Income Shifting Incentives and Offshored U.S. Jobs

Braden Mern Williams

A dissertation

submitted in partial fulfillment of the

requirements for the degree of

Doctor of Philosophy

University of Washington

2015

Reading Committee:

Jacob R. Thornock, Co-chair

Terrence J. Shevlin, Co-chair

Sarah E. McVay

Program Authorized to Offer Degree:

Foster School of Business

University of Washington

Abstract

Income Shifting Incentives and Offshored U.S. Jobs

Braden Mern Williams

Co-chairs of the Supervisory Committee:

Associate Professor Jacob Thornock & Professor Terrence Shevlin

Accounting

This study uses a small, but detailed sample of offshored U.S. jobs from a program within the Department of Labor called Trade Adjustment Assistance (TAA) to examine the association between international income shifting incentives and where multinational firms choose to move offshored U.S. jobs. Overall, I find that for every percentage point increase in the gains from shifting taxable income into a particular foreign country, the likelihood that firms in my sample send U.S. jobs to that country increases by approximately 4%. However, across certain offshoring arrangements, types of firms, and types of jobs I find that tax incentives have little or no association with where offshored U.S. jobs are moved suggesting that there is cross sectional variation in the importance of tax incentives in labor offshoring decisions. These findings add to the mosaic of studies examining both the real effects and the welfare consequences that result from incentives created by the current U.S. international tax system.

Acknowledgements:

I thank Jake Thornock (co-chair), Terry Shevlin (co-chair), Sarah McVay, Jonathan Karpoff, Ed Rice, and Stewart Tolnay for their service on my dissertation committee. I particularly thank Jake for his endless encouragement, help, and guidance and Terry for his direction and wisdom.

I also thank John Barrick, Dave Burgstahler, Terrence Blackburne, Lisa De Simone, Scott Dyreng, Michelle Hanlon, Jeff Hoopes, David Kenchington, Dawn Matsumoto, Ed Maydew, Paige Patrick, Phil Quinn, Miles Romney, D. Shores, Bill Snyder, Brandon Szerwo, Sara Toynbee, Jaron Wilde, and workshop participants at the BYU Accounting Research Symposium, University of Washington, University of Oregon, Indiana University, Florida State University, Penn State University, University of Houston, and University of Texas for helpful comments on this study.

I acknowledge financial assistance from the University of Washington and the Grant Thornton Foundation.

Dedication:

For family—those who have come before and upon whose shoulders I stand, those present, and those who are yet to be—and especially for Becky, whose love, friendship, and dedicated work has made this and the rest of our journey together a joint effort.

Table of Contents:

1. Introduction 1
2. Institutional Background 6
2.1 Income Shifting 6
2.2 Tax Treaties 9
3. Hypothesis Development 10
4. Sample and Research Design 13
4.1 Data Sources and Details 13
4.2 Variable Construction 15
4.3 Empirical Design and Results 18
4.3.1 Test of the Association between Income Shifting Incentives and Offshored U.S. Jobs 18
4.3.2 Test of the Association between Income Shifting Incentives and Offshored U.S. Jobs by Sourcing Arrangement 21
4.3.3 Test of the Association between Income Shifting Incentives and Offshored U.S. Jobs by Level of Transfer Pricing Discretion 23
4.3.4 Test of the Association between Income Shifting Incentives and Offshored U.S. Jobs across Job Type 26
4.3.5 Test of the Association between Income Shifting Incentives and Offshored U.S. Jobs using Tax Treaty Revisions 28
5. Robustness Tests 31
5.1 Analysis Using Changes in Independent Variables 31
5.2 The Moulton Problem 32
5.3 Count-based Regressions with Zeros 33
6. Conclusions 34
Figure 1 36
Appendices 37
References 43
Tables 46

1. Introduction

Recent estimates suggest that up to 37.8 million U.S. jobs (i.e., 29% of all jobs in the U.S. workforce) are potentially "offshorable" (Blinder 2009).[1] While productivity gains from trade and cost savings are usually thought to be the primary reasons firms move U.S. jobs abroad (Krugman 2008, Grossman and Rossi-Hansberg 2008), the decision to offshore domestic jobs is multifaceted and complex. The broad goal of this study is to understand the impact of incentives created by the current U.S. international tax system on offshoring and the domestic labor market. As this broad agenda is complex, I specifically focus on the more tractable tasks of examining if, when, and to what extent tax-motivated income shifting incentives *incrementally* help explain where firms move offshored U.S. jobs.[2]

Because the United States has one of the highest corporate tax rates in the world, U.S. firms have incentives to engage in cross-border tax avoiding activities, such as income shifting. Generally, firms shift income to increase (decrease) the taxable income reported to low (high) tax countries. While a firm has some discretion in where taxable income is reported, the taxable income reported to a country is theoretically a function of that firm's underlying economic activity in that country, as well as the country's complex sourcing and allocation rules. To the extent that offshoring U.S. jobs relocates economic activity to lower-tax countries, then the tax benefits of income shifting could be an important determinant in firms' offshoring decisions and thereby contribute to job loss in the U.S.

A simplified example from my sample helps illustrate this point. In 2006, Merck & Company underwent restructuring that involved laying off U.S. workers and closing down U.S. facilities (Berenson 2005). Meanwhile, Merck also celebrated the completion of an expansion to a subsidiary's production facilities in Singapore that performed functions similar to those previously performed in a U.S. plant

[1] I define offshoring as filling a business need abroad (e.g., production). This definition is conceptually different that outsourcing, which I define as contracting with another party outside the firm to fill a business need. Figure 1 illustrates the potential relations between offshoring and outsourcing in matrix form.

[2] I define income shifting to be the movement of taxable income within a firm from one jurisdiction to another. Income shifting is not limited just to the use of opportunistic transfer prices, but can also include operational choices (e.g., relocating assets) or financing choices (e.g., strategically locating intercompany debt) that result in more income being reported to low-tax countries and less income being reported to high-tax countries.

(Asia Pacific Biotech News, 2006). While the restructuring may have been costly, by decreasing its U.S. activity and simultaneously increasing activity in Singapore, Merck would have been able to report less taxable income to the U.S. (which had an average 40% federal and state corporate tax rate) and more taxable income to Singapore (which had a 20% corporate tax rate) and thereby shift taxable income from the U.S. to Singapore.[3] This anecdote illustrates two points. First, international tax incentives sometimes appear to influence the location of a firm's labor force. Second, firms consider these tax incentives in conjunction with other costs and benefits of offshoring.

Although a large body of research shows that tax incentives can influence the location of firms' investment, there are several reasons why income shifting incentives may actually be irrelevant to where U.S. multinational firms locate jobs. First, due to the U.S. worldwide tax system, the tax required when foreign earnings are repatriated to the U.S. may offset any gains from shifting income to low-tax countries as the repatriation tax is larger (smaller) when firms repatriate earnings from a low (high) tax foreign country. Second, in today's knowledge-based economy, the tax benefits achievable by shifting jobs may pale in comparison to the tax benefits of shifting intangibles and intellectual property. To the extent that firms can attribute large amounts of taxable income to intellectual property in low- tax countries, then tax incentives may be a non-factor in where firms decide to locate jobs. Hence, whether income shifting incentives influence the allocation of jobs across multinational firms becomes an empirical question.

Despite the existence of developed literatures on both offshoring and income shifting, there is a scarcity of empirical research at the intersection of these two topics, likely due to several data limitations. First, detailed job loss data is difficult to find (e.g., which firms offshore U.S. jobs, the number of the jobs offshored, the new host location of the offshored jobs, etc.). For example, most of the data available from the Bureau of Labor Statistics are aggregated and cannot be tied to a specific firm. Conversely, the

[3] Under the arm's length principle prescribed by the OECD, the *taxable income* reported to a country as a result of transfer pricing arrangements must be related to the underlying economic activity in a country (i.e., functions, assets, and risks). Hence, shifting jobs overseas does not merely increase foreign deductions and decrease domestic deductions. Revenues and expenses are required to be considered jointly as they would be by two independent firms transacting together. Detail on transfer pricing methods is discussed more in Section 2.1 and Appendix 1.

employee count in a firm's financial statements can be linked to a specific firm, but does not provide any other detail. Second, measuring income shifting incentives has proven very difficult because firms disclose little location-specific detail in their public financial statements (Klassen and LaPlante 2012).

To overcome these empirical issues, I construct a novel, albeit small dataset from domestic job loss data reported by the Department of Labor, under a program called Trade Adjustment Assistance (TAA). These data cover approximately 165,000 offshored U.S. jobs and are advantageous for this study in several ways. First, these data isolate a sample of job losses that are specifically due to offshoring. Second, these data identify the new host country of the offshored jobs, which in turn allows me to estimate tax-motivated income shifting incentives and incorporate country-level controls in my analysis. Third, by using a simple name matching algorithm and manual checking I can link a portion of these layoff data to public firms' financial statements and incorporate firm-specific controls and cross sectional tests. Finally, these data also contain sourcing detail (i.e., within-firm vs. outsourcing) that is useful in validation tests. Thus, while these data are not without limitations, they are uniquely suited to help address my research question.[4]

Overall, I find the likelihood that U.S. jobs are offshored to a particular foreign country is positively associated with the corporate tax rate differential between the U.S. and that country. Similarly, the number of U.S. jobs that are offshored to a given foreign country is also positively associated with the tax rate differential between the U.S. and that country. These results suggest that even after controlling for the effects of known determinants of offshoring, international tax incentives are a material consideration in the decision to move U.S. jobs. In terms of economic magnitude, I find that for each percentage point increase in the difference between the U.S. corporate tax rate and the corporate tax rate in a prospective new host country for the offshored jobs, the likelihood that U.S. jobs are offshored to that country increases by approximately 3.9% and the number of jobs offshored to that country increases by about

[4] Limitations are discussed in Section 4.1and relate primarily to sample selection (i.e., the sample is made up primarily of manufacturing firms) and self-selection (i.e., only firms who offshore U.S. jobs and whose displaced U.S. workers petition for Trade Adjustment Assistance are in the sample).

7.4%.[5] Because there are inherent limitations to this sample due to selection issues, readers should use caution in generalizing these findings beyond this sample. However, this evidence does provide tractable, small-sample support for the overarching question of whether tax incentives are relevant to managers' decisions about offshoring jobs.

While I find an overall positive association between tax incentives and the location of offshored U.S. jobs, I find significant cross sectional variation in the sensitivity of offshored job location to income shifting incentives. First, I find that firms are more (less) sensitive to income shifting incentives when offshored jobs are kept within the firm (outsourced) where transactions are coordinated by a manager (coordinated in a market) and managers can (cannot) use opportunistic transfer pricing. Second, I find that firms that have unique products or processes (and therefore more discretion in setting the terms of intercompany transfer prices) are more sensitive to income shifting incentives (e.g., pharmaceutical, technology, and high R&D firms). Third, I find that the subsequent location of jobs that generate a low contribution margin is less (more) sensitive to income shifting incentives (labor costs) than jobs that generate a relatively higher margin. Taken together, these results suggest that the importance of income shifting incentives on offshoring decisions differs widely depending on non-tax factors.

Finally, I conduct tests that employ revisions in bilateral tax treaties as a plausibly exogenous shock to the tax incentives to shift income. While treaties do not change the income tax rate in a given country, they are intended largely to "prevent fiscal evasion," and will influence firms' expected gains from income shifting and therefore the incentive to shift income. At different points during the sample period, the U.S. and 10 of the 51 countries in the sample bilaterally revised their income tax treaties. I find weak evidence that following the revision of a bilateral treaty, the number of U.S. jobs offshored to the treaty-

[5] In interpreting economic magnitudes, it is important to consider that the largest possible tax rate difference in my sample is 27% points (i.e., 40% combined U.S. federal & average state rate – 13% Irish tax rate). At their extreme, these estimates suggest that if there were a hypothetical nation identical to Ireland along every dimension except the nation had a 40% tax rate, (1) the likelihood that a U.S. firm would choose to offshore jobs to Ireland is nearly 100% higher than the likelihood of offshoring to the hypothetical nation, and (2) for every U.S. job sent to this hypothetical nation three U.S. jobs would be sent to Ireland.

revising country decreases relative to the contemporaneous change in a sample of matched countries.[6] I do not find, however, a statistically significant change in the overall propensity to offshore jobs to a treaty country following a treaty revision.

This paper makes several contributions. First, the finding that offshored U.S. jobs are increasing in the potential tax gains from shifting income out of the U.S. suggests that domestic workers bear a portion of the burden of the U.S. corporate income tax—even though it is not directly levied against them. Evidence that part of the corporate income tax burden is implicitly passed through to domestic workers answers the call for research to better understand "the welfare consequences of multinational corporations' sensitivity to taxation" (Blouin 2011 p.3).

Second, this paper addresses calls for research to understand how income shifting "…affect[s] firms' real investment, investment location, and repatriation decisions..." (Hanlon and Heitzman 2010 p.158). By showing that firms' responses to income shifting incentives have real consequences in the domestic labor market, I extend a developing branch of the literature that examines the real effects of tax-motivated income shifting (see Foley, Hartzell, Titman, and Twite 2007; Hanlon, Lester, and Verdi 2014; Edwards, Kravet, and Wilson 2014; Bird, Edwards, and Shevlin 2014).

Third, this paper extends the literature on the boundary of the firm (i.e., the scope of a firm's activities). A handful of papers have examined how taxes influence the decision to keep an activity within the boundary of a firm (Shevlin 1987; Beatty, Berger, and Magliolo, 1995; Petroni and Shackelford 1995), but the idea that income shifting incentives could affect whether labor is kept within a multinational firm's boundary has not yet been studied, likely due either to data limitations or limited understanding of complex multinational tax planning. By showing that offshored jobs are sensitive to

[6] Even though treaties do not set the income tax rate in a given country, they do influence firms' potential gains from income shifting and therefore the incentive to shift income. There are generally two objectives of income tax treaties: (1) facilitate trade by reducing double taxation, and (2) prevent cross-border fiscal evasion. The problems created by double taxation have largely been solved by a host of treaties that date back to the 1970s and recent revisions to those treaties largely focus on reducing the ability of multinational firms to "exploit opportunities for avoidance taxes that arise from their cross-border activities" (McIntyre 2003).

income shifting incentives, but only when jobs are kept within the firm, this study links two large, yet previously discrete, literatures—one on income shifting and one on the boundary of the firm.

Finally, by highlighting a positive association between income shifting incentives and the outcomes of several offshoring decisions, this paper provides relevant information to policy makers involved in the debate about the high statutory U.S. corporate tax rate. In contrast to existing papers that examine aggregate tax revenues, this study contributes to the debate by highlighting the labor market consequences of firms' sensitivity to income shifting incentives. Additionally, the cross sectional variation in the association between income shifting incentives and offshored jobs documented in this study suggests that blunt policies broadly intended to influence labor market outcomes by changing the costs or benefits of tax-motivated income shifting may only be effective for certain sourcing arrangements, types of firms, and types of jobs.

2. Institutional Background

2.1 Income shifting

Globally integrated supply chains create complex challenges for international taxation. For both companies and tax administrators, the primary challenge is answering the question: where should a given dollar of income be taxed? This question is difficult to answer for two reasons. First, multinational firms are subject to the tax laws of many countries, which often contain overlapping claims to tax income from certain activities (e.g., income from general operations, interest income, dividend income, royalties from intangibles, etc.). Understanding where income generated by different types of activities is taxable can be very complicated. Second, multinational firms must also determine how much income is attributable to different activities in different jurisdictions. Activity that is operationally seen as part of a single, global value-generating process or supply chain must be artificially separated for tax purposes and allocated to multiple activities and countries in order to calculate the taxable income in each country. This allocation of a firm's income across countries differs from the treatment of consolidated income under GAAP, in which a firm's financial statements are consolidated on a worldwide basis. Moreover, because of diverse

tax rates in each country, the allocation of income can have an economically meaningful effect on a firm's overall tax bill—more income allocated to a low-tax country would result in lower overall tax payments and vice versa.

So what then prohibits a firm from simply reporting all of their income in the lowest-tax rate country in which it is required to file a tax return? Tax authorities around the world have generally agreed to the "arm's length principle" for allocating income across multiple jurisdictions (OECD 2010). The arm's length principle states that the terms of internal trade between two affiliates (e.g., Merck U.S. parent and Merck Singapore subsidiary) used to calculate taxable income in each affiliate's domicile should not differ from those which would be made between independent enterprises" (OECD 2010, p. 23).[7] The OECD emphasizes that if transactions between affiliates happen at arm's length, then the profits allocated to a jurisdiction should match the "functions performed (taking into account assets used and risks assumed)" in that jurisdiction (OECD 2010, p.25, p.65, p.198). In other words, if a firm follows the arm's length principle and moves a productive asset or process from one country to another, the profit generated by that asset/process should follow the asset and be reported to the new host country where the asset is used.

Firms generally have two channels by which they can shift income or change the location of where income is taxed—operations-based methods and accounting-based methods. First, by making operational decisions that relocate value-generating resources or activities, firms can shift where taxable income is reported and still strictly adhere to the arm's length standard (Thomsen, Ullmann, and Watrin 2013). Merck's 2006 restructuring is an example of this type of shifting. Second, firms can use the discretion they have in setting the terms of internal accounting transactions (e.g., transfer prices) to shift income between jurisdictions. While income shifting is simple in theory, implementing the arm's length principle in practice can be very difficult and complex. The complexity, in turn, allows firms bounded discretion in

[7] The OECD defines an affiliate as an enterprise that is in a direct investment relationship. A firm is affiliated with its direct investors, its subsidiaries, and fellow enterprises that share a common parent.

setting the terms of internal transfer prices.[8] For example, if Merck's subsidiary in Singapore opportunistically overcharged the U.S. parent for services performed, this choice of transfer prices would let Merck report even more taxable income to Singapore and even less taxable income to the U.S.

To the extent that operational and accounting-based methods of income shifting are complements, firms that want to reduce tax payments will jointly (1) locate (or relocate) key activities or investments (i.e., functions, assets, and risks) in low-tax jurisdictions, and (2) choose transfer prices within the arm's length range that allocate more (fewer) profits to low (high) tax jurisdictions. By coordinating these two complementary channels, firms can get the greatest returns to tax planning (Grubert and Slemrod 1998).

Figure 1 describes the four basic location and sourcing combinations a firm could use to perform a business function—(1) domestic performance within the firm, (2) outsourcing to a domestic firm, (3) offshoring within the firm, and (4) outsourced offshoring—and summarizes relevant detail about the operational and tax consequences of each arrangement. Several points are worth highlighting. First, the terms of transactions between two entities within the same firm (foreign or domestic) are coordinated by management, while outsourced transactions between firms are coordinated by a market. Second, foreign taxes are generally only payable to a foreign country where a firm has local operations or a "permanent establishment" in that country. Simply buying goods from, selling goods into, or purchasing basic services from a foreign country will usually not trigger the need to file an income tax return in that country. Third, because the U.S. uses a worldwide tax system that taxes U.S. firms on all income, regardless of where it is earned, all of a U.S. multinational firm's income will be taxable by the U.S at some point. U.S earnings are generally taxable by the U.S. when earned. Generally, U.S. taxes on active

[8] Firms that provide unique or specialized products are generally thought to have more discretion in setting transfer prices because of the difficulty finding comparable transactions. Without an independent benchmark transaction, it is more difficult for tax authorities to argue that a firm's transfer prices are not computed at arm's length.

foreign earnings, however, are deferred until they are repatriated to the U.S. (if ever).[9, 10] Hence, any *explicit* gains from income shifting are only achievable when firms engage in offshoring within the firm.

2.2 Tax Treaties

To coordinate tax issues that can arise between one another, countries often enter into contracts called bilateral income tax treaties. The two general objectives of tax treaties are to (1) facilitate trade by reducing double taxation between countries,[11] and (2) reduce multinational firms' fiscal evasion via cross-border transactions (McIntyre 2003). While treaties do not set the actual tax rate in a foreign country, they are nonetheless important to multinational firms because they determine how U.S. tax rules will interact with a foreign country's local tax rules, and how the respective governments will work together when multi-jurisdictional tax issues arise.

The U.S. has signed tax treaties with nearly 70 countries dating back to the 1970s. The initial focus of these treaties was to eliminate the problem of double taxation. Adept multinational firms, however, have been able to maneuver the international tax landscape and tax treaties to find loopholes, structure arrangements that actually result in nowhere income (i.e., income that is not taxable in any jurisdiction), and engineer other cross-border tax avoiding opportunities. As treaties are periodically revised, countries update provisions attempting to remove firms' ability to avoid taxes via cross border transactions. Such revisions can include provisions that increase information sharing between two countries or limit "treaty shopping" (i.e., limiting the scope of parties to whom treaty benefits apply so that they cannot be used in

[9] The U.S. grants firms a foreign tax credit against their U.S. tax liability on foreign earnings that is generally equal to the lesser of the U.S. tax liability on its foreign earnings or the amount of foreign taxes paid to a local government on those foreign earnings.

[10] Passive foreign income (e.g., certain dividends, interest, and royalties) are immediately taxable by the U.S. under the provisions of Section 952 of the Internal Revenue Code – Subpart F.

[11] To illustrate the problem of double taxation, consider that the U.S. has a worldwide system that taxes resident individuals and resident firms on all income earned—regardless of location. U.S. residence is based on citizenship for individuals and country of incorporation for firms. Most other countries have a territorial tax system that taxes both resident and nonresident individuals and firms on their income that is generated by activity within that country. This arrangement means that absent some credit or agreement between the U.S. and a foreign country, a U.S. firm's foreign earnings would be taxed twice—once by the foreign country at the local tax rate and then again by the U.S. at the U.S. rate. Historically, countries have agreed to solutions that involve credits, exclusions, or withholdings to minimize double taxation.

evasive transactions). Thus, the effect of newly *implementing* a tax treaty would be to increase foreign investment in the contracting country, but the expected net effect of *revising* a tax treaty between the U.S. and a contracting country would be to increase the expected cost of aggressive income shifting which would decrease firms' overall incentives to shift income into that country.

3. Hypothesis Development

Labor relocation decisions are complicated as there are many potential benefits and costs of moving jobs. On the one hand, firms that offshore U.S. jobs can access less costly labor, access foreign talent, and enjoy productivity gains from trade (Krugman 2008; Grossman and Rossi-Hansberg 2008; Lewin, Massini, and Peeters 2009). On the other hand, firms that offshore U.S. jobs can also face additional transportation costs, coordination costs, reputational costs, and agency costs (Stringfellow, Teagarden, and Nie 2008). Besides these operational benefits and costs of offshoring jobs, there are several tax-related benefits and costs that managers could also consider in offshoring decisions. While perhaps less salient than operational incentives, these tax incentives are still likely to be considered by rational managers jointly with all other incentives when making labor location decisions (Scholes et al. 2014).

The first tax-related benefit of offshoring discussed in prior literature is a potential increase in the amount of foreign income taxed at preferential foreign tax rates (Clausing 2005, Metters and Verma 2008). That is, by offshoring U.S. jobs, firms move functions, assets, and/or risks from the U.S. to other countries and can then also move taxable income out of the U.S., all in accordance with the arm's length standard (i.e., legally). Because the U.S. has one of the highest corporate tax rates in the world, companies that offshore U.S. jobs move activity to countries with lower corporate tax rates, which can reduce tax payments to governments and preserve profits for future investment or operational use, so long as the income is not brought back to the U.S.[12] Clausing (2008), Sullivan (2008), and Christian and

[12] Appendix 1 contains several stylized, numeric, two-step production examples that illustrate in detail how offshoring labor to a low-tax country and transacting at arm's length can lower a firm's tax burden. These examples define and illustrate several of the OECD's prescribed transfer pricing methods. The fact that relocating labor does not simply shift deductions is highlighted in these examples.

Schultz (2005) estimate that, in aggregate, U.S. multinational firms annually save $30-$90 billion in income taxes by shifting income out of the U.S.

Income shifting enabled by offshoring can also provide financial reporting benefits. Under GAAP, repatriation taxes that are due at some future date are generally recorded as a deferred tax liability with a corresponding deferred tax expense. If firms assert that they have a plan for permanently reinvesting those foreign earnings abroad, then firms can avoid recording the deferred tax expense, which decreases their book effective tax rate and increases net income and earnings-per-share (Blouin, Krull, and Robinson 2012). Thus, the benefits of income shifting are not limited to lower cash tax payments, but can also include the benefits of reporting higher net income (Graham, Hanlon, and Shevlin 2011).

There are also, however, costs of income shifting and/or costs of offshoring that could offset the association between income shifting incentives and offshored jobs. Foremost are a host of adjustment costs that a firm must bear when making a major operational change. These adjustment costs include (but are not limited to) transit/supply chain reorganization costs, asset acquisition costs, learning (i.e., temporary productivity) costs, additional tax scrutiny, additional regulatory costs, reputational costs, and the costs of putting a system in place to manage the risk associated with foreign currency and property rights. In many circumstances, these adjustment costs prohibitively offset any potential tax benefits from income shifting and incentivize firms to retain domestic operations and employees despite potential income shifting gains from offshoring.[13]

Repatriation taxes are another potential cost that can offset any tax-based income shifting incentives to offshore jobs. Because the U.S. has a worldwide tax system that generally taxes the active foreign earnings of U.S. multinational firms when they are repatriated to the U.S., any tax savings from income

[13] One byproduct of adjustment costs is that investment becomes "lumpy." In a world without any adjustment costs, firms would constantly update offshoring decisions through small investments whenever there was a change to a cost or benefit of offshoring. While any single offshoring cost or benefits could be material, the nature of adjustment costs makes it unlikely that any single factor is *wholly* responsible for an offshoring decision. Rather, the accumulated marginal effects of these factors will determine whether or not offshoring is a positive net present value proposition. When the accumulated marginal benefits exceed the high marginal cost hurdle created by the adjustment costs, then firms will offshore U.S. jobs.

shifting that arise from offshoring domestic jobs would be nullified by the offsetting repatriation tax due *if* firms choose to repatriate earnings. While there is empirical evidence that U.S. firms hold earnings abroad in order to avoid repatriation taxes (Foley, Hartzell, Titman, and Twite 2009) and report higher earnings (Graham, Hanlon, and Shevlin 2011; Blouin, Krull, and Robinson 2012), there is also evidence that some firms pay the repatriation taxes needed to dividend foreign earnings back to the U.S. parent companies for domestic use (Dyreng and Markle 2014). Other than benefits from the time value of money, these repatriation taxes could essentially nullify the tax benefits of income shifting.

Finally, the nature of intangibles in today's economy could heavily mute the association between income shifting incentives on offshored jobs. While the arm's length principle is simple and clear in theory, the application of this principle is often quite difficult—particularly for intangible assets. The challenge with intangible assets is estimating a comparable price between two independent firms because comparable firms or even a comparable transaction might not exist. Because ambiguity grants managers discretion in setting transfer prices, the largest gains from income shifting come from shifting unique functions, assets, and risks. Hence, relative to the potential gains from relocating patents, formulas, trademarks, or executives, the tax gains from relocating rank-and-file jobs could be trivial, in which case the tax benefits of income shifting could be a non-factor for labor offshoring decisions.

Based on the benefits and costs outlined above, rational economic decision making would suggest either a positive association or no association between tax-motivated income shifting incentives and the location of offshored U.S. jobs. This leads to my hypothesis in alternate form.

H1: The potential gains from shifting taxable income to a particular foreign country are positively associated with offshored U.S. jobs sent to that country.

To test this hypothesis, I first examine the associations between the statutory corporate tax rate difference between the U.S. and a particular foreign country and both (1) the likelihood that firms in my sample send U.S. jobs to that country and (2) the number of U.S. jobs that firms in my sample send to that country. Next, I examine how these associations vary based on different sourcing arrangements

(offshoring within the firm and outsourced offshoring). I also examine how the associations vary is several cross sections of firms that are more likely to have greater discretion in setting internal transfer prices. Next, I examine how the association varies between unionized jobs that likely generate a small contribution margin and other nonunionized jobs. Finally, I examine how the likelihood of offshoring U.S. jobs to a particular foreign country and the number of U.S. jobs offshored to a particular country changes following revisions to bilateral tax treaties that increase the expected cost of aggressive income shifting.

If firms first determine whether or not to offshore jobs and then determine where to offshore jobs, evidence of a positive association between income shifting incentives and the location of offshored U.S. jobs would only suggest that conditional on firms choosing to offshore U.S jobs, tax incentives help determine where offshored jobs are located. If, however, firms jointly determine whether and where to offshore U.S. jobs, then evidence of a positive association between income shifting incentives and the location of offshored jobs (controlling for other factors) would be consistent with the notion that offshoring U.S. jobs to a low (high) tax country is more often a positive (negative) NPV project. This evidence would then also suggest that taxes are a relevant consideration in the actual decision to move U.S. jobs offshore.

4. Sample and Research Design

4.1 Data Sources and Details

I construct a sample of selected layoff data from Trade Adjustment Assistance (TAA). TAA is a program administered by the Department of Labor together with each of the 50 states to provide assistance and training to domestic workers who lose their jobs due to foreign trade. A group of U.S. workers whose lose their jobs because of foreign trade can apply for temporary assistance from TAA. When reviewing assistance applications, TAA administrators gather and compile relevant information

about the circumstances surrounding the layoff, including the number of workers that are laid off or voluntarily leave before the layoff.[14]

These data have several strengths. First, these data contain granular detail on a sample of U.S. job loss that is *specifically due to offshoring*. Second, for most certified petitions from 2003 to 2009, these data identify the new host country to which U.S. jobs were offshored. Third, these data distinguish between different sourcing arrangements by which U.S. jobs can be offshored (i.e., offshoring within the firm or outsourced offshoring). Fourth, these data are firm specific, which allows me to link offshoring data to financial statement data for public firms.[15] In sum, these data create a unique setting in which I can test my hypothesis.

These data, however, also are subject to several limitations. First, the sample is made up primarily of manufacturing firms who terminate U.S. workers and whose terminated workers request temporary assistance finding new employment; therefore, the inferences from this study may not generalize to all firms in the economy. Second, while the TAA has been in place since the 1970s, data with the level of granularity needed for this study are only available from 2003-2009. During this relatively short window there were no large domestic tax rate changes that would assist in identification. Third, while these data allow me to identify the country to which offshored U.S. jobs are being sent, they do not include firm-country-specific employment or financial data. This means that control and test variables are measured at either the (1) consolidated firm-level or (2) country-level. To the extent that these proxies somehow misrepresent firms' country-specific conditions, inferences from these data could be flawed. Finally, by using this sample I am unable to reliably analyze firms that did not offshore jobs as firms not in the

[14] Some of the information gathered during interviews is posted directly to the TAA website in certification reports. See Appendix 2 for an example of a certification report from Merck. Additional TAA data was also received from the Department of Labor by PublicCitizen, a government watchdog group that filed a request with the Department of Labor under the Freedom of Information Act for this detail.

[15] Name matching is required to link the TAA data with firm financial data because the database I draw from does not report a firm-specific identification number or provide a linking table. I match the names from the TAA petitions with company names from CRSP by using the spedis (spelling distance) function in SAS to identify potential matches then confirm each match manually. I also manually check the data for matches missed by the algorithm because of abbreviations and or extended names (e.g., listing company and division name).

sample (1) may not have offshored jobs, or (2) may have offshored jobs but not have had workers petition for assistance from TAA.

Despite these limitations, this sample offers a unique setting in which I can examine the association between income shifting incentives and offshored jobs. Given the important nature of understanding the association between income shifting incentives and firms' actions that impact the domestic labor market, I proceed using the data, but caution that results should be interpreted within these limitations.

4.2 Variable Construction

To operationalize potential offshoring outcomes, I create several different variables. I first set an indicator variable called *TOTAL OFFSHORING INDICATOR*$_{i,j,t}$ (*i*=firm, *j*=country, *t*=year) equal to one if firm *i* offshored U.S. jobs to country *j* in year *t*, and equal to zero otherwise. Next, I separate (1) those offshored jobs that were kept within the firm and (2) those offshored jobs that were outsourced to outside firms and create two additional indicators variables.[16] *WITHIN-FIRM OFFSHORING INDICATOR*$_{i,j,t}$ is set equal to one if firm *i* offshored U.S. jobs to country *j* in year *t* that were subsequently kept within the firm and equal to zero otherwise. Likewise, *OUTSOURCED OFFSHORING INDICATOR*$_{i,j,t}$ is set equal to one if firm *i* offshored U.S. jobs to country *j* in year *t* that were subsequently outsourced to another firm and equal to zero for firm-country-year combinations that did not host offshored U.S. jobs.

[16] I follow the spirit of Monarch, Park, and Sivadasan (2013) and make this separation based on Department of Labor categorizations in the data provided to PublicCitizen. There are four categories of offshoring jobs loss in the TAA data—(1) shift in production, (2) imports, (3) certified upstream layoffs, and (4) certified downstream layoffs. Per conversations with a state TAA official, the shift in production category represents domestic job loss that is replaced by foreign jobs within the firm, and is the only one of the four categories in which foreign labor remains within the boundary of the firm, so I include job loss with this tag in *WITHIN-FIRM OFFSHORED JOBS.* The remaining three categories all correspond to domestic job losses that result in increased foreign outsourcing and job loss with these tags are counted in *OUTSOURCED OFFSHORED JOBS*. The import category corresponds to domestic job loss that is due to a rise in company imports (i.e., purchasing from outside the firm) or customer imports. Certified upstream and downstream layoffs are layoffs that result from a major counterparty starting to import foreign goods or services. In terms of Figure 1, these layoffs would be analogous to firms moving from a quadrant 2 arrangements (domestic outsourcing) to a quadrant 4 arrangement (foreign outsourcing). While policymakers and other parties care about all forms of offshoring, I expect that income shifting incentives will only be directly relevant to job loss due to a shift in production within the firm.

Next, for each firm in my sample I aggregate the number of U.S. jobs that were offshored by firm *i* to country *j* in year *t*.[17,18] I call this count variable *TOTAL OFFSHORED JOBS*$_{i,j,t}$ (*i*=firm, *j*=country, *t*=year). I also count the annual number of U.S. jobs that were offshored to each new host country by sourcing arrangement. Specifically, I separate those offshored jobs that were kept within the firm and those offshored jobs that were outsourced to outside firms and call these variables *WITHIN-FIRM OFFSHORED JOBS*$_{i,j,t}$ and *OUTSOURCED OFFSHORED JOBS*$_{i,j,t}$, respectively.

For each observation (firm-country-year), I then merge in both the country- and firm-level control variables identified in Section 4.3 that are needed to estimate the empirical models. I drop observations that are missing any necessary control variables. The sample has 1,142 non-zero firm-country-year observations and covers 166,075 U.S. jobs offshored from 2003-2009. These jobs were sent to 51 different countries by 382 different firms. Table 1, Panel A summarizes detail about the number of jobs sent to major countries. The most popular new host location for offshored jobs in the sample is Mexico, followed by China, Canada, India, and Singapore. Table 1, Panel B summarizes the number of sample firms by single digit SIC code.[19] Consistent with the notion that the sample is made up of firms that terminate workers that need retraining or assistance finding new work, more than 80% of the sample is made up of manufacturing firms.

Table 2 describes the composition of the samples used in each of the tables. Most analyses use a panel of 120,030 possible firm-country-year combinations. Each combination is an observation. Of these observations, only approximately 1% (i.e., 1,142) actually host offshored U.S. jobs from firms in my sample. In later robustness tests, the data are aggregated to a country-year level (Table 10).

---

[17] While the underlying TAA data is based on plant-level events, aggregating layoffs by firm i to country *j* over an annual window is preferable to analyzing the underlying data at an event level because firms have different offshoring strategies. For example, a firm planning to offshore 100 U.S. jobs could layoff all the employees at once or they could choose to do it do it in five waves of twenty layoffs each month as U.S. operations wind down. To make a reasonable comparison between the overall jobs loss under each scenarios, I aggregate the total job loss over a fixed period of time (i.e., one year).

[18] Approximately 25% of the petitions relate to blocks of U.S. jobs that were sent to multiple countries. For these petitions, I evenly divide the total number of lost U.S. jobs among the host countries listed by the certifying officer.

[19] In actual empirical tests, I use a more granular measure of industry classification used by Beaver, Barth, Hand, and Landsman (2005), but use the coarser single digit SIC code for general descriptive detail only.

Descriptive statistics for the sample firms are presented in Table 3, Panel A. The median firm in the sample had over 9,000 employees, a return on assets of 4.9%, and approximately 18% of its total assets invested in long-term property, plant, and equipment. Compared to the median public firm listed in Compustat from 2003-2009 that is not in the sample, sample firms have more employees, are more profitable, and have higher levels of property, plant, and equipment. More sample firms have foreign profits than non-sample firms. The median research and development spending by firms in my sample is greater than the median research and development spending by other firms in Compustat, but mean research and development spending is comparable across groups.

Summary statistics describing other key variables in my sample are presented in Table 3, Panel B. The mean values of *TOTAL OFFSHORING INDICATOR*, *WITHIN FIRM OFFSHORING INDICATOR*, and *OUTSOURCED OFFSHORING INDICATOR* are all less than 1%, suggesting that most potential countries are not chosen to host offshored U.S. jobs. The average number of *TOTAL OFFSHORED JOBS* per firm-country-year is 1.38. Within non-zero values, the average number of *TOTAL OFFSHORED JOBS* is 145 (untabulated). The mean value of *STATUTORY RATE DIFFERENCE* is approximately 11% points suggesting that the average potential host country for offshored U.S. jobs has a tax rate of approximately 29%. Other variables in this table are defined in Appendix 3.

Correlations among both firm- and country-controls are presented in Table 3, Panel C. In univariate correlations, *TOTAL OFFSHORED JOBS* is negatively correlated with *STATUTORY RATE DIFFERENCE*.[20] Consistent with the intuition of prior literature on investment, *TOTAL OFFSHORED JOBS* is positively correlated with *GDP*, *GDP GROWTH*, *TRADEFLOWS*, and negatively correlated with *GDP PER CAPITA* and *DISTANCE*.

[20] When *TRADEFLOWS* or *GDP* is added as a single control variable, the partial correlation between *OFFSHORED JOBS* and *STATUTORY RATE DIFFERENCE* turns positive. A positive univariate correlation between *OFFSHORED JOBS* and *STATUTORY RATE DIFFERENCE* would imply that the largest share of offshored U.S. jobs go to tax havens, but the positive partial correlation between *OFFSHORED JOBS* and *STATUTORY RATE DIFFERENCE* suggests that income shifting incentives are positively associated with the number of offshored jobs sent to a country that are not explained by the product market opportunities in that country or size of the economy.

4.3 Empirical Design and Results

4.3.1 Test of the Association between Income Shifting Incentives and Offshored U.S. Jobs

To empirically examine the association between income shifting incentives and the location of offshored U.S. jobs, I estimate Equation (1) below. Equation (1) follows the spirit of traditional models on the determinants of foreign direct investment (FDI) and cross-border mergers and acquisitions (M&A) by including controls for the economic, political, and cultural/agency incentives in the new host country (e.g., see Schnedier and Frey (1985) or Erel, Liao, and Weisbach (2012)) , as well as characteristics of the investing firm.

$$OFFSHORED\ JOBS_{i,j,t} = \beta_0 + \beta_1\ STATUTORY\ RATE\ DIFFERENCE_{j,t} + \beta_C\ COUNTRY\ CONTROLS_{j,t} + \beta_F\ FIRM\ CONTROLS_{i,t} + YEAR\ EFFECTS_t + INDUSTRY\ EFFECTS_k + \varepsilon_{i,j,t} \quad (1)$$

I use two proxies to measure $OFFSHORED\ JOBS_{i,j,t}$: $TOTAL\ OFFSHORING\ INDICATOR_{i,j,t}$ and $TOTAL\ OFFSHORED\ JOBS_{i,j,t}$. $STATUTORY\ RATE\ DIFFERENCE_{j,t}$ is the main test variable and calculated as the top U.S. statutory corporate tax rate in year *t* minus the top statutory corporate tax rate in country *j* in year *t*, and proxies for the potential gains from shifting income from the U.S. to country *j*.[21] These data are gathered from KPMG's historical corporate tax rates tables.[22]

$COUNTRY\ CONTROLS_{j,t}$ is a vector of country-level characteristics shown by prior research to influence foreign investment. I use $GDP\ PER\ CAPITA_{j,t}$ to control for the cost of labor in a given country.[23] To control for the effect of the other economic incentives to offshore U.S. jobs to country *j*, I

[21] Ideally, this measure would be the difference between the firm's *marginal* tax rate in the U.S. and the firm's marginal tax rate in country *j*. Based on the methodology described in Shevlin (1990) and popularized by Graham (1996), calculating jurisdiction-specific marginal tax rates would require enough data to do jurisdiction-specific long-range earnings forecasts, as well as detail about each firm's country-specific tax attributes (e.g., NOLs, credit positions, etc.). Because firms only disclose enough detail to compute a blended foreign effective tax rate, I use the difference in two countries' statutory tax rates as a proxy for the potential tax gains from shifting income from the U.S. to country *j*. This choice is also consistent with Grubert and Mutti (1991)'s conclusion that statutory tax rates appear a better determinant of income shifting than effective tax rates.

[22] KPMG's historical tax rate data are available online. The tax rate data for early years in the sample are available at http://www.lib.uwo.ca/files/business/KPMGCorporateTaxRateSurvey.pdf. Later years in the sample are posted at http://www.kpmg.com/Global/en/services/Tax/tax-tools-and-resources/Pages/corporate-tax-rates-table.aspx.

[23] While the World Bank does maintain a database of "comparable wages" that has been used by prior literature to control for the cost of labor across countries, I use *GDP PER CAPITA* instead because of greater data coverage.

include controls for a country's $GDP_{j,t}$, $GDP\ GROWTH_{j,t}$, $TRADEFLOWS_{j,t}$, $EXCHANGE\ RATE_{j,t}$, and $INDIRECT\ TAXES_{j,t}$. To control for the effect of the political environment and the strength of institutions in country *j* in year *t*, I include measures of $POLITICAL\ STABILITY_{j,t}$, $GOVERNMENT\ EFFECTIVENESS_{j,t}$, $REGULATORY\ QUALITY_{j,t}$, and the $RULE\ OF\ LAW_{j,t}$. Finally, to control for the effects of cultural and other characteristics that can influence the agency costs of investing in country *j*, I include an indicator variable $ENGLISH_j$ that is equal to one if English is an official language of country *j*, an indicator variable $CONTIGUOUS\ BORDER_j$ that is equal to one if country *j* shares a common border with the U.S., and a measure of the $DISTANCE_j$ between the U.S. and country *j*. All variables are defined in Appendix 3.

$FIRM\ CONTROLS_{i,t}$ is a vector of firm-level characteristics that could influence offshoring decisions. I use the total number of workers employed by firm *i* in year *t* ($EMPLOYEES_{i,t}$) to control for the size of the firm's labor force, as larger firms could be more likely to offshore U.S. jobs. I also include proxies for $PROFITABILITY_{i,t}$, $CAPITAL\ INTENSITY_{i,t}$, and $FOREIGN\ PROFITS_{i,t}$ to control for the effects of firm *i*'s operational performance, prospective cost of restructuring/retooling, and foreign activity on offshoring decisions.

I include year fixed effects to control for variation in macroeconomic trends and changes to economy-wide tax incentives that can influence the incentive to shift income (e.g., the domestic manufacturing deduction). I include industry fixed effects to control for overall industry trends that can influence offshoring choices or tax incentives (i.e., research and development tax credits). As my primary tests use binary and count-based regressions, I choose industry fixed effects instead of firm fixed effects to avoid the potential bias created by using a large number of fixed effects in non-linear models (Greene 2004). Because many countries' tax rates are relatively stable over the sample period and most of the variation in $STATUTORY\ RATE\ DIFFERENCE_{j,t}$ is cross sectional, I do *not* include country fixed effects as doing so would subsume much of the variation in the test variable. (In robustness analysis, however, I do estimate a model that uses changes in all independent variables.)

The coefficient of interest in Equation (1) is the estimate of β_1. The hypothesis that the tax–based incentives to shift income into a given foreign country are associated with U.S. jobs being sent to that foreign country would suggest that the estimate of $\beta_1 > 0$.

Table 4, Column 1 presents the results of estimating Equation (1) using logistic regression with *TOTAL OFFSHORING INDICATOR*$_{i,j,t}$ as the dependent variable. I include year and industry fixed effects, and cluster standard errors by both firm and country. The estimated coefficient on β_1 is positive (0.043) and significantly different than zero at the 1% level. In terms of economic magnitudes, a one percentage point increase in the difference between the statutory corporate tax rates of the U.S. and a particular foreign country is associated with a 3.9% increase in the likelihood that firms in my sample will send offshored U.S. jobs to that country.[24]

The estimated coefficients on the control variables are largely consistent with the intuition of the FDI and cross-border M&A literatures. U.S. jobs in my sample are more likely to be sent to countries that have strong trading relationships with the U.S. (*TRADEFLOWS*), low cost labor (*GDP PER CAPITA*), and share a common border with the U.S. (*CONTIGUOUS*). The negative association between the likelihood of hosting offshored U.S. jobs and both *GDP GROWTH* and *REGULATORY QUALITY* is possibly due to demographic shifts in general manufacturing and may not generalize to all industries. At a firm-level, the size of a firm's labor force (*EMPLOYEES*) is positively associated with the likelihood of sending U.S. jobs abroad. Finally, ROA is negative associated with the likelihood of sending U.S. jobs abroad suggesting that much of the offshoring in my sample happens when a firm is not performing well.

Table 4, Column 2 presents the results of estimating Equation (1) using negative binomial regression with *TOTAL OFFSHORED JOBS*$_{i,j,t}$ as the dependent variable. I use negative binomial regression rather than standard Poisson regression because the large number of observations that did not host offshored

[24] As the estimated coefficients from logistic regressions are not interpretable, I also present the marginal effects in Table 4. The marginal effect of a one percentage point increase in the *STATUTORY RATE DIFFERENCE* is associated with a 0.00037 increase in the likelihood that a foreign country will host offshored U.S. jobs. The unconditional mean likelihood that a given firm-country-year observation will host offshored U.S. jobs from firms in my sample is 0.00951 (i.e., 1,142/120,030)). The 3.9% increase is the likelihood of hosting offshored U.S. jobs is calculated by scaling the marginal effect by the unconditional mean.

U.S. jobs (i.e., zero observations) creates an over-dispersion problem that violates the equal mean and variance assumption of Poisson regression. I include year and industry fixed effects, and cluster standard errors by country only.[25] The estimated coefficient on β_1 is positive (0.071) and significantly different than zero at the 5% level. The incident rate ratio for this coefficient suggests that for each percentage point increase in the potential tax savings available from shifting income to a foreign country, firms offshore approximately 7.4% more U.S. jobs to that country. Also, the directional effects and significance of the control variables remain largely unchanged.

Applied to the earlier Merck example with Singapore in 2006 when the difference between the U.S. and Singaporean rates was 20% points, these estimates would suggest that Merck would be approximately 78% more likely to send U.S. jobs to Singapore than to a hypothetical sister country that was identical to Singapore on all dimensions, but had a tax rate of 40%.[26] Similar application of the estimates from the incident rate ratio from the count models would suggest that Merck would also send approximately 148% more jobs to Singapore than to the hypothetical sister country.

4.3.2 Test of the Association between Income Shifting Incentives and Offshored U.S. Jobs by Sourcing Arrangement

An important insight for this study is that the greatest tax-related income shifting benefits from offshoring jobs are most likely to be realized *when firms keep offshored activities within the firm and managers retain the ability to coordinate transactions internally*, which stands in contrast to other potential benefits of offshoring jobs that can be realized through *both* offshoring within the firm and outsourced offshoring. To illustrate, consider a firm that offshores U.S. jobs to access low-cost labor. The firm could benefit from low-cost workers either (1) within the firm by hiring them directly or (2)

[25] I am unaware of any way to cluster negative binomial regressions along multiple dimensions. As my test variable varies across country, but not firm, I chose to cluster standard errors in all subsequent negative binomial regressions by country. Later results are also robust to clustering by firm instead.

[26] The 78% is calculated as (40%-20%)*3.9. Also, the 78% increase should be interpreted relative the unconditional mean likelihood of hosting offshored U.S. jobs, which is approximately 1%. In other words, the 78% increase means that the likelihood a particular tax haven country hosts offshored U.S. jobs is nearly double the likelihood of a particular high-tax country hosts offshored U.S. jobs in my sample. While the likelihood that a particular tax haven hosts offshored U.S. jobs is still very low (approximately 2% rather than 1%), the increase is economically meaningful.

outside of the boundary of the firm by contracting with a local company that pays the workers low wages. However, because tax-motivated income shifting requires managerial control, explicit income shifting gains from offshoring can only be realized when offshored activity is kept within the firm and not when it is outsourced to another firm. This insight suggests that while many benefits of offshoring can be obtained regardless of the boundary of the firm (i.e., inside or outside of the boundary), tax-motivated offshoring to low-tax countries will be concentrated within offshoring within the firm.

To help validate earlier findings, I re-estimate both specifications of Equation (1), but separate offshored U.S. jobs that were subsequently kept *within the firm* and offshored U.S. jobs that were *outsourced* to another firm. To the extent that a potential foreign supplier in a low-tax country is willing to adjust their prices in the product market to compensate a U.S. buyer for the foregone tax benefits from not shifting income within the firm, then income shifting incentives could *implicitly* be positively associated with outsourced offshoring. Nevertheless, in such a case, the economic gains from income shifting would likely then be divided between two parties via negotiation. Hence, I generally expect the association between income shifting incentives and offshored jobs to be more pronounced when offshored jobs are kept within the firm, but there are theoretical reasons why the association could be similar across sourcing arrangements.

Table 5, Panel A, Column 1 presents the results of estimating Equation (1) using logistic regression and *WITHIN-FIRM OFFSHORING INDICATOR*$_{i,j,t}$ as the dependent variable. Control variables, fixed effects, and clustering choices follow those presented in Table 4. The estimated β_1 is positive (0.058) and significantly different than zero at the 1% level, and suggests that a one percentage point increase in the difference between the statutory corporate tax rates of the U.S. and a particular foreign country is associated with a 5.2% increase in the likelihood that country will host offshored U.S. jobs that are kept

within the offshoring firm.[27] Table 5, Panel A, Column 2 presents the results of re-estimating the same analysis but using *OUTSOURCED OFFSHORING INDICATOR*$_{i,j,t}$ as the dependent variable. In this analysis, the estimate of β_1 is negative (-0.015), but not significantly different than zero, suggesting that income shifting incentives are not explicitly considered in offshoring decisions when firms outsource offshored jobs. When comparing across these two models using a generalized Hausman test, the estimate of β_1 is significantly larger in Column 1 than in Column 2 (χ^2 statistic 14.20 and one-tailed p-value =0.0001). Taken together, these results help validate the positive association between income shifting incentives and the likelihood that a country hosts U.S. offshored jobs because any potential spurious explanation for this association would also have to explain why the association is present when offshoring is kept within the firm, but not present in outsourcing arrangements.

Table 5, Panel B, Column 1 presents the results of estimating Equation (1) using negative binomial regression and *WITHIN-FIRM OFFSHORED JOBS*$_{i,j,t}$ as the dependent variable. The estimated β_1 is positive (0.109) and significantly different than zero at the 1% level, and suggests that a one percentage point increase in the difference between the statutory corporate tax rates of the U.S. and a particular foreign country is associated with an 11% increase in the number of offshored U.S. jobs keep within the offshoring firm that are hosted by that foreign country. Table 5, Panel B, Column 2 presents the results of re-estimating the same analysis but using *OUTSOURCED OFFSHORED JOBS*$_{i,j,t}$ as the dependent variable. In this analysis, the estimate of β_1 is positive (0.054), but not significantly different than zero. When comparing across these two models, the estimate of β_1 is larger in Column 1 than in Column 2, but the difference is not significant at standard levels (χ^2 statistic = 1.1 and one-tailed p-value =0.1437).

4.3.3 Test of the Association between Income Shifting Incentives and Offshored U.S. Jobs by Level of Transfer Pricing Discretion

[27] The marginal effect of β_1 on the *WITHIN-FIRM OFFSHORING INDICATOR* is .0003898. Relative to the .0074 unconditional likelihood of a country hosts a firm's *within-firm* offshored jobs, the marginal effect represents a 5.2% increase over the unconditional mean.

I next examine how discretion in setting transfer prices influences the relation between income shifting incentives and offshored U.S. jobs. Prior research suggests that accounting-based income shifting is concentrated within certain industries and firms that have unique products and processes that are not easily comparable to those performed by other firms (De Simone, Mills, and Stomberg 2014). This non-comparability allows firms to use more discretion in setting intercompany transfer prices because it is difficult for tax authorities to authoritatively specify what an appropriate arm's length price would be. Firms are required to do a "comparability analysis" and come up with a range of potential arm's length prices based on comparable peer firms or transactions. This process gives firms some discretion in selecting both the peer firms they use as benchmarks to calculate the arm's length range and the final transfer price they choose from the arm's length range (De Simone 2014). Opportunistically exercised, this discretion could incrementally increase income shifting gains from offshoring beyond those that result from the theoretical arm's length terms.

I use two proxies for a firm's ability to exercise *DISCRETION* in setting the terms of intercompany transactions—(1) an indicator for pharmaceutical and technology firms,[28] and (2) an indicator for observations that have research and development activity greater than the sample median in a given year. I then manipulate earlier models to examine whether potential gains from income shifting have a greater association with tax-efficient offshoring choices for these two cross-sections of firms. Specifically, I estimate Equation (2) below.

$$\begin{aligned} &OFFSHORED\ JOBS_{i,j,t} = \delta_0 + \delta_1\ STATUTORY\ RATE\ DIFFERENCE_{j,t} + \\ &+ \delta_2\ DISCRETION_{i,t} + \delta_3\ STATUTORY\ RATE\ DIFFERENCE*DISCRETION \\ &+ \delta_C\ COUNTRY\ CONTROLS_{j,t} + \delta_F\ FIRM\ CONTROLS_{i,t} + YEAR\ EFFECTS_t \\ &+ INDUSTRY\ EFFECTS_k + \varepsilon_{i,j,t} \end{aligned} \qquad (2)$$

Table 6 presents the results of estimating Equation (2) in several ways. In both panels, the tests presented in Columns 1 and 2 use an indicator variable set equal to one for firms in the *COMPUTERS &*

[28] I use the pharmaceutical and computers industry groups in the 17 industries classified by Barth, Beaver, Hand, and Landsman (2005). I group together firms from industries not well represented in my sample into an "other category."

PHARMACEUTICALS industries to proxy for the level of discretion managers have in setting internal transfer prices and the tests presented in Columns 3 and 4 use an indicator variable equal to one for *R&D INTENSIVE* to proxy for discretion. To conserve space, the estimates of country- and firm-level controls are suppressed and only estimates δ_1 - δ_3 are presented.

Table 6, Panel A, Column 1 presents the marginal effects of estimating Equation (2) using a logistic regression and *WITHIN-FIRM OFFSHORING INDICATOR*$_{i,j,t}$ as the dependent variable. The estimate of δ_3 is positive and significant at the 5% level, suggesting that the sensitivity of the new host location of offshored U.S. jobs to income shifting incentives is greater for firms that have greater discretion in setting internal transfer prices. Column 2 presents the results of the same model estimated using *OUTSOURCED OFFSHORING INDICATOR* as the dependent variable. In this specification, the estimate of δ_3 is negative, but not significantly different from zero. In cross equation testing, the estimate of δ_3 is greater for *WITHIN-FIRM OFFSHORING INDICATOR* (Column 1) than for *OUTSOURCED OFFSHORING INDICATOR* (Column 2) and the difference is significant at the 10% level (χ^2 statistic = 2.00 and one-tailed p-value =0.0789). This suggests that the difference in the sensitivity of offshored U.S. job location to taxes between technology/pharmaceutical firms and other firms is greater when offshored jobs are kept within the firm than when offshored jobs are outsourced to another firm. The results presented in Columns 3 and 4 are directionally consistent when using *R&D INTENSIVE* firms are a proxy for discretion, but the difference is not significant across columns. At the bottom of Table 6, Panel A, I also present estimates of δ_3 that incorporate the correction for interacted independent variables in a logistic model suggested by Ai and Norton (2003).

Table 6, Panel B, Column 1 presents the results of estimating Equation (2) using a negative binomial regression and *WITHIN-FIRM OFFSHORED JOBS*$_{i,j,t}$ as the dependent variable. The estimate of δ_3 is positive and significant at the 5% level. Column 2 presents the results of the same model estimated using *OUTSOURCED OFFSHORING INDICATOR* as the dependent variable and the estimate of δ_3 is also positive, but not significantly different from zero. In cross equation testing, the estimate of δ_3 is greater

for *WITHIN-FIRM OFFSHORING INDICATOR* (Column 1) than for *OUTSOURCED OFFSHORING INDICATOR* (Column 2), but the difference is not statistically significant (χ^2 statistic = 0.54 and one-tailed p-value =0.2308). The results presented in Columns 3 and 4 from tests that use *R&D INTENSIVE* firms as a proxy for discretion are not directionally consistent with predictions, but the estimates and differences are not significant.

Taken together, the results generally support the idea that firms that have more discretion in setting transfer prices are more sensitive to tax incentives when making offshoring decisions. This result is more pronounced when offshored U.S. jobs are kept within the firm than when those offshored U.S. jobs are outsourced to another country. The difference across sourcing arrangements is not always statistically significant however. This result may be due to empirical reasons (e.g., low statistical power) or theoretical reasons (e.g., implicit taxes).

4.3.4 Test of the Association between Income Shifting Incentives and Offshored U.S. Jobs across Job Type

Under the arm's length standard, the tax benefit of relocating an employee from the United States to a low-tax country depends on the difference between what the firm pays the employee and what independent parties would pay for the worker's productive output (i.e., the margin). Because moving a high-margin worker shifts more income than moving a low-margin worker, the potential tax benefits of shifting income to a low-tax country are greater for high-margin workers than for low-margin workers. Hence, I expect the location of high-margin jobs and activities to be more sensitive to income shifting incentives than the location of low-margin jobs.

For illustrative purposes, reconsider the Merck example and hypothetically assume that only two jobs were sent from their plant in Georgia to their new expanded Singapore plant—a data entry position and a position for a specialized biochemist. Because of the commodity-like nature of data entry services and the large pool of available substitutes for the employee, at arm's length very little profit would be attributable to the data entry personnel as they generate a very small margin. Due to the unique nature of

the biochemists' work and the value created by his or her firm-specific human capital, more taxable income would be attributable to the biochemist as they generate larger margins.

While TAA does not provide granular detail on the specific types or titles of jobs that are offshored, about 30% petitions in my sample were filed by unions on behalf of displaced workers. As specialized, ambitious, and innovative workers that create large margins for firms are less likely to unionize (Farber and Saks 1980, Hirsch 1980), I use workers whose TAA petitions were filed by unions as a coarse proxy for workers who would generate a low contribution margin and re-estimate Equation (1) separating the dependent variable into the workers whose petitions were filed by a union and those that weren't. I choose to focus only on offshored jobs kept within the firm because earlier results show firms are more sensitive to tax incentives under this sourcing arrangement.

Table 7 Panel A presents the results of estimating Equation (1) using logistic regression and *WITHIN-FIRM OFFSHORING INDICATOR, UNIONIZED WITHIN-FIRM OFFSHORING INDICATOR*, and *OTHER WITHIN-FIRM OFFSHORING INDICATOR* in Columns 1-3, respectively. The estimate of *STATUTORY RATE DIFFERENCE* in Column 1 replicates the estimate from Column 1 of Table 5 Panel A and is positive (0.058) and significant at the 1% level. The estimate in Column 2 using *UNIONIZED WITHIN-FIRM OFFSHORING INDICATOR* as a dependent variable is not significantly different from zero, while the estimate in Column 3 using *OTHER WITHIN-FIRM OFFSHORING INDICATOR* is positive (0.061) and significant at the 1% level. Interestingly, while the estimated coefficient on *GDP PER CAPITA* is significantly negative in both Columns 2 & 3, it is significantly more negative in the Column 2 analysis of unionized jobs than in the Column 3 analysis of other jobs (χ^2 statistic = 2.90 and one-tailed p-value =0.016). Taken together, these estimates suggest that the cost of labor is incrementally associated with job location for low-margin jobs while the potential gains from income shifting are incrementally associated with job low location for high-margin jobs.

Table 7 Panel B presents the results of estimating Equation (1) using negative binomial regression and *WITHIN-FIRM OFFSHORED JOBS*, *UNIONIZED WITHIN-FIRM JOBS*, and *OTHER WITHIN-FIRM OFFSHORED JOBS* as dependent variables in Columns 1-3, respectively. The estimate of *STATUTORY RATE DIFFERENCE* is positive (0.120) and significantly different than zero at the 1% level for nonunionized, higher-margin jobs (Column 3), but not significant for unionized jobs (Column 2). The estimated coefficient on *GDP PER CAPITA* is negative and significant for both unionized and nonunionized jobs, but significantly more negative for nonunionized jobs (χ^2 statistic = 5.86 and one-tailed p-value =0.007). Collectively, the results across both panels highlight variation across job type in the way that firms prioritize tax incentives and the cost of labor in decisions about offshored jobs.

4.3.5 Test of the Association between Income Shifting Incentives and Offshored U.S. Jobs using Tax Treaty Revisions

While tax rate differences are a common way to represent the benefit of shifting income from one country to another in a single metric (Wagener and Watrin 2014), there are also other features of countries' international tax systems that can influence the costs or benefits of shifting income between countries. As there is little time-series variation in tax rates during my sample period, to help identify the association between income shifting incentives and offshored U.S. jobs using time-series evidence I examine how the offshoring of U.S. jobs to a particular foreign country changes in response to revisions to that country's bilateral tax treaty with the U.S.

From 2003 to 2009, the U.S. and ten foreign countries in my sample bilaterally revised their tax treaties. While the particulars of each treaty revision are unique, the expected effect of treaty revisions on firms in my sample is to reduce firms' ability to aggressively shift income via treaty shopping.[29] As the

[29] In addition to provisions intended to eliminate fiscal evasion (e.g., clauses that make it more difficulty to engage in treaty shopping), treaty revisions can also contain provisions that revise agreements that relate to eliminating double taxation between two countries, which would actually increase the benefits of income shifting and increase the likelihood that a firm invests in the treaty country following the revisions. However, McIntyre (2003) explains that broad provisions to eliminate double taxation are generally set forth in an initial treaty—not a revision. Provisions in treaty revisions that do relate to withholding rules often deal with withholding rules for new or special entity types (e.g., the 2004 protocol amending the U.S. – France treaty modifies withholding rules to include regulated investment companies, real estate investment trusts, and real estate mortgage conduits). As my sample is

benefits of aggressive income shifting are curbed, the incentive to shift income out of the U.S. and into the contracting country decreases, and thus decreases the incentive to relocate U.S. jobs there as well.

I use a matched sample design to examine how treaty revisions influence both (1) the likelihood that firms offshore U.S. jobs to a given country and (2) the number of U.S. jobs that get offshored to that country. My "treatment group" includes all firm-country-year observations where the host country *j* is one of the ten countries listed in Appendix 3 that revised their tax treaty with the U.S. from 2003-2009. For each firm-country combination in the treatment group, I randomly choose a matched "control group" that is (1) from the *same firm*, (2) from a country that did *not* revise its tax treaty with the United States during the sample period, and (3) from a country with comparable *STATUTORY TAX RATE DIFFERENCE*, *TRADEFLOWS*, *GDP PER CAPITA*, or *REGULATORY QUALITY*.[30] Using this sample, I estimate Equation (3).

$$OFFSHORED\ JOBS_{i,j,t} = \gamma_0 + \gamma_1 TREATY\ REVISION\ COUNTRY_j + \gamma_2 POST_{j,t} + \gamma_3 POST*TREATY\ REVISION\ COUNTRY_{j,t} + \gamma_F\ FIRM\ CONTROLS_{i,t} + \gamma_C\ COUNTRY\ CONTROLS_{j,t} + INDUSTRY\ EFFECTS_k + YEAR\ EFFECTS_t + \varepsilon_{i,j,t} \quad (3)$$

TREATY REVISION COUNTRY$_j$ is an indicator variable if the host country *j* and the U.S. revise their bilateral tax treaty during the sample period and set equal to zero for all observations from a matched country. For treatment countries, $POST_{j,t}$ is an indicator that is equal to one following the treaty revision and equal to zero beforehand. For matched countries, $POST_{j,t}$ is an indicator that is equal to one following the matched treatment country's treaty revision and equal to zero beforehand. The coefficient of interest is the estimate of the interaction *POST * TREATY REVISION COUNTRY*. To the extent that revisions to bilateral tax treaties reduce firms' abilities to aggressively shift income and decrease the tax

primarily made up of manufacturing firms that are publicly traded corporations, I expect such withholding revisions to have little effect on firms in my sample and the net effect of treaty revisions to increase the cost of aggressive income shifting between the two contracting countries.

[30] Specifically, I include a "control country" as an potential match for a "treatment country" if the country's average *STATUTORY TAX RATE DIFFERENCE*, *TRADEFLOWS*, *GDP PER CAPITA*, or *REGULATORY QUALITY* for the sample period were in the same quintile as the "treatment country." I select these variables as they seem to have the greatest influence on offshoring outcomes across multiple models. For this test, I use this matching strategy rather than propensity score matching as the quality of propensity score matches is very low.

incentive to shift income into a particular country, the intuition of my hypothesis would suggest that $\gamma_3 <$ 0—specifically when offshored jobs are kept within the firm.

To ensure that the observed results are not the artifact of a single choice of control firms, I estimate Equation (3) one thousand times using randomly selected control countries based on the criteria listed above. By drawing potential matched countries from a list of countries with common characteristics rather than *any* country that did not have a tax treaty, I eliminate observations that are likely poor counterfactuals (e.g., comparing Nigeria and Japan).

Table 8, Panel A, Column 1 presents the results of estimating Equation (3) using logistic regression and *WITHIN-FIRM OFFSHORING INDICATOR*$_{i,j,t}$ as the dependent variable. As Equation (3) is estimated with 1,000 different samples, the coefficient estimates presented in Column 1are the mean coefficient of the 1,000 estimates and the t-statistics are the mean coefficient estimates divided by the standard deviation of the 1,000 estimates. The average estimate of γ_3 is -0.577, but is not significantly different from zero (t-stat = -1.103). The results of estimating Equation (3) using *OUTSOURCED OFFSHORING INDICATOR*$_{i,j,t}$ as the dependent variable are presented in Table 8, Panel A, Column 2. The average estimate of γ_3 in this specification using outsourced jobs is 0.229 and also not significantly different than zero (t-stat = 0.450). Across the 1,000 samples, the average difference between estimates of γ_3 in Column 1 and Column 2 is -0.8068 (t-stat = -1.168) and not significantly different than zero. In 903 of the 1,000 samples, however, the estimate of γ_3 in Column 1 is less than the estimate of γ_3 in Column 2 (significant at 5% with one-tailed test) suggesting the average difference across equations is affected by influential observations.[31]

In a similar fashion, Table 8, Panel B, Column 1 presents the results of estimating Equation (3) using negative binomial regression and *WITHIN-FIRM OFFSHORED JOBS*$_{i,j,t}$ as the dependent variable. Equation (3) is again estimated with 1,000 different control samples and the average coefficients are

[31] As applying the correction described by Ai and Norton (2003) is computationally intensive in looped form, I repeat this analysis using OLS for robustness as suggested by Angrist and Pischke (2009), p197. Directional inferences and significant levels using this alternative methodology remain unchanged.

based on the distribution of the 1,000 estimates. The average estimate of γ_3 is -2.280, (t-stat = -1.452, one tailed p-value of .073). The results of estimating Equation (3) using *OUTSOURCED OFFSHORED JOBS*$_{i,j,t}$ as the dependent variable are presented in Table 8, Panel B, Column 2. The average estimate of γ_3 in this specification is 1.108 and also not significantly different than zero (t-stat = 0.434). Across the 1,000 samples, the average difference between estimates of γ_3 in Column 1 and Column 2 is -3.388 (t-stat = -1.234) and not significantly different than zero. Additionally, in 904 of the 1,000 samples, the estimate of γ_3 in Column 1 is less than the estimate of γ_3 in Column 2 (significant at 5% with one-tailed test). Across panels, these results weakly suggest that following treaty revisions that decrease the incentive to engage in aggressive income shifting, the decrease in the number of U.S. jobs offshored to a treaty-revising country relative to change in the number of jobs offshored to control countries was greater when jobs were kept within the firm than when jobs were outsourced to other firms.

To the extent that these treaty revisions decrease the expected gains from income shifting, then these results help provide additional evidence that income shifting incentives have a material impact on offshoring decisions—incremental to other established determinants. These results also suggest that firms consider multiple dimensions of a country's tax environment when deciding where to locate labor.

5. Robustness Tests

5.1 Analysis Using Changes in Independent Variables

Equations (1) – (3) are constructed with independent variables that proxy for the magnitude of the potential costs and benefits that managers may consider when making the decisions of whether and where to offshored U.S. jobs. If managers make decisions about offshoring by comparing prospective costs and benefits, then the *level* of any potential tax savings from income shifting from the United States to a particular foreign country (i.e., the difference between the tax rate in the United States and the foreign country) would be relevant to a manager's offshoring decision.

However, in a hypothetical world with no adjustment costs where tax gains from income shifting are the sole determinant of offshoring jobs, offshoring would only happen if there was a *change* to a tax

benefit. Firms would move jobs immediately following the tax change and then not again until another tax change. To the extent that the adjustment costs related to offshoring are nominal, then the specifications in Equations (1) – (3) that use levels as independent variables could be problematic, and a positive association between offshoring and the level of tax savings could be spuriously due to a correlated omitted variable.[32] In such a case, a specification that uses changes as independent variables would be more appropriate. However, to the extent that the adjustment costs related to offshoring are large, a specification of that uses changes as independent variables could fail to capture an association between offshored jobs and tax incentives if adjustment costs delay managers' decisions to offshore jobs.

To ensure that the association between offshored jobs and income shifting incentives is robust to different assumptions about the nature of adjustment costs, I estimate Equation (4) below.

$$OFFSHORED\ JOBS_{i,j,t} = \beta_0 + \beta_1\ \Delta STATUTORY\ RATE\ DIFFERENCE_{j,t} + \beta_C \Delta COUNTRY\ CONTROLS_{j,t} + \beta_F\ \Delta FIRM\ CONTROLS_{i,t} + YEAR\ EFFECTS_t + \varepsilon_{i,j,t} \quad (4)$$

As the primary independent variables in Equation (4) are change variables, this model omits all country-level characteristics that do not vary over the sample period. I include year-fixed effects to control for macroeconomic trends not captured by other variables the model.

The results of estimating Equation (4) using both indicator and continuous variables to proxy for offshored jobs are presented in Table 9 Panels A and B, respectively. Across both panels, positive estimates of the coefficient on *ΔSTATUTORY RATE DIFFERENCE* suggest that firms in my sample offshore more (fewer) jobs to foreign countries following increases (decreases) in the tax benefits of shifting taxable income to those countries. These estimates also suggest that the positive association between income shifting incentives and offshored jobs is robust to different assumptions about the nature of the adjustment costs related to offshoring.

5.2 The Moulton Problem

[32] Any potential correlated omitted variable would, however, have to also explain why the association between tax rates and offshored jobs is concentrated within jobs that are kept within the firm and why firms with discretion in setting the terms of intercompany prices

I cluster standard errors by country in all models to ensure that the standard errors in significance tests are not an artifact of the so-called "Moulton problem" (Moulton 1986), which arises from examining the effect of a policy using data that is more granular than the level at which the policy is administered. For an additional solution to the Moulton problem, I aggregate the underlying data to the level at which the policy is administered and run country level-regressions. To do this I use negative binomial regression to estimate Equation (5) and cluster the standard errors by country.

$$OFFSHORED\ JOBS_{j,t} = \gamma_0 + \gamma_1\ STATUTORY\ RATE\ DIFFERENCE_{j,t} + \gamma_{C,}COUNTRY\ CONTROLS_{j,t} + YEAR\ EFFECTS_t + \varepsilon_{j,t} \quad (5)$$

$OFFSHORED\ JOBS_{j,t}$ is the aggregated number of U.S. jobs offshored by *all firms in my sample* to country *j* in year *t*. By construction, this model is forced to omit all firm-specific characteristics. Results from estimating Equation (5) are presented in Table 10. The magnitudes, significance levels, and inferences drawn from the initial results in Table 5, Panel B appear unchanged.

5.3 Count-based Regressions with Zeros

Approximately 99% of the observations in my sample do not host offshored U.S. jobs. This means that estimates that use a count of *OFFSHORED JOBS* have a very high number of zero observations. Lots of zeros can create an overdispersion problem that makes the basic count regression technique (i.e., Poisson regression) not appropriate as variance estimates may be biased. In the main tests, I tentatively address this problem by using a negative binomial regression, which lets the distribution of the count variable have a different mean and variance. The Zero-Inflated Poisson (ZIP) model is another way of dealing with the overdispersion problem when there is a theoretical basis to predict which zero observations are excessive and erroneously inflating the number of zero observations. In my sample, the ZIP model is not appropriate, however, as I see no theoretical argument that any of the zero observations are erroneously included.

To help alleviate any concern that the association between income shifting incentives and offshored U.S. jobs is the artifact of an overdispersion problem caused by "zero offshoring observations," I drop

these observations and examine the association between income shifting incentives and offshored jobs for non-zero observations only. Based on that untabulated analysis, inferences are unchanged.

6. Conclusions

This paper examines the labor market consequences of multinational firms' sensitivity to corporate tax rates. Specifically, I study the association between potential tax gains from offshoring jobs and where offshored U.S. jobs are subsequently located. To the extent that (1) firms enjoy tax benefits from shifting income and (2) offshoring domestic jobs to foreign countries contributes to a firm's ability to shift income, then income shifting incentives would also contribute to a firm's decision to offshore jobs. Consistent with this notion, I find evidence that both (1) the likelihood a firm offshores U.S. jobs to a particular foreign country, and (2) the number of offshored U.S. jobs sent to a particular foreign country are positively associated with the tax-based incentives to shift income into that country. In cross-sectional tests, I find generally robust evidence that both of these positive associations are stronger for offshored jobs are kept within the firm, for firms have discretion in setting the terms of their intercompany transactions, and for jobs that generate higher contribution margins. I also find weak evidence that following revisions to bilateral tax treaties that increase the cost of aggressive income shifting, firms offshore fewer U.S. jobs to the treaty-revising country.

Taken together, these findings contribute to the literature on international tax avoidance by showing links between tax-motivated income shifting incentives and corporate decisions regarding where jobs are located. These results suggest that tax-motivated income shifting incentives are considered incremental to other factors when firms make operational decisions about where to locate labor. These results should be of interest to academics and policymakers alike.

While this study presents estimates of the sensitivity of the location of jobs within the firm to income shifting incentives, the results should be interpreted with several points of caution. First, as the sample is primarily made up of manufacturing firms, these results may not generalize to the whole economy.

Second, as the sample only allows me to examine the sensitivity of job location to income shifting incentives for firms that actually offshored U.S. jobs and whose employees filed for assistance from TAA, these estimates may be influenced by self-selection. Hence, this study is not intended to conclude research about the labor market consequences of income shifting incentives; rather, it is intended to be one attempt to sidestep empirical issues that have made it difficult for prior research to examine the intersection of income shifting and offshoring. I look forward to additional studies on the matter.

Figure 1 – Summary of operational and tax consequences of location and sourcing arrangements

		Sourcing	
		Within the firm	Outsourcing
Location	Domestic	(1) Domestic performance within the firm Examples: (a) production by a U.S. subsidiary, (b) sale by U.S. subsidiary, (c) in-house call center in the U.S. Transactions coordinated by: management Foreign taxes due: None. U.S. taxes: Profits taxable. Transfer pricing: N/A for calculating U.S. federal tax because all U.S. activity is consolidated.[33]	(2) Outsourcing to a domestic firm Examples: (a) purchasing from a U.S. supplier, (b) sale by U.S. distributor, (c) outsourced call center in the U.S. Transactions coordinated by: market prices Foreign taxes due: None. U.S. taxes: Profits taxable. Transfer pricing: N/A
	Foreign	(3) Offshoring within the firm Examples: (a) production by a foreign subsidiary, (b) sale by foreign subsidiary, (c) in-house foreign call center Transactions coordinated by: management Foreign taxes due: Foreign profits are taxable in each foreign jurisdiction according to the tax law in the local country. U.S. taxes: Worldwide profits are taxable. Taxes on foreign profits are deferred until repatriated. U.S. credit given for foreign income taxes paid. Transfer pricing: arm's length standard	(4) Outsourced offshoring Examples: (a) purchasing from a foreign supplier, (b) sale by foreign distributor, (c) outsourced foreign call center Transactions coordinated by: market prices Foreign taxes due: Generally, no foreign taxes are due in the foreign country unless the firm has a permanent establishment in the local country that relates to that activity. U.S. taxes: Worldwide profits are taxable. U.S. credit given for foreign income taxes paid (if applicable). Transfer pricing: N/A

[33] While strategically setting transfer prices does not influence a domestic firm's federal tax burden, it could impact a firm's state and local tax burden as there is heterogeneity in state and local tax rates.

Appendix 1 – Income shifting example

A simple production example illustrates the potential tax gains from offshoring labor to a foreign country. Suppose that a firm produces a product using a two-part production process. In the first step of production, a firm subsidiary produces components at a cost of $30. The subsidiary then transfers the components to the parent company that assembles the components to make the final good in the second step of production at a cost of $10. The firm can sell the finished good to customers in the U.S. for $100, resulting in $60 of taxable income.

Case 1—Domestic production

If both the parent and subsidiary are located in the U.S., then regardless of the price at which the subsidiary transfers the components to the parent, $60 of taxable income will be reported to the U.S. because consolidation at the country level would eliminate intercompany transactions. If the U.S. income tax rate is 35% then the firm would pay $21 of income tax to the U.S. and have $39 of after-tax profits.

Case 2—Example of *incorrectly* sourcing only deductions abroad

Suppose now that the subsidiary is located in Hong Kong, which has a tax rate of 15%, and the parent is still located in the U.S. The costs of the first and second steps production are still $30 and $10, respectively, and the final good still sells for $100. If shifting the first stage of production from the U.S. to Hong Kong only shifted deductions without any shifting revenues, this would result in a $30 loss in Hong Kong and taxable income in the U.S. of $90 ($100-$10). The firm would pay $31.50 of tax to the U.S. and have an effective tax rate of 52.5% ($31.50/$60).

This example is incorrect because it violates the arm's length principle. No independent party acting in its own interest would expend resources without receiving revenue or some remuneration for goods provided or services performed. Acceptable income shifting plans must allocate both revenues and deductions to foreign countries.

Case 3—Foreign production using accepted transfer pricing methodologies

OECD guidance describes five accepted transfer pricing methodologies—comparable uncontrolled price method, resale price method, cost plus method, transactional net margin method, and the transactional profit split method. Below I define and give examples of three of these methods to illustrate specifically how offshoring can contribute to income shifting.

For each of the examples, continue to suppose that the subsidiary is located in Hong Kong, which has a tax rate of 15%, and the parent is located in the U.S., which has a tax rate of 35%. The costs of the first and second steps production are still $30 and $10, respectively, and the final good still sells for $100.

(A) *Comparable uncontrolled price method*—A transfer pricing method that compares the price for property or services transferred in a controlled transaction to the price charged for property or services transferred in a comparable uncontrolled transaction in comparable circumstances.

Applied example: suppose there is another firm in Hong Kong that also produces components identical to the ones produced by the Hong Kong subsidiary and sells them to other companies in the United States for $80. Using the comparable uncontrolled price method, $50 of taxable income ($80-$30) of taxable income would be reported in Hong Kong and $10 of taxable income would be reported in the U.S. ($100-$80-$10). The firm would pay $11 of tax to the two nations combined ($50*15%+$10*35%), and have $49 of after tax profits.

(B) *Cost plus method*—A transfer pricing method using the costs incurred by the supplier of property (or services) in a controlled transaction. An appropriate cost plus markup is added to this cost, to make an appropriate profit in light of the functions performed (taking into account assets used and risks assumed) and the market conditions. What is arrived at after adding the cost plus mark up to the above costs may be regarded as an arm's length price of the original controlled transaction.

Applied example: Suppose that the parent and subsidiary determine that an appropriate markup for the costs incurred during stage one production in Hong Kong is 100%. If the Hong Kong subsidiary incurs $30 of production costs, then based on the 100% markup, the Hong Kong subsidiary would recognize $60 of revenue, and report $30 of taxable income in Hong Kong. The firm would then report taxable income in the United States of $30 ($100-$60-$10). The firm would pay $15 of tax to the two nations combined ($30*15%+$30*35%), and have $45 of after tax profits.

(C) *Transactional profit split method*— The transactional profit split method determines the division of profits that independent enterprises would have expected to realize from engaging in a similar transaction. The combined profits are then split between the associated enterprises on an economically valid basis.

Applied example: The Hong Kong subsidiary and the U.S. parent together incur costs of $40 ($30+$10) and receive $100 of revenue, resulting in $60 of taxable income. Suppose that based on the relative functions performed, assets owned, and risks born in the two countries the firm determines that 70% of the profits should be attributable to Hong Kong. In that case, $42 of taxable income is reported in Hong Kong ($60*70%) and $18 of taxable income is reported in the U.S. ($60*30%). The firm would pay $12.60 of tax to the two nations combined ($42*15%+$18*35%), and have $47.40 of after tax profits.

Introducing managerial discretion and the arm's length range

In the three cases above, the arm's length price, markup percentage, and profit split percentage were given. In reality, these numbers are often more subjective. By choosing a higher price, higher markup percentage, or a profit split percentage that attributes more taxable income to Hong Kong and less taxable income to the United States.

In order to limit managerial discretion, the OECD requires that firms perform a comparability analysis. A comparability analysis involves identifying a group of benchmarks transactions and/or firms and using those benchmarks to come up with a range of potential transfer prices that would be comparable with those used by benchmark firms. This range is referred to as the arm's length range and a firm can then choose their transfer prices from within the arm's length range.

Appendix 2 – Sample Certification Report

MERCK & CO., INC.
FLINT RIVER PLANT
ALBANY, GEORGIA

Certification Regarding Eligibility
To Apply for Worker Adjustment Assistance and
Alternative Trade Adjustment Assistance

In accordance with Section 223 of the Trade Act of 1974, as amended (19 USC 2273), the Department of Labor herein presents the results of an investigation regarding certification of eligibility to apply for worker adjustment assistance.

In order to make an affirmative determination and issue a certification of eligibility to apply for Trade Adjustment Assistance, the group eligibility requirements in either paragraph (a)(2)(A) or (a)(2)(B) of Section 222 of the Trade Act must be met. It is determined in this case that the requirements of (a)(2)(B) of Section 222 have been met.

The investigation was initiated on February 5, 2007 in response to a petition filed by workers of Merck & Co., Inc., Flint River Plant, Albany, Georgia. The workers produce pharmaceutical ingredients. These ingredients are used as intermediate or active ingredients in prescription drugs.

The investigation revealed that employment at the subject facility declined between 2005 and 2006.

The subject firm has shifted a portion of production to a country (Singapore) which is party to a free trade agreement with the United States.

In addition, in accordance with Section 246 the Trade Act of 1974 (26 USC 2813), as amended, the Department of Labor herein presents the results of its investigation regarding certification of eligibility to apply for alternative trade adjustment assistance (ATAA) for older workers.

In order for the Department to issue a certification of eligibility to apply for ATAA, the group eligibility requirements of Section 246 of the Trade Act must be met. The Department has determined in this case that the requirements of Section 246 have been met.

A significant number of workers at the firm are age 50 or over and possess skills that are not easily transferable. Competitive conditions within the industry are adverse.

Conclusion

After careful review of the facts obtained in the investigation, I determine that there was a shift in production from the workers' firm or subdivision to Singapore of articles that are like or directly competitive with those produced by the subject firm or subdivision. In accordance with the provisions of the Act,
I make the following certification:

"All workers of Merck & Co., Inc., Flint River Plant, Albany, Georgia who became totally or partially separated from employment on or after February 1, 2006, through two years from the date of certification, are eligible to apply for adjustment assistance under Section 223 of the Trade Act of 1974, and are also eligible to apply for alternative trade adjustment assistance under Section 246 of the Trade Act of 1974."

Signed in Washington, D.C., this 12th day of February 2007

/s/Richard Church

_____
Certifying Officer, Division of Trade Adjustment Assistance

Appendix 3 – Variable Definitions and Data Sources

Variable	Definition
Dependent Variables—	
TOTAL OFFSHORING INDICATOR$_{i,j,t}$	An indicator variable equal to one if firm *i* offshored U.S. jobs to country *j* in year *t*, and equal to zero otherwise.
WITHIN-FIRM OFFSHORING INDICATOR$_{i,j,t}$	An indicator variable equal to one if firm *i* offshored U.S. jobs to country *j* in year *t* that were subsequently kept within the firm, and equal to zero otherwise.
OUTSOURCED OFFSHORING INDICATOR$_{i,j,t}$	An indicator variable equal to one if firm *i* offshored U.S. jobs to country *j* in year *t* that were subsequently outsourced to another firm, and equal to zero otherwise.
TOTAL OFFSHORED JOBS$_{i,j,t}$	The number of U.S. jobs offshored by firm *i* to country *j* in year *t*.
WITHIN-FIRM OFFSHORED JOBS$_{i,j,t}$	The number of U.S. jobs offshored by firm *i* to country *j* in year *t* that are subsequently kept within the firm.
OUTSOURCED OFFSHORED JOBS$_{i,j,t}$	The number of U.S. jobs offshored by firm *i* to country *j* in year *t* that are subsequently outsourced to another firm.
UNIONIZED WITHIN-FIRM OFFSHORING INDICATOR$_{i,j,t}$	An indicator variable equal to one if firm *i* offshored unionized U.S. jobs to country *j* in year *t* that were subsequently kept within the firm, and equal to zero otherwise. Jobs are considered unionized if a labor union prepared the petition filed with TAA on behalf of the displaced workers.
NONUNIONIZED WITHIN-FIRM OFFSHORING INDICATOR$_{i,j,t}$	An indicator variable equal to one if firm *i* offshored nonunionized U.S. jobs to country *j* in year *t* that were subsequently kept within the firm, and equal to zero otherwise. Jobs are considered nonunionized if an entity other than a union prepared the petition filed with TAA.
UNIONIZED WITHIN-FIRM OFFSHORED JOBS$_{i,j,t}$	The number of unionized U.S. jobs offshored by firm *i* to country *j* in year *t* that are subsequently kept within the firm. Jobs are considered unionized if a labor union prepared the petition filed with TAA on behalf of the displaced workers.
NONUNIONIZED WITHIN-FIRM OFFSHORED JOBS$_{i,j,t}$	The number of nonunionized U.S. jobs offshored by firm *i* to country *j* in year *t* that are subsequently kept within the firm. Jobs are considered nonunionized if an entity other than a union prepared the petition filed with TAA.
TOTAL OFFSHORED JOBS$_{j,t}$	The aggregate number of U.S. jobs offshored to country *j* in year *t*.
WITHIN-FIRM OFFSHORED JOBS$_{j,t}$	The aggregate number of U.S. jobs offshored to country *j* in year *t* that are subsequently kept within the firm.
OUTSOURCED OFFSHORED JOBS$_{j,t}$	The aggregate number of U.S. jobs offshored to country *j* in year *t* that are subsequently outsourced to another firm.
Country-level variables—	
STATUTORY RATE DIFFERENCE$_{j,t}$	The difference between the highest corporate tax rate in the U.S. and the highest corporate tax rate in country *j* in year *t* using rates from KPMG's historical corporate tax rates tables.
GDP$_{j,t}$	The log of the gross domestic product of country *j* in year *t*. These data are collected by the World Bank.

GDP GROWTH$_{j,t}$	The GDP in country *j* in year *t* less the GDP in country *j* in year *t-1* divided by the GDP in year *t-1*.
GDP PER CAPITA$_{j,t}$	The log of the gross domestic product per capita in country *j* in year *t*. These data come from the World Bank.
TRADEFLOWS$_{j,t}$	The log of the maximum of the imports from or export to country *j* in year *t*. These data come from the United Nations Commodity Trade Statistics Database.
EXCHANGE RATE$_{j,t}$	The average value of $1 USD in country *j* in year *t*. These data are collected from the historical exchange rate files on Oanda.com.
INDIRECT TAX$_{j,t}$	An indicator variable equal to one if country *j* imposed a value added tax (VAT) in year *t* and zero otherwise.
POLITICAL STABILITY$_{j,t}$	An index score that reflects perceptions in year *t* that the government of country *j* will be destabilized or overthrown. These data are gathered by the World Bank and maintained as part of the World Governance Indicators (WGI).
GOVERNMENT EFFECTIVENESS$_{j,t}$	An index score that reflects perceptions in year *t* of the quality of public services, civil service, and policy formation by the local government in country *j*. These data are gathered by the World Bank and maintained as part of the World Governance Indicators (WGI).
REGULATORY QUALITY$_{j,t}$	An index score that reflects perceptions in year *t* that the government of country *j* can formulate and implement sound policies that will permit and promote private sector development. These data are gathered by the World Bank and maintained as part of the World Governance Indicators (WGI).
RULE OF LAW$_{j,t}$	An index score that reflects perceptions in year *t* that agents in country *j* have confidence in and abide by the rules of society, including the quality of contract enforcement, property rights, and the court system. These data are gathered by the World Bank and maintained as part of the World Governance Indicators (WGI).
ENGLISH$_{j}$	An indicator variable equal to one if English is the (or one of the) official languages of country *j*. These data were obtained from www.cepii.fr.
CONTIGUOUS BORDER$_{j}$	An indicator variable equal to one for jobs that are offshored to Canada or Mexico and zero otherwise.
DISTANCE$_{j}$	The natural log of the distance from the capital of the U.S. to the capital of country *j*. These data were obtained from www.cepii.fr.
ΔSTATUTORY RATE DIFFERENCE$_{j,t}$	*STATUTORY RATE DIFFERENCE*$_{j,t}$ *- STATUTORY RATE DIFFERENCE*$_{j,t-1}$
ΔGDP$_{j,t}$	*((GDP*$_{j,t}$ *- GDP*$_{j,t-1}$*) / GDP*$_{j,t-1}$**)** **100*
ΔGDP PER CAPITA$_{j,t}$	*((GDP PER CAPITA*$_{j,t}$ *- GDP PER CAPITA*$_{j,t-1}$*) / GDP PER CAPITA*$_{j,t-1}$**)** **100*
ΔTRADEFLOWS$_{j,t}$	*((TRADEFLOWS*$_{j,t}$ *- TRADEFLOWS*$_{j,t-1}$*) / TRADEFLOWS*$_{j,t-1}$**)** **100*
ΔEXCHANGE RATE$_{j,t}$	*((EXCHANGE RATE*$_{j,t}$ *- EXCHANGE RATE*$_{j,t-1}$*) / EXCHANGE RATE*$_{j,t-1}$**)** **100*
ΔPOLITICAL STABILITY$_{j,t}$	*POLITICAL STABILITY*$_{j,t}$ *- POLITICAL STABILITY*$_{j,t-1}$
ΔGOVERNMENT EFFECTIVENESS$_{j,t}$	*GOVERNMENT EFFECTIVENESS*$_{j,t}$ *- GOVERNMENT EFFECTIVENESS*$_{j,t-1}$
ΔREGULATORY QUALITY$_{j,t}$	*REGULATORY QUALITY*$_{j,t}$ *- REGULATORY QUALITY*$_{j,t-1}$
ΔRULE OF LAW$_{j,t}$	*RULE OF LAW*$_{j,t}$ *- RULE OF LAW*$_{j,t-1}$
Firm Controls—	

$EMPLOYEES_{i,t}$	The log of one plus the total number of employees employed by firm *i* in year *t*. Compustat mnemonic: emp.
$PROFITABILITY_{i,t}$	Firm *i*'s net income in year *t* scaled by total assets in year *t-1*. Compustat mnemonics: ni & at.
$CAPITAL\ INTENSITY_{i,t}$	Firm *i*'s net property, plant, and equipment in year *t* scaled by total assets in year *t-1*. Compustat mnemonics: ppent & at.
$FOREIGN\ PROFITS_{i,t}$	An indicator variable equal to one if foreign profits are non-missing and greater than zero and zero otherwise. Compustat mnemonics: pifo.
$\Delta EMPLOYEES_{i,t}$	$((EMPLOYEES_{i,t} - EMPLOYEES_{i,t-1}) / EMPLOYEES_{i,t-1}) * 100$
$\Delta PROFITABILITY_{i,t}$	$((PROFITABILITY_{i,t} - PROFITABILITY_{i,t-1}) / PROFITABILITY_{i,t-1}) * 100$
$\Delta CAPITAL\ INTENSITY_{i,t}$	$((CAPITAL\ INTENSITY_{i,t} - CAPITAL\ INTENSITY_{i,t-1}) / CAPITAL\ INTENSITY_{i,t-1}) * 100$
$\Delta FOREIGN\ PROFITS_{i,t}$	$FOREIGN\ PROFITS_{i,t} - FOREIGN\ PROFITS_{i,t-1}$
Variables used in Cross Sectional Tests—	
$COMPUTERS\ \&\ PHARMACEUTICAL_i$	An indicator variable equal to one if firm *i* is in the *Computers* or *Pharmaceutical* industries using the Barth, Beaver, Hand, and Landsman (2005) industry classifications and zero otherwise.
$R\&D\ INTENSIVE_{i,t}$	An indicator variable equal to one for firms in the sample that have research and development activity greater than the sample median in year *t*. Research and development is calculated as a percentage of lagged total assets. Compustat mnemonics: rd, at.
$TREATY\ REVISION\ COUNTRY_j$	An indicator variable equal to one for the ten countries that revised their bilateral tax treaty with the U.S. sometime during the sample period and equal to zero otherwise. These countries include Belgium, Canada, Denmark, Finland, France, Germany, Japan, Netherlands, New Zealand, and Sweden.
$POST_{j,t}$	For "treatment" countries that revised their tax treaty with the U.S.—an indicator variable equal to one for years following the treaty revision and equal zero for the years preceding and also the year of the treaty revision. For matched "control" observations from countries that did not revise their treaties with the U.S.—an indicator variable equal to one for years following the treaty revision of the matched treatment country and zero for years preceding and also the year of the treaty revision.

References

Ai, C., Norton, E., 2003. Interacted terms in logit and probit models. Economic Letters 80, 123-129.

Angrist, J., Pischke, J., 2008. Mostly harmless econometrics: an empiricist's companion. Princeton University Press, 2008.

Asia Pacific Biotech News, 2006. Merck Sharp & Dohme expand Singapore facility with S$100 million investment. APBN Vol. 10 - No. 15 – 2006. http://www.asiabiotech.com

Barth, M., Beaver, W., Hand, J., Landsman, W., 2005. Accruals, accounting-based valuation models, and the prediction of equity values. Journal of Accounting, Auditing, and Finance 20: 311-345.

Berenson, A., 2005. Revamping at Merck to cut costs. New York Times 11/29/2005.

Bird, A., Edwards, A., Shevlin, T., 2014. Does earnings lockout make U.S. multinationals attractive to foreign acquirers? Working paper.

Blinder, A., 2009. How many U.S. jobs might be offshorable? World Economics 10 (2), 41-78.

Blouin, J., 2011. Taxation of multinational corporations. Foundations and Trends in Accounting 6, 1-64.

Blouin, J., Krull, L., Robinson, L., 2012. Is U.S. multinational divided repatriation policy influenced by reporting incentives? The Accounting Review 87, 1463-1491.

Christian, C., Schultz, T., 2005. ROA-based estimates of income shifting by multinational corporations, IRS Research Bulletin, http://www.irs.gov/pub/irs-soi/05christian.pdf.

Clausing, K., 2005. The role of U.S. tax policy in offshoring. Brookings Trade Forum, Offshoring White-Collar Work, 457-490.

Clausing, K., 2008. U.S. multinationals shifting profits out of the United States. Tax Notes, March 10, 2008, p.1078-1082.

De Simone, L., 2014. Does a common set of accounting standards affect tax-motivated income shifting for multinational firms? Working paper.

De Simone, L.,Mills, L., Stomberg, B., 2014. Do investors differentially value tax avoidance of income mobile firms? Working paper.

Dyreng, S., Markle, K., 2014. The effect of financial constraints on tax-motivated income shifting by U.S. multinationals. Working paper.

Edwards, A., Kravet, T., Wilson, R., 2013. Trapped cash and the profitability of foreign acquisitions. Contemporary Accounting Research (Forthcoming).

Erel, I., Liao, R., Weisbach, M., 2012. Determinants and cross-border mergers and acquisitions. Journal of Finance 67, 1045-1082.

Farber, H., Saks, D. 1980. Why Workers Want Unions: The Role of Relative Wages and Job Characteristics. Journal of Political Economy 88, 349-369.

Foley, C., Hartzell, J., Titman, S., Twite, G., 2007. Why do firms hold so much cash? A tax-based explanation. Journal of Financial Economics 86, 579-607.

Graham, J., 1996. Debt and the marginal tax rate. Journal of Financial Economics 41, 41-73.

Graham, J., Hanlon, M., Shevlin, T., 2011. Real effects of accounting rules: evidence from multinational firms' investment location and profit repatriation decisions. Journal of Accounting Research 49, 137-185.

Greene, W., 2004. The behavior of the maximum likelihood estimator of limited dependent variable models in the presence of fixed effects. The Econometrics Journal 7, 98-119.

Grossman, S., Hart, O., 1986. The costs and benefits of ownership: a theory of vertical and lateral integration. Journal of Political Economy 94, 691-719.

Grossman, G., Rossi-Hansberg, E., 2007. Trading tasks: a simple theory of offshoring. American Economic Review 98, 1978-1997.

Grubert, H., Mutti, J., 1991. Taxes, tariffs, and transfer pricing in multinational corporate decision making. The Review of Economics and Statistics 73, 285-293.

Grubert, H., Slemrod, J., 1998. The effect of taxes on investment and income shifting to Puerto Rico. The Review of Economics and Statistics 80, 365-373.

Hanlon, M., Heitzman, S., 2010. A review of tax research. Journal of Accounting and Economics 50, 127-178.

Hanlon, M., Lester, R., Verdi, R., 2014. The effects of repatriation tax costs on U.S. multinational investment. Journal of Financial Economics (Forthcoming).

Hirsch, B. 1980. The Determinants of Unionization: An Analysis of Interarea Differences. Industrial and Labor Relations Review 33, 147-161.

Klassen, K., LaPlante, S., 2012. Are U.S. multinational corporations becoming more aggressive income shifters? Journal of Accounting Research 50, 1245-1285.

Krugman, P., 2008. Trade and wages, reconsidered. Brookings Papers on Economic Activity 2008 (1): 103-154.

Lewin, A., Massini, S., Peeters, C., 2009. Why are companies offshoring innovation? The emerging global race for talent. Journal of International Business Studies 40, 901-925.

Metters, R., Verma, R., 2008. History of offshoring knowledge services. Journal of Operations Management 26, 141-147.

McIntyre, M., 2003. Legal Structure of Tax Treaties. Unpublished manuscript available from the *International Association of Tax Judges* website. www.iatj.net.

Monarch, R., Park, J., Sivadasan, J., 2013. Gains from Offshoring? Evidence from U.S. microdata. Working Paper.

Moulton, B., 1986. Random group effects and the precision of regression estimates. Journal of Econometrics 32, 385-397.

OECD, 2010. OECD transfer pricing guidelines for multinational enterprises and tax administrations. Available at: www.oecd.org/tax/transfer-pricing/transfer-pricing-guidelines.htm.

Petroni, K., Shackelford, D., 1995. Taxation, regulation, and the organizational structure of property-casualty insurers. Journal of Accounting and Economics 20, 229-253.

Schneider, F., Frey, B., 1985. Economic and political determinants of foreign direct investment. World Development 13, 161-175.

Scholes, M., Wolfson, M., Erickson, M., Hanlon, M., Maydew, E., Shevlin, T., 2014. Taxes and business strategy: A planning approach. *Pearson,* Boston, Fifth Edition.

Shevlin, T., 1987. Taxes and off-balance sheet financing: research and development limited partnerships. The Accounting Review 62, 480-509.

Shevlin, T., 1990. Estimating corporate marginal tax rates with asymmetric tax treatment of gains and losses. Journal of the American Taxation Association 11, 51-67.

Stringfellow, A., Teagarden, M., Nie, W., 2008. Invisible costs in offshoring services work. Journal of Operations Management, 164-179.

Sullivan, M., 2008. U.S. multinationals shifting profits out of the United Sates. Tax Notes, March 10, 2008, 1078-1082.

Thomsen, M., Ullman, R., Watrin, C., 2014. The impact of taxes on location decisions. Working paper.

Zingales, L., 2000. In search of new foundations. The Journal of Finance 55, 1623-1653.

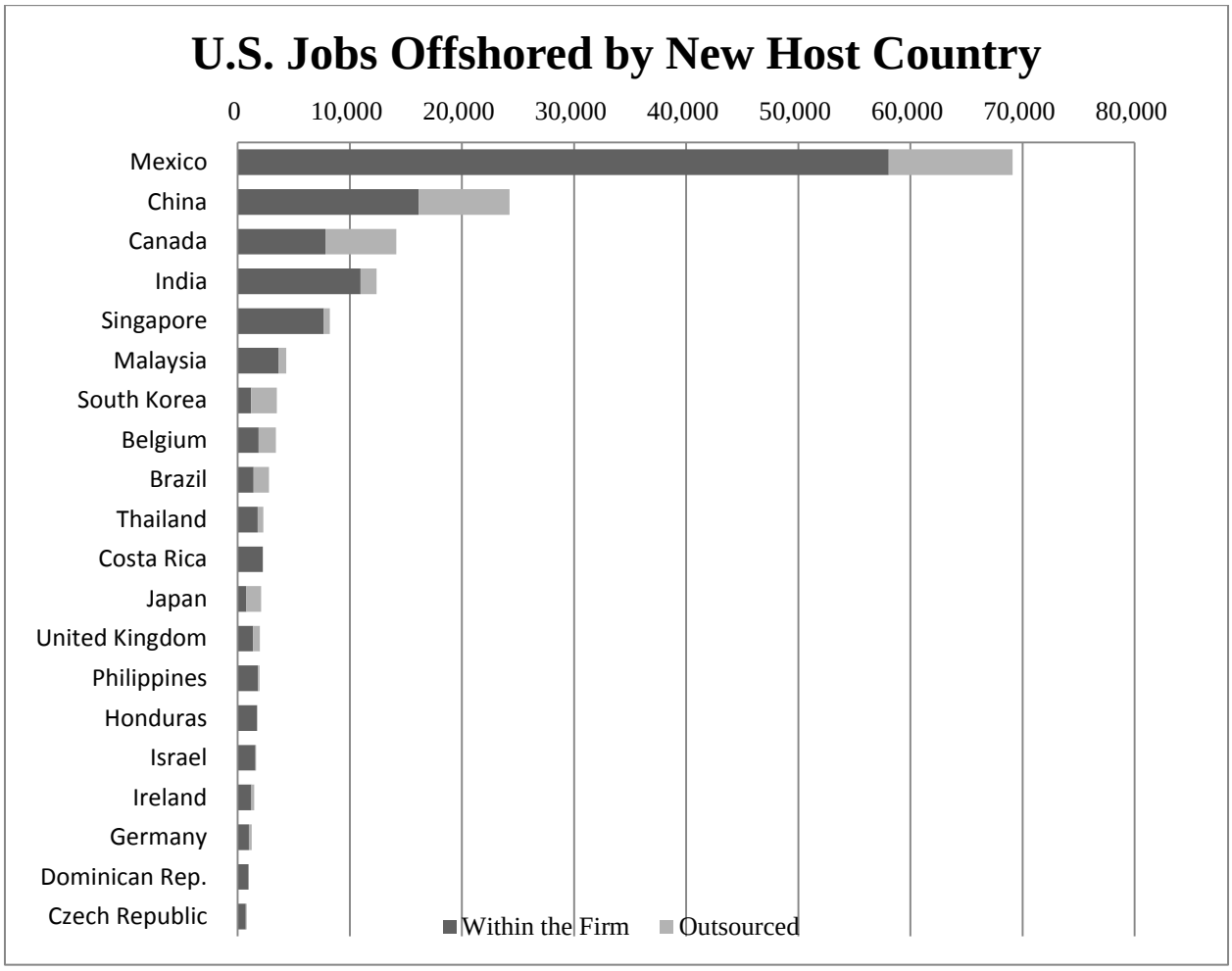
Table 1
Sample Details

This table presents summary statistics from the certified petitions filed with Trade Adjustments Assistance (TAA) that make up my sample. TAA is a federal program that is administered jointly by the Department of Labor and each of the 50 states to provide benefits and services to workers who have lost employment because of foreign trade. Panel A details the number of U.S. jobs offshored to the most popular new host countries in my sample. Panel B summarizes the industry membership of firms in my sample based on SIC codes.

Panel A: U.S. Jobs Offshored by New Host Country (Top 20 Countries)

Rank	Country	Offshored Jobs	Within the Firm	Outsourced	Corp. Tax Rate	GDP (in Billions)	GDP Per Capita
1	Mexico	69,117	58,060	11,056	28%	895.35	7,690.55
2	China	24,242	16,139	8,103	25%	4,991.26	3,749.27
3	Canada	14,160	7,830	6,330	33%	1,337.58	39,659.06
4	India	12,375	10,962	1,413	34%	1,365.37	1,147.24
5	Singapore	8,214	7,698	516	18%	194.13	38,922.78
6	Malaysia	4,338	3,628	710	25%	202.25	7,277.76
7	South Korea	3,503	1,191	2,312	24%	834.06	16,958.65
8	Belgium	3,405	1,871	1,534	34%	473.25	43,834.10
9	Brazil	2,798	1,417	1,380	34%	1,620.17	8,373.34
10	Thailand	2,286	1,790	496	30%	263.71	3,978.91
11	Costa Rica	2,235	2,226	9	30%	29.38	6,385.54
12	Japan	2,096	787	1,309	40%	5,035.14	39,473.36
13	United Kingdom	1,981	1,353	628	28%	2,208.00	35,721.83
14	Philippines	1,955	1,804	151	30%	168.33	1,831.97
15	Honduras	1,769	1,744	25	30%	14.49	1,939.28
16	Israel	1,647	1,602	45	26%	194.87	26,032.16
17	Ireland	1,466	1,216	250	13%	225.44	50,559.74
18	Germany	1,251	997	255	29%	3,298.22	40,270.16
19	Dominican Rep.	970	965	5	25%	46.77	4,731.60
20	Czech Republic	802	732	71	20%	197.22	18,805.65
	TOTALS	166,075	127,064	39,011			

Table 1 (continued)
Panel A (continued):



Panel B: Sample Composition by Industry

One Digit SIC	Category	No. of Firms
1	Mining and Construction	1
2-3	Manufacturing	314
4	Transportation/Public Utilities	3
5	Wholesale & Resale Trade	13
6	Finance, Insurance, and Real Estate	12
7	Services	28
8	Health Services	3
9	Unclassified	8
		382

Table 2
Sample Composition

This table describes the composition of the samples used in each subsequent table.

Base sample (firm-country-years):	**Observations**
Number of certified TAA petitions with country detail for public firms (2003-2009)	2,643
Number of unique firm-new host country-year observations	1,611
Less: observations missing country or firm controls	(469)
Firm-country-year observations with non-zero offshoring values	1,142
Number of unique years	7
Number of unique countries	51
Number of unique firms	382
Table 3A - Sample of firm-years	
Potential Sample (No. unique years*No. unique firms)	2,674
Less: Observations with missing controls, firms that entered/exited sample, etc.	(245)
Firm-year observations used (for descriptive statistics only)	2,429
Tables 3B, 3C, 4, 5, 6, 7 - Sample of firm-country-years	
Potential sample (No. unique years*No. unique countries*No. unique firms)	136,374
Less: Observations with missing controls, firms that entered/exited sample, etc.	(16,344)
Firm-country-year observations used (including zero values)	120,030
Table 8 - Matched samples	
Number of random draws	1,000
Table 9 - Sample of firm-country-years	
Observations from tables 3B, 3C, 4, 5, 6	120,030
Less: Observations with missing lagged variables needed for changes analysis	(4,293)
Country-year observations	115,737
Table 10 - Sample of country-years	
Potential full sample (No. unique years*No. unique countries)	357
Less: Observations with missing country controls	(11)
Country-year observations	346

Table 3
Descriptive Statistics

This table presents descriptive statistics about firms in the sample. Panel A compares summary statistics of several firm characteristics for the firms that make the sample and all other firms in Compustat for the years 2003-2009. The difference between the means and medians of the two groups are tested. *** indicates p<0.01, ** p<0.05 and * p<0.1 for these tests. Panel B presents summary statistics of the firm-country-year offshoring variables, along with country-specific and firm-specific control variables. Panel C presents the correlations among variables in the sample. Pearson (Spearman) correlations are presented above (below) the main diagonal. All variables are defined in Appendix 3.

Panel A: Comparison of Sample Firms and Other Compustat Firms

	SAMPLE FIRMS (2003-2009)				OTHER FIRMS (2003-2009)				Mean	Median
VARIABLE	**N**	**Mean**	**Median**	**Std. Dev.**	**N**	**Mean**	**Median**	**Std. Dev.**	**Difference**	**Difference**
EMPLOYEES	2,429	15.686	9.408	14.715	50,767	4.262	0.468	9.111	***	***
ROA	2,429	0.036	0.049	0.132	50,767	-0.088	0.018	0.358	***	***
PPE	2,429	0.210	0.178	0.146	50,767	0.238	0.129	0.255	***	***
FOREIGN	2,429	0.625	1.000	0.484	50,767	0.171	0.000	0.376	***	***
RESEARCH & DEVELOPMENT	2,429	0.040	0.020	0.052	50,767	0.043	0.000	0.087		***

Table 3 (continued)
Panel B: Descriptive Statistics

	N	Mean	Std. Dev.	Min.	Median	Max.
TOTAL OFFSHORING INDICATOR	120,030	0.0095143	0.0970765	0	0	1
WITHIN-FIRM OFFSHORING INDICATOR	120,030	0.0074398	0.0859332	0	0	1
OUTSOURCED OFFSHORING INDICATOR	120,030	0.0025577	0.0505091	0	0	1
TOTAL OFFSHORED JOBS	120,030	1.383609	29.77506	0	0	3804
WITHIN-FIRM OFFSHORED JOBS	120,030	1.058602	23.91375	0	0	2395
OUTSOURCED OFFSHORED JOBS	120,030	0.3250069	14.84549	0	0	2906
STATUTORY RATE DIFFERENCE	120,030	11.05423	6.278519	-2	10	27.5
GDP	120,030	26.19481	1.551262	22.56124	26.16563	29.24746
GDP GROWTH	120,030	0.1130291	0.1112566	-0.2638403	0.1209281	0.5326581
GDP PER CAPITA	120,030	9.153077	1.288753	6.274489	9.112452	11.1354
TRADEFLOWS	120,030	23.0352	1.469956	18.75661	22.9648	26.59195
EXCHANGE RATE	120,030	0.6658262	2.612833	0.0004998	0.0082772	17.7484
INDIRECT TAX	120,030	0.9332667	0.2495606	0	1	1
POLITICAL STABILITY	120,030	0.0997646	0.9644731	-2.626997	0.3405119	1.664182
GOVERNMENT EFFECTIVENESS	120,030	0.7552411	0.8975087	-0.7785802	0.6794283	2.429652
REGULATORY QUALITY	120,030	0.7186924	0.8064739	-0.8760426	0.7491344	1.996294
RULE OF LAW	120,030	0.5623047	0.9673032	-1.154264	0.5748329	1.99964
ENGLISH	120,030	0.2712655	0.4446146	0	0	1
CONTIGUOUS	120,030	0.0404732	0.1970671	0	0	1
DISTANCE	120,030	8.890596	0.6134033	6.604001	8.879697	9.703335
EMPLOYEES	120,030	9.066212	1.766473	4.905275	9.152283	12.7201
PROFITABILITY	120,030	0.0381597	0.1227146	-0.421347	0.0492453	0.3240083
CAPITAL INTENSITY	120,030	0.2179873	0.1520749	0.0075437	0.1837511	0.7188279
FOREIGN	120,030	0.7598184	0.4271954	0	1	1
RESEARCH & DEVELOPMENT	120,030	0.041369	0.0522094	0	0.020495	0.2608085

Table 3 (continued)
Panel C: Correlation among Variables – Pearson (Spearman) Correlations are Presented Above (Below) the Main Diagonal

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)
TOTAL OFFSHORED JOBS	**(1)**		0.87	0.61	-0.01	0.04	0.00	-0.01	0.07	-0.01	0.01	-0.02	-0.01	-0.01	-0.02	0.00	0.11	-0.03	0.04	-0.01	0.00	0.01	0.00
WITHIN-FIRM OFFSHORED JOBS	**(2)**	0.88		0.13	0.00	0.03	0.00	-0.01	0.07	-0.01	0.01	-0.02	-0.01	-0.01	-0.03	0.00	0.11	-0.03	0.03	-0.01	0.00	0.01	0.00
OUTSOURCED OFFSHORED JOBS	**(3)**	0.52	0.11		-0.01	0.02	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	-0.01	0.00	0.05	-0.02	0.02	-0.01	0.01	0.00	0.00
STATUTORY RATE DIFFERENCE	**(4)**	-0.01	0.00	-0.02		-0.23	-0.08	0.19	-0.21	-0.01	-0.18	0.32	0.18	0.28	0.21	0.01	-0.12	0.07	0.01	-0.02	-0.02	0.02	-0.01
GDP	**(5)**	0.08	0.07	0.05	-0.22		0.00	0.47	0.79	-0.08	-0.13	0.13	0.37	0.33	0.33	-0.04	0.19	0.11	0.01	-0.02	-0.02	0.01	0.00
GDP GROWTH	**(6)**	0.00	0.00	0.01	-0.06	0.01		-0.18	-0.07	0.08	0.14	-0.12	-0.13	-0.18	-0.16	-0.05	-0.09	0.11	-0.02	0.06	0.04	-0.03	0.01
GDP PER CAPITA	**(7)**	-0.03	-0.02	-0.01	0.20	0.49	-0.19		0.36	-0.34	-0.17	0.74	0.87	0.90	0.85	0.06	0.09	-0.13	0.01	-0.02	-0.02	0.01	0.00
TRADEFLOWS	**(8)**	0.11	0.10	0.06	-0.17	0.77	-0.08	0.42		-0.02	-0.22	0.08	0.34	0.29	0.25	0.09	0.44	-0.08	0.00	-0.01	-0.01	0.01	0.00
EXCHANGE RATE	**(9)**	-0.01	-0.01	-0.01	-0.10	-0.21	0.00	-0.45	-0.23		0.03	-0.12	-0.25	-0.32	-0.24	-0.15	-0.05	0.21	0.00	0.00	0.00	0.00	0.00
INDIRECT TAX	**(10)**	0.01	0.01	0.00	-0.20	-0.14	0.15	-0.15	-0.27	0.03		-0.12	-0.18	-0.21	-0.18	-0.20	0.05	-0.07	0.00	0.00	0.00	0.00	0.00
POLITICAL STABILITY	**(11)**	-0.04	-0.04	-0.02	0.34	0.12	-0.13	0.77	0.11	-0.32	-0.09		0.76	0.76	0.79	-0.02	0.03	-0.08	0.00	0.00	0.00	0.00	0.00
GOVERNMENT EFFECTIVENESS	**(12)**	-0.02	-0.02	-0.01	0.17	0.36	-0.12	0.87	0.37	-0.41	-0.17	0.80		0.94	0.96	0.22	0.06	0.07	0.00	0.00	0.00	0.00	0.00
REGULATORY QUALITY	**(13)**	-0.03	-0.03	-0.02	0.26	0.30	-0.19	0.89	0.33	-0.42	-0.23	0.81	0.93		0.94	0.21	0.07	-0.04	0.00	0.00	0.00	0.00	0.00
RULE OF LAW	**(14)**	-0.04	-0.04	-0.02	0.19	0.32	-0.15	0.86	0.29	-0.38	-0.16	0.84	0.95	0.93		0.20	0.01	0.07	0.00	0.00	0.00	0.00	0.00
ENGLISH	**(15)**	0.00	0.00	0.00	-0.09	-0.06	-0.07	0.07	0.12	-0.26	-0.20	0.05	0.22	0.24	0.19		0.11	0.16	0.00	0.00	0.00	0.00	0.00
CONTIGUOUS	**(16)**	0.15	0.14	0.07	-0.13	0.22	-0.08	0.10	0.34	-0.14	0.05	0.02	0.07	0.07	0.03	0.11		-0.53	0.00	0.00	0.00	0.00	0.00
DISTANCE	**(17)**	-0.02	-0.02	-0.01	0.03	0.02	0.15	-0.19	0.04	0.15	-0.04	-0.06	0.05	-0.08	0.03	0.27	-0.32		0.00	0.00	0.00	0.00	0.00
EMPLOYEES	**(18)**	0.04	0.04	0.02	0.01	0.01	-0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.25	0.08	0.23	-0.21
PROFITABILITY	**(19)**	-0.01	0.00	-0.01	-0.02	-0.01	0.06	-0.02	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.21		0.07	0.09	-0.09
CAPITAL INTENSITY	**(20)**	0.00	-0.01	0.02	-0.02	-0.02	0.03	-0.02	-0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.09		-0.01	-0.20
FOREIGN	**(21)**	0.02	0.02	0.00	0.02	0.01	-0.03	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.21	0.08	0.05		0.07
RESEARCH & DEVELOPMENT	**(22)**	0.00	0.01	-0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.13	0.01	-0.15	0.19	

Table 4
Test of the Association between Income Shifting Incentives and Overall Offshored U.S. Jobs

This table presents the results of estimating Equation (1). The unit of observation is the firm-host country-year. Column 1 presents estimates using logistic regression. The dependent variable is an indicator variable equal to one if firm *i* offshored U.S. jobs to country *j* in year *t*. The independent variable of interest is the difference between the U.S. statutory corporate tax rate and the statutory tax rate in host country *j* to which the offshored jobs were sent (*STATUTORY RATE DIFFERENCE*$_{j,t}$). Column 2 presents estimates using negative binomial regression. The dependent variable is equal to the number of U.S. jobs firm *i* offshored to country *j* in year *t*. All other variables are defined in Appendix 3. T-statistics are included in parentheses, and * indicates significance at 10%, ** indicates significance at 5%, and *** indicates significance at 1%; one-tailed where I have a directional prediction and two-tailed otherwise.

		Column 1			**Column 2**		
DEPENDENT VARIABLE		*TOTAL OFFSHORING INDICATOR*			*TOTAL OFFSHORED JOBS*		
VARIABLE	*PRED.*	**Coefficient**	**T-Statistic**	**Marginal Effects**	**Coefficient**	**T-Statistic**	**Incident Rate Ratio**
STATUTORY RATE DIFFERENCE	+	0.043***	2.859	0.0004***	0.071**	2.189	1.074**
GDP		-0.147	-0.912	-0.0013	-0.650***	-3.457	0.522***
GDP GROWTH		-1.595*	-1.818	-0.0136*	0.197	0.147	1.218
GDP PER CAPITA		-0.589***	-2.838	-0.005***	-0.788***	-2.942	0.455***
TRADEFLOWS		0.946***	5.860	0.0081***	1.723***	8.658	5.600***
EXCHANGE RATE (/ 1000)		-0.184***	-9.111	-0.0016***	-0.256***	-7.386	0.774***
INDIRECT TAX		0.507	0.844	0.0043	-0.533	-1.181	0.587
POLITICAL STABILITY		0.335*	1.947	0.0029*	0.532**	2.098	1.703**
GOVERNMENT EFFECTIVENESS		0.107	0.214	0.0009	1.051	1.479	2.860
REGULATORY QUALITY		-1.007***	-2.650	-0.0086***	-2.164***	-3.262	0.115***
RULE OF LAW		0.250	0.588	0.0021	0.204	0.249	1.226
ENGLISH		0.274	0.990	0.0023	0.732	1.529	2.079
CONTIGUOUS		1.502***	3.663	0.0128***	0.984	1.168	2.676
DISTANCE		0.368	1.375	0.0031	-0.271	-0.691	0.763
EMPLOYEES		0.297***	6.169	0.0025***	0.564***	8.891	1.757***
PROFITABILITY		-1.141***	-3.409	-0.0098***	-1.749	-1.450	0.174
CAPITAL INTENSITY		-0.195	-0.359	-0.0017	1.285	1.529	3.615
FOREIGN		0.116	0.815	0.001	-0.375	-1.370	0.687
FIXED EFFECTS		YEAR & INDUSTRY			YEAR & INDUSTRY		
S.E. CLUSTERED BY:		COUNTRY & FIRM			COUNTRY		
OBSERVATIONS		120,030			120,030		

Table 5
Test of the Association between Tax Incentives and Offshored U.S. Jobs by Sourcing Arrangement

This table presents additional results of estimating Equation (1). Panel A presents the results of using logistic regression. The dependent variable in Column 1 (2) is an indicator variable equal to one if firm *i* offshored U.S. jobs to country *j* in year *t* that were subsequently kept within the offshoring firm (outsourced to another firm). The independent variable of interest is the difference between the U.S. statutory corporate tax rate and the statutory tax rate in the host country to which the offshored jobs were sent (*STATUTORY RATE DIFFERENCE*$_{j,t}$). Panel B presents the results of using negative binomial regression. The dependent variable in Column 1 (2) is a count of the number of U.S. jobs offshored by firm *i* to country *j* in year *t* that were subsequently kept within firm *i* (outsourced to a different firm). In both panels, the unit of observation is the firm-host country-year. All variables are defined in Appendix 3. T-statistics are included in parentheses, and * indicates significance at 10%, ** indicates significance at 5%, and ***indicates significance at 1%; one-tailed where I have a directional prediction and two-tailed otherwise.

Panel A: Association between Income Shifting Incentives and the Likelihood of Hosting U.S. Offshored Jobs Using Tax Rate Differences

		Column 1			**Column 2**			**Column 3**		
DEPENDENT VARIABLE		*WITHIN-FIRM OFFSHORING INDICATOR*			*OUTSOURCED OFFSHORING INDICATOR*			*CROSS EQUATION TESTING*		
VARIABLE	*PRED.*	**Coefficient**	**T-Statistic**	**Marginal Effects**	**Coefficient**	**T-Statistic**	**Marginal Effects**	**Coef. Difference**	**χ^2 Statistic**	**P-Value**
STATUTORY RATE DIFFERENCE	+	0.058***	3.728	0.0004***	-0.015	-0.666	0.0000	0.0705	14.20	0.0001
GDP		-0.261	-1.384	-0.0018	0.098	0.707	0.0002			
GDP GROWTH		-2.142**	-2.014	-0.0144**	1.134	1.074	0.0028			
GDP PER CAPITA		-0.485**	-2.153	-0.0033**	-0.998***	-4.147	-0.0024***			
TRADEFLOWS		1.038***	5.584	0.007***	0.717***	5.189	0.0018***			
EXCHANGE RATE (/ 1000)		-0.212***	-9.367	-0.0014***	-0.140***	-4.945	-0.0003***			
INDIRECT TAX		0.802	1.087	0.0054	-0.557	-1.531	-0.0014			
POLITICAL STABILITY		0.327	1.542	0.0022	0.485***	3.417	0.0012***			
GOVERNMENT EFFECTIVENESS		-0.225	-0.374	-0.0015	0.611	1.581	0.0015			
REGULATORY QUALITY		-1.139***	-2.689	-0.0077***	-0.556	-1.498	-0.0014			
RULE OF LAW		0.444	0.861	0.003	-0.002	-0.008	0.0000			
ENGLISH		0.445	1.549	0.003	-0.447	-1.324	-0.0011			
CONTIGUOUS		1.735***	3.452	0.0117***	1.418***	5.326	0.0035***			
DISTANCE		0.556*	1.712	0.0037*	-0.028	-0.136	-0.0001			
EMPLOYEES		0.319***	7.092	0.0022***	0.275***	3.351	0.0007***			
PROFITABILITY		-0.942**	-2.489	-0.0064**	-1.898***	-2.863	-0.0046***			
CAPITAL INTENSITY		-0.806*	-1.783	-0.0054*	0.786	0.862	0.002			
FOREIGN		0.290**	2.174	0.002*	-0.393**	-2.267	-0.0009**			
FIXED EFFECTS		YEAR & INDUSTRY			YEAR & INDUSTRY					
S.E. CLUSTERED BY:		COUNTRY & FIRM			COUNTRY & FIRM			COUNTRY		
OBSERVATIONS		120,030			120,030			120,030		

Table 5 (continued)
Panel B: Association between Income Shifting Incentives and the Number of Offshored U.S. Jobs Using Tax Rate Differences

		Column 1			Column 2			Column 3		
DEPENDENT VARIABLE		*WITHIN-FIRM OFFSHORED JOBS*			*OUTSOURCED OFFSHORED JOBS*			*CROSS EQUATION TESTING*		
VARIABLE	*PRED.*	**Coefficient**	**T-Statistic**	**Incident Rate Ratio**	**Coefficient**	**T-Statistic**	**Incident Rate Ratio**	**Coef. Difference**	**χ^2 Statistic**	**P-Value**
STATUTORY RATE DIFFERENCE	+	0.109***	2.962	1.115***	0.054	0.936	1.055	0.054	1.13	0.1437
GDP		-0.649***	-3.281	0.522***	-0.099	-0.417	0.906			
GDP GROWTH		-1.050	-0.608	0.350	-1.026	-0.336	0.358			
GDP PER CAPITA		-1.586***	-4.612	0.205***	-0.019	-0.033	0.981			
TRADEFLOWS		1.781***	7.445	5.938***	1.835***	5.573	6.266***			
EXCHANGE RATE (/ 1000)		-0.308***	-7.856	0.735***	-0.239***	-3.495	0.788***			
INDIRECT TAX		-0.103	-0.201	0.902	0.720	0.831	2.054			
POLITICAL STABILITY		-0.027	-0.083	0.974	1.377***	3.925	3.961***			
GOVERNMENT EFFECTIVENESS		1.772*	1.853	5.885*	-0.128	-0.169	0.880			
REGULATORY QUALITY		-0.707	-0.710	0.493	-3.996***	-2.972	0.018***			
RULE OF LAW		-0.292	-0.256	0.747	1.168*	1.699	3.214*			
ENGLISH		0.343	0.593	1.409	1.567**	2.078	4.794**			
CONTIGUOUS		0.139	0.141	1.149	1.437	1.280	4.206			
DISTANCE		-1.225**	-2.546	0.294**	1.435***	2.853	4.200***			
EMPLOYEES		0.730***	8.829	2.074***	0.457***	4.593	1.580***			
PROFITABILITY		-1.874	-1.621	0.154	-2.827	-1.496	0.059			
CAPITAL INTENSITY		0.433	0.555	1.542	2.994**	2.259	19.958**			
FOREIGN		-0.447	-1.489	0.639	-0.231	-0.683	0.794			
FIXED EFFECTS		YEAR & INDUSTRY			YEAR & INDUSTRY					
S.E. CLUSTERED BY:		COUNTRY			COUNTRY			COUNTRY		
OBSERVATIONS		120,030			120,030			120,030		

Table 6
Validation of the Association between Tax Incentives and the New Host Location of Offshored U.S. Jobs

This table presents the results of estimating Equation (2). Panel A presents the marginal effects of estimates from a logistic regression. The dependent variable in Column 1 (2) is an indicator variable equal to one if firm *i* offshored U.S. jobs to country *j* in year *t* that were kept within the offshoring firm (outsourced to another firm). The independent variable of interest is the interaction between *STATUTORY RATE DIFFERENCE* and two proxies of the discretion managers have in setting transfer prices (*COMPUTERS & PHARMACEUTICALS* and *R&D INTENSIVE*). Panel B presents the results of using negative binomial regression. The dependent variable in Column 1 (2) is a count of the number of U.S. jobs offshored by firm *i* to country *j* in year *t* that were kept within firm *i* (outsourced to a different firm). In both panels, the unit of observation is firm-host country-year. All variables are defined in Appendix 3. T-statistics are included in parentheses, and * indicates significance at 10%, ** indicates significance at 5%, and ***indicates significance at 1%; one-tailed where I have a directional prediction and two-tailed otherwise.

Panel A: Cross Sectional Differences in the Association between Income Shifting Incentives and the Likelihood of Hosting U.S. Offshored Jobs

		Column 1	Column 2	Column 3	Column 4	Column 5	
VARIABLE		*WITHIN-FIRM OFFSHORING INDICATOR*	*OUTSOURCED OFFSHORING INDICATOR*	*WITHIN-FIRM OFFSHORING INDICATOR*	*OUTSOURCED OFFSHORING INDICATOR*	*CROSS EQUATION TESTING*	
	Pred.					*Coef. Difference χ2 Statistic*	*P-Value*
STATUTORY RATE DIFFERENCE		.00027**	-0.00003	0.00018	-0.00005		
		(2.337)	(-0.663)	(1.038)	(-0.836)		
CROSS SECTIONAL TESTS-							
COMPUTERS & PHARMACEUTICALS		-0.00384	-0.00210				
		(-1.454)	(-1.548)				
*STAT RATE DIF * COMPUTERS & PHARMA*	+	.00042**	-0.00002			2.00*	0.0789
		(2.399)	(-0.177)				
R&D INTENSIVE				-0.0069	-0.0011312		
				(-0.393)	(-1.345)		
*STAT RATE DIF * R&D INTENSIVE*	+			0.00034**	0.00004	0.76	0.1912
				(1.886)	(0.471)		
FIRM & COUNTRY CONTROLS INCLUDED		YES	YES	YES	YES		
YEAR FIXED EFFECTS		YES	YES	YES	YES		
INDUSTRY FIXED EFFECTS		NO	NO	YES	YES		
S.E. CLUSTERED BY:		COUNTRY & FIRM	COUNTRY & FIRM	COUNTRY & FIRM	COUNTRY & FIRM	COUNTRY	
OBSERVATIONS		120,030	120,030	120,030	120,030	120,030	
Ai & Norton (2003) Correction applied to:							
*STAT RATE DIF * COMPUTERS & PHARMA*		0.00047***	0.00001				
		(2.899)	(0.242)				
*STAT RATE DIF * R&D INTENSIVE*				0.00045***	0.00005		
				(3.004)	(0.745)		

Table 6 (continued)
Panel B: Cross Sectional Differences in the Association between Income Shifting Incentives and the Number of Offshored U.S. Jobs

		Column 1	**Column 2**	**Column 3**	**Column 4**	**Column 5**	
VARIABLE		*WITHIN-FIRM OFFSHORED JOBS*	*OUTSOURCED OFFSHORED JOBS*	*WITHIN-FIRM OFFSHORED JOBS*	*OUTSOURCED OFFSHORED JOBS*	*Coef. Difference χ2 Statistic*	*P-Value*
	Pred.						
STATUTORY RATE DIFFERENCE		0.083*	0.055	0.143**	0.052		
		(1.826)	(1.169)	(2.100)	(0.677)		
CROSS SECTIONAL TESTS-							
COMPUTERS & PHARMACEUTICALS		-0.650	-0.358				
		(-1.205)	(-0.380)				
*STAT RATE DIF * COMPUTERS&PHARMA*	+	0.067**	0.005			0.072	
		(1.848)	(0.072)			0.54	0.2308
R&D INTENSIVE				1.114*	-1.490*		
				(1.667)	(-1.651)		
*STAT RATE DIF * R&D INTENSIVE*	+			-0.046	0.018	-0.064	
				(-0.777)	(0.253)	0.31	0.71205
FIRM & COUNTRY CONTROLS INCLUDED		YES	YES	YES	YES		
YEAR FIXED EFFECTS		YES	YES	YES	YES		
INDUSTRY FIXED EFFECTS		NO	NO	YES	YES		
S.E. CLUSTERED BY:		COUNTRY	COUNTRY	COUNTRY	COUNTRY	COUNTRY	
OBSERVATIONS		120,030	120,030	120,030	120,030	120,030	

Table 7
Association between Tax Incentives and the New Host Location of Offshored U.S. Jobs across Job Type

This table presents the results of re-estimating Equation (1). Panel A presents the coefficients and marginal effects of estimates from a logistic regression. The dependent variable in Column 1 is an indicator variable equal to one if firm *i* offshored U.S. jobs to country *j* in year *t* that were kept within the offshoring firm. In Column 2 (3), the dependent variable is only equal to one if the job was unionized (not unionized). The independent variable of interest is the *STATUTORY RATE DIFFERENCE*. Panel B presents the results of using negative binomial regression. The dependent variable in Column 1 is a count of the number of U.S. jobs offshored by firm *i* to country *j* in year *t* that were kept within firm *i*. In Column 2(3) the count only includes unionized (nonunionized) jobs. In both panels, the unit of observation is firm-host country-year. All variables are defined in Appendix 3. T-statistics are included in parentheses, and * indicates significance at 10%, ** indicates significance at 5%, and ***indicates significance at 1%; one-tailed where I have a directional prediction and two-tailed otherwise.

Panel A: Differences in the Association between Income Shifting Incentives and the Likelihood of Hosting U.S. Offshored Jobs across Job Type

		Column 1			**Column 2**			**Column 3**		
DEPENDENT VARIABLE		*WITHIN-FIRM OFFSHORING INDICATOR*			*UNIONIZED WITHIN-FIRM OFFSHORING INDICATOR*			*OTHER WITHIN-FIRM OFFSHORING INDICATOR*		
VARIABLE	*PRED.*	**Coefficient**	**T-Statistic**	**Marginal Effects**	**Coefficient**	**T-Statistic**	**Marginal Effects**	**Coefficient**	**T-Statistic**	**Marginal Effects**
STATUTORY RATE DIFFERENCE	+	0.058***	3.728	0.00039	-0.015	-0.474	0.0000	0.061***	3.831	0.0004
GDP		-0.261	-1.384	-0.00175	0.551	1.534	0.0003	-0.294	-1.495	-0.0019
GDP GROWTH		-2.142**	-2.014	-0.01439	-0.283	-0.196	-0.0002	-2.216**	-2.040	-0.0141
GDP PER CAPITA		-0.485**	-2.153	-0.00326	-1.672***	-3.636	-0.0011	-0.475**	-2.104	-0.0030
TRADEFLOWS		1.038***	5.584	0.00697	0.391	1.109	0.0002	1.063***	5.431	0.0068
EXCHANGE RATE (/ 1000)		-0.212***	-9.367	-0.00143	-0.722	-1.355	-0.0005	-0.209***	-9.084	-0.0013
INDIRECT TAX		0.802	1.087	0.00539	-0.744	-0.906	-0.0005	0.813	1.057	0.0052
POLITICAL STABILITY		0.327	1.542	0.00220	1.366***	3.479	0.0009	0.296	1.358	0.0019
GOVERNMENT EFFECTIVENESS		-0.225	-0.374	-0.00151	-1.161**	-2.241	-0.0007	-0.190	-0.304	-0.0012
REGULATORY QUALITY		-1.139***	-2.689	-0.00766	0.831	1.077	0.0005	-1.197***	-2.699	-0.0076
RULE OF LAW		0.444	0.861	0.00298	0.547	1.145	0.0003	0.448	0.843	0.0028
ENGLISH		0.445	1.549	0.00299	-2.062***	-4.236	-0.0013	0.488*	1.674	0.0031
CONTIGUOUS		1.735***	3.452	0.01166	3.890***	4.293	0.0024	1.660***	3.233	0.0106
DISTANCE		0.556*	1.712	0.00374	-0.045	-0.141	0.0000	0.567*	1.676	0.0036
EMPLOYEES		0.319***	7.092	0.00215	0.681***	6.140	0.0004	0.296***	6.579	0.0019
PROFITABILITY		-0.942**	-2.489	-0.00633	-2.302***	-2.829	-0.0014	-0.753*	-1.933	-0.0048
CAPITAL INTENSITY		-0.806*	-1.783	-0.00542	0.285	0.203	0.0002	-0.823*	-1.849	-0.0052
FOREIGN		0.290**	2.174	0.00195	-0.284	-0.837	-0.0002	0.331***	2.679	0.0021
FIXED EFFECTS		YEAR & INDUSTRY			YEAR & INDUSTRY			YEAR & INDUSTRY		
S.E. CLUSTERED BY:		COUNTRY & FIRM			COUNTRY & FIRM			COUNTRY & FIRM		
OBSERVATIONS		120,030			120,030			120,030		

Table 7 (continued)
Panel B: Differences in the Association between Income Shifting Incentives and the Number of Offshored U.S. Jobs across Job Type

		Column 1			**Column 2**			**Column 3**		
DEPENDENT VARIABLE		*WITHIN-FIRM OFFSHORED JOBS*			*UNIONIZED WITHIN-FIRM OFFSHORED JOBS*			*OTHER WITHIN-FIRM OFFSHORED JOBS*		
VARIABLE	*PRED.*	**Coefficient**	**T-Statistic**	**Incident Rate Ratio**	**Coefficient**	**T-Statistic**	**Incident Rate Ratio**	**Coefficient**	**T-Statistic**	**Incident Rate Ratio**
STATUTORY RATE DIFFERENCE	+	0.109***	2.962	1.115***	-0.155	-0.971	0.857	0.120***	3.065	1.128***
GDP		-0.649***	-3.281	0.522***	-0.625	-0.736	0.535	-0.650***	-3.290	0.522***
GDP GROWTH		-1.050	-0.608	0.350	1.755	0.348	5.786	-0.350	-0.185	0.705
GDP PER CAPITA		-1.586***	-4.612	0.205***	-7.350***	-2.885	0.001***	-1.506***	-4.292	0.222***
TRADEFLOWS		1.781***	7.445	5.938***	3.953***	4.406	52.073***	1.804***	7.199	6.074***
EXCHANGE RATE (/ 1000)		-0.308***	-7.856	0.735***	-2.482	-0.916	0.084	-0.299***	-6.943	0.742***
INDIRECT TAX		-0.103	-0.201	0.902	-0.907	-0.369	0.404	-0.264	-0.503	0.768
POLITICAL STABILITY		-0.027	-0.083	0.974	4.930***	2.993	138.417***	-0.064	-0.192	0.938
GOVERNMENT EFFECTIVENESS		1.772*	1.853	5.885*	-9.816***	-2.686	0.000***	1.518	1.393	4.565
REGULATORY QUALITY		-0.707	-0.710	0.493	10.589**	2.267	39,698.300**	-0.798	-0.780	0.450
RULE OF LAW		-0.292	-0.256	0.747	4.197	1.553	66.487	-0.124	-0.102	0.884
ENGLISH		0.343	0.593	1.409	-6.916***	-3.187	0.001***	0.375	0.631	1.455
CONTIGUOUS		0.139	0.141	1.149	4.231	1.033	68.773	0.372	0.365	1.450
DISTANCE		-1.225**	-2.546	0.294**	-0.906	-0.591	0.404	-1.082**	-2.168	0.339**
EMPLOYEES		0.730***	8.829	2.074***	2.423***	9.405	11.282***	0.692***	7.600	1.997***
PROFITABILITY		-1.874	-1.621	0.154	3.274	1.042	26.405	-1.198	-0.993	0.302
CAPITAL INTENSITY		0.433	0.555	1.542	1.300	0.402	3.670	0.398	0.489	1.489
FOREIGN		-0.447	-1.489	0.639	0.756	0.897	2.129	-0.390	-1.188	0.677
FIXED EFFECTS		YEAR & INDUSTRY			YEAR & INDUSTRY			YEAR & INDUSTRY		
S.E. CLUSTERED BY:		COUNTRY			COUNTRY			COUNTRY		
OBSERVATIONS		120,030			120,030			120,030		

Table 8

Test of the Association between Income Shifting Incentives and Offshored U.S. Jobs Using Tax Treaty Revisions

This table presents the results of estimating Equation (3). Panel A presents the results of using logistic regression. The dependent variable in Column 1 (2) is an indicator variable equal to one if firm *i* offshored U.S. jobs to country *j* in year *t* that were subsequently kept within the offshoring firm (outsourced to another firm). The independent variable of interest is the interaction between *POST* and *TREATY REVISION COUNTRY*. Panel B presents the results of using negative binomial regression. The dependent variable in Column 1 (2) is a count of the number of U.S. jobs offshored by firm *i* to country *j* in year *t* that were subsequently kept within firm *i* (outsourced to a different firm). In both panels, the coefficients presented are the average coefficient from estimating Equation (2) with 1,000 different control groups. All variables are defined in Appendix 3. T-statistics are included in parentheses, and * indicates significance at 10%, ** indicates significance at 5%, and ***indicates significance at 1%; one-tailed where I have a directional prediction and two-tailed otherwise.

Panel A: Association between Income Shifting Incentives and the Likelihood of Hosting U.S. Offshored Jobs Using Treaty Revisions

		Column 1		**Column 2**		**Column 3**		
DEPENDENT VARIABLE		*WITHIN-FIRM OFFSHORING INDICATOR*		*OUTSOURCED OFFSHORING INDICATOR*		*CROSS EQUATION TESTING*		
VARIABLE	*PRED.*	**Avg. Coefficient**	**T-Statistic**	**Avg. Coefficient**	**T-Statistic**	**Avg. Coef. Diff.**	**T-Statistic**	**P-Value**
TREATY REVISION COUNTRY		-0.368	-0.266	-0.252	-0.196			
POST		0.044	0.085	-0.019	-0.035			
*POST*TREATY REVISION COUNTRY*	-	-0.577	-1.103	0.229	0.450	-0.8067729	-1.168	0.122
STATUTORY RATE DIFFERENCE		0.056	0.952	-0.024	-0.485			
GDP		0.031	0.062	0.006	0.016	Note: In 903 of the 1,000 samples, the estimate of *POST*TREATY REVISION COUNTRY* in Column 1 was less that the correspoding estimate in Column 2.		
GDP GROWTH		-1.359	-0.920	0.750	0.407			
GDP PER CAPITA		-0.386	-0.475	-0.581	-0.778			
TRADEFLOWS		0.9521**	2.003	0.593	1.568			
EXCHANGE RATE (/ 1000)		-0.566	-0.173	-0.422	-0.127			
INDIRECT TAX		0.526	0.327	1.222	0.224			
POLITICAL STABILITY		-0.253	-0.368	0.065	0.104			
GOVERNMENT EFFECTIVENESS		0.192	0.202	0.780	1.280			
REGULATORY QUALITY		-1.349	-1.029	-0.683	-0.609			
RULE OF LAW		0.689	0.477	-0.184	-0.153			
ENGLISH		0.186	0.134	-1.480	-0.559			
CONTIGUOUS		0.275	0.072	2.440	0.599			
DISTANCE		-0.107	-0.093	-0.240	-0.227			
EMPLOYEES		0.3329***	7.088	0.3434***	4.910			
PROFITABILITY		-1.1164***	-2.643	-2.9327***	-7.826			
CAPITAL INTENSITY		-0.1534	-0.233	2.717***	2.913			
FOREIGN		0.4523*	1.801	-0.5468***	-5.785			
FIXED EFFECTS		YEAR & INDUSTRY		YEAR & INDUSTRY				
NUMBER OF ITERATIONS		1,000		1,000				

Table 8 (continued)
Panel B: Association between Income Shifting Incentives and the Number of U.S. Offshored Jobs Using Treaty Revisions

		Column 1		**Column 2**		**Column 3**		
DEPENDENT VARIABLE		*WITHIN-FIRM OFFSHORED JOBS*		*OUTSOURCED OFFSHORED JOBS*		*CROSS EQUATION TESTING*		
VARIABLE	*PRED.*	**Avg. Coefficient**	**T-Statistic**	**Avg. Coefficient**	**T-Statistic**	**Coef. Difference**	**T-Statistic**	**P-Value**
TREATY REVISION COUNTRY		2.252	0.709	-2.915	-0.576			
POST		0.355	0.223	0.332	0.119			
*POST*TREATY REVISION COUNTRY*	-	-2.2803*	-1.452	1.108	0.434	-3.388	-1.234	0.109
STATUTORY RATE DIFFERENCE		0.267	1.544	0.064	0.260			
GDP		0.064	0.050	0.162	0.099	Note: In 904 of the 1,000 samples, the		
GDP GROWTH		-1.912	-0.430	-11.887	-1.049	estimate of *POST*TREATY REVISION*		
GDP PER CAPITA		-0.591	-0.267	-2.466	-0.794	*COUNTRY* in Column 1 was less that the		
TRADEFLOWS		2.082**	2.008	1.977	1.044	correspoding estimate in Column 2.		
EXCHANGE RATE (/ 1000)		0.898	0.098	-4.430	-0.271			
INDIRECT TAX		1.034	0.208	3.341	0.346			
POLITICAL STABILITY		-0.900	-0.482	0.511	0.189			
GOVERNMENT EFFECTIVENESS		0.602	0.276	3.871	1.064			
REGULATORY QUALITY		-1.843	-0.525	-7.194	-1.255			
RULE OF LAW		-0.658	-0.173	2.854	0.504			
ENGLISH		1.054	0.344	-0.531	-0.095			
CONTIGUOUS		1.653	0.166	-2.526	-0.172			
DISTANCE		-0.400	-0.129	-2.123	-0.474			
EMPLOYEES		0.7808***	4.783	0.491	0.577			
PROFITABILITY		-0.218	-0.104	-7.645	-0.968			
CAPITAL INTENSITY		-0.114	-0.068	4.706	0.642			
FOREIGN		1.094	1.224	-1.152	-0.976			
FIXED EFFECTS		YEAR & INDUSTRY		YEAR & INDUSTRY				
NUMBER OF ITERATIONS		1,000		1,000				

Table 9
Test of the Association between Changes in Income Shifting Incentives and Offshored U.S. Jobs

This table presents the results of estimating Equation (4). Panel A presents the results of using logistic regression. The dependent variables in Columns 1 - 3 are indicator variables equal to one if firm *i* offshored U.S. jobs to country *j* in year *t*, one if firm *i* offshored U.S. jobs to country *j* in year *t* that were subsequently kept within the offshoring firm, and one if firm *i* offshored U.S. jobs to country *j* in year *t* that were subsequently outsourced to another firm, respectively. The independent variable of interest is the Δ*STATUTORY RATE DIFFERENCE*. Panel B presents the results of using negative binomial regression. The dependent variables in Columns 1 – 3 are counts of the number of U.S. jobs offshored by firm *i* to country *j* in year *t*, the number of U.S. jobs offshored by firm *i* to country *j* in year *t* that were subsequently kept within firm *i*, and the number of U.S. jobs offshored by firm *i* to country *j* in year *t* that were subsequently outsourced to a different firm. All variables are defined in Appendix 3. T-statistics are included in parentheses, and * indicates significance at 10%, ** indicates significance at 5%, and ***indicates significance at 1%; one-tailed where I have a directional prediction and two-tailed otherwise.

Panel A: Association between Changes in Income Shifting Incentives and the Likelihood of Hosting U.S. Offshored Jobs

		Column 1			**Column 2**			**Column 3**		
DEPENDENT VARIABLE		*TOTAL OFFSHORING INDICATOR*			*WITHIN-FIRM OFFSHORING INDICATOR*			*OUTSOURCED OFFSHORING INDICATOR*		
VARIABLE	*PRED.*	**Coefficient**	**T-Statistic**	**Marginal Effects**	**Coefficient**	**T-Statistic**	**Marginal Effects**	**Coefficient**	**T-Statistic**	**Marginal Effects**
Δ*STATUTORY RATE DIFFERENCE*	+	0.127**	2.314	0.0012**	0.147***	2.358	0.0011***	0.092**	2.122	0.0002**
Δ*GDP*		0.133	0.822	0.0013	0.206	1.526	0.0015	-0.157	-0.625	-0.0004
ΔGDP PER CAPITA		-0.127	-0.652	-0.0012	-0.206	-1.277	-0.0015	0.193	0.666	0.0005
ΔTRADEFLOWS		0.006	0.601	0.0001	0.006	0.594	0.0000	0.007	0.582	0.0000
ΔEXCHANGE RATE		0.032	1.062	0.0003	0.032	1.163	0.0002	0.039	0.872	0.0001
ΔPOLITICAL STABILITY		-1.014	-1.383	-0.0097	-0.949	-0.975	-0.0071	-1.784***	-3.494	-0.0046***
ΔGOVERNMENT EFFECTIVENESS		0.827	0.710	0.0079	0.729	0.491	0.0055	1.300	1.259	0.0034
ΔREGULATORY QUALITY		-0.771	-0.915	-0.0074	-0.893	-0.978	-0.0067	-0.377	-0.378	-0.0010
ΔRULE OF LAW		-0.571	-0.239	-0.0055	-1.452	-0.509	-0.0109	1.511	0.824	0.0039
ΔEMPLOYEES		-0.002	-0.864	0.0000	0.001	0.266	0.0000	-0.014***	-2.653	-0.0000***
ΔPROFITABILITY		-0.000	-1.038	0.0000	-0.000	-1.061	0.0000	-0.000	-0.586	0.0000
ΔCAPITAL INTENSITY		-0.001	-0.527	0.0000	-0.000	-0.162	0.0000	-0.004	-1.428	0.0000
ΔFOREIGN		0.346***	2.760	0.0033***	0.496***	3.435	0.0037***	-0.085	-0.396	-0.0002
FIXED EFFECTS		YEAR			YEAR			YEAR		
S.E. CLUSTERED BY:		COUNTRY & FIRM			COUNTRY & FIRM			COUNTRY & FIRM		
OBSERVATIONS		115,737			115,737			115,737		

Table 9 (continued)
Panel B: Association between Changes in Income Shifting Incentives and the Number of U.S. Offshored Jobs

		Column 1			**Column 2**			**Column 3**		
DEPENDENT VARIABLE		*TOTAL OFFSHORED JOBS*			*WITHIN-FIRM OFFSHORED JOBS*			*OUTSOURCED OFFSHORED JOBS*		
VARIABLE	*PRED.*	**Coefficient**	**T-Statistic**	**Incident Rate Ratio**	**Coefficient**	**T-Statistic**	**Incident Rate Ratio**	**Coefficient**	**T-Statistic**	**Incident Rate Ratio**
Δ*STATUTORY RATE DIFFERENCE*	+	0.136*	1.347	1.146*	0.250**	2.226	1.284**	0.014	0.157	1.014
Δ*GDP*		0.181	0.798	1.199	0.360	1.347	1.433	-0.219	-1.054	0.804
Δ*GDP PER CAPITA*		-0.189	-0.760	0.828	-0.373	-1.255	0.689	0.234	1.086	1.264
Δ*TRADEFLOWS*		0.028	1.274	1.028	0.046**	2.161	1.047**	0.010	0.380	1.010
Δ*EXCHANGE RATE*		0.072	1.274	1.075	0.100*	1.804	1.105*	0.061	1.015	1.063
Δ*POLITICAL STABILITY*		-1.884**	-2.234	0.152**	-2.142**	-2.076	0.117**	-3.115***	-3.176	0.044***
Δ*GOVERNMENT EFFECTIVENESS*		2.027	1.196	7.593	2.945	1.255	19.009	0.508	0.379	1.662
Δ*REGULATORY QUALITY*		-0.781	-0.769	0.458	-0.327	-0.306	0.721	-1.307	-0.876	0.271
Δ*RULE OF LAW*		0.841	0.371	2.319	-1.455	-0.596	0.233	3.984*	1.859	53.724*
Δ*EMPLOYEES*		-0.017***	-6.566	0.983***	-0.018***	-6.395	0.982***	-0.024***	-5.230	0.976***
Δ*PROFITABILITY*		-0.000	-0.405	1.000	0.000	1.020	1.000	-0.000	-0.871	1.000
Δ*CAPITAL INTENSITY*		0.001	0.248	1.001	0.002	0.880	1.002	-0.002	-0.748	0.998
Δ*FOREIGN*		0.283*	1.937	1.327*	0.751***	4.436	2.119***	-0.405**	-2.058	0.667**
FIXED EFFECTS		YEAR			YEAR			YEAR		
S.E. CLUSTERED BY:		COUNTRY & FIRM			COUNTRY & FIRM			COUNTRY & FIRM		
OBSERVATIONS		115,737			115,737			115,737		

Table 10
Country-Level Offshoring Regressions

This table presents the results of estimating Equation (5) using negative binomial regression. The unit of observation is the host country-year. In Column 1 (2), the dependent variable is the aggregate number of U.S. jobs offshored *by all firms in my sample* to country *j* in year *t* that were subsequently kept within the firm (outsourced to a different firm). The independent variable of interest is the difference between the U.S. statutory corporate tax rate and the statutory tax rate in the host country to which the offshored jobs were sent (*STATUTORY RATE DIFFERENCE*$_{j,t}$). All variables are defined in Appendix 3. T-statistics are included in parentheses, and * indicates significance at 10%, ** indicates significance at 5%, and ***indicates significance at 1%; one-tailed where I have a directional prediction and two-tailed otherwise.

		Column 1			**Column 2**			**Column 3**		
DEPENDENT VARIABLE		*WITHIN-FIRM OFFSHORED JOBS*			*OUTSOURCED OFFSHORED JOBS*			*CROSS EQUATION TESTING*		
VARIABLE	*PRED.*	**Coefficient**	**T-Statistic**	**Incident Rate Ratio**	**Coefficient**	**T-Statistic**	**Incident Rate Ratio**	**Coef. Difference**	**χ^2 Statistic**	**P-Value**
STATUTORY RATE DIFFERENCE	+	0.117**	2.249	1.124**	0.059	1.210	1.060	0.058	1.22	0.1350
GDP		-0.489**	-2.100	0.613**	-0.240	-0.981	0.787			
GDP GROWTH		-1.027	-0.505	0.358	1.528	0.458	4.609			
GDP PER CAPITA		-1.202***	-3.138	0.301***	0.212	0.513	1.237			
TRADEFLOWS		1.799***	7.407	6.047***	1.790***	4.518	5.991***			
EXCHANGE RATE (/ 1000)		-0.220***	-3.279	0.802***	-0.297***	-3.808	0.743***			
INDIRECT TAX		-0.171	-0.283	0.843	1.098	1.550	2.997			
POLITICAL STABILITY		0.220	0.614	1.247	1.890***	4.023	6.616***			
GOVERNMENT EFFECTIVENESS		1.406	1.448	4.079	-0.986	-0.848	0.373			
REGULATORY QUALITY		-1.021	-1.097	0.360	-3.917***	-4.364	0.020***			
RULE OF LAW		-0.201	-0.189	0.818	1.480	1.550	4.394			
ENGLISH		0.365	0.496	1.440	2.313***	2.933	10.103***			
CONTIGUOUS		-0.201	-0.163	0.818	1.821	1.234	6.180			
DISTANCE		-0.972	-1.479	0.379	1.667***	2.663	5.295***			
FIRM LEVEL CONTROLS:		N/A			N/A					
FIXED EFFECTS		YEAR			YEAR					
S.E. CLUSTERED BY:		COUNTRY			COUNTRY					
OBSERVATIONS		346			346					