columns 4-6 show results from 2SLS regressions are over the period 1996-2013. Country level variables are computed as differences between the acquirer country (U.S.) and the target country. To address endogeneity concerns, we instrument the central government debt variable (*GOVDEBT-1*) using the central government debt in the five fiscal years and the sum of public social expenditures (*PUBEXPEND-2*) in two fiscal years before the deal announcement year. Detailed definitions of all variables are found in Appendix A. We include target country, acquirer industry and year fixed effects (not shown) in all regressions and cluster standard errors by target country. Additional details on regression diagnostics are as described for Table 4. Heteroskedasticity robust standard errors are reported in parentheses. * , ** , *** indicate significance at the 10%, 5%, and 1% level, respectively.

| | **1** | **2** | **3** | **4** | **5** | **6** |
|---|---|---|---|---|---|---|
| | **OLS** | **OLS** | **OLS** | **2nd Stage** | **2nd Stage** | **2nd Stage** |
| | **ΔCTXD3** | **ΔCTXD/AT3** | **ΔETRDIFF3** | **ΔCTXD3** | **ΔCTXD/AT3** | **ΔETRDIFI** |
| GOVDEBT-1 | -1.590* | -0.016* | 0.048 | -3.215** | -0.030*** | 0.105* |
| | (0.880) | (0.008) | (0.041) | (1.283) | (0.011) | (0.059) |
| Tax | 6.493 | -0.050 | 0.155 | 11.163 | -0.009 | 0.119 |
| | (7.311) | (0.054) | (0.327) | (8.167) | (0.046) | (0.304) |
| ΔCTXD-3 | 0.155** | | | 0.172*** | | |
| | (0.072) | | | (0.061) | | |
| ΔCTXD/AT-3 | | -0.318*** | | | -0.316*** | |
| | | (0.069) | | | (0.075) | |
| ΔETRDIFF-3 | | | -0.718*** | | | -0.700*** |
| | | | (0.045) | | | (0.054) |
| Market MTB | 2.341 | -0.039 | -0.642 | -9.961 | -0.396** | -0.982 |
| | (25.010) | (0.225) | (0.938) | (26.867) | (0.192) | (0.839) |
| Market R12 | 0.229 | 0.003 | -0.003 | 0.440 | 0.007 | -0.008 |
| | (0.838) | (0.006) | (0.022) | (0.757) | (0.007) | (0.022) |
| Kaufman | -91.216 | -0.455 | 5.055 | -178.912 | -0.721 | 8.561** |
| | (118.690) | (1.053) | (3.686) | (119.879) | (1.096) | (4.212) |
| GDP per capita | -577.799*** | -1.197 | -9.682 | -706.575*** | -0.939 | -0.355 |
| | (201.863) | (2.086) | (9.458) | (246.503) | (1.889) | (12.932) |
| GDP growth | -0.330 | -0.005 | -0.272 | 1.748 | -0.003 | -0.293 |
| | (7.572) | (0.072) | (0.263) | (7.347) | (0.062) | (0.188) |
| Bilateral trade | -3,867.550*** | -7.133 | -25.448 | -3,086.668*** | -2.688 | -25.380 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | (1,188.620) | (9.381) | (32.162) | (1,151.144) | (10.900) | (48.163) |
| Firm size | 36.998*** | -0.073* | 0.875** | 35.558*** | -0.057 | 0.998*** |
| | (8.257) | (0.040) | (0.315) | (7.061) | (0.037) | (0.323) |
| ROA | 29.372 | 4.560*** | 14.329** | 19.296 | 4.421*** | 13.186** |
| | (61.038) | (0.684) | (5.723) | (57.078) | (0.707) | (5.273) |
| MTB | 2.642 | 0.136*** | -0.044 | 2.108 | 0.159*** | 0.052 |
| | (1.605) | (0.037) | (0.104) | (1.607) | (0.039) | (0.117) |
| Leverage | -80.249 | -2.059*** | 1.289 | -51.137 | -2.389*** | 0.737 |
| | (68.277) | (0.362) | (1.185) | (51.676) | (0.303) | (1.102) |
| Past return | -0.048 | 0.001 | 0.000 | -0.019 | 0.002 | 0.003 |
| | (0.088) | (0.002) | (0.004) | (0.083) | (0.002) | (0.004) |
| Top5 institutions | -106.265** | 0.904 | 6.080 | -115.724*** | 1.426 | 7.453 |
| | (40.239) | (1.643) | (5.332) | (37.257) | (1.554) | (5.359) |
| All cash | -37.136*** | 0.098 | -0.469 | -37.699*** | 0.156 | -0.262 |
| | (12.722) | (0.145) | (0.552) | (12.095) | (0.119) | (0.508) |
| All stock | 29.579 | -0.348 | -4.278* | 19.222 | -0.211 | -3.172* |
| | (38.120) | (0.418) | (2.206) | (30.969) | (0.474) | (1.870) |
| Diversifying | 11.287 | -0.444** | -1.354 | 6.904 | -0.494*** | -1.495* |
| | (9.251) | (0.192) | (0.916) | (9.699) | (0.163) | (0.884) |
| Tender offer | 69.535** | 0.146 | -0.490 | 70.879** | 0.098 | -0.398 |
| | (32.721) | (0.312) | (1.415) | (34.759) | (0.325) | (1.246) |
| Relative size | 17.680* | -0.066 | -4.448* | 19.859*** | -0.025 | -4.133** |
| | (8.812) | (0.308) | (2.211) | (6.970) | (0.315) | (2.054) |
| Private target | 51.113* | -0.038 | -2.769* | 55.332** | -0.008 | -2.246* |
| | (29.597) | (0.262) | (1.410) | (23.754) | (0.260) | (1.208) |
| Subsidiary target | 44.437 | 0.087 | -2.003 | 53.924** | 0.123 | -1.636 |
| | (29.290) | (0.291) | (1.389) | (22.841) | (0.276) | (1.227) |
| Constant | -171.007 | 1.419 | -8.423* | | | |
| | (126.564) | (0.979) | (4.842) | | | |
| Target country fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Year fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 1,242 | 1,242 | 1,058 | 1,169 | 1,169 | 994 |
| Adjusted R- | 0.256 | 0.148 | 0.471 | | | 0.506 |

| | | | |
|---|---|---|---|
| squared | 0.361 | 0.243 | |
| 1st stage F-statistic (p-value) | 0 | 0 | 0 |
| Hansen J-statistic ($\chi$ 2) | 0.214 | 0.659 | 0.003 |
| p-value | 0.644 | 0.417 | 0.958 |

**Table 6. Cross-sectional determinants of cross-border acquisitions.**

The table shows estimates from cross-sectional regressions of cross-border acquisitions by country pairs over the period 1996-2013. The dependent variable is the cross-border ratio – the total number of cross-border acquisitions between 1996 and 2013 in which the acquirer is from the U.S. and the target is from an OECD country, as a proportion of all majority and cross-border acquisitions in a target country during the period. All country level variables are computed as differences between the acquirer country (U.S.) and the target country. Detailed definitions of all variables are found in Appendix A. To address endogeneity concerns, we instrument the central government debt variable (GOVDEBT-1) using the central government debt as a percentage of GDP in the previous five fiscal years and the sum of public social expenditures in the previous two fiscal years (PUBEXPEND-2). Column 1 shows first-stage results of 2SLS regressions using GOVDEBT-1 as dependent variable. Column 2 shows results from OLS regressions. Column 3 shows results from 2SLS regressions. We include year fixed effects (not shown) and cluster standard errors by target country. Heteroskedasticity robust standard errors are reported in parentheses. * , ** , *** indicate significance at the 10%, 5%, and 1% level, respectively.

| | **1** | **2** | **3** |
|---|---|---|---|
| | **1st Stage** | **OLS** | **2nd Stage** |
| | **GOVDEBT-1** | **Cross-border flow** | **Cross-border flow** |
| GOVDEBT-1 | | 0.092** | 0.099** |
| | | (0.038) | (0.040) |
| PUBEXPEND-2 | 1.000** | | |
| | (0.410) | | |
| GOVDEBT-5 | 0.857*** | | |
| | (0.067) | | |
| GDP growth | -1.209** | 0.453 | 0.576** |
| | (0.542) | (0.274) | (0.273) |
| Tax-1 | -0.639 | 0.271 | 0.251 |
| | (0.735) | (0.624) | (0.611) |
| Market MTB | -5.509** | 2.629* | 2.228* |
| | (2.164) | (1.349) | (1.315) |
| Kaufman | -2.491 | 0.851 | 1.001 |
| | (4.363) | (2.609) | (2.558) |
| GDP per capita | -9.654 | -6.385 | -7.817 |
| | (9.532) | (5.631) | (6.177) |
| Market R12 | 0.153** | 0.008 | 0.015 |

| | | | |
|---|---|---|---|
| | (0.058) | (0.027) | (0.023) |
| Bilateral trade | -166.964*** | 16.200 | 16.369 |
| | (45.163) | (34.474) | (33.507) |
| Same Religion | 7.423** | -2.435 | -2.596 |
| | (2.823) | (2.668) | (2.506) |
| Same Law | 2.801 | 40.383*** | 39.755*** |
| | (4.740) | (1.566) | (1.406) |
| Same language | -8.995 | -42.284*** | -41.876*** |
| | (5.479) | (3.159) | (3.008) |
| Distance | -7.701 | 1.528 | 2.164 |
| | (5.183) | (4.316) | (4.429) |
| Sharing border | 30.219* | 10.361 | 11.830 |
| | (15.192) | (14.045) | (14.500) |
| Colonial link | -3.137 | 1.426 | 1.611 |
| | (4.662) | (3.272) | (3.422) |
| Constant | 77.993 | -5.870 | |
| | (46.557) | (40.987) | |
| Year fixed effects | Yes | Yes | Yes |
| Observations | 334 | 345 | 334 |
| Adjusted R-squared | 0.9 | 0.462 | 0.487 |
| 1st stage F-statistic (p-value) | | | 0 |
| Hansen J-statistic ($\chi 2$) | | | 0.281 |
| p-value | | | 0.596 |

**Appendix A: Variable Definitions**

| Variable | Definition |
|---|---|
| All cash | An indicator variable that takes a value of one if the bid involves only cash payment to the target shareholders, and zero otherwise. |
| All stock | An indicator variable that takes a value of one if the bid involves only stock swap with the target shareholders, and zero otherwise. |
| Bilateral trade | Maximum of bilateral imports, exports between two countries. Bilateral imports (exports) are calculated as the total value of imports (exports) by a target's country from an acquirer's country as a proportion of total imports by the target's country. |
| CAR(-1; 1) | Cumulative abnormal return (in percentage points) of the acquirer from one day before to one day after the deal announcement date. Abnormal return is calculated by subtracting the CRSP value-weighted market return from the stock return of the acquirer. |
| Cross-border flow | The number of cross-border majority acquisitions in which the acquirer is from the U.S. and the target is from a non-U.S. OECD country in a year, as the percentage of the total number of all domestic and cross-border majority acquisitions in that target country during that year. |
| Diversifying | An indicator variable that takes a value of one if the acquirer is not from the same two-digit SIC industry as the target firm, and zero otherwise. |
| Firm size | Natural logarithm of the acquirer's total assets in constant 2013 U.S. dollars. |
| GDP growth | Annual growth in real GDP. |
| GDP per capita | Logarithm of real GDP (current U.S. $) divided by the average population. |
| GOVDEBT-1 | Central government debt as a percentage of GDP in the year before (five years before) the deal announcement year. General |

| | |
|---|---|
| | government debt-to-GDP ratio is the amount of a country's total gross government debt as a percentage of its GDP. It is an indicator of an economy's health and a key factor for the sustainability of government finance. "Debt" is commonly defined as a specific subset of liabilities identified according to the types of financial instruments included or excluded. Debt is thus obtained as the sum of the following liability categories (as applicable): currency and deposits; securities other than shares, except financial derivatives; loans; insurance technical reserves; and other accounts payable. Changes in government debt over time reflect the impact of government deficits. This indicator is measured as a percentage of GDP OECD (2016), General government debt (indicator). doi: 10.1787/a0528cc2-en (Accessed on 16 August 2016). |
| GOVDEBT-5 | Central government debt as a percentage of GDP five years before the deal announcement year. |
| Inversion | An indicator variable equal to one if the deal is an inversion deal (Inversion), and zero otherwise. |
| Kaufman | The average of all six Kaufmann et al. (2009) governance indicators: political stability; voice and accountability; government effectiveness; regulatory quality; control of corruption, and rule of law. Each of the indices ranges from -2.5 to 2.5, with higher values indicating better governance. |
| Leverage | Book value of debt divided by the sum of book value of debt and market value of equity. |
| MAR(-1; 1) | Cumulative abnormal return (in percentage points) of the acquirer from one day before to one day after the deal announcement date, where daily abnormal stock return is calculated by subtracting the CRSP value-weighted market return from the stock return of the acquirer. |
| Market MTB | The difference between acquirer (j) and target (i) countries of domicile in value-weighted market-to-book equity. |
| Market R12 | The (average) difference between the annual local real stock |

| | |
|---|---|
| | market return of the acquirer country (j) and target country (i). We obtain total value-weighted return indices in local currency for each country. |
| Market value | The market value of equity. |
| MTB | Market value of equity divided by book value of equity. |
| Past return | Buy-and-hold stock return (in percentage points) in the year prior to deal announcement. |
| Private target | An indicator variable that takes a value of one if the target firm is privately held, and zero otherwise. |
| PUBEXPEND-2 | Sum of public social expenditures as a percentage of GDP in the two years before the deal announcement year |
| Relative size | The ratio of deal transaction value to the acquirer's total assets. |
| ROA | Income before extraordinary items scaled by total assets (in percentage points). |
| Subsidiary target | An indicator variable that takes a value of one if the target firm is a subsidiary, and zero otherwise. |
| Tax | A country's statutory corporate income tax rate in percentage. |
| Tender offer | An indicator variable that takes a value of one if the bid is a tender offer made to the target shareholders, and zero otherwise. |
| Top5 institutions | The fraction of shares outstanding held by the five largest institutional investors prior to deal announcement. |
| Total Assets | The value of the acquirer's total assets in constant in constant 2013 U.S. dollars. |
| ΔAVOIDANCE3 | The post-deal change in total tax avoidance scaled by the acquirer's total assets, which is the average total tax avoidance as a percentage of total assets in the three fiscal years after the deal completion minus the total tax avoidance as a percentage of total assets in the three fiscal years before the deal announcement. |
| ΔCTXD/AT3 | The post-deal change in the amount of cash tax paid scaled by the acquirer's total assets, which is the average cash tax paid as a percentage of total assets in the three fiscal years after the deal completion minus the average cash tax paid as a percentage of |

| | |
|---|---|
| | total assets in the three fiscal years before the deal announcement. |
| ΔCTXD3 | Post-deal change in the dollar amount of cash tax paid by the acquirer, which is the average amount of cash tax paid in the three fiscal years after the deal completion minus the average amount of cash tax paid in the three fiscal years before the deal announcement. |

**Appendix B: International Tax Competitiveness**

The table shows the results of the 2014 and 2015 International Tax Competitiveness Index released by the Tax Foundation. This index measures the competitiveness of tax systems of all 34 OECD countries based on five categories: corporate income taxes, individual taxes, consumptions taxes, property taxes, and the treatment of foreign earnings. Higher scores and lower ranks indicate a more competitive tax system.

| Countryname | Overall Rank 2014 | Overall Score 2014 | Overall Rank 2015 | Overall Score 2015 |
|---|---|---|---|---|
| Estonia | 1 | 100 | 1 | 100 |
| New Zealand | 2 | 87.8 | 2 | 91.8 |
| Switzerland | 3 | 82.2 | 3 | 84.9 |
| Sweden | 4 | 79.8 | 4 | 83.2 |
| Australia | 5 | 78.2 | 7 | 78.3 |
| Luxembourg | 6 | 77.1 | 6 | 79.1 |
| Netherlands | 7 | 76.6 | 5 | 82 |
| Slovak Republic | 8 | 74.2 | 8 | 76 |
| Turkey | 9 | 70.3 | 9 | 75.5 |
| Slovenia | 10 | 69.8 | 18 | 69.1 |
| Finland | 11 | 67.4 | 15 | 69.8 |
| Austria | 12 | 67.2 | 16 | 69.5 |
| Norway | 13 | 66.7 | 12 | 71 |
| Korea, Rep. | 14 | 66.4 | 13 | 70.9 |
| Ireland | 15 | 65.7 | 10 | 71.6 |
| Czech Republic | 16 | 64.4 | 14 | 69.9 |
| Denmark | 17 | 63.7 | 21 | 65.8 |
| Hungary | 18 | 63.6 | 22 | 65.1 |
| Mexico | 19 | 63.2 | 24 | 61.6 |
| Germany | 20 | 62.7 | 17 | 69.2 |
| United Kingdom | 21 | 62.2 | 11 | 71.5 |
| Belgium | 22 | 59.6 | 23 | 62.5 |
| Canada | 23 | 59 | 19 | 68.7 |
| Iceland | 24 | 57.2 | 20 | 66.5 |
| Japan | 25 | 54.5 | 25 | 61.5 |

| | | | | |
|---|---|---|---|---|
| Poland | 26 | 53.8 | 30 | 55.8 |
| Greece | 27 | 53.4 | 27 | 59.4 |
| Israel | 28 | 53.1 | 26 | 60.8 |
| Chile | 29 | 51 | 28 | 56.8 |
| Spain | 30 | 50.8 | 29 | 56 |
| Italy | 31 | 47.1 | 33 | 50.9 |
| United States | 32 | 44.3 | 32 | 52.9 |
| Portugal | 33 | 42.9 | 31 | 53.1 |
| France | 34 | 38.9 | 34 | 43.7 |