

# **Essays on the Expected and Unexpected Effects of a Major Tax Reform**

Inauguraldissertation

zur

Erlangung des Doktorgrades

der

Wirtschafts- und Sozialwissenschaftlichen Fakultät

der

Universität zu Köln

2022

vorgelegt von

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Tag der Promotion: 15.09.2022

# Vorwort

Die vorliegende Arbeit entstand während meiner Tätigkeit als wissenschaftlicher Mitarbeiter am Seminar für ABWL und Unternehmensbesteuerung der Universität zu Köln. Sie wurde im Juli 2022 von der Wirtschafts- und Sozialwissenschaftlichen Fakultät der Universität zu Köln als Dissertation angenommen. Das Entstehen dieser Arbeit wurde durch die qualifizierte Unterstützung zahlreicher Personen geprägt, denen ich an dieser Stelle meinen Dank aussprechen möchte.

Zunächst gilt mein herzlichster Dank meinem Doktorvater, Herrn Prof. Dr. Michael Overesch. Die vielen Gespräche und konstruktiven Diskussionen während meiner Promotionszeit haben bedeutsam zum Gelingen der Arbeit beigetragen. Darüber hinaus möchte ich mich bei Prof. Dr. Michael Stich für die ausgesprochen gute Zusammenarbeit im Rahmen gemeinsamer Projekte bedanken. Auch Prof. Dan Lynch gilt mein besonderer Dank, da er mir im Rahmen meiner Promotionszeit einen Forschungsaufenthalt an der University of Wisconsin-Madison ermöglicht hat. Ich danke darüber hinaus Herrn Prof. Dr. Maximilian Müller für die Erstellung des Zweitgutachtens.

Des Weiteren danke ich den wissenschaftlichen Mitarbeitern am Lehrstuhl für die stets gute Atmosphäre und Zusammenarbeit. Namentlich danke ich insbesondere Herrn Dr. Mathias Dunker, mit dem ich ein gemeinsames Forschungsprojekt erarbeiten durfte, welches Bestandteil dieser Dissertation ist. Außerdem möchte ich Herrn Dr. Mathias Dunker, Herrn Dr. Tobias Kölle und Herrn Dr. Hubertus Wolff für die Freundschaft danken, die uns auch über die Lehrstuhlzeit hinaus verbindet. Auch danke ich Frau Tanja Breuer, für die umfangreiche Unterstützung bei all den alltäglichen Aufgaben und vor allem für die notwendige Ablenkung zwischendurch und ihr offenes Ohr für alle möglichen Thematiken.

Besonders dankbar bin ich für die Unterstützung meiner Eltern Dr. Dietmar und Andrea Pflitsch, die mich auf meinem gesamten Lebensweg stets vollumfänglich unterstützt haben. Des Weiteren möchte ich meiner Großmutter Marga Pflitsch sowie meiner Stiefmutter Nicole Pflitsch danken. Sie alle haben mir stets den nötigen Rückhalt gegeben. Zuletzt gilt mein größter Dank meiner lieben Frau Sarah Pflitsch. Du hast immer, ob im In- oder Ausland, bedingungslos zu mir gehalten. Ohne Dich und Deine schier unendliche Geduld und Unterstützung, wäre diese Arbeit niemals gedruckt worden.

Köln, im Juli 2022

Max Pflitsch

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# **Chapter 1**

## Introduction

**Chapter 1**

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## **1.1 Motivation and Object of Research**

On December 22, 2017, Donald J. Trump enacted the ‘Tax Cuts and Jobs Act of 2017’ [TCJA] in the United States [U.S.]. This tax reform is considered the most significant overhaul of a tax system in any western economy for decades (Wagner, Zeckhauser, and Ziegler, 2018a). It has sparked remarkable interest in academia, politics and society. However, the TCJA is by far not the only example of significant changes in the international tax landscape in recent years. Recent developments include changes on the national level, such as the TCJA or the tax reform proposals currently considered by the Biden administration, and multilateral projects, for instance, the ‘Base Erosion and Profit Shifting’ project [BEPS] by the Organization for Economic Co-operation and Development [OECD]. Furthermore, potential tax reforms continue to draw heated debates in political discussions. For instance, the Biden administration proposed additional tax reforms in the U.S. that would alter the global tax landscape once again. The corresponding proposals include both the enhancement of TCJA provisions (for instance, increasing the tax rate on ‘Global Intangible Low Tax Income’ [GILTI]), and the abolishment of specific provisions enacted through the TCJA (for instance the ‘Foreign Derived Intangible Income’ [FDII] provision). Furthermore, policymakers on the national and multilateral level discuss new approaches to the taxation of multinational corporations including new ideas such as the different proposals regarding a minimum taxation based on book income considered by the Biden administration and the OECD.

One important driver of the intensified worldwide tax legislation is tax avoidance by multinational corporations. Tax avoidance scandals have revolved around large multinational corporations, for instance, including the prominent cases of Amazon, Apple, Google and Starbucks. These firms were able to utilize tax haven structures or exploited differing tax residency definitions in national tax codes to achieve little to no taxation while reporting large

profits at the same time. Furthermore, leaked documents such as the ‘Panama Papers’ or ‘Lux Leaks’ revealed some of the aggressive tax avoidance behavior by individuals and corporations. For instance, ‘Lux Leaks’, disclosed so-called advance tax rulings between the Luxembourgian tax authority and corporations allowing the latter to achieve very low tax burdens. These scandals have resulted in public outrage and a societal demand for tax legislation to address these issues and make corporations ‘pay their fair share’. Furthermore, estimated revenue losses for the governments are economically significant. According to the Tax Justice Network, the aggregated global revenue loss due to tax avoidance amounts to about \$483 billion annually of which \$312 billion are due to cross-border tax avoidance by multinational corporations (Tax Justice Network, 2021).

Providing relevant information for policymakers has long been established as a key motivation for academic research in taxation (Shevlin, 2007; Hanlon and Heitzman, 2010; Clemons and Shevlin, 2016; Shevlin, 2021). Given the ever-changing tax landscape and the recent frequency and intensity with which significant tax reforms are being discussed and implemented, it is especially important to inform the debates about the consequences of tax policy. This thesis aims to provide evidence on the effectiveness of certain tax provisions. Even more importantly, a part of this thesis discusses potentially unexpected or unintended effects on firm behavior and provides novel evidence on potential spillover effects to firms in foreign countries.

There is plenty of research on previous tax reforms. For instance, prior literature analyzes multiple aspects of the ‘Tax Reform Act of 1986’ [TRA] extensively (e.g., Guenther, 1994; Guenther, Maydew, and Nutter, 1997; Maydew, 1997; Shane and Stock, 2006). However, given the ever-changing tax landscape and the changing issues in corporate taxation, the current policy debates can only draw limited inference based on academic findings from the past. In particular, current proposals and tax reforms include provisions and changes that have not existed before (consider, for instance, GILTI or the minimum book tax). This implies that there



still is –and perhaps always will be– a need for academic research evaluating the effects of tax reforms.

This thesis comprises four essays that analyze different aspects of the TCJA and aim to shed light on the important expected and perhaps unexpected effects of this tax reform. Although this thesis builds on the TCJA, the findings have implications that go beyond the TCJA case. Policymakers in and outside of the U.S. are still debating on the effects of the TCJA, and how to respond to it. The U.S. administration is currently considering a significant tax reform building on and altering different TCJA provisions. Part of this thesis directly links to the effectiveness of these provisions and thus potentially adds to the current debate in the U.S. (for instance, regarding GILTI). Furthermore, some of the presented findings relate to considerations that are more general in nature and are also considered in countries outside the U.S. (for instance, the effect of corporate tax rate changes on corporate behavior or the change between a worldwide and a territorial tax system).

The first essay entitled “*Cross-Border Effects of a Major Tax Reform – Evidence from the European Stock Market*” is co-authored with Michael Overesch, Chair of Business Taxation at the University of Cologne. We analyze cross-border effects of the TCJA on stock prices of European firms. While U.S. companies benefit from several elements of the TCJA, most notably from the 14 percentage-point cut in the corporate income tax rate, the consequences for European companies are less obvious. We show that European firms are affected through two different channels. First, European firms benefit from the TCJA if they are active in the U.S. This benefit occurs either directly through lower taxation on U.S. operations of the European firms or through expectations regarding positive developments of the U.S. economy after the TCJA. Second, we show that European firms suffer from the TCJA if they face strong competition from U.S. firms in their domestic markets. Thereby, we provide evidence that the TCJA improved the relative competitiveness of U.S. firms. Amongst others, my contribution to the essay was the data collection and processing, the empirical analyses and writing the

scientific paper. This essay was presented at the *Doctoral Research Seminar in Cologne 2018*, *the 42<sup>nd</sup> European Accounting Association Annual Congress in Paphos 2019*, *the VHB Annual Conference in Rostock 2019*, *the IIPF Annual Conference in Glasgow* and *the Annual Conference of the National Tax Association 2019 in Tampa*.

The second essay “*Intertemporal Income Shifting around the Tax Cuts and Jobs Act of 2017*” is co-authored by Dan Lynch, Department of Accounting and Information Systems, University of Wisconsin-Madison and Michael Stich, Accounting Department, Technical University Munich. We analyze intertemporal income shifting by U.S. firms around the TCJA through earnings management techniques. The significant reduction in the corporate tax rate enacted through the TCJA incentivized firms to shift taxable income from 2017 to 2018. We predict and find that firms use cash flow management to reduce taxable income in the high-tax period prior to the TCJA. However, shifting taxable income out of 2017 also affects financial accounting income negatively. We show that firms use additional manipulations to offset the effect on accounting income to avoid missing reporting targets in 2017. Furthermore, we quantify the revenue loss of the government induced by intertemporal income shifting and conclude that the effects are economically significant. Amongst others, my contribution to the essay was the data collection and processing, the execution of the empirical analyses and writing the scientific paper. This paper was presented at the *Doctoral Research Seminar in Cologne 2019*, *the EAA Doctorial Colloquium 2021*, *the European Accounting Association Annual Congress 2021*, *the Swiss Winter Accounting Conference 2021*, *the Annual Conference of the National Tax Association 2021*, *the Hawai'i Accounting Research Conference 2022* and in workshops at the *Boston University*, *Florida State University*, *Missouri University*, *University of Wisconsin-Madison*, *University of Munich*, *the technical University of Munich*, *Paderborn University*, *Schöller Research Center* and *the TRR 266 Accounting for Transparency Research Center founded by the German Research Foundation (DFG)*.

The third essay “*The Effects of the U.S. Tax Reform on Investments in Low-Tax Jurisdictions – Evidence from Cross-Border M&As*” is co-authored with Mathias Dunker, former doctoral research assistant at the Chair of Business Taxation at the University of Cologne and Michael Overesch, Chair of Business Taxation at the University of Cologne. We analyze the effects of certain TCJA provisions on cross-border merger and acquisition [M&A] activities. We focus on the GILTI provision, which is an international tax provision enacted through the TCJA. This provision aims to deter low-tax investments. We show that firms that are likely subject to GILTI significantly reduce the amount of investments in low-tax and tax haven countries after the TCJA. Therefore, we provide evidence that the GILTI provision effectively deters low-tax investments. My co-authors and I were equally responsible for the data collection, the implementation of empirical analyses and writing the scientific essay.

The fourth and last essay is entitled “*The Investors’ Assessment of Cross-Border M&A – Repatriation Taxes, Agency Conflicts and the TCJA*”. This paper is single-authored and thus my sole responsibility. In this essay, I examine stock market reactions to announcements of cross-border M&A deals before and after the TCJA. One of the most significant changes enacted through the TCJA is the change to a territorial tax system, i.e., the abolition of the repatriation tax system. Literature prior to the TCJA established that the repatriation tax system of the U.S. created agency conflicts resulting in excessive cross-border M&As. Therefore, one could expect that managers’ M&A decisions post TCJA are more aligned with the investors’ perspectives. Correspondingly, stock market reactions could, on average, become more positive after the TCJA. Considering the trade-off between a foreign acquisition and repatriation to the U.S., the latter becomes more beneficial from the investor perspective in the absence of the repatriation tax post TCJA. The important question is whether managers M&A decisions will reflect this altered trade-off of the investor. If managers continue excessive acquisitions post TCJA, this could harm investors even more due to the more beneficial alternative of repatriation. In this case, investors could react more negatively to cross-border M&A

announcements post TCJA. Comparing U.S. acquisitions to acquirers outside the U.S., I present evidence that abnormal returns to cross-border M&A announcements by U.S. firms are significantly lower in the period after the TCJA. Moreover, average abnormal returns for U.S. acquisitions are positive before the TCJA and turn negative afterwards.

Overall, this thesis documents expected but also unexpected effects of the TCJA. The TCJA affected U.S. firms but also firms outside the U.S. heterogeneously. Furthermore, it incentivized costly intertemporal income shifting of U.S. firms. However, some of the international provisions appear to curb cross-jurisdictional profit shifting as indicated by reduced M&A activity in low-tax countries. Lastly, the stock market reactions to M&A announcements after the TCJA indicate that the TCJA did not solve agency conflicts between shareholders and managers of U.S. firms.

## **1.2 Cross Border Effects of a Major Tax Reform - Evidence from the European Stock Market**

### **1.2.1 Research Question and Design**

The first essay, “Cross Border Effects of a Major Tax Reform – Evidence from the European Stock Market”, investigates potential spillover effects of the U.S. tax reform of 2017 on European firms. The TCJA considerably changed the tax landscape for U.S. firms in multiple ways. Domestic provisions include a significant cut in the corporate income tax rate from 35% to 21% and immediate expensing of certain qualified assets. The aforementioned changes to international taxation of GILTI, FDII and BEAT aim to deter profit shifting and improve the competitiveness of U.S. firms internationally. While the tax reform quite clearly improves the situation of U.S. firms, the consequences for non-U.S. firms are less obvious. In our paper, we examine the potential effects of the TCJA on European firms. We hypothesize that European firms can be affected through at least two competing channels. First, to the extent that European firms are active in the U.S., they could benefit from the TCJA either due to lower taxation on

their U.S. operations or through positive effects on the U.S. economy. Second, given that the TCJA aims to improve the competitive situation of U.S. firms, European firms could suffer from a relative decrease in their competitiveness.

To measure the potential effects, we rely on the event study methodology and examine stock market reactions of European firms on days where the likelihood of implementation of the TCJA changes (MacKinlay, 1997). To this end, we rely on multiple data sources. We obtain stock returns and consolidated financial statement data from Compustat Global. To identify European firms that are active in the U.S., we obtain geographic segment data from the Thomson Reuters Eikon database on revenues and assets. To measure the competition with U.S. firms, we retrieve data on the market shares of U.S. firms across different European industries from Eurostat. Then, we examine whether the stock market reaction of the European firms depends on whether the firm is active in the U.S. and on the market share of U.S. competitors in the respective industry.

### **1.2.2 Results and Contribution to the Literature**

Our results are in line with our hypotheses. European firms that are active in the U.S. exhibit positive stock market reactions on the days when passage of the TCJA becomes more likely. However, European firms that face high competition from U.S. firms, i.e., European firms operating in industries with a high market share of U.S. firms, exhibit significantly lower stock market returns on the respective days. This provides evidence that the TCJA successfully improved the international competitiveness of U.S. firms. In sum, our results indicate that the TCJA has significant effects that extend beyond the U.S.

Prior literature has examined stock market reactions to tax reforms in multiple settings and countries (Bolster, Lindsey, and Mitrusi, 1989; Michaely, 1991; Whitworth and Rao, 2010). Wagner et al. (2018a) analyze the stock market response to the 2016 U.S. election and find that the stock market response following the surprising election of Donald Trump relates to his tax

reform campaign. In a later paper, Wagner, Zeckhauser and Ziegler (2018b) analyze stock market reactions around important dates in the legislative process of the TCJA. Both studies find that U.S. stock prices reacted accordingly to the changing expectations. Both, the mentioned studies around the TCJA and the prior work related to other tax reforms focus on the effects of tax reforms on firms in the country the tax reform is implemented in. Our main contribution is the investigation of the effects of a major tax reform on foreign firms. So far, the literature on cross-border effects of a tax reform on a foreign stock market is scarce. Only one related paper documents cross-border effects of the TCJA on foreign stock markets. Gaertner, Hoopes, and Williams (2020) document significant international stock market reactions with a particular focus on China. By restricting our study to European firms, we are able to utilize additional data sources and estimate the aforementioned channels more directly. More precisely, we add to this contemporaneous study by empirically investigating the effects of U.S. activity and competition.

### **1.3 Intertemporal Income Shifting around the Tax Cuts and Jobs Act of 2017**

#### **1.3.1 Research Question and Design**

The second essay “Intertemporal Income Shifting around the Tax Cuts and Jobs Act of 2017” analyzes behavioral responses by U.S. firms to the large cut in the corporate income tax rate enacted through the TCJA. The TCJA reduced the tax rate on corporate income from 35% until 2017 to 21% in 2018. This created strong incentives to shift taxable income from 2017 to 2018. Firms with a fiscal year end in December could save 14 cents for every dollar shifted into the low-tax year 2018.<sup>1</sup> We examine whether firms responded to this rate change by shifting income from 2017 into 2018. The U.S. tax code follows a modified cash basis of accounting. Therefore, to reduce taxable income in 2017 firms generally needed to reduce cash flows in

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<sup>1</sup> Firms with a fiscal year end in other months face a blended tax rate for the fiscal year 2017/2018. Therefore, tax savings through intertemporal income shifting depend on the fiscal year end.

2017. Consistent with prior literature, we assume a certain degree of book-tax conformity of cash flow manipulations (Zang, 2012). Therefore, the intertemporal shifting of taxable income also reduced financial accounting income in 2017. This could result in financial reporting costs (Shackelford and Shevlin, 2001). We hypothesize that firms avoided these financial reporting costs by engaging in accrual-based earnings management, which has lower book-tax conformity, to offset the reduction in financial accounting income.

We obtain consolidated financial statement data from Compustat North America and utilize a firm fixed effect regression to estimate whether firms exhibit abnormally low cash flows and abnormally high accrual-based earnings management in 2017. Furthermore, we examine whether these effects reverse in 2018. We rely on the common two-stage procedures to obtain our estimates for cash flow management and accrual-based earnings management (Jones, 1991; Zang, 2012). Additionally, we estimate the amount of revenue lost due to this intertemporal income shifting. To this end, we also explicitly estimate the book-tax conformity of the different manipulation techniques involved.

### **1.3.2 Results and Contribution to the Literature**

Our results are in line with our hypotheses. We find that firms use cash flow management to decrease taxable income in the high-tax period prior to the TCJA enactment. Our results also show that firms utilize accrual-based earnings management to offset the corresponding reduction in book income. These results reverse in 2018 consistent with intertemporal income shifting. We further find that the results are concentrated in firms that have the largest tax savings incentives. Furthermore, the offsetting accrual manipulations are largest for firms that face high financial reporting pressure. The results are concentrated in the last two quarters of 2017 when passage of the TCJA becomes more certain. In addition, we estimate the book-tax conformity of the different techniques and provide empirical evidence that cash flow management has a stronger effect on taxable income compared to accrual-based

earnings management. Lastly, we use the estimated book-tax conformity to obtain a range of revenue lost between \$6.1 billion and \$15.6 billion. This revenue loss corresponds to 2.1 to 5.3 percent of total corporate tax revenues of the U.S. in 2017 and is thus economically significant. These effects seem to be unexpected to some extent by the policymakers given that the ‘Congressional Budget Office’ [CBO] estimates of the effects of the TCJA on tax collections did not consider intertemporal income shifting (CBO, 2018).

Multiple studies have examined tax avoidance through income shifting. Mostly, tax avoidance through cross-jurisdictional income shifting has been examined (Shackelford and Shevlin, 2001; Hanlon and Heitzman, 2010). This study contributes to the literature on intertemporal income shifting. We extend and update the findings of prior work around the tax reforms in the U.S. (Scholes, Wilson, and Wolfson, 1992; Guenther, 1994; Guenther et al., 1997; Maydew 1997). We extend this stream of literature by examining how book-tax conformity affects the use of different income management techniques around a change in the corporate tax rate. Our findings also contribute to the literature by examining different actions firms take in response to a major tax reform (Wilde and Wilson, 2018; Shevlin, 2021). We further contribute to the financial accounting literature by showing that reporting targets and financial reporting pressure affect the intertemporal income shifting around a tax rate change. Lastly, we believe that our economic estimates of the effects of this tax planning strategy on tax collections and corresponding increases in accrual manipulations provide useful information for policymakers (Shevlin, 2021).

## **1.4 The Effects of the U.S. Tax Reform on Investments in Low-Tax Jurisdictions – Evidence from Cross-Border M&As**

### **1.4.1 Research Question and Design**

The essay “The Effects of the U.S. Tax Reform on Investments in Low-Tax Jurisdictions – Evidence from Cross-Border M&As” scrutinizes the effects of the TCJA on cross-border



acquisition patterns of U.S. firms. As mentioned before, the TCJA included multiple changes to domestic and international tax provisions. These changes, in particular with respect to international taxation, have the potential to affect cross-border M&A transactions. In our paper, we focus on two key changes induced by the TCJA. The first major change is the implementation of a 100% dividend exemption system. This changes the U.S. tax system from a global to a territorial tax system. This implies that generally foreign income does not result in additional tax burdens in the U.S. upon repatriation. Given that the foreign tax rate becomes decisive in a territorial tax system, this could render low-taxed foreign income more attractive. In line with this, one might expect U.S. firms to conduct more M&A in low-tax or tax haven jurisdictions.

However, the TCJA also implemented GILTI, an anti-tax avoidance rule. In case foreign income is taxed below 13.125 % (below 16.4 % from 2026 onwards), 50% of a controlled foreign corporations [CFC] income could be included in the U.S. tax base if it exceeds a certain return on ‘qualified business asset investment’ [QBAI]. We hypothesize that firms potentially subject to GILTI are less likely to pursue M&A in low-tax or tax haven countries post TCJA.

We obtain data on cross-border M&A deals from U.S. and non-U.S. firms for a sample period between 2010 and 2019 from Refinitiv’s SDC Platinum database. In our empirical analyses, we utilize logit regressions to model the decision of an acquirer to either invest in a high-tax or low-tax country. We compare cross-border acquisitions by U.S. acquirers to acquirers outside the U.S. before and after the TCJA. We differentiate between low- and high-tax countries based on the median statutory corporate tax rate in our sample. Additionally, we employ different approximations to examine whether a firm is affected by GILTI based on the foreign effective tax rate and based on excess returns. Furthermore, we analyze whether the market share of U.S. corporations with respect to the global M&A market has changed after the TCJA.

### **1.4.2 Results and Contribution to the Literature**

Our results suggest that the acquisition pattern of U.S. acquirers changed significantly after the TCJA. In particular, utilizing different approximations for GILTI, we find that firms affected by this anti-tax avoidance provision have a reduced likelihood of acquiring a target firm located in low-tax or tax haven countries (Dyreng and Lindsey, 2009). In addition, we only find weak evidence for changes in the acquisition behavior of U.S. acquirers not affected by GILTI. The results indicate an increased likelihood of low-tax target acquisitions for unaffected U.S. firms. However, the effects are not significant after controlling for global trends in M&A, i.e., including cross-border acquisitions by non-U.S. acquirers in the control group. This suggests that the GILTI provision has the largest effect on the M&A behavior post TCJA and effectively deters low-tax acquisitions.

Prior literature has established that taxes affect M&A decisions. Both the tax rate and the type of the tax system, i.e., territorial vs worldwide system, affect cross-border acquisitions (Barrios, Huizinga, Laeven and Nicodème, 2012; Arulampalam, Devereux and Liberini, 2019). In particular, previous studies have documented that the former U.S. tax system distorted M&A decisions (Bird, Edwards, and Shevlin, 2017; Harris and O'Brien, 2018). Our study adds to this literature on the relationship of taxation and M&A. Furthermore, two contemporaneous studies also examine the effect of the TCJA on the M&A market. Atwood, Downes, Henley, and Mathis (2020) focus on the differential effect of the TCJA on domestic versus foreign investments. Amberger and Robinson (2020) analyze the overall effect of the TCJA on the M&A market. They find that U.S. acquirers post TCJA are less likely to acquire targets in low-tax and low-growth markets. We add to this literature by utilizing a measure to identify GILTI-affected firms. This allows us to scrutinize whether the GILTI provision drives most of the reduction in low-tax and tax haven acquisitions by U.S. firms post TCJA. Furthermore, this result is likely

of interest to policymakers as the Biden administration is currently considering significant expansions of the GILTI provision.

## **1.5 The Investors' Assessment of Cross-Border M&A – Repatriation Taxes, Agency Conflicts and the TCJA**

### **1.5.1 Research Question and Design**

The article “The Investors’ Assessment of Cross-Border M&A – Repatriation Taxes, Agency Conflicts and the TCJA” analyzes investor reactions to cross-border M&A announcements of U.S. acquirers before and after the TCJA. As described in the previous section, the TCJA abolished the repatriation tax system. Prior literature suggests that the repatriation tax system resulted in excessive foreign cash holdings of U.S. firms. Literature referred to these foreign cash holdings as ‘trapped cash’ due to the potentially high additional tax burden upon repatriation (Foley, Hartzell, Titman, and Twite, 2007). Furthermore, this resulted in agency conflicts and inefficient cross-border acquisition decisions by U.S. acquirers in the period before the TCJA (Hanlon, Lester, and Verdi, 2015). The TCJA imposed a transition tax on the untaxed foreign earnings and installed a 100% dividend exemption system. Therefore, the accumulated foreign cash and future foreign profits are no longer trapped and could be repatriated at no additional repatriation tax costs. Considering the investors perspective, foreign acquisitions and accumulation of foreign cash was beneficial prior to the TCJA if the associated costs were lower compared to the tax burden upon repatriation. This particularly holds, if investors expected future tax holidays, i.e., a reduction or abolishment of the repatriation tax. Post TCJA the trade-off between foreign acquisition and repatriation changes from the investors’ point of view. Repatriation becomes more beneficial given the repatriation tax is no longer in place.

If the abolishment of the repatriation tax reduced agency conflicts, cross-border M&A decisions by the managers might more closely align with the investors’ perspective post TCJA.

In this case, investors might react more positively to related M&A announcements. However, prior literature also suggests that repatriation taxes are not the sole driver of excess foreign acquisitions (Jensen, 1986). Therefore, managers might continue pursuing inefficient cross-border M&As even in the absence of repatriation taxes. Post TCJA, this would be particularly at odds with the altered trade-off for investors. Therefore, if excess acquisitions continue post TCJA, investors might react more negatively to related announcements.

I analyze abnormal returns to M&A announcements in the period 2010–2019 included in Refinitiv’s SDC Platinum database and merge these announcements with financial data and data on daily stock prices from Compustat. Using regression analyses, I compare abnormal announcement returns of U.S. acquirers to acquirers outside the U.S. before and after the TCJA. Furthermore, I consider different cross-sections based on acquirer and deal characteristics to examine the drivers behind the investor reactions. More precisely, I consider the relative importance of the repatriation tax prior to the TCJA for the acquirer, the payout profile and leverage ratio of the acquirer, and whether the deal takes place within one industry.

### **1.5.2 Results and Contribution to the Literature**

My findings suggest that excess cross-border acquisitions continue after the TCJA and that the abolishment of the repatriation tax did not resolve the agency conflicts. Abnormal returns are significantly lower for U.S. acquirers post TCJA compared with acquirers outside the U.S. Furthermore, my results suggest that this negative reaction of cross-border acquisitions by U.S. acquirers post TCJA relates to agency conflicts and the altered trade-off of investors due to the abolished repatriation tax. More precisely, the negative reaction is more pronounced for U.S. acquirers that were more affected by the repatriation tax prior to the TCJA. In addition, the negative perception of cross-border M&A announcements is concentrated in acquirers with low leverage ratios and in cross-industry acquisitions. Furthermore, the negative investor reactions occur predominantly in the case of acquirers that exhibit low payout ratios in the past

or current period. Overall, these results are in line with agency conflicts not resolved through the TCJA.

This study adds both to the literature on the TCJA effects on M&A (Amberger and Robinson, 2020; Atwood et al., 2020) and to the literature on M&A and the repatriation tax system prior to the TCJA (Foley et al., 2007; Hanlon et al., 2015; Chen and Shevlin, 2018; Harris and O'Brien, 2018). Prior literature has documented that before the TCJA, managers had incentives to reinvest foreign earnings rather than repatriate to the U.S. Literature also suggests that this resulted in inefficient cross-border investments, as indicated by lower returns that relate to agency conflicts (Hanlon et al., 2015). My study adds to this literature by showing that the abolishment of the repatriation tax did not resolve the agency conflicts affecting cross-border acquisitions by U.S. firms.

## References

- Amberger, H., & Robinson, L. A. (2020). The Initial Effect of US Tax Reform on Foreign Acquisitions. *Working paper*.
- Arulampalam, W., Devereux, M. P., & Liberini, F. (2019). Taxes and the location of targets. *Journal of Public Economics*, 176, 161-178.
- Atwood, T. J., Downes, J., Henley, J., & Mathis, M. (2020). The Impact of US tax reform on US firm acquisitions of domestic and foreign targets. *Working paper*.
- Barrios, S., Huizinga, H., Laeven, L., & Nicodème, G. (2012). International taxation and multinational firm location decisions. *Journal of Public Economics*, 96(11-12), 946-958.
- Bird, A., Edwards, A., & Shevlin, T. (2017). Does US foreign earnings lockout advantage foreign acquirers? *Journal of Accounting and Economics*, 64(1), 150-166.
- Bolster, P. J., Lindsey, L. B., & Mitrusi, A. (1989). Tax-Induced Trading: The Effect of the 1986 Tax Reform Act on Stock Market Activity. *The Journal of Finance*, 44(2), 327-344.
- Congressional Budget Office (CBO). 2018. How the 2017 tax act affects CBO's projections. Available at: <https://www.cbo.gov/publication/53787>
- Chen, N. X., & Shevlin, T. (2018). "US worldwide taxation and domestic mergers and acquisitions" a discussion. *Journal of Accounting and Economics*, 66(2-3), 439-447.
- Clemons, R., & Shevlin, T. (2016). The tax policy debate: Increasing the policy impact of academic tax accounting research. *The Journal of the American Taxation Association*, 38(1), 29-37.
- Dyreng, S. D., & Lindsey, B. P. (2009). Using financial accounting data to examine the effect of foreign operations located in tax havens and other countries on US multinational firms' tax rates. *Journal of Accounting Research*, 47(5), 1283-1316.
- Foley, C. F., Hartzell, J. C., Titman, S., & Twite, G. (2007). Why do firms hold so much cash? A tax-based explanation. *Journal of Financial Economics*, 86(3), 579-607.
- Gaertner, F. B., Hoopes, J. L., & Williams, B. M. (2020). Making only America great? Non-US market reactions to US tax reform. *Management Science*, 66(2), 687-697.
- Guenther, D. A. (1994). Earnings management in response to corporate tax rate changes: Evidence from the 1986 Tax Reform Act. *The Accounting Review*, 230-243.
- Guenther, D. A., Maydew, E. L., & Nutter, S. E. (1997). Financial reporting, tax costs, and book-tax conformity. *Journal of Accounting and Economics*, 23(3), 225-248.
- Hanlon, M., & S. Heitzman. (2010). A review of tax research. *Journal of Accounting and Economics*, 50, 127-178.
- Hanlon, M., Lester, R., & Verdi, R. (2015). The effect of repatriation tax costs on US multinational investment. *Journal of Financial Economics*, 116(1), 179-196.
- Harris, J., & O'Brien, W. (2018). US worldwide taxation and domestic mergers and acquisitions. *Journal of Accounting and Economics*, 66(2-3), 419-438.
- Jensen, M. C. (1986). Agency costs of free cash flow, corporate finance, and takeovers. *The American Economic Review*, 76(2), 323-329.
- Jones, J. J. (1991). Earnings management during import relief investigations. *Journal of Accounting Research*, 29(2), 193-228.

- MacKinlay, A. C. (1997). Event studies in economics and finance. *Journal of Economic Literature*, 35(1), 13-39.
- Maydew, E. L. (1997). Tax-induced earnings management by firms with net operating losses. *Journal of Accounting Research*, 35(1), 83-96.
- Michaely, R. (1991). Ex-dividend day stock price behavior: The case of the 1986 Tax Reform Act. *The Journal of Finance*, 46(3), 845-859.
- Scholes, M. S., G. P. Wilson, & M. A. Wolfson. (1992). Firms' responses to anticipated reductions in tax rates: The TRA of 1986. *Journal of Accounting Research* 30, 161-185.
- Shackelford, D. A., & Shevlin, T. (2001). Empirical tax research in accounting. *Journal of Accounting and Economics*, 31(1-3), 321-387.
- Shane, P. B., & Stock, T. (2006). Security analyst and stock market efficiency in anticipating tax-motivated income shifting. *The Accounting Review*, 81(1), 227-250.
- Shevlin, T. (2007). The future of tax research: From an accounting professor's perspective. *The Journal of the American Taxation Association*, 29(2), 87-93.
- Shevlin, T. (2021). Key Note Address to *Ohio State Tax Conference*.
- Tax Justice Network (2021). The State of Tax Justice 2021. Available at: <https://taxjustice.net/reports/the-state-of-tax-justice-2021/>
- Wagner, A. F., Zeckhauser, R. J., & Ziegler, A. (2018a). Company stock price reactions to the 2016 election shock: Trump, taxes, and trade. *Journal of Financial Economics*, 130(2), 428-451.
- Wagner, A. F., Zeckhauser, R. J., & Ziegler, A. (2018b). Unequal rewards to firms: Stock market responses to the trump election and the 2017 corporate tax reform. *AEA Papers and Proceedings*, 108, 590-96.
- Whitworth, J., & Rao, R. P. (2010). Do Tax law changes influence ex-dividend stock price behavior? Evidence from 1926 to 2005. *Financial Management*, 39(1), 419-445.
- Wilde, J. H., & Wilson, R. J. (2018). Perspectives on corporate tax planning: Observations from the past decade. *The Journal of the American Taxation Association*, 40(2), 63-81.
- Zang, A. Y. (2012). Evidence on the trade-off between real activities manipulation and accrual-based earnings management. *The Accounting Review*, 87(2), 675-703.

## **Chapter 2**

### **Cross-Border Effects of a Major Tax Reform – Evidence from the European Stock Market**



# **Cross-Border Effects of a Major Tax Reform – Evidence from the European Stock Market**

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## **Abstract:**

We analyze the effects of the major U.S. tax reform of 2017 on European firms. While foreign firms that are active in the U.S. should be directly affected, other foreign firms could also be indirectly affected through competition. With an event study design, we analyze stock market returns in Europe around key dates in the legislative process leading to the TCJA. We find positive market returns for the European firms that are active in the United States. Moreover, our results suggest an indirect effect through competition. European firms that face strong competition from U.S. firms in their domestic markets exhibit significantly lower returns.

**JEL Classification:** M41, D8, F23, H32

**Keywords:** U.S. tax reform, stock returns, event study, cross-border effects, international competition

Acknowledgments: We gratefully acknowledge helpful comments and suggestions by Jeffrey L. Hoopes, Martin Jacob and workshop participants at the University of Cologne. Furthermore, we are thankful for suggestions by participants at the NTA 112th Conference (Tampa), the EAA Conference 2019 (Cyprus) and the IIPF Congress in 2019 (Glasgow). Lastly, we thank two anonymous referees and the editors Stacy Dickert-Conlin and William Gentry for various helpful comments. All remaining errors are ours.

## Chapter 2

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## 2.1 Introduction

The ‘Tax Cuts and Jobs Act’ [TCJA] was one of the largest tax reforms in the history of the United States. U.S. companies benefit from several elements of the TCJA, most notably, from the 14 percentage point cut in the corporate tax rate. Less obvious are the consequences for foreign companies. These firms might also benefit if they are active in the U.S. However, foreign companies could also suffer from competition effects if their peers are mainly U.S. firms. We investigate how the TCJA affected firm values outside the U.S.

The TCJA aims to improve the competitiveness of U.S. firms. Nevertheless, the international discussion has focused on the potential downsides for non-U.S. firms. Politicians and business experts around the globe warned that parts of the U.S. tax reform could infringe the rules of the WTO and tax treaties. For instance, even before the reform had passed, five European ministers of finance wrote a letter to Secretary Mnuchin and argued that “the inclusion of certain less conventional international tax provisions could contravene the U.S.’s double taxation treaties and may risk having a major distortive impact on international trade.”<sup>2</sup> The recent academic literature also points to potential efficiency losses and ownership distortions that result from the international provisions of the TCJA (Dharmapala, 2018; Lyon and McBride, 2018). However, it is also possible that some firms outside the U.S. actually benefit from the reform. For instance, firms that operate to some extent in the U.S. gain from the tax cuts or the immediate expensing of certain new capital investments under the TCJA.

We employ an event study to analyze cross-border effects of the TCJA on the European stock market. The legislative process of the tax reform started on September 27, 2017, the date when the framework for the tax reform was revealed. During November and December 2017, different versions of the TCJA were revealed and passed by the House and Senate. Most importantly, on December 15, 2017, the final Conference Agreement was revealed and it

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<sup>2</sup> Reuters Staff, “European finance ministers call for U.S. tax reform rethink”, December 11, 2017, (<https://www.reuters.com/article/usa-tax-europe-letter-idUSA5N1JY023>).

became clear that the TCJA would pass and take effect in 2018. We examine whether and how the European stock market reacted to this announcement on December 15. Furthermore, we also examine potential market reactions to various other events related to the TCJA.

Three main findings emerge from our analysis. First, the TCJA had a significant impact on European firm values. We find an overall positive reaction of European stocks to the TCJA. The mean daily return was 0.71% immediately after the final content of the bill was revealed. Second, European firms that are subject to U.S. taxation also exhibit significantly larger returns compared to our sample mean. Third, foreign firms were also indirectly affected. We find lower returns for European firms in response to the TCJA if they face significant competition from U.S. firms in their domestic markets. Thus, our results suggest that the stock market reflects concerns with regard to the competitiveness of European firms after the TCJA.

Stock market responses to tax reforms have been studied in the literature in various settings.<sup>3</sup> For instance, Cutler (1988) and Givoly and Hayn (1991) study the stock market reaction of U.S. firms to the ‘Tax Reform Act of 1986’. In a more recent study, Wagner, Zeckhauser, and Ziegler (2018a) analyze the stock market response to the 2016 U.S. election. Both presidential candidates had very different plans regarding the tax system. The authors link the stock market response following the surprising election of Donald Trump to these differences. In a later paper, Wagner, Zeckhauser, and Ziegler (2018b) analyze stock market reactions around important dates in the legislative process of the TCJA. Both studies find that U.S. stock prices reacted accordingly to the changing expectations. Blanchard, Collins, Jahan-Parvar, Pellet, and Wilson (2018) also analyzed the development of the U.S. stock market

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<sup>3</sup> Examples include the effects on the trading behavior of investors (Bolster, Lindsey and Mitrusi, 1989), the stock market behavior around ex dividend dates (Michaely, 1991; Whitworth and Rao, 2010) and around announcements regarding the investment tax credit (Lyon, 1989). Proposals of tax reform that were not implemented have also been examined in the literature. For instance, Gaertner, Hoopes and Maydew (2019) analyze the reaction to a border adjustment tax proposed in 2017.

following the 2016 election. They identify that only part of the positive reaction relates to the expectations regarding tax reform.

These studies examine the effects of tax reforms on the respective domestic stock markets. Potential international effects of national tax reforms have rarely been examined in the literature. However, other policy events have been discussed with respect to their international effects. Examples include monetary policy (Eichengreen and Gupta, 2015; Aizenman, Chinn, and Ito, 2016; Feldkircher and Huber, 2016) and elections (Cunha and Kern, 2018). These international settings often focus on the American prominence in the financial system and thus analyze how other countries are affected by the U.S. (Eichengreen and Gupta, 2015; Eickmeier and Ng, 2015; Winecoff, 2015; Danzman, Winecoff and Oatley, 2017). A study by Cunha and Kern (2018) analyzes the impact of the 2016 U.S. election on international financial markets. By using data on exchange traded funds [ETFs], the authors find an overall negative effect of the election on financial markets. European countries exhibited only moderate negative returns of borderline or no significance following the U.S. election.

The U.S. election triggered a large shift in expectations regarding the tax regime in the U.S. Although the election was important for U.S. markets in terms of corporate taxation, other differences between the candidates may have been considerably more important internationally. For instance, both candidates differed widely in terms of trade policy.<sup>4</sup> Thus, by focusing on the election, it is difficult to isolate the effect of tax regime expectations on foreign markets. Furthermore, Cunha and Kern (2018) focus on the overall effect of the election on a given foreign stock market. By using ETF data, it is obviously not possible to determine whether there are heterogeneous effects for different firms. Our design relies on firm-level data. Therefore, we can examine firm-specific reactions and potentially uncover offsetting forces.

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<sup>4</sup> See Noland, Hufbauer, Moran, and Robinson (2016) for a detailed review of the different trade policies.

Our main contribution is the investigation of the effects of a major tax reform (TCJA) on foreign firms. So far, cross-border effects of a tax reform on a foreign stock market have rarely been examined in the literature. Regarding Japan's adoption of a territorial tax system in 2009, Bradley, Dauchy, and Hasegawa (2018) find significant market reactions for Japanese firms. However, they conclude that the cross-border spillovers from the reform were insignificant.

In a recent paper, Kim, Nessa, and Wilson (2021) examine the effect of corporate tax cuts outside the U.S. on the competitive situation of U.S. domestic manufacturers. They find that foreign corporate tax cuts affect the profitability of U.S. firms negatively, thus indicating increased competition. Although we focus on a stock market reaction, our study closely relates to Kim et al. (2021). In accordance with their findings, our results suggest that investors believe that the international competitive situation changes due to a tax reform. Therefore, we answer to their call for research that examines the cross-border effects of the TCJA.

Moreover, a contemporaneous paper by Gaertner, Hoopes, and Williams (2020) closely relates to our study. The authors also consider stock market reactions to the TCJA outside the U.S. They document heterogeneous reactions to the TCJA with a particular emphasize on a large negative reaction in China. Our study focusses on the European market only, which allows us to use additional data sources and to investigate the channels of cross-border effects of the TCJA on foreign firms. Gaertner et al. (2020) examine whether companies incorporated outside the U.S. were affected by the TCJA if they are subject to taxation in the U.S. They document small effects associated with U.S. activity. However, they approximate U.S. activity by a decline in a firm's effective tax rate [ETR] after the TCJA. A declining ETR post TCJA might be associated with being subject to U.S. taxation, but variations of the ETR are determined by a variety of causes. In our analysis, we consider firm level geographic data to determine U.S. activity of European firms more directly. Compared to Gaertner et al. (2020), we find a much larger response associated with the Conference Agreement on December 15. Furthermore, we

employ a different measure regarding the competitive situation for European firms. More precisely, we measure how prone a European firm is to competition with U.S. firms in European markets.

Our study has policy implications. The TCJA started a discussion regarding whether other countries need to react for maintaining a competitive tax system. One fundamental aspect of this discussion is the question whether and how firms outside the U.S. were affected by the TCJA. Our results indicate that investors indeed expected that the TCJA affects firms in Europe and that firms could suffer from tougher U.S. competition. However, our results also indicate that European firms operating in the U.S. significantly benefit from the TCJA.

This paper proceeds as follows. The next section discusses the TCJA with respect to its potential international effects and derives our hypothesis. Section 2.3 contains explorative statistics and describes our empirical strategy. Section 2.4 presents our empirical results and various robustness checks. Section 2.5 concludes.

## **2.2 Cross-Border Effects of the TCJA**

The legislative process of the tax reform started on September 27, 2017 when the framework for the tax reform was revealed. The process ended when President Donald J. Trump signed it into law on December 22, 2017. Until December 15, it was far from certain that the reform would pass the Senate in 2017, and when it would take effect. As the *Financial Times* put it, “Party leaders [were] operating on razor-thin margins [...] with no support from Democrats.”<sup>5</sup> Eventually, on the afternoon of December 15, 2017, Senators Marco Rubio and Bob Corker declared that they were going to back the Conference Agreement. Without convincing the two Republican Senators Rubio and Corker, the bill would possibly not have made it through the two chambers in 2017.

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<sup>5</sup> Barney Jopson, “Trump closes in on landmark US tax reform”, December 15, 2017 (<https://www.ft.com/content/567580b8-e1c1-11e7-8f9f-de1c2175f5ce>).



After the senators' statements, investors became aware that the bill was most likely going to pass the following week and signed into law by the President before Christmas. Even more important was that investors became aware of the final content of the bill. The Senate and the House had passed different versions of the TCJA before. However, the two versions significantly differed in some important parts. For instance, the House bill suggested that the corporate tax rate cut becomes effective in 2018, whereas the Senate amendment delayed it to tax year 2019. The final version of the tax reform followed the House version and took effect in 2018.

To understand how firms outside the U.S. might be affected by the TCJA, let us briefly discuss the main features of the different versions of the bill regarding international operations. Discussing the previous versions is important since any information revealed during our main event needs to be interpreted relative to the previous available information regarding the TCJA. The corporate tax cut from 35% to 21% constitutes the most striking feature of the TCJA. Additionally, the bill features immediate expensing of certain new capital investments. The previous House and Senate versions both imposed similar tax cuts (corporate tax rate 20 %) and immediate expensing.<sup>6</sup>

The most important changes regarding international taxation are the switch from a worldwide to a territorial tax system and the additional rules denoted as 'Base Erosion and Anti-Abuse Tax' [BEAT], 'Global Intangible Low Tax Income' [GILTI] and 'Foreign Derived Intangible Income' [FDII]. These rules are motivated by the goal to decrease profit shifting of multinationals and incentivize corporations to relocate intellectual property to the U.S.

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<sup>6</sup> More precisely, the final versions followed the Senate and allowed 100% expensing until 2022, which is phased out linearly until 2026 while the House version did not include increased expensing beyond 2022.

BEAT implies that the final income tax due is the maximum of either the regular tax liability or 5% on income ignoring all deductible payments to international affiliates (10% in 2019 through 2025 and 12.5% thereafter).<sup>7</sup>

The TCJA changes the U.S. tax system from a worldwide system to a territorial tax system. The profits earned by foreign subsidiaries are in general no longer subject to U.S. taxation upon repatriation. An important exception to the territorial system constitutes GILTI. Fifty percent of the income of a U.S. controlled foreign corporation [CFC] net of interest payments may be subject to U.S. taxation if it exceeds a certain return depending on its 'qualified business assets'. Effectively, this rule applies only if the corporate tax rate of a foreign country is lower than 13.125% (from 2026 onwards 16.4%). In a recent paper, Lyon and McBride (2018) argue that the GILTI regime may at least partly offset the benefits of the territorial system and thus could diminish the gain in international competitiveness of U.S. firms. The House and Senate versions contained similar provisions. Notably, the GILTI regime under the Senate version did not allow for interest deductions on the CFC level.<sup>8</sup>

Additionally, the final bill follows the Senate version and includes FDII. 'Intangible income' received by a U.S. firm from the sale of goods and services outside the U.S. is effectively taxed at a lower rate of 13.125%. This lower rate can benefit U.S. firms that export goods and services.

European firms might be affected by these changes through different channels. European firms that are subject to taxation in the U.S. are obviously affected by changes in the U.S. tax code. Due to the territorial tax system in European countries, we expect those European firms that operate in the U.S. to benefit from the lower corporate tax rate on their U.S. profits.<sup>9</sup>

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<sup>7</sup> Transfers regarding the costs of goods sold [COGS] are excluded from this calculation.

<sup>8</sup> On the other hand, the House version included interest deduction. Nevertheless, it imposed a similar taxation of 'Foreign High Return' which was defined as the return net of 8 % of tangible property instead of 10% as in the final version.

<sup>9</sup> See also Section 2.3.2 for a discussion of potential effects of the international tax systems of home countries.

The immediate expensing of certain new capital investments might further benefit the European firms that operate in the U.S. On the contrary, subsidiaries of European firms might suffer from the BEAT regime. While the BEAT regime applies to both U.S. and foreign-owned groups, U.S. subsidiaries of foreign firms should be particularly affected due to the typically high number of intercompany transactions with the headquarter and other plants abroad. Thus, we expect that BEAT has a negative effect on European firms active in the U.S. However, it is important to note that the previously proposed versions by the House and Senate provided even stricter rules for the taxation of intercompany transfers, and probably, would have harmed international firms even more.<sup>10</sup> Therefore, the final version of the BEAT regime could be seen as a lesser evil and investors could revise their expectations accordingly. Taking into account these details of the final version of the TCJA, we state the following hypothesis:

*H1: European firms that are active in the U.S. benefit from the TCJA and exhibit positive returns in response to the TCJA.*

In some cases, U.S. activity might not imply being subject to U.S. taxation. For instance, a firm is able to export goods to the U.S. without operating through a subsidiary or permanent establishment in the U.S. However, these firms might also be positively affected through the effect of the TCJA on the U.S. economy.<sup>11</sup>

The second channel through which European firms could be affected is competition from U.S. firms. U.S. firms benefit from the large corporate tax cuts and immediate expensing of certain new capital investments. This may give them additional resources to compete internationally. Indeed, one of the major aims of the TCJA was to make U.S. firms

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<sup>10</sup> The Senate version proposed a similar regime with a 10% tax rate instead of 5% in 2018. The House version proposed an excise tax on any intercompany deductible payments including COGS depending on the net income ratio of the foreign affiliate.

<sup>11</sup> We try to disentangle the effect of the TCJA on the tax liability of European firms and the indirect effect through the economy by including the beta coefficient of a firm and the U.S. market in our regression analysis. However, ultimately we cannot rule out the possibility that the effect we document is partly driven by the expectations regarding the U.S. economy. We thank an anonymous referee for this suggestion.

internationally more competitive. Accordingly, contemporaneous literature documents that both domestic and international U.S. firms benefit from lower taxes after the TCJA (Dyreng, Gaertner, Hoopes, and Vernon, 2020; Wagner, Zeckhauser, and Ziegler, 2020).<sup>12</sup>

Let us consider, for instance, a U.S. based multinational that holds a subsidiary in Europe to serve the European market. Let us further assume that this multinational faces a certain level of required net return on investment after taxes. The after-tax return might increase due to the change to a territorial system and the lower corporate tax rate in the U.S. The eventually larger return renders U.S. based firms competitive advantages. The firm can set lower prices by realizing the same after-tax return or could invest more in new plants or research projects. Moreover, due to lower U.S. taxes, U.S. MNE's might also experience liquidity advantages. Again, this may render the U.S. firm more possibilities to invest.

The international provisions of the TCJA are associated with complex effects on the international competitiveness of U.S. firms. On the one hand, a U.S. based multinational is now able to repatriate future foreign profits without additional U.S. taxes due to the switch to the territorial system. Furthermore, FDII can be expected to improve the international competitiveness of U.S. firms.<sup>13</sup> On the other hand, some of the international provisions may have the opposite effect. In particular, GILTI can lead to additional tax payments if CFC's of U.S. firms generate excess returns. Moreover, retained earnings of foreign subsidiaries are subject to a transition tax. Lastly, the BEAT regime may lead to additional taxes for U.S. based multinationals. These measures could decrease their international competitiveness.<sup>14</sup>

Taking into account the complex provisions, the effect of the TCJA on the international competitiveness of U.S. firms is ambiguous. Therefore, it remains an empirical question to

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<sup>12</sup> These papers suggest that domestic U.S. firms benefit most from the TCJA. However, international firms may have still gained competitiveness relative to European firms.

<sup>13</sup> FDII can be generated if the goods and services are sold to unrelated parties outside the U.S. but also if sold to related parties outside the U.S. Therefore, whether or not the U.S. firm internationally operates through a CFC, FDII is likely to improve competitiveness.

<sup>14</sup> Some of the international provisions have been discussed regarding potential WTO violations. Desai and Hines (2008) have shown that filing complaints before the WTO may have significant effects on firm values.

determine the overall effect of the TCJA on the competitive landscape. In line with the framework of the tax reform, we state as our null hypothesis that the TCJA improved the competitiveness of U.S. firms. If this holds true, we expect that European firms that operate in industries with high competition from U.S. firms are particularly affected.

*H2: European firms that compete intensely with U.S. firms lose from the TCJA because U.S. firms gain competitiveness.*

## **2.3 Empirical Strategy**

### **2.3.1 Event Study Design**

In our examination, we start from the common event study methodology discussed in detail by MacKinlay (1997). We consider the publication of the Conference Agreement on the afternoon of December 15, 2017, as the event for our main analysis. On this day, investors became aware of the final content of the bill and that the reform would pass. As described in Section 2.2, passage of the TCJA was highly uncertain before that day. Most of this uncertainty resolves on December 15. To estimate the overall response to the TCJA we also examine reactions to additional events during the legislative process in Section 2.4.

Most event studies examine abnormal returns calculated based on a market model. However, the TCJA is likely to have an impact on any market. This implies that using abnormal returns is likely to remove part of the effect we seek to document. Therefore, we analyze gross returns in our main analysis. For event windows longer than one day, we compute cumulative gross returns [CGR]. CGR's are computed based on the share price at the end of the respective event window relative to the last closing price before the event window. In additional robustness checks, we also consider abnormal returns that are computed as the difference between gross returns and expected returns.

Our empirical approach relies on multiple data sources. First, we obtain data on the stock prices of European firms from Compustat Global. We only keep the firms that are actively

traded and that have at least 100 observations in the respective estimation window. Following the literature, we exclude penny stocks (stock price below 1 €). We also eliminate firms with missing control variables. We drop firms from the sample in the top 1% and bottom 1% of gross returns to ensure that our results are not driven by outliers.<sup>15</sup> Furthermore, we exclude firms with earnings announcements in the respective event windows. Moreover, we consider segment data on revenues from the Thomson Reuters Eikon database and obtain data on revenues of U.S.-controlled companies for European industries from Eurostat. For an additional competition measure we obtain export data from the OECD STAN database. Our final sample contains 1,779 firms. Please refer to Table 1 for a detailed overview of the sample selection.

**Table 1: Screening Criteria and Sample Size**

Screening Step	Remaining Sample Size
Initial sample size	9,410
Having segment data	2,857
Dividend adjustment factors	2,850
Price > 1 €	2,312
Having 100 estimation points and being traded more than 50% of the time	2,118
Being still active during the event	2,111
Having NAICS codes with available competition ratio	2,073
Having data on all control variables	1,779

Note: Table 1 summarizes the sample selection. Starting with 9,410 firms available in Compustat, we reach our final sample of 1,779 firms with the data for all our explanatory variables. However, not all of these firms have return data for every examined event window in our regressions and some data points are eliminated through truncation. Furthermore, we exclude firms with earnings announcements in the respective event windows. Please refer to the number of observations reported in the regression tables as the respective final sample sizes.

<sup>15</sup> SRP GROUPE SA constitutes an outlier example. The company revised downwards their annual profit expectations on the event date. The stock price fell by 22% in response. This reaction was due to the announcement rather than the developments regarding the TCJA and should thus be excluded in our analysis.

**Table 2: Descriptive Statistics**

Statistic	N	Mean	St. Dev.	Min	P25	Median	P75	Max
<b>Return after the Revelation of the Conference Agreement on December 15</b>								
One-Day Return	1705	0.71	1.68	-4.77	-0.14	0.52	1.67	6.23
Three-Day Return	1715	0.60	2.57	-12.44	-0.78	0.43	2.00	11.54
One Week Return	1701	1.07	3.60	-12.93	-0.99	0.86	2.93	22.18
<b>Covariates</b>								
Market capitalization	1705	3943.46	9360.45	6.04	169.21	603.11	2848.46	55693.21
Profitability	1705	0.06	0.10	-0.55	0.03	0.06	0.11	0.39
Growth of sales	1705	0.11	0.24	-0.58	0.01	0.08	0.16	1.88
Beta S&P	1705	0.41	0.39	-0.49	0.12	0.39	0.68	1.32
US Activity	1705	0.55	0.50	0.00	0.00	1.00	1.00	1.00
US Comp EU	1705	0.09	0.06	0.00	0.04	0.08	0.12	0.26
Export ratio	1030	0.04	0.03	0.00	0.01	0.04	0.09	0.10
<b>Additional Event Dates 3-Day-Window Returns:</b>								
Sep 27: Framework Revealed	1646	1.11	2.37	-8.19	-0.29	0.83	2.40	14.34
Nov 02: House Bill introduced	1640	-0.04	2.38	-11.68	-1.31	0.00	1.16	12.41
Nov 16: House Bill passes	1658	0.80	2.70	-9.76	-0.78	0.54	2.07	14.89
Dec 02: Senate Bill passes	1691	-0.07	2.52	-9.40	-1.33	0.00	1.36	10.70
Dec 20: Conf. Agreement passes	1712	0.11	2.28	-10.87	-1.11	0.00	1.20	12.24

Table 2 shows descriptive statistics for the cumulative returns (3-Day window) and covariates. All values are in percent except for market capitalization, which is measured in Million €, *US Comp EU*, the Beta coefficient and the *US Activity* variable. Due to time zone considerations, the event windows start on September 27 (Revelation of the Framework), November 2 (Introduction of the House Bill), November 17 (Passing of the House Version), December 4 (passing of the Senate Bill), December 18 (Revelation of the Conference Agreement) and December 20 (passing of the Conference Agreement).

Table 2 shows descriptive statistics for our final sample. Despite the discussed international concerns regarding the TCJA, the European stock market overall reacted *positively* to the final version of the bill. The mean return on December 18 was 0.71%. The cumulative return for the one-week window<sup>16</sup> increases to 1.07 %.

We proceed with an analysis of the potential channels through which firms were affected by the reform. To this end, we perform regressions based on two main models. First, we test whether European firms that are active in the U.S. benefit from the TCJA. We obtain geographical revenue data from the Thomson Reuters Eikon database to determine whether a

<sup>16</sup> If not otherwise noted, one week refers to the window from December 18 to December 27 because most of the European stock exchanges were closed on December 25 and 26.

firm is active in the U.S.<sup>17</sup> Unfortunately, the reporting of geographic data is not completely coherent among companies. Companies report on the country level, the continental level or other regional constructs.<sup>18</sup> This constitutes a challenge if we want to identify the proportion of revenues generated in the U.S. For instance, if a company reports revenues in North America, we do not observe the exact revenue amount generated in the U.S. Therefore, we consider a dummy variable rather than relying on the exact revenue value. The dummy is set to 1 if the company either reports to have revenues in the U.S. or if it reports revenues in (North) America. Generally, our dummy variable indicates whether a firm is likely to operate in the U.S. As shown in Table 2, 55% of the European sample firms are likely to be active in the U.S. We consider the following model to test hypothesis 1:

$$CGR_{it} = \alpha_0 + \alpha_1 US Activity_i + \gamma Beta S\&P_i + \Delta X_i + Ind. F. E. j \quad (1)$$

$CGR_{it}$  is the cumulative gross return of firm  $i$  at event window  $t$ ,  $US Activity$  is the dummy variable that indicates the firms that generate revenues in the U.S. Moreover, to control for the overall dependence on the U.S. market of our sample firms, we include the beta coefficient  $Beta S\&P$  between the firms' stock return and the S&P 500.<sup>19</sup>  $X$  is a vector of control variables and country fixed effects. Following Wagner et al. (2018a), we include market capitalization, profitability and sales growth as control variables, which are obtained from Compustat.<sup>20</sup> We include country fixed effects because the event may have a different impact on firms from different countries. For instance, Cunha and Kern (2018) show that stock markets react differently to U.S. events depending on their countries' financial ties to the U.S.

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<sup>17</sup> Unfortunately, it is not possible to determine directly whether a company is subject to taxation in the U.S. It is possible that a firm generates revenues in the U.S., but is not taxable (e.g., if the company only exports to the U.S. and does not have a permanent establishment or CFC in the U.S.). Perhaps a better approximation to being taxable in the U.S. would be to use data on assets instead. As part of our robustness check we show that our results are qualitatively unchanged if we base our  $US Activity$  measure on assets.

<sup>18</sup> Examples include the reporting of 'Foreign vs Domestic revenue', 'revenues generated in the NAFTA region', or 'revenues generated in EMEA.'

<sup>19</sup> We estimate  $S\&P Beta$  based on data from the year before the event.

<sup>20</sup>  $Market Capitalization$  is the logarithm of shares outstanding x share price (adjusted for stock splits and dividends),  $Growth$  equals the growth rate of sales, and  $Profitability$  is given by pretax income divided by total assets.



Regarding hypothesis 1, we expect that  $\alpha_1 > 0$ . The European firms that are active in the U.S. should benefit from the final version of the TCJA. Furthermore, the TCJA was expected to boost economic growth, at least in the short term. Accordingly, response of the U.S. stock market to the tax reform announcement was positive (Wagner et al., 2018a). Therefore, we expect that European firms that depend more on the U.S. market (high *Beta S&P*) exhibit positive returns. Thus, we expect  $\gamma > 0$ .

The second channel through which the TCJA could affect European firms is competition. Competition is difficult to measure. We rely on Eurostat data to construct a ratio that indicates how prone a European firm is to competition from U.S. firms. We proxy potential U.S. competition by the market share of U.S.-controlled companies in a certain European industry (two-digit NACE codes). For this, we obtain aggregated data on the revenues by industry in the E.U. from Eurostat.<sup>21</sup> Additionally, Eurostat provides the revenue of U.S.-controlled companies by industry. For each of the available NACE codes, we compute the following ratio:

$$US\ Comp\ EU_j = \frac{Revenue\ of\ US\ Controlled\ Companies\ in\ the\ EU_j}{Total\ Revenue\ in\ the\ EU_j}$$

The index  $j$  corresponds to the two-digit NACE industry.<sup>22</sup> We compute the competition ratio for the 67 different industries in our sample. Our measure approximates the competitive situation of the European market. Arguably, the European market is highly important for most European firms.<sup>23</sup> As shown in Table 2, the average firm in our sample operates in an industry with a share of 9 % U.S. competitors. We use the following model to test hypothesis 2:

$$CGR_{it} = \alpha_0 + \alpha_1 US\ Activity_i + \alpha_2 US\ Comp\ EU_j + \gamma S\&P\ Beta_i + \Delta X + Ind.\ F.\ E._j \quad (2)$$

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<sup>21</sup> Eurostat provides these aggregated numbers for most of the two-digit industry NACE codes. For some NACE codes, Eurostat provides only country-level information on the revenues for some European countries. In these cases, we construct the competition ratio by using the available data.

<sup>22</sup> Compustat does only provide data on NAICS codes, but not on NACE codes. Therefore, we rely on correspondence tables obtained from Eurostat to merge the competition ratio to the firms in our sample.

<sup>23</sup> In 2017 EU-firms exported 3,347 € billion to other EU-countries compared to 1,879 € billion to the rest of the world ([https://ec.europa.eu/eurostat/statisticsexplained/index.php?title=International\\_trade\\_in\\_goods](https://ec.europa.eu/eurostat/statisticsexplained/index.php?title=International_trade_in_goods)). In addition, the domestic sales of European firms have to be considered.

If European firms suffer from tougher competition from U.S. firms following the TCJA, we expect this effect to be particularly pronounced for the firms that already face relatively high competition from U.S. firms. Therefore, we expect that  $\alpha_2 < 0$ .

Our competition measure is based on the market share of U.S.-controlled corporations. However, European firms might also compete with U.S. firms that export to European industries and do not operate through a CFC.<sup>24</sup> To address this additional competition channel, we consider a competition measure that refers to exports in additional analysis in Section 2.4.

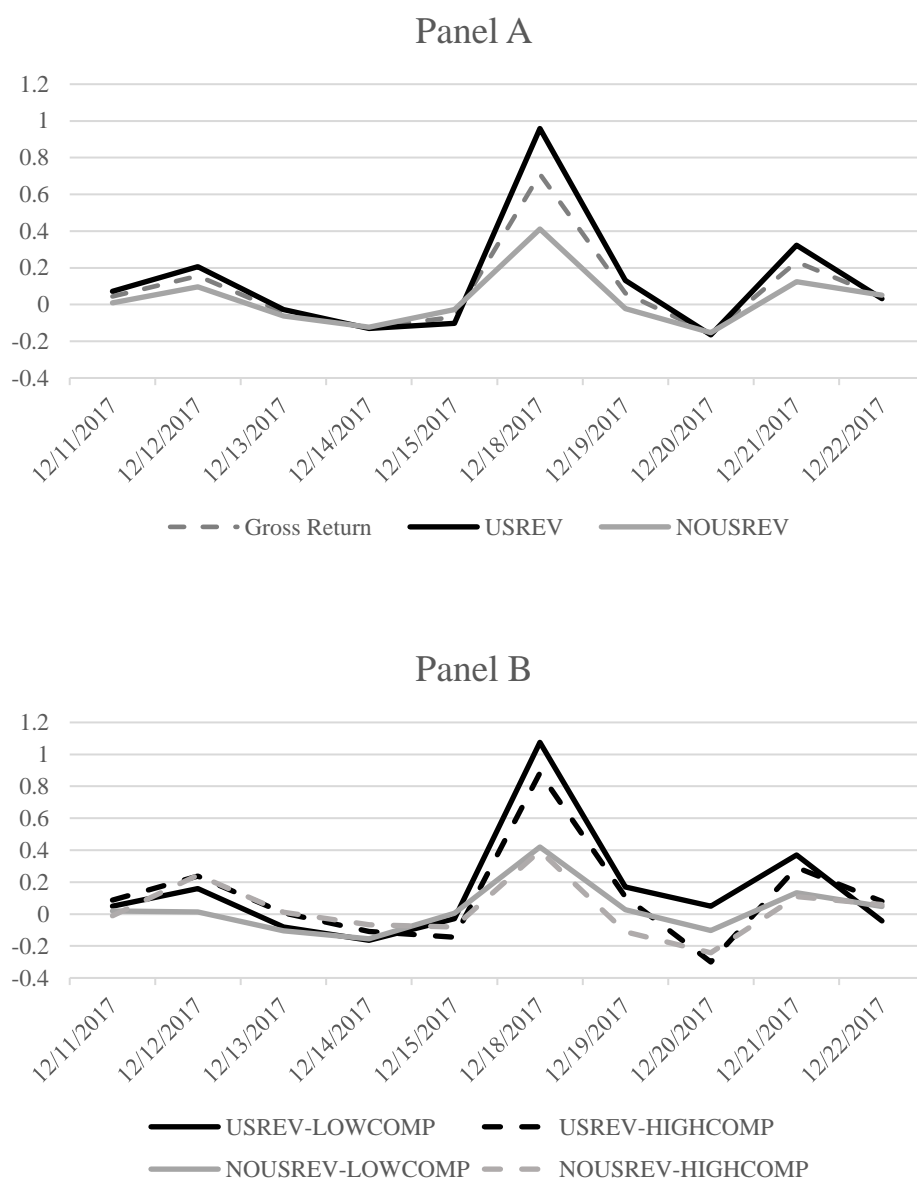
### 2.3.2 Explorative Analysis

We start with an explorative analysis. In Figure 1, we split our sample using the *US Activity* variable and plot returns around the event date. Panel A shows that following the event the firms that are active in the U.S. (black line) experienced higher returns compared to the firms that are not (grey line). The difference is largest immediately on the trading day after the event on December 15. For Panel B we additionally split our sample at the median of the competition ratio *US Comp EU*. Dashed lines indicate the set of firms with a competition ratio above the median. In accordance with our hypothesis, firms that are active in the U.S. and face low competition from U.S. firms in their domestic markets exhibit the largest positive returns following the event. For both, the firms that are active in the U.S. and the firms that are not, lower competition ratios are associated with higher returns after the event.

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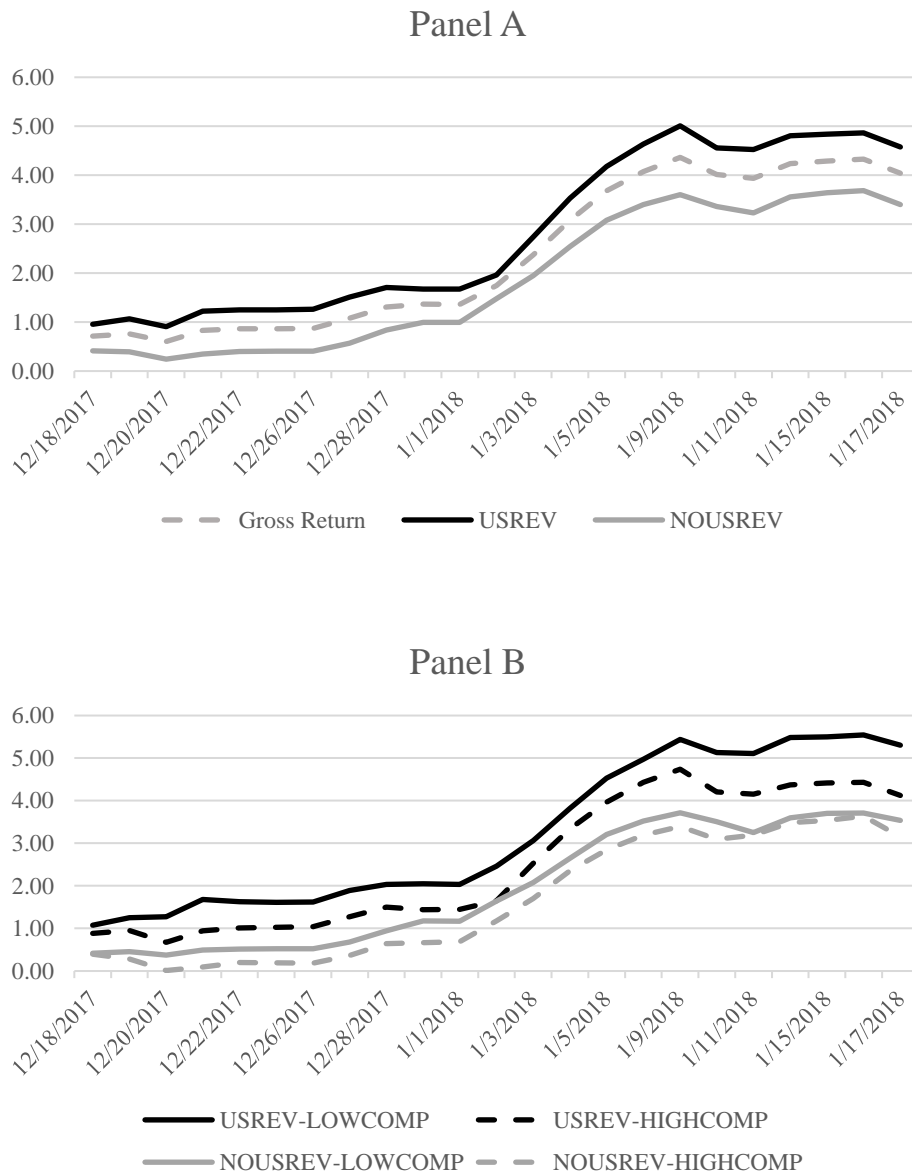
<sup>24</sup> In fact, U.S. firms that export are also eligible for FDII and are not necessarily subject to GILTI. Therefore, these firms might benefit even more in terms of international competitiveness. Due to data availability, we still focus on the revenue ratios of CFC's for the main analysis.

**Figure 1: Returns around the Event**



Notes: The figure plots the average return around the event measured in percentages. Black lines (USREV) correspond to the firms that are active in the U.S., as measured by our *US Activity* variable. Grey lines (NOUSREV) show average returns for the firms that are not active in the U.S. For Panel A the dashed line corresponds to the average gross return for the full sample. For Panel B we additionally split our sample at the median of the competition ratio *US comp EU*, which results in four subsamples. The dashed lines in Panel B (NOUSREV-HIGHCOMP and USREV-HIGHCOMP) correspond to the firms that have an above median competition ratio. The solid lines (NOUSREV-LOWCOMP and USREV-LOWCOMP) correspond to firms with a below median competition ratio.

**Figure 2: Cumulative Returns following the Event**



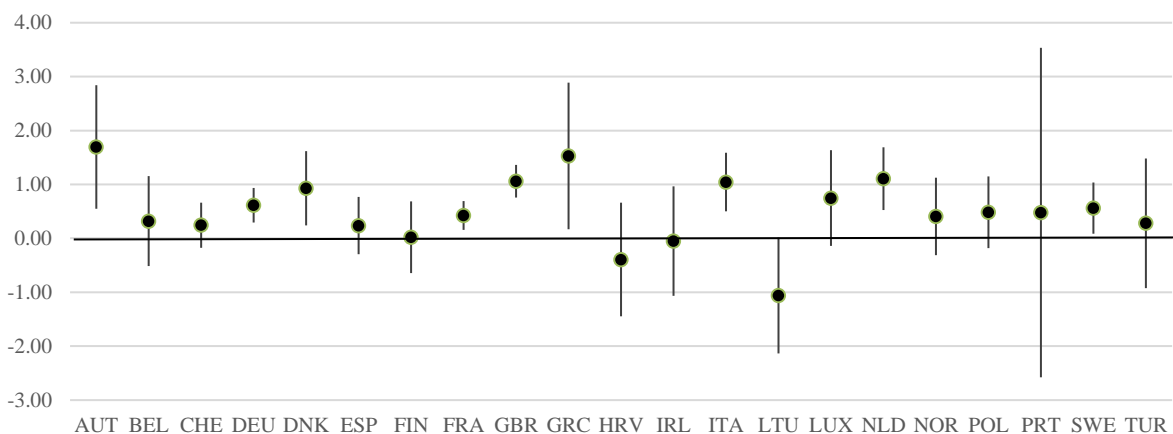
Notes: The figure plots the average cumulative return after the event in percentages. Black lines (USREV) correspond to the firms that are active in the U.S., as measured by our *US Activity* variable. Grey lines (NOUSREV) show average returns for the firms that are not active in the U.S. For *Panel A* the dashed line corresponds to the average gross return for the full sample. For *Panel B* we additionally split our sample at the median of the competition ratio *US Comp EU*, which results in four subsamples. The dashed lines in *Panel B* correspond to the firms that have an above median competition ratio (NOUSREV-HIGHCOMP and USREV-HIGHCOMP). The solid lines correspond to firms with a below median competition ratio (NOUSREV-LOWCOMP and USREV-LOWCOMP).

Figure 2 plots cumulative returns following the event for a longer time horizon. *Panel A* suggests that firms that are active in the U.S. exhibit higher cumulative returns after the event. *Panel B* of Figure 2 shows that lower competition ratios are also associated with higher cumulative returns. These differences remain approximately constant throughout the whole month following the event. Thus, the reaction documented in Figure 1 is unlikely driven by a short-term market reaction to the TCJA.

Figure 3 plots the 95% confidence interval of the average return by country based on the three-day window following the revelation of the Conference Agreement on December 15. Almost all countries exhibit positive returns. However, there is some variation in returns by country. We take into account the variation across countries and always control for country fixed effects in our main analyses.

There might be various explanations of different developments in European stock markets. In Section 2.4.2, we examine two potential channels that may result in the differential impact of the TCJA on firms from different countries: different co-movement of European markets with the U.S market and policy spill-over effects. One further reason for different reactions across European countries could be the differences in tax regimes across Europe. If, for instance, a European country would follow a worldwide tax system, European firms in this

**Figure 3: Conference Agreement 3 Day Return by Country**



Notes: Figure 3 plots the 95% confidence interval of the average percentage return by country for the three-day window following the revelation of the Conference Agreement on December 15. Only countries that have more than 10 observations in the respective window are shown.

country might not be able to benefit fully from the lower taxation on their U.S. profits. However, the countries in our sample either follow the territorial approach or include passages in the tax treaties with an exemption of income from U.S. subsidiaries.<sup>25</sup>

Furthermore, in line with Figure 1, average returns by country could also be affected by how many of the firms in a given country are active in the U.S. For instance, Switzerland, The Netherlands, Great Britain, Italy and Austria have the highest share of U.S. active firms. Except for Switzerland, all of these countries exhibit high returns. On the other hand, Croatia, Turkey, Poland and Lithuania have the lowest ratio of U.S. active firms and correspondingly have relatively low or even negative returns.

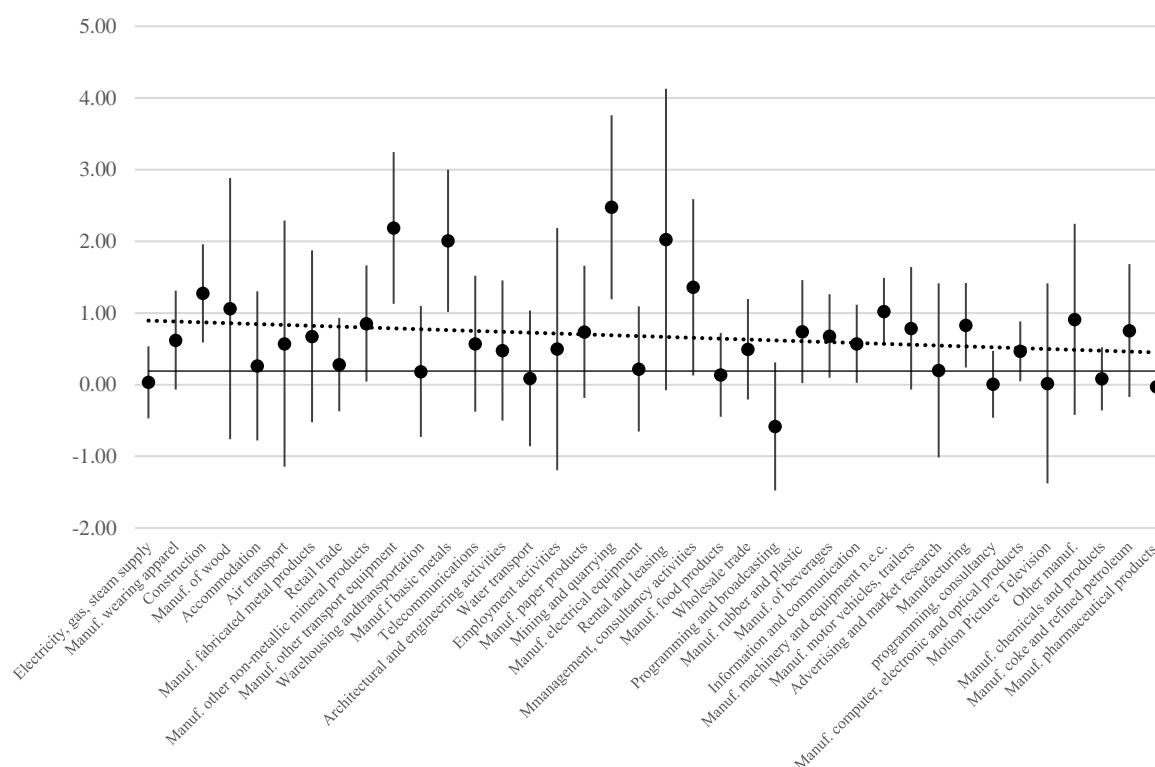
Figure 4 plots the 95% confidence interval of the average return by industry following the revelation of the Conference Agreement. Industries are ordered depending on *US Comp EU*, increasing from left to right. Therefore, industries on the right are characterized by tougher competition from U.S. firms. The dashed line is a trend line based on the average return by industry. In accordance with hypothesis 2, we observe lower average returns for industries with high competition ratios. Notably, the decline in returns by *US Comp EU* appears quite steadily, i.e., there is not a particular industry driving the effect.<sup>26</sup>

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<sup>25</sup> The only country in our sample applying a worldwide tax system is Ireland. However, the Irish corporate tax rate is 12.5 percent. Therefore, profits repatriated from the U.S. are not associated with additional taxes. Additionally, we reviewed the CFC rules for all countries in our sample. Only Germany and Denmark have CFC rules which could potentially target income from U.S. subsidiaries after the TCJA. These countries do not exhibit outlying returns as shown in Figure 3. Consequently, differences in tax regimes do not appear to drive the return pattern in Figure 3.

<sup>26</sup> While there are no outlying negative returns, some industries exhibited larger average returns. Among them are ‘manufacturing of other transport equipment’, ‘mining and quarrying’ and ‘manufacturing of basic metals’.

**Figure 4: Conference Agreement 3 Day Return by Industry**



Notes: Figure 4 plots the 95 % confidence interval based on the three-day window average percentage return by industry. Following the revelation of the Conference Agreement on December 15. Only Industries with more than 10 observations in the respective window are shown. Industries are ordered based on the competition ratio  $US\ Comp\ EU$  increasing from left to right. The dashed line corresponds to the trend line based on the industries' average return.

## 2.4 Empirical Results

### 2.4.1 U.S. Activity and Competition

In this section, we use regression analysis and test whether European firms exhibited different stock market returns depending on their U.S. activity. Columns (1) to (4) of Table 3 show the results of an OLS regression of equation (1) for different event windows from one day to one week after the event.

$US\ Activity$  is the main variable of interest. The coefficient is positive and statistically significant throughout all event windows. The effect is also meaningful in terms of size. The mean return on the day immediately after the event was 0.71 %. Table 3 implies that being a firm that is active in the U.S. resulted in a 0.34 percentage-point higher return.

**Table 3: U.S. Activity and Competition**

	1 Day	2 Days	3 Days	1 Week	1 Day	2 Days	3 Days	1 Week
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>US Activity</i>	0.343*** (3.81)	0.436*** (3.09)	0.586*** (3.53)	0.538*** (3.20)	0.344*** (3.82)	0.451*** (3.25)	0.618*** (3.76)	0.563*** (3.39)
<i>US Comp EU</i>					-0.160 (-0.28)	-1.953*** (-3.15)	-4.143*** (-3.59)	-3.031* (-1.91)
<i>Beta S&amp;P</i>	0.824*** (6.92)	1.080*** (6.30)	0.879*** (4.03)	1.539*** (4.80)	0.823*** (6.94)	1.074*** (6.33)	0.865*** (4.05)	1.533*** (4.79)
<i>Market Capitalization</i>	0.058** (2.14)	0.001 (0.03)	-0.059 (-1.58)	0.031 (0.58)	0.058** (2.14)	0.004 (0.13)	-0.054 (-1.44)	0.034 (0.65)
<i>Profitability</i>	1.084** (2.33)	1.030* (1.68)	1.326** (2.28)	1.625 (1.47)	1.075** (2.31)	0.904 (1.45)	1.074* (1.76)	1.466 (1.34)
<i>Growth</i>	0.243 (1.53)	0.221 (0.90)	0.129 (0.35)	0.451 (1.38)	0.245 (1.54)	0.239 (0.96)	0.170 (0.45)	0.470 (1.44)
Industry Fixed Effect?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1705	1706	1715	1701	1705	1706	1715	1701
R <sup>2</sup>	0.127	0.099	0.074	0.120	0.127	0.101	0.081	0.122

Note: This table shows the regression results of the gross returns for different horizons after the event on December 15, 2017. Due to time zone considerations, December 18 is the first day included in the event window. In all following tables, returns are in percent and continuous variables are winsorized at the 1% level. Market capitalization is given by the logarithm of *Shares Outstanding x Share Price*, Profitability equals *Pretax Income/Sales*, and *Growth* equals the growth rate of *Sales*. All of these items are obtained from Compustat. *Beta S&P* is the beta coefficient to the S&P 500. *US Activity* is a dummy variable indicating firms with U.S. revenues. *US Comp EU* is defined as the revenue share of U.S. CFC's in Europe by industry. Industry fixed effects are computed by using the first letter of the European NACE code. All specifications include country fixed effects. T-statistics based on standard errors clustered at the country-industry level are shown in parentheses. Significance is indicated by \*p<0.1, \*\*p<0.05 and \*\*\*p<0.01.

Consistent with the average returns shown in Table 2, the coefficient becomes larger as the event window gets longer and reaches up to 0.59 for the three-day window (Column 3).

The control variables *Market Capitalization* and *Profitability* appear to affect stock market returns after the event. There is some evidence that larger firms and profitable firms exhibit higher returns after the event. We find a significant positive coefficient for *Beta S&P* for all of the examined event windows. This is in line with investors believing European firms to benefit from the U.S. market following the TCJA. Most important, we document a significant



positive coefficient of *US Activity* even after controlling for the dependence on the U.S. market. Activity in the U.S. is associated with an extraordinary positive market response around the TCJA. Our results suggest that investors reacted according to hypothesis 1. The European firms that are active in the U.S. had higher returns after the revelation of the final content of the TCJA.

The second channel through which European firms could be affected by the TCJA is competition. Therefore, we also examine whether European firms that operate in markets with strong competition from U.S. firms experience lower returns after the event. Columns (5) to (8) of Table 3 present results of an OLS regression of equation (2). The coefficient of *US Activity* remains positive and highly significant across all specifications. More important, we find supporting evidence for hypothesis 2. The sign of the *US Comp EU* coefficient is negative throughout the specifications.<sup>27</sup> Firms had smaller returns if they operate in an industry for which U.S. competitors play an important role. The effect is insignificant immediately after the event, whereas the effect is highly significant for the two-day window and three-day window. The coefficient is also meaningful in terms of size. For instance, the coefficient from Column (7) equals -4.14. If we consider the sample mean of the competition ratio of 0.09, the point estimate suggests a decrease in the return of -0.37 ( $= -4.14 * 0.09$ ) percentage points due to competition from U.S. firms.<sup>28</sup>

There are different explanations regarding why the effect is not statistically significant immediately after the event. Perhaps, investors took longer to realize the competition situation of firms. While it is easy to understand whether a firm is active in the U.S. or not, it is more difficult to analyze the complex competition situation of a firm and how this situation has

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<sup>27</sup> Our U.S. competition measure is based on the two-digit NACE codes and thus varies only among the corresponding industry classifications. For consistency, we rely on the first digit of the NACE code to form our industry fixed effects. Untabulated results show that the effect is qualitatively unchanged if we do not include industry fixed effects.

<sup>28</sup> An alternative explanation for the negative effect could relate to the M&A market. Post TCJA, firms are able to repatriate cash to the U.S. more easily and thus have less incentives for foreign acquisitions. This reduces the demand for shares. We address this concern by providing similar results for an alternative competition measure based on exports in section 2.4.2. However, a detailed analysis of the M&A effects of the TCJA is beyond the scope of this paper. We thank an anonymous referee for this suggestion.

changed after the TCJA. Moreover, some of the information regarding competition could have been priced in prior to the event of our main analysis. Section 2.4.3 elaborates on this possibility and documents that there are also significant competition effects associated with prior events.

## **2.4.2 Additional Analyses**

Our results suggest that European stock prices were indeed affected by the TCJA. This section contains various additional analyses to test the robustness of our main findings.

### **Measuring U.S. Activity**

For our main specification we consider a dummy variable indicating firms that have revenues in the U.S. As a robustness check, we obtain data on geographic assets. Having assets in the U.S. might more closely relate to being subject to U.S. taxation. However, data coverage is much lower for geographic assets. Therefore, we rely on revenue data for our main analysis.

In Panel A of Table 4 we consider an *US Activity* variable that refers to geographic data on assets. The effect of *US Activity* remains positive and significant for the one-day and two-day window. Moreover, the coefficient of *US Comp EU* remains qualitatively unchanged.

**Table 4: Alternative U.S. Activity and Competition Measures**

<i>Panel A: US Activity Based on Assets:</i>				
	1 Day	2 Days	3 Days	1 Week
	(1)	(2)	(3)	(4)
<i>US Activity</i>	0.365*** (3.10)	0.364** (2.22)	0.289 (1.48)	0.415 (1.65)
<i>US Comp EU</i>	-0.593 (-0.99)	-2.609*** (-3.97)	-3.830*** (-3.08)	-3.562 (-1.57)

<i>Panel B US Competition:</i>								
	US Competition based on Exports				US Competition based on NoE			
	1 Day	2 Days	3 Days	1 Week	1 Day	2 Days	3 Days	1 Week
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>US Activity</i>	0.401*** (3.70)	0.446** (2.41)	0.664*** (3.18)	0.748*** (4.78)	0.748*** (4.78)	0.348*** (3.95)	0.470*** (3.51)	0.653*** (4.10)
<i>US Comp EU</i>	-0.656 (-0.52)	-2.893* (-1.71)	-6.510** (-2.64)	-6.105* (-1.91)	-0.201 (-0.19)	-3.581*** (-2.88)	-8.358*** (-4.84)	-7.233*** (-2.61)

<b>Panel A:</b>								
Observations	938	936	941	930				
R <sup>2</sup>	0.150	0.138	0.107	0.165				
<b>Panel B:</b>								
Observations	1030	1035	1035	1028	1710	1711	1720	1706
R <sup>2</sup>	0.159	0.104	0.095	0.163	0.128	0.102	0.082	0.122

Note: This table shows the regression results of the returns for different horizons after the event on December 15, 2017. Due to time zone considerations, December 18 is the first day included in the event window. All specifications include country and industry fixed effects. Market capitalization, growth, profitability and the beta coefficient to the S&P 500 are included in all specifications. In Panel A *US Activity* is based on assets, in Panel B it is based on revenues as in the main specification. *US Comp EU* in Panel A is based on the revenue share of U.S. CFC's in European industries. In Panel B columns (1) to (4) it is based on the exports of U.S. firms to European industries. In Panel B columns (5) to (8) it is based on the share of employees from U.S. CFC's. T-statistics based on standard errors clustered at the country-industry level are shown in parentheses. Significance is indicated by \*p<0.1, \*\*p<0.05 and \*\*\*p<0.01.

## Measuring U.S. Competition in Europe

In a second set of robustness checks, we consider alternative measures for U.S. competition. While in our base specifications we have considered the market share of U.S.-controlled CFCs in European industries, we now consider how prone a European firm is to U.S. competition through exports. European firms might also compete with exporting U.S. firms that are not operating through CFC's in Europe. In fact, exporting U.S. firms are also able to benefit

from the lower tax rate at home and FDII. At the same time, they are not subject to the GILTI regime. Thus, exporting U.S. firms might especially benefit from the TCJA. Therefore, we consider an alternative competition measure that is based on U.S. exports into European industries. More precisely, we construct *US Comp EU* as the ratio of U.S. exports to total domestic production based on European industries. This measure is supposed to capture the relevance of the exports from the U.S. relative to the size of the respective industry.

Columns (1) to (4) of Panel B present the respective results. The results are very similar to our baseline specification. The coefficient of *US Comp EU* appears larger. However, evaluated at the sample mean the effect size is comparable to our base line results. For example, Panel B Column (3) of Table 4 suggests that the response is approximately -0.29 ( $-6.51 * 0.044$ ) evaluated at the sample means. The results confirm our main finding that European firms operating in European industries with a large presence of U.S. competitors exhibit lower returns.

Furthermore, we consider a third competition measure based on the workforce of the respective industry.<sup>29</sup> Eurostat provides data on the number of employees [NoE] per European industry as well as the NoE of U.S. CFC's. Columns (5) to (8) of Panel B show that the results are qualitatively unchanged. In addition, the magnitude of the competition effect evaluated at the untabulated sample mean (0.05) remains similar.

In additional analyses, we investigate whether the effect associated with U.S. competition differs between firms that are active in the U.S. and firms that do not operate in the U.S. In general, the change in competitiveness of U.S. firms should affect both, European firms that are active in the U.S. and European firms that are not. Firms that are not active in the U.S. suffer from competition with U.S. firms, for example, in European markets. The firms that are active in the U.S. could also suffer from competition both in the U.S. market and in European markets. To this end, we consider an interaction term of the competition measure and *US*

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<sup>29</sup> For Columns (5) to (8) of Panel B, we define *US Comp EU* analogously to the base line specification as the NoE of U.S. CFC's divided by the total NoE in the European industry.

*Activity*. The interaction term captures a potentially difference in the competition effect of firms that are active in the U.S. Column (1) of Table 5 presents respective results. While the base effect of *US Comp EU* remains negative and significant, the coefficient of the interaction term is negative. However, the interaction effect is not significant at any conventional level.

**Table 5: Additional Analysis**

	U.S. Active vs. Not U.S. Active	Country Characteristics		Dynamics of Competition	ETR Analysis
	(1)	(2)	(3)	(4)	(5)
<i>US Activity</i>	0.749*** (3.85)	0.650*** (3.89)	0.676*** (4.17)	0.617*** (3.74)	
<i>US Comp EU</i>	-3.186** (-2.00)	-3.898*** (-3.31)	-4.152*** (-3.61)	-4.097*** (-3.55)	-3.296*** (-3.08)
<i>US Activity x US Comp EU</i>	-1.508 (-0.82)				
<i>Country Beta</i>		0.630** (2.42)			
<i>Statutory Rate</i>			-0.001 (-0.10)		
<i>Competition Growth</i>				-0.106 (-0.42)	
<i>ETR Decline</i>					-0.107 (-0.71)
Industry Fixed Effect?	✓	✓	✓	✓	✓
Controls?	✓	✓	✓	✓	✓
Observations	1715	1680	1715	1714	1126
R <sup>2</sup>	0.082	0.060	0.060	0.081	0.073

Note: This table shows the regression results of the returns based on the three-day window after the event on December 15, 2017. Due to time zone considerations, December 18 is the first day included in the event window. All specifications include industry fixed effects. Columns (1) and (4) include country fixed effects. Market capitalization, growth, profitability and the beta coefficient to the S&P 500 are included in all specifications. In column (1) we include the interaction term of *US Activity* and *US Comp EU* in the regression. In column (2) *Country Beta* is the beta coefficient resulting from a regression of a countries ETF or Index and the S&P 500. In column (3) we include the statutory tax rate. Lastly, in column (4) we include *Competition Growth* which is the relative change in *US Comp EU* between 2016 and 2015. T-statistics based on standard errors clustered at the country-industry level are shown in parentheses. Significance is indicated by \*p<0.1, \*\*p<0.05 and \*\*\*p<0.01.

## Country Specific Effects

We include country fixed effects in our main analysis. As depicted in Figure 3, there is some variation in the returns between home countries of the analyzed European firms. In additional analyses, we examine two channels through which countries might be differentially affected by the reform. First, markets of some countries might comove more closely with the U.S. market. Firms headquartered in these countries might be more affected by U.S. events. In Column (2) of Table 5, we consider the beta coefficient of a country ETF and the S&P 500 as an explanatory variable.<sup>30</sup> Intuitively, companies operating in markets that generally comove more closely with the U.S. market are stronger affected by the U.S. tax reform. The comovement on the country level is significantly positive associated with returns following the event.<sup>31</sup> This is in accordance with prior studies showing that events in the U.S. may differentially affect countries, for instance, depending on the financial ties to the U.S. (Cunha and Kern, 2018). More important, the results for *US Activity* and *US Comp EU* are rather unchanged compared to our base results in Table 3.

The second channel relates to potential policy spillovers of the TCJA. Perhaps, markets anticipated that after the passage of the TCJA European countries will respond by cutting their tax rates. This could be another explanation for the positive response of European markets. If this holds true, we expect this effect to be particularly pronounced in countries with a high corporate tax rate. Therefore, we include the statutory tax rate of the home country in Column (3) of Table 5. However, the coefficient of the statutory tax rate is insignificant. Again, effects for *US Activity* and *US Comp EU* are qualitatively unaffected.

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<sup>30</sup> We obtain the beta coefficient by regressing the return of the corresponding country ETF or index on the return of the S&P 500. We were not able to obtain daily data for an index capturing the Luxembourgian market. Therefore, we obtain the slightly lower sample size in specification 2.

<sup>31</sup> Specification 2 still controls for the firm's beta coefficient *Beta S&P*. This may limit the variation in the country beta effect. However, untabulated results are unchanged if we omit *Beta S&P*.

## **Growth of Competition**

Moreover, we examine the possibility that the recent development of competition explains the returns following the event. Column (4) of Table 5 considers the relative growth in *US Comp EU* between 2015 and 2016. We do not find a significant effect of competition growth. More importantly, the positive effect of *US Activity* and the negative coefficient of *US Comp EU* remain significant.

## **Decline in ETR as an Indicator of U.S. Activity**

In a recent study, Gaertner et al. (2020) approximate U.S. activity based on the ETR of foreign firms. A decline in the ETR after the effectiveness of the TCJA is interpreted as an indicator that a foreign firm is subject to U.S. taxation. However, many factors might influence the ETR of a foreign firm, in particular if a foreign firm only partly operates in the U.S. Nevertheless, we consider an indicator variable *ETR Decline* as an alternative measure in Column (5) of Table 5. Analogously to Gaertner et al. (2020), we set *ETR Decline* to one if the ETR of a firm in our sample decreased between 2016 and 2018. For our sample of European firms, the coefficient of *ETR Decline* is insignificant while the effect *US Comp EU* is unchanged.

## **Additional Robustness Checks**

Table 6 presents additional robustness checks. While we rely on gross returns for our main analysis, a common approach in the event study literature is to focus on abnormal returns. Following the most common approach, we compute abnormal returns as the difference between the realized returns and an expected return based on a market model. We choose the *STOXX Global 1800* as the market portfolio. Column (1) of Table 6 shows that our results are unchanged.

We control for the relation between a firm and the U.S. stock market by including *Beta S&P* in our main analysis. International stock markets are highly correlated. Therefore, this beta coefficient could partly measure the beta coefficient to the overall global market rather than the

dependency on the U.S. market. To ensure that the results are not driven by the omitted overall beta coefficient, we additionally estimate the beta coefficient to the global market (approximated by the MSCI World) *Beta Global* simultaneously when estimating *Beta S&P*. Column (2) of Table 6 shows that including both *Beta Global* and *Beta S&P* as control variables does not change our main findings. Furthermore, both of the untabulated coefficients are significantly positive. In our main specification, we truncate gross returns at the 1% level to limit the effect of outliers. Columns (3) and (4) of Table 6 show that results are also qualitatively unchanged if we consider winsorized or unadjusted returns. As it is standard in the event study literature, we also eliminated observations when confounding firm events took place. Specification (5) of Table 6 shows that our results are unchanged if we include the observations with confounding events. Lastly, Dang, Li, and Yang (2018) have shown that many of the results in empirical corporate finance are sensitive to the choice of the size measure. Columns (6) and (7) of Table 6 show that our results are robust if we change the size proxy to firms' total assets or sales instead of market capitalization.

**Table 6: Robustness Checks**

	Relation to the Market		Data Adjustments			Size Proxy	
	CAPM	Global	Winsorized	Unadjusted	Confounding	Assets	Sales
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
<i>US Activity</i>	0.635*** (3.78)	0.605*** (3.65)	0.644*** (3.51)	0.620*** (3.15)	0.618*** (3.77)	0.590*** (3.69)	0.583*** (3.66)
<i>US Comp EU</i>	-4.164*** (-3.81)	-4.152*** (-3.58)	-2.873*** (-2.76)	-2.337* (-1.88)	-4.136*** (-3.59)	-4.205*** (-3.75)	-4.140*** (-3.75)
Industry	✓	✓	✓	✓	✓	✓	✓
Controls?	✓	✓	✓	✓	✓	✓	✓
Observations	1715	1715	1731	1731	1720	1715	1714
R <sup>2</sup>	0.092	0.081	0.077	0.070	0.081	0.080	0.080

Note: This table shows the regression results of the returns based on the three-day window after the event on December 15, 2017. Due to time zone considerations, December 18 is the first day included in the event window. All specifications include country and industry fixed effects. Growth, profitability and the beta coefficient to the S&P 500 are included in all specifications. Columns (1) to (5) include market capitalization as a control variable. In column (1) we change the dependent variable from gross returns to abnormal returns based on a market model estimated with data of the year prior the event. In column (2), we additionally control for the beta coefficient to the global market, measured by the MSCI World. In column (3) and (4) we present the results for winsorized and unadjusted gross returns respectively. For column (5) we keep the firm specific confounding observations in the sample. In columns (6) and (7) we change the size variable to the logarithm of assets and sales respectively. T-statistics based on standard errors clustered at the country-industry level are shown in parentheses. Significance is indicated by \*p<0.1, \*\*p<0.05 and \*\*\*p<0.01.



## Cross-Correlation and Event Induced Volatility

We consider the market reaction of all firms in our sample on the same date. Kolari and Pynnönen (2010) have shown that cross-correlation may result in an over-rejection of the null hypothesis of zero cumulative abnormal returns in cases of event-day clustering. In additional tests, we consider the modified Boehmer, Musumeci, and Poulsen statistic proposed by Kolari and Pynnönen (2010) which adjusts for event induced volatility as well as cross-correlation.<sup>32</sup> Since we can only use the Kolari and Pynnönen (2010) method to test whether returns are non-zero we need to split our sample to gain further insights regarding our explanatory variables. Therefore, to verify that our findings regarding *US Activity* and *US Comp EU* are robust after adjusting for cross-correlation, we first split our sample accordingly. Afterwards we test whether cumulative gross returns are different from zero in the corresponding subsamples.

Table 7 presents the results for the immediate response (one-day window) and the three-day window. In accordance with the previous findings, firms that are active in the U.S. and face low competition (Columns 1 and 2, Panel A) exhibit the largest and most significant returns (CGR 1.06%, p-value 0.03). The return is smaller but still significant in the subset of U.S. active firms that face high competition (Panel B, Column 1).

**Table 7: Cross-Correlation and Event Induced Volatility**

		U.S. Active		Not U.S. Active	
		(1)	(2)	(3)	(4)
<b>Competition:</b>	<b>U.S. Activity:</b>	1 Day	3 Days	1 Day	3 Days
Panel A: Low Competition	CGR (%)	1.064**	1.253*	0.426	0.349
	P Value	0.033	0.074	0.171	0.334
Panel B: High Competition	CGR (%)	0.856*	0.629	0.370	0.040
	P Value	0.074	0.231	0.302	0.729
Panel C: Whole Set	CGR (%)	0.938*	0.872	0.406	0.238
	P Value	0.051	0.145	0.189	0.864

Note: This table shows the mean CGR for the different sub-samples and the p-value regarding the null hypothesis of zero returns based on the adjusted BMP statistic proposed by Kolari and Pynnönen (2010). Returns are shown for the one-day and three-day window following the revelation of the Conference Agreement on December 15. Due to time zone considerations, December 18 is the first day included in the event window. Panel A and B show the average returns and p-values for firms with a below and above median competition ratio respectively. Panel C shows the returns independently of the competition ratio. Each of the Panels tabulates returns for U.S. active and not U.S. active firms in columns (1, 2) and (3, 4) respectively. The test statistics are computed using the user written Stata program *Eventstudy2* proposed by Kaspereit (2018).

<sup>32</sup> We rely on the user written Stata program *Eventstudy2* to compute the modified test statistics.

Lastly, firms that are not active in the U.S. do not exhibit significant positive returns (Columns 3 and 4). These results support the findings of our main analysis.

### **2.4.3 Additional Event Dates**

So far, our analysis has focused on the reaction to the final version of the TCJA and the fact that investors became aware on December 15 that the reform would pass and take effect in 2018. December 15, 2017 marked the most significant step towards the tax reform and allows us to determine how European firms might be affected by the final version of the TCJA. In this section, we extend the analysis to other dates during the legislative process. In fact, the market response to the revelation of the final version has to be interpreted relative to the previously available information and expectations. As described in Section 2.2, the final version could be seen as more beneficial for both, European firms operating in the U.S. and U.S. based firms, compared to the earlier versions of the act proposed by the House and Senate.<sup>33</sup>

If the stock market works efficiently, we can only expect to document market reactions if new information is revealed. In line with prior literature we consider the following additional dates. First, we consider the revelation of the framework for tax reform on September 27 because it contained the first information regarding the aims of the TCJA. Additionally, the revelation can be seen a signal that the legislative process regarding the TCJA was moving forward.

Next, the introduction on November 2 and subsequent passing on November 16 of the House version revealed first detailed information on the reform. As described above, the Senate version differed significantly from the House version. Therefore, we also expect that the passing of the Senate version on December 2 revealed new information. Most important, until

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<sup>33</sup> For instance, compared to the Senate version the final version contained a lower BEAT rate and the bill took effect one year earlier. Compared to the House version, the bill features the FDII regime (which was absent from the House version) and the BEAT regime can be seen as a lesser evil compared to the excise tax system of the House version.

December 15, it was far from certain that the reform would pass the Senate in 2017, and when it would take effect. Eventually, on the afternoon of December 15, 2017, investors became aware that the bill was most likely going to pass and signed into law by the President before Christmas. Thus, most of the uncertainty resolves on the evening of December 15, 2017. For completeness, we also examine potential reactions on the eventual passage of the TCJA on December 20, although we do not expect new information was revealed on that day.

We consider stock-returns of our European firm sample for each of the additional dates and apply our main regression approach. Table 8 presents the results based on three-day event windows. Regarding *US Activity* we find a positive coefficient associated with the revelation of the framework (Column 1 of Table 8). At this event, no detailed information regarding the international provisions of the reform were available. The effect is not significant at conventional levels for the three-day window (p-value 0.15). However, untabulated results reveal that the effect is significant for the two-day window (p-value 0.04).

The strongest effect in terms of size and significance occurs after the event of our main analysis on December 15, when the Conference Agreement was revealed. Notably, we do not find significant effects associated with the House and Senate version for *US Activity* (Columns 2 to 4 of Table 8). As described above, the House and Senate version included different provisions potentially harmful for international firms. Perhaps, these punitive features were partly offsetting the positive effect of the tax cuts. Thus, rendering the overall response to the earlier versions with respect to *US Activity* insignificant. As discussed in Section 2.2, the final version relaxed most of the punitive features. Therefore, the strong positive reaction to our main event could be interpreted as a combined effect. First, the tax cuts became certain, and second the final version contained less punitive features. However, we believe that the partial reversal of the punitive features can only account for the smaller part of the effect because we do not document any significant negative reactions associated with the more punitive features of the earlier versions in the first place.

Regarding the competition channel, we find a negative significant coefficient of *US Comp EU* after the revelation of the framework (September 27), the passing of the Senate version (December 2) and the Conference Agreement (December 15). Notably, we do not find a negative coefficient associated with the House version (November 2 and November 16). This is also in line with the international provisions of the different versions. Two positive drivers of U.S. firms' competitiveness were known already after the revelation of the framework for tax reform on September 27, namely the change to a territorial tax system and the cut in the corporate tax rate. Importantly, the GILTI regime was not discussed by then. Correspondingly, we expect and find a significant negative effect of our competition variable for European firms. GILTI was first introduced on November 2 (introduction of the House version). Therefore, the House version, relative to the previous available information, could be expected to have a less positive or even negative effect on the international competitiveness of U.S. firms. Correspondingly, we do not find a significant negative competition effect on European firms associated with the House version.

Moreover, the FDII regime was included in the version passed on December 2 (Senate version). As stated above, the FDII regime can be expected to have a positive effect of U.S. firms' competitiveness. Correspondingly, we document a negative competition effect for European firms at this date (Table 8, Column 4).

We also consider the joint returns across all relevant event windows (Column 7 of Table 8). The test again suggests that European firms that are active in the U.S. benefit most from the TCJA while firms that operate in industries with a large market share of U.S. competitors exhibit significantly lower returns.

**Table 8: Additional Event Dates**

	<u>September 27</u> Framework Revealed (1)	<u>November 2</u> House Version introduced (2)	<u>November 16</u> House Version passes (3)	<u>December 2</u> Senate Version Passed (4)	<u>December 15</u> Agreement revealed (5)	<u>December 20</u> Agreement passed (6)	<u>Joint Test</u> (7)
US Activity	0.175 (1.47)	-0.050 (-0.37)	0.033 (0.23)	-0.105 (-0.61)	0.618*** (3.76)	0.166 (1.55)	0.116** (1.97)
US Comp EU	-1.917** (-2.11)	0.971 (1.26)	1.230 (1.31)	-3.672** (-2.50)	-4.143*** (-3.59)	-1.496 (-1.48)	-1.149*** (-2.61)
Industry Fixed Effects?	✓	✓	✓	✓	✓	✓	✓
Controls?	✓	✓	✓	✓	✓	✓	✓
N	1646	1640	1658	1691	1715	1712	10051
R <sup>2</sup>	0.084	0.067	0.092	0.095	0.081	0.072	0.030

Note: This table shows regression results for various events during the legislative process based on three-day window returns. Industry and country fixed effects, Market capitalization, growth, profitability and the beta coefficient to the S&P 500 are included in all specifications. Due to time zone considerations, three-day windows for the passage of the House version and the revelation of the Conference Agreement start on November 17 and December 18 respectively. The event window for the passing of the Senate Version starts on December 4, the next trading day. The standard errors clustered at the country-industry level are shown in parentheses. Significance is indicated by \*p<0.1, \*\*p<0.05 and \*\*\*p<0.01.

## 2.5 Conclusion

The TCJA was the largest U.S. tax reform in the last three decades. Previous research shows how national stock markets react to major tax reforms, but this study focuses on cross-border effects. We analyze the reaction of European stocks after the final content of the TCJA was revealed and it became clear that the reform was going to pass. We present robust evidence that the stock market expected European firms to be affected. Firms that are active in the U.S. and thus can benefit from the TCJA exhibited significant positive returns. Moreover, markets may anticipate European firms to face tougher competition from their U.S. peers post TCJA. Correspondingly, we show that firms that operate in industries where competition from U.S. firms is fierce, exhibit significant lower returns following the event. This suggests that investors believe that the TCJA overall improved the international competitiveness of U.S. firms. Changes in national tax codes have mainly been analyzed with respect to their domestic effects. We show that national tax reforms can also have a significant impact on foreign firms. Our results suggest not only a direct effect on foreign multinational firms, subject to taxes in the respective country, but also an indirect effect through competition. While our study examines the short-term reaction to the TCJA, we look forward to future research regarding the long-term effects of the TCJA on foreign firms.

## References

- Aizenman, J., Chinn, M. D., & Ito, H. (2016). Monetary policy spillovers and the trilemma in the new normal: Periphery country sensitivity to core country conditions. *Journal of International Money and Finance*, 68, 298-330.
- Blanchard, O., Collins, C. G., Jahan-Parvar, M. R., Pellet, T., & Wilson, B. A. (2018). Why Has the Stock Market Risen So Much Since the US Presidential Election? *Working paper*.
- Bolster, P. J., Lindsey, L. B., & Mitrusi, A. (1989). Tax-Induced Trading: The Effect of the 1986 Tax Reform Act on Stock Market Activity. *The Journal of Finance*, 44(2), 327-344.
- Bradley, S., Dauchy, E., & Hasegawa, M. (2018). Investor valuations of Japan's adoption of a territorial tax regime: quantifying the direct and competitive effects of international tax reform. *International Tax and Public Finance*, 25(3), 581-630.
- Cunha, R., & Kern, A. (2018). US political shocks, global banks, and international financial markets: Evidence from the 2016 presidential election. *Working paper*.
- Cutler, D. M. (1988). Tax reform and the stock market: An asset price approach. *The American Economic Review*, 78(5), 1107-1117.
- Dang, C., Li, Z. F., & Yang, C. (2018). Measuring firm size in empirical corporate finance. *Journal of Banking and Finance*, 86, 159-176.
- Danzman, S., Winecoff, W. K., & Oatley, T. (2017). All crises are global: Capital cycles in an imbalanced international political economy. *International Studies Quarterly*, 61(4), 907-923.
- Desai, M. A., & Hines Jr, J. R. (2008). Market reactions to export subsidies. *Journal of International Economics*, 74(2), 459-474.
- Dharmapala, D. (2018). The consequences of the Tax Cut and Jobs Act's international provisions: Lessons from existing research. *National Tax Journal*, 71(4), 707-728.
- Dyreg, S., Gaertner, F. B., Hoopes, J. L., & Vernon, M. (2020). The effect of US tax reform on the tax burdens of US domestic and multinational corporations. *Working paper*.
- Eichengreen, B., & Gupta, P. (2015). Tapering talk: The impact of expectations of reduced Federal Reserve security purchases on emerging markets. *Emerging Markets Review*, 25, 1-15.
- Eickmeier, S., & Ng, T. (2015). How do US credit supply shocks propagate internationally? A GVAR approach. *European Economic Review*, 74, 128-145.
- Feldkircher, M., & Huber, F. (2016). The international transmission of US shocks—Evidence from Bayesian global vector autoregressions. *European Economic Review*, 81, 167-188.
- Gaertner, F. B., Hoopes, J. L., & Williams, B. M. (2020). Making only America great? Non-US market reactions to US tax reform. *Management Science*, 66(2), 687-697.
- Gaertner, F. B., Hoopes, J. L., & Maydew, E. L. (2019). Shareholder wealth effects of border adjustment taxation. *The Journal of Law and Economics*, 62(2), 215-249.
- Givoly, D., & Hayn, C. (1991). The aggregate and distributional effects of the tax reform act of 1986 on firm valuation. *Journal of Business*, 363-392.
- Kaspereit, Thomas, (2018). Eventstudy2 - A Program to Perform Event Studies with Complex Test Statistics in Stata (Version 2.0.2), available at <https://ideas.repec.org/c/boc/bocode/s458086.html>

- Kim, J., Nessa, M., & Wilson, R. J. (2021). How do reductions in foreign country corporate tax rates affect US domestic manufacturing firms? *The Accounting Review*, 96(3), 287-311.
- Kolari, J. W., & Pynnönen, S. (2010). Event study testing with cross-sectional correlation of abnormal returns. *The Review of Financial Studies*, 23(11), 3996-4025.
- Lyon, A. B. (1989). The effect of the investment tax credit on the value of the firm. *Journal of Public Economics*, 38(2), 227-247.
- Lyon, A. B., & McBride, W. A. (2018). Assessing US Global Tax Competitiveness after Tax Reform. *National Tax Journal*, 71(4), 751-788.
- MacKinlay, A. C. (1997). Event studies in economics and finance. *Journal of Economic Literature*, 35(1), 13-39.
- Michaely, R. (1991). Ex-dividend day stock price behavior: The case of the 1986 Tax Reform Act. *The Journal of Finance*, 46(3), 845-859.
- Noland, M., Hufbauer, G. C., Moran, T., & Robinson, S. (2016). Assessing trade agendas in the US presidential campaign. *Peterson Institute for International Economics*.
- Wagner, A. F., Zeckhauser, R. J., & Ziegler, A. (2018a). Company stock price reactions to the 2016 election shock: Trump, taxes, and trade. *Journal of Financial Economics*, 130(2), 428-451.
- Wagner, A. F., Zeckhauser, R. J., & Ziegler, A. (2018b). Unequal rewards to firms: Stock market responses to the trump election and the 2017 corporate tax reform. In *AEA Papers and Proceedings*, 108, 590-96.
- Wagner, A. F., Zeckhauser, R. J., & Ziegler, A. (2020). The Tax Cuts and Jobs Act: Which Firms Won? Which Lost? *Working paper*.
- Whitworth, J., & Rao, R. P. (2010). Do Tax law changes influence ex-dividend stock price behavior? Evidence from 1926 to 2005. *Financial Management*, 39(1), 419-445.
- Winecoff, W. K. (2015). Structural power and the global financial crisis: a network analytical approach. *Business and Politics*, 17(3), 495-525.



## **Chapter 3**

Intertemporal Income Shifting around the Tax Cuts and Jobs

Act of 2017

# Intertemporal Income Shifting around the Tax Cuts and Jobs Act of 2017

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## **Abstract:**

This paper examines intertemporal income shifting around the reduction in the corporate tax rate as enacted by the Tax Cuts and Jobs Act [TCJA] of 2017. The TCJA incentivizes firms to shift taxable income from 2017 where the tax rate is 35% to 2018 where the tax rate is 21%. We predict and find that firms use cash flow management to reduce taxable income in the high-tax period prior to the TCJA. Applying different empirical approaches, our results suggest that the 731 firms of our sample save between \$6.1 billion and \$15.6 billion in taxes by shifting income from the high-tax to the low-tax period. We also predict and find that firms use accrual-based earnings management, which has lower book-tax conformity than cash flow management, to simultaneously increase book income in the high-tax period. Consistent with intertemporal income shifting, we find that these effects reverse in 2018. Overall, our results document an economically significant effect of the TCJA on firm behavior that should be of interest to policymakers, regulators, and researchers as they evaluate the largest tax reform since 1986.

**JEL Classification:** G12, G14, H25, M41, M48

**Keywords:** Tax Cuts and Jobs Act [TCJA]; tax reform; income shifting; tax avoidance; cash flow; real earnings management; accrual-based earnings management.

**Acknowledgments:** We gratefully acknowledge helpful comments and suggestions by Erik Beardsley (discussant), Bruce Billings, Katie Boylen, Amanda Carlson, Derek Christensen, Ann Ehinger, Nathan Goldman (discussant), Ann-Kristin Großkopf, Christian Hofmann, Svea Holtmann (discussant), Jeff Hoopes, Martin Jacob, Jessica Nylen, Regina Ortmann, Michael Overesch, Jan Riepe, Miles Romney, David Samuel, Terry Shevlin, Thorsten Sellhorn, Caren Sureth-Sloane, Dan Wangerin, Ally Zimmerman, workshop participants at the University of Cologne, the 2021 EAA Conference, the 2021 NTA Conference, Florida State University, University of Munich, University of Wisconsin-Madison, Technical University of Munich, Paderborn University, Schöller Research Center, HARC research conference, and of the TRR 266 Accounting for Transparency Research Center founded by the German Research Foundation (DFG).

## **Chapter 3**

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### 3.1 Introduction

This paper examines whether, how, and to what extent firms engage in intertemporal income shifting around the ‘Tax Cuts and Jobs Act’ [TCJA] of 2017. One of the major changes of the TCJA is the reduction of the corporate income tax rate from 35% to 21%. This decrease creates incentives to shift taxable income from the high-tax period prior to the TCJA (i.e., the period with a tax rate of 35%) to the low-tax period after the TCJA (i.e., the period with a tax rate of 21%). However, to the extent decreases in taxable income also lower book income, there are potential non-tax financial reporting costs to shifting income (Shackelford and Shevlin, 2001). Consistent with prior literature (Zang, 2012), we argue that firms can use accrual-based earnings management [AEM], which has lower book-tax conformity than cash flow management [CFM], to manage book earnings upwards without corresponding increases in taxable income. Therefore, we predict that firms use CFM to decrease taxable income prior to the TCJA and simultaneously take advantage of the lower book-tax conformity of AEM to manage book income upwards to offset the reduction of book income created by this tax motivated intertemporal income shifting.<sup>34</sup>

This study contributes to the tax and financial accounting literature by examining the effects of book-tax conformity on intertemporal income shifting. More specifically, we consider the link between book and tax accounts and analyze whether book-tax conformity affects how firms engage in intertemporal income shifting to avoid taxes and simultaneously meet/beat book earnings targets around a major tax rate change. Furthermore, our estimates of the federal government’s tax revenue loss due to this tax planning strategy and the specific techniques used to shift income provide policymakers and regulators with insights into how firms respond to a major tax rate cut (Wilde and Wilson, 2018; Shevlin, 2021).

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<sup>34</sup> We follow prior literature and define *book-tax conformity* as the extent to which accounting income (following United States Generally Accepted Accounting Principles [U.S. GAAP]) and taxable income (following the Internal Revenue Code) mirror each other (Blaylock, Gaertner, and Shevlin, 2017).

We argue that differences in book-tax conformity of income shifting techniques affect how firms utilize these techniques around the TCJA. Given that the U.S. tax system recognizes income and deductions using a modified cash basis of accounting, firms must generally decrease cash flows to lower taxable income (Zang, 2012). However, due to the high book-tax conformity of CFM this also decreases book income. In contrast, AEM has a lower degree of book-tax conformity allowing firms to manage book income while leaving taxable income unchanged. Therefore, we predict that firms use AEM to offset the reduction in book income created by the decrease in taxable income due to CFM to avoid taxes and reduce non-tax financial reporting costs at the same time.

To illustrate the predicted behavior, Appendix A provides a numerical example of how both CFM and AEM are used to save taxes and simultaneously meet/beat an earnings target around the corporate tax rate decrease from 35% in 2017 to 21% in 2018. In both periods, the firm reports \$500 of unmanaged pre-tax income in the tax and the book accounts. In 2017, the firm seeks to reduce taxable income by \$100 to \$400 to lower taxes but still wants to report \$500 of book income. To reduce taxable income, the firm accelerates advertising expenditures from 2018 to 2017. However, because this expense is subject to full book-tax conformity, it also reduces book income by \$100. To offset the reduction in book income, the firm defers \$100 of book depreciation expense by changing the useful life of the asset and/or salvage value for book purposes (i.e., non-current AEM with no book-tax conformity) from 2017 to 2018.<sup>35</sup> Concertedly, these strategies simultaneously lower taxes while still allowing the firm to meet/beat the book earnings target.

The tax rate cut of the TCJA provides an excellent setting to test our predictions for at least two reasons. First, the tax rate cut is a large and plausibly exogenous shock to the intertemporal income shifting incentives of firms. In theory, firms will engage in a baseline

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<sup>35</sup> With a practitioner of a big four audit firm, we confirmed that one way firms can and did shift book income around the TCJA corporate tax rate decrease is through non-current book accruals such as depreciation.

amount of taxable income shifting around year-ends to defer paying taxes and offset any reduction in book income with AEM. However, in order to develop an internally valid test of these predicted effects, we need to observe a tax rate change and subsequent change in firm behavior. The tax rate cut from 35% to 21% is a two-fifths reduction in the corporate tax rate representing the largest percentage rate reduction in the history of the U.S. corporate tax. This provides a strong shock to intertemporal income shifting incentives to test the predicted effects.

Second, the timing of the introduction and passage of the TCJA creates a tight treatment window to observe potential effects on firm behavior. Unlike prior tax reforms such as the 1986 Tax Reform Act, the TCJA was introduced and passed quickly without significant debate or public input (Slemrod, 2018). Furthermore, although momentum for tax reform began with the election of President Trump in 2016, the passage of the TCJA was far from certain until late 2017 (Gaertner, Hoopes, and Williams, 2020) providing firms with a relatively short window to react to the corporate tax rate cut. This allows us to isolate the time interval when we expect firms to engage in CFM and AEM in response to the corporate tax rate change.

To empirically test our predictions, we use quarterly data from 2010 to 2019. We measure CFM based on abnormal research and development [R&D] expenses, abnormal selling, general, and administrative [SG&A] expenses, and abnormal production costs (Roychowdury, 2006).<sup>36</sup> We measure AEM as pre-tax discretionary accruals (Jones, 1991) and differentiate between its components of current and non-current discretionary accruals (Guenther, 1994). We include firm, calendar quarter, and fiscal quarter fixed effects to control for time invariant firm and quarter characteristics. We examine earnings management in the four quarters prior to the effectiveness of the TCJA (i.e., 1<sup>st</sup> to 4<sup>th</sup> quarter of 2017 for a calendar year end firm; ‘expect interval’). We argue that if firms are managing earnings around the TCJA tax cut we will observe a reversal of AEM – and potentially also of CFM – in the subsequent

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<sup>36</sup> We also use abnormal operating cash flows as an alternative measure of CFM that captures items potentially not included in these measures and to provide a range of economic significance of our results.

four quarters (i.e., 1<sup>st</sup> to 4<sup>th</sup> quarter of 2018 for a calendar year end firm; ‘effective interval’). To improve the validity of our results, we also examine each quarter of 2017 individually to study the effects that are concentrated in the quarters when the corporate tax rate cut became certain (i.e., 3<sup>rd</sup> and 4<sup>th</sup> quarter of 2017).

The empirical results are consistent with our predictions. We find that firms use CFM to decrease taxable income in the high-tax period prior to the TCJA. Furthermore, we document that firms offset the resulting decrease in book income due to CFM with an increase in book income through AEM in the high-tax period. This increase in book income via AEM is reversed in the subsequent low-tax period consistent with intertemporal income shifting. These results are concentrated in the final two quarters of 2017, which suggests firms engage in this behavior immediately prior to the TCJA enactment when the corporate tax rate decrease became more certain. Consistent with theory, we find that AEM is concentrated in non-current accruals, which have lower book-tax conformity than current accruals (Guenther, 1994).

We next empirically examine the book-tax conformity of CFM and AEM. Consistent with our conjectures and prior literature we find that the CFM proxies exhibit the highest degree of book-tax conformity while AEM, and more specifically abnormal non-current accruals exhibit the lowest degree of book-tax conformity (Guenther, 1994; Dyreng, 2009; Zang, 2012). We use these book-tax conformity estimates and the results from our primary analyses to derive the economic significance of the amount of taxes saved by our sample of firms through intertemporal income shifting around the TCJA. For the 731 firms of our sample with fiscal year on December 31, we estimate a reduction of tax payments through taxable income shifting via CFM of between \$8.28 million and \$21.34 million per firm and aggregated tax savings of between \$6.1 billion and \$15.6 billion. Taken together, our results suggest that firms react to the corporate tax rate cut by using CFM to shift taxable income to lower tax burdens while engaging in AEM to offset the corresponding decrease in book income.



We also examine the specific accounts used to shift taxable income and cross-sectional variation in the incentives to engage in AEM. We find that firms increase SG&A and R&D expenses and engage in underproduction to lower taxable income in the high-tax period. We provide evidence that the results for AEM are strongest for firms that face financial reporting pressure to meet/beat book income targets. We also find our results are robust to using only domestic firms, omitting firms with large deferred tax balances, and eliminating loss firms, which alleviates concerns that the effects of other TCJA provisions explain our results. Overall, these results allow us to attribute the observed changes in firm behavior to the tax rate change and shed light on *how* firms shift income to avoid taxes around a decrease in the corporate tax rate.

This study makes the following contributions to the literature. First, we add to the research on the consequences of the TCJA (e.g., Dharmapala, 2018; Koutney and Mills, 2018; Gale, Gelfond, Krupkin, Mazur, and Toder, 2019; Gaertner et al., 2020; Carrizosa, Gaertner, and Lynch, 2020). We contribute to this stream of literature by identifying specific actions that firms take in response to a major corporate tax rate decrease (Wilde and Wilson, 2018). Specifically, we document that firms change real corporate decisions that affect cash flows and that firms manage accruals around the tax rate decrease. Importantly, the ‘Congressional Budget Office’ [CBO] estimates of the effects of the TCJA on tax collections do not consider the effects of intertemporal income shifting (CBO, 2018). Our results suggest that firms managed earnings to avoid between \$6.1 billion and \$15.6 billion of corporate taxes which represents 2.1% to 5.3% of total corporate tax collections in 2017 (\$297 billion). These findings suggest that policymakers should carefully consider the costs and benefits of tax rate changes. Regulators such as the ‘Internal Revenue Service’ [IRS] and the ‘Securities and Exchange Commission’ [SEC] will be interested in our findings as we illustrate context-specific CFM to avoid taxes and AEM to meet/beat book earnings targets. These results provide useful information for policymakers as they consider future tax reform (Shevlin, 2021).

We contribute to the prior literature on how firms respond to tax rate changes. Our findings indicate that both tax planning and financial reporting incentives influence how firms engage in intertemporal income shifting around a major tax cut. We also expand the prior literature on inherent trade-offs between tax planning decisions and financial reporting costs (Shackelford and Shevlin, 2001; Randolph, Salamon, and Seida, 2005). More specifically, we show that firms can use CFM to shift taxable income and simultaneously use AEM to increase book income allowing firms to reach both tax and book income targets.

Our findings are subject to several caveats. First, due to the archival nature of our data, we cannot establish causal inference. Although the timing and magnitude of the tax rate cut of the TCJA generate a plausibly exogenous shock to the incentives of firms and our fixed effects strategy controls for time-invariant firm characteristics, we cannot completely rule out endogeneity concerns. Second, we rely on data from financial statements produced in accordance with U.S. GAAP as tax return data are not publically available. Thus, we are unable to examine the hypothesized effects in specific tax accounts. Finally, we focus on the decrease of the federal tax rate as the key component of the TCJA. However, the TCJA contains several other tax provision changes. Consequently, we cannot ultimately rule out that our findings are influenced by other changes in the U.S. tax regime. Although many of these changes did not take effect until 2018 potentially alleviating concerns of other provisions affecting our results. Despite these limitations, we believe that we make a significant contribution to the literature by documenting an economically significant response to the largest tax rate change since 1986.

### **3.2 Prior Literature and Hypotheses Development**

Prior research suggests that firms use differences in tax regimes to avoid taxes through income shifting (Shackelford and Shevlin, 2001; Hanlon and Heitzman, 2010). Many of these studies refer to *cross-jurisdictional* income shifting, i.e., the use of heterogeneity in tax jurisdictions to reduce tax burdens (e.g., Collins, Kemsley, and Lang, 1998; Huizinga and

Laeven, 2008; Huizinga, Laeven, and Nicodeme, 2008; De Simone, 2016). In contrast, fewer studies examine how taxes affect *intertemporal* income shifting. The most prominent example is research surrounding the ‘Tax Reform Act’ [TRA] of 1986. These studies generally find that firms shift income to take advantage of the lower corporate tax rate as enacted by the TRA (e.g., Guenther, 1994; Guenther, Maydew, and Nutter, 1997; Maydew, 1997; Shane and Stock, 2006). For example, Scholes, Wilson, and Wolfson (1992) find that firms accelerate deductible expenses to shift taxable income from the high-tax rate period to the low-tax rate period around the TRA.<sup>37</sup>

Even in the absence of a tax rate decrease, a common tax planning strategy is to defer recognizing taxable income. To implement this strategy, firms delay income recognition and/or accelerate deductions for tax purposes at the year-end. This allows firms to realize gains equal to the time value of the deferred tax payment. A change in the corporate tax rate increases incentives to engage in intertemporal income shifting. More specifically, firms can realize *tax savings* equal to the tax rate differential by deferring taxable income from the high-tax to the low-tax period. The TCJA decreased the corporate tax rate on the federal level from 35% in 2017 to 21% in the 2018 tax year. This allowed calendar year-end firms to realize tax savings of \$0.14 for each dollar of taxable income shifted from 2017 into 2018.

We postulate that *book-tax conformity* is an important determinant of *how* firms engage in intertemporal income shifting around the TCJA. Book-tax conformity is the degree to which book income and taxable income mirror each other (Blaylock et al., 2017). There are significant differences in how income is calculated for book versus tax purposes, which limits book-tax conformity. The U.S. tax system recognizes income and deductions using a modified cash basis of accounting (IRS Publication 538) resulting in differences in how income and expenses are

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<sup>37</sup> Lopez, Regier, and Lee (1998) provide evidence for earnings management around the TRA. They find that these manipulations are more pronounced for tax aggressive firms. Intertemporal income shifting for different purposes is also documented for non-U.S. settings (e.g., Lin, Lu, and Zhang, 2012; Andries, Cools, and van Uytbergen, 2017).

recognized for GAAP versus tax purposes.<sup>38</sup> The use of the modified cash basis of accounting for tax purposes implies that one of the primary ways to manage taxable income is by changing cash flows. In contrast, it is more difficult to manage taxable income with accruals due to lower book-tax conformity. Consistent with this conjecture, the empirical findings of Zang (2012) suggest that real earnings management has higher book-tax conformity than AEM because it directly affect cash flows in the current period whereas AEM does not.<sup>39</sup>

Building on the prior evidence, we argue that firms use CFM to shift taxable income from the high-tax period to the low-tax period. As previously discussed, the TCJA lowered the corporate tax rate from 35% in 2017 to 21% in 2018, which constitutes a strong exogenous shock to the incentives to shift taxable income from 2017 to 2018. Given that firms must usually change cash flows to change taxable income, we predict that firms use CFM to take advantage of the change in the corporate tax rate as follows:

*H1: Firms use cash flow management to shift taxable income from high-tax periods to low-tax periods.*

There is a ‘natural’ trade-off between tax planning and firms’ efforts to minimize real and accounting non-tax costs (Scholes, Wilson, and Wolfson, 1990). For example, assuming a certain degree of book-tax conformity, incentives to lower taxes often stand vis-à-vis financial reporting incentives (Shackelford and Shevlin, 2001; Randolph et al., 2005). More specifically, when firms engage in tax planning that decreases taxable income there is often a corresponding decrease in book income. Additionally, using income-increasing earnings management to meet/beat earnings targets also increases taxable income, leading to higher taxes. Prior literature examines this trade-off between tax and financial reporting incentives in different settings.

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<sup>38</sup> For example, in certain circumstances, firms are allowed to deduct expenses when paid and delay the recognition of revenue until cash is collected (e.g., installment sale income). Importantly, many of these items will create financial statement accruals (e.g., prepaid expenses and accounts receivable). We recognize that the majority of such accruals will be current accruals. In our AEM analyses, we provide evidence that our results are concentrated in non-current accruals, which have a lower degree of book-tax conformity.

<sup>39</sup> For example, when a firm cuts discretionary expenses, this increases both book and taxable income.

Maydew (1997) investigates tax-induced intertemporal income shifting by firms with net operating loss carry backs and provides evidence that the tax and non-tax costs and benefits of managing taxable income determine the extent of the income shifting. Matsunaga, Shevlin, and Shores (1992) show that some firms forego net tax benefits by not undertaking disqualifying dispositions of incentive stock options in order to avoid reductions in reported earnings.<sup>40</sup>

Our first hypothesis predicts that firms use CFM to shift taxable income from the high-tax to the low-tax period. Given that prior literature suggests a high book-tax conformity of CFM, this would also result in lower book income (Zang, 2012). To the extent that firms incur costs due to lower reported book income, we predict that firms engage in actions that offset this reduction in reported book income.<sup>41</sup> To avoid reducing the tax benefits achieved through CFM, these offsetting book income increases should not increase taxable income. Therefore, we predict that firms use techniques with low book-tax conformity to increase book income. As described above, prior literature suggests that AEM has low book-tax conformity (Zang, 2012). Therefore, we expect firms to use AEM to offset the reduction in book income due to taxable income shifting via CFM. We formalize this prediction as follows:

*H2: Firms use accrual-based earnings management to shift book income from low-tax periods to high-tax periods to offset decreases in book income due to cash flow management.*

This study makes several contributions to the literature by examining how the TCJA's shock to intertemporal income shifting incentives affects firm behavior. First, we add to the literature on intertemporal income shifting. We extend and update the findings of prior work

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<sup>40</sup> Other examples for such trade-offs are related to the adoption (Cushing and LeClere, 1992) and abandonment of the last-in-first-out [LIFO] method (Johnson and Dhaliwal, 1988) and to banks' securities transactions (Scholes et al., 1990). Further, several studies examine the intertemporal income shifting of firms subject to the 1986 alternative minimum tax (e.g., Boynton, Dobbins, and Plesko, 1992; Dhaliwal and Wang, 1992).

<sup>41</sup> Consistent with the existence of financial reporting costs, prior literature finds that firms use income-increasing AEM to meet/beat book earnings targets (Zang, 2012).

around the TRA (Scholes et al., 1992; Guenther, 1994; Guenther et al., 1997; Maydew, 1997). We extend this stream of literature by examining how the book-tax conformity of the different forms of income manipulations affect how they are used to engage in intertemporal income shifting. These results further contribute to the literature by examining different actions firms take in response to a major tax reform (Wilde and Wilson, 2018; Shevlin, 2021). We also believe that our economic estimates of the effects of this tax planning strategy on tax collections and corresponding increases in AEM provide useful information for policymakers as they debate future tax reform (Shevlin, 2021). Specifically, tax policymakers, the CBO and the IRS will be interested in the magnitude of tax savings realized by firms. This is especially important, as this behavioral response is not included in CBO estimates of the effects of the TCJA on tax collections. Finally, the SEC will also be interested in these results as they suggest tax incentives can affect the management of book income through accruals.

### **3.3 Data and Sample**

To test our hypotheses, we use data collected from the quarterly file of the Compustat database, financial analyst data from the IBES database, and economic variables from the Worldbank database. Table 1 contains details of our sample selection process. Our starting sample consists of all listed U.S. firms included in the Compustat database in the January 2010 to December 2019 interval. We begin in January 2010 to avoid confounding effects of the 2008/2009 international financial crisis and end our sample in 2019 as 2020 data might be affected by the COVID-19 virus pandemic.<sup>42</sup>

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<sup>42</sup> A *control period* which contains observations from the interval prior to and after the treatment intervals lowers the likelihood that our analyses pick up overall time trends rather than the hypothesized effects. Nevertheless, we note that the tenor of our results remains unchanged when we exclude 2019.

**Table 1: Screening Criteria and Sample Size**

Screening Step	Firm-Quarter Observations	Firm Observations
U.S. firms ( <i>#fic</i> ) with net sales ( <i>#sale</i> ) available in the quarterly file of the Compustat database during the investigation interval from the calendar year 2010 to 2019.	231,587	9,614
<i>Less</i> observations that refer to fiscal years with a length unequal to 12 months and fiscal quarters with a length unequal to 3 months ( <i>#pddur</i> and <i>#datadate</i> ).	8,280	468
<i>Less</i> observations of firms from the financial and insurance industry (SIC 6000 to 6999) and from regulated industries (SIC 4400 to 4999) ( <i>#sic</i> ). We also eliminate firms without SIC classification.	70,297	2,560
<i>Less</i> observation of firms with total assets lower than \$1 million.	17,739	441
<i>Less</i> observations with missing data and firms with less than 10 observations from the calendar years 2010 to 2019.	110,581	5,195
<b>Final Sample</b>	<b>24,690</b>	<b>950</b>
<i>Thereof</i> , firms with fiscal year end on December 31 ( <i>#fyr</i> = 12).	18,694	731

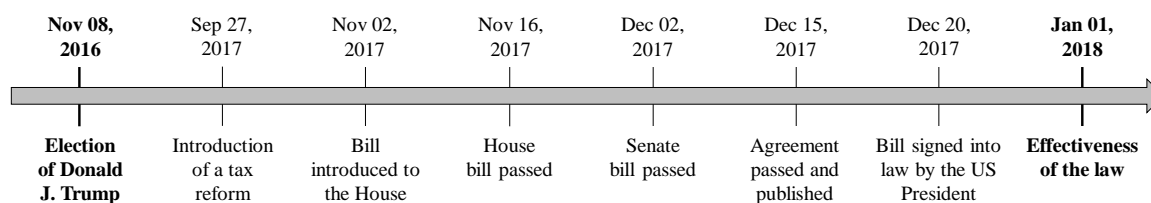
This table summarizes the steps of the sample selection. For each step, the table shows the number of firm-quarter observations and the number of firm observations eliminated. Data items refer to the quarterly file of the Compustat database.

Our initial sample contains 231,587 firm-quarter observations from 9,614 unique U.S. firms with quarterly sales available in the Compustat database. We eliminate observations that refer to fiscal years with a length unequal to twelve months and fiscal quarters with a length unequal to three months. We also drop firms from regulated industries and firms from the financial and insurance industry. To promote meaningful longitudinal comparisons of firms' CFM and AEM, we drop firms with total assets of less than \$1 million, firms with missing data, and firms with less than 10 observations over our investigation period. The sample for our base-line analyses consists of 24,690 firm-quarter observations from 950 firms. For additional analyses, we restrict the sample to firms with a fiscal year end on December 31. This reduced sample comprises 18,694 firm-quarter observations from 731 firms.

### 3.4 Research Design

#### Identification Strategy

**Figure 1: Timeline of the Passage of the ‘Tax Cuts and Jobs Act’**



This figure summarizes the timeline of the development and enactment of the TCJA. For more details about the key dates in the passage of the TCJA see Gaertner et al. (2020).

Figure 1 summarizes the legislative process leading to the enactment of the TCJA. The probability of tax reform and reduced corporate tax rate increased with the election of Donald J. Trump (Wagner, Zeckhauser, and Ziegler, 2018a). Approximately one year after the election, the TCJA bill was formally introduced to the House (November 2017). After its approval by the House and the Senate, the President signed the bill into law on December 22, 2017. The reduced corporate tax rate of 21% became effective from January 2018 onwards. Firms with fiscal year ends different from December face a blended tax rate for the fiscal year ending in 2018. The blended tax rate is defined as the weighted average of the 35% tax rate prior to the enactment of the TCJA and the new 21% tax rate, weighted by the days of the fiscal year in 2017 and 2018, respectively. Importantly for our identification strategy, this timeline suggests a series of time intervals that are characterized by specific incentives for intertemporal shifting of taxable income.

#### *Expect Interval*

The outcome of the 2016 election was unexpected (Wagner et al., 2018a). Therefore, it is unlikely that firms anticipated a significant tax reform before the election in late 2016. As The Republican Party controlled both the Presidency and Congress after the election, it became



clear that policy changes, including a tax reform, could occur because tax breaks were a key pledge of the Republicans' 2016 election campaigns (Wagner, Zeckhauser, and Ziegler, 2018b). Consequently, we argue that managers likely anticipated future tax cuts following the 2016 election. Note that CFM to shift taxable income needs to be conducted during the respective fiscal year. Furthermore, some of the specific techniques we analyze (e.g., shifting R&D expenses) take some time to implement.

Therefore, our first treatment period, denoted as the 'expect interval' ( $EXP_t = 1$ ), is defined as the four fiscal quarters before the new tax rate of 21% applies.<sup>43</sup> When the fiscal year is identical to the calendar year, the 'expect interval' is the calendar year 2017. When the fiscal year differs from the calendar year, firms face a blended tax rate weighted by the number of days in 2017 and 2018. For example, a firm with a fiscal year end in March 2018 has a blended tax rate of 31.5% for the fiscal year 2017/2018. Analogously, we define the 'expect interval' of these firms as the four fiscal quarters before the new tax rate of 21% applies which is the interval from April 2017 to March 2018. We also leverage differences in the tax rate incentives to shift income over time in our empirical design by defining the 'expect interval' with a continuous measure of the tax rate savings differential.<sup>44</sup>

### ***Effective Interval***

In all specifications, the second treatment period, denoted as 'effective interval' ( $EFF_t = 1$ ), is defined as the earliest four quarters for which the 21% tax rate applies. Once again, this interval depends on the fiscal year end of the firm. For a firm with a fiscal year end on December 31, the 'effective interval' is defined as the four quarters ending in calendar year

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<sup>43</sup> We examine if the *expectation formation process* prior to the enactment of the TCJA affects our findings. Specifically, we find that eliminating the period between the 2016 election and the 'expect interval' does not change the tenor of our results. Further, we show that our results are robust to expanding the 'expect interval' to the period between the 2016<sup>th</sup> election and the effectiveness of the TCJA.

<sup>44</sup> Besides the decrease in the corporate tax rate, the TCJA also affects several international provisions, including a shift to a quasi-territorial system with a deemed repatriation tax, global intangible low-tax income taxes [GILTI], and base erosion and anti-abuse taxes [BEAT] (Donohoe, McGill, and Outslay, 2019). Section 3.6 contains additional analyses which suggest that our findings are not driven by TCJA-related incentives of multinationals.

2018 while for a firm with a fiscal year end in March 2018, the ‘effective interval’ is defined as the four quarters between April 2018 and March 2019.

## Regression Models

To provide empirical evidence on CFM and AEM around the enactment of the TCJA, we separately estimate the following OLS regressions for our panel dataset. We calculate test statistics using robust standard errors clustered at the firm level:<sup>45</sup>

$$CFM_{it} = \beta_0 + \beta_1 EXP_t + \beta_2 EFF_t + \beta_3 TREND_t + \text{controls} + \sum \beta F_i + \sum \beta CQ_t + \sum \beta FQ_t + u_{it} \quad (1)$$

$$AEM_{it} = \beta_0 + \beta_1 EXP_t + \beta_2 EFF_t + \beta_3 TREND_t + \text{controls} + \sum \beta F_i + \sum \beta CQ_t + \sum \beta FQ_t + u_{it} \quad (2)$$

$CFM_{it}$  is our measure for CFM of firm  $i$  in the fiscal quarter  $t$ , defined as abnormal production costs, minus abnormal R&D expenses, minus abnormal SG&A expenses (Roychowdury, 2006).  $AEM_{it}$  is our measure for AEM of firm  $i$  in the fiscal quarter  $t$ , defined as pre-tax discretionary accruals estimated in a Jones (1991)-type model. Appendix B provides detailed definitions of these proxies.<sup>46</sup> In addition to economy-wide controls, we consider the overall time trend in CFM and AEM by including a linear trend control ( $TREND_t$ ) (Cohen, Dey, and Lys, 2008). We also include firm fixed effects ( $F_i$ ), indicators for the four calendar quarters ( $CQ_t$ ), and indicators for the four fiscal quarters ( $FQ_t$ ). Firm fixed effects control for a large set of time-invariant firm characteristics potentially related to the costs and benefits of CFM and AEM.

Referring to hypothesis 1 (equation 1), ceteris paribus, we predict that  $\beta_1 < 0$  and  $\beta_2 > 0$  consistent with the use of CFM to shift taxable income from the high-tax period ( $EXP_t = 1$ )

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<sup>45</sup> Our inferences remain unchanged if we employ unclustered standard errors.

<sup>46</sup> In additional analyses, we also measure CFM based on abnormal operating cash flows. We use pre-tax total accruals throughout our analyses to remove the effects of the corporate tax rate change on the revaluation of deferred taxes. However, our results are unchanged if we use after-tax accruals.

to the low-tax period ( $EFF_t = 1$ ). Referring to hypothesis 2 (equation 2), ceteris paribus, we hypothesize that  $\beta_1 > 0$  and  $\beta_2 < 0$  consistent with the use of AEM to increase book income in the high-tax period to offset the decrease due to taxable income shifting.

### **Control Variables**

We include control variables for the relative costs and benefits associated with CFM and AEM, fundamental firm characteristics, and the economic environment (Ernstberger, Link, Stich, and Vogler, 2017). First, to proxy for the (relative) costs associated with CFM we include the sales market share of a firm ( $SHARE_{it-1}$ ) because a firm's competitive advantages associated with its market leadership may influence the flexibility to conduct CFM. We add Altman's (1968) z-score ( $ZSCORE_{it-1}$ ) as a proxy for the overall financial health because financially distressed firms are less able to use CFM (Zang, 2012). We also control for institutional ownership ( $INST_{it-1}$ ) because close monitoring by sophisticated investors reduces the flexibility to use CFM (Bushee, 1998).

Second, to proxy for the (relative) costs associated with AEM, we include a big four audit firm indicator ( $BIGFOUR_{it}$ ) (Becker, DeFond, Jiambalvo, and Subramanyam, 1998) and the experience of an auditor with a client ( $TENURE_{it}$ ) as both could constrain AEM (Myers, Myers, and Omer, 2003). Following Barton and Simko (2002), we control for a firm's AEM balance sheet constraints ( $NOA_{it-1}$ ). We also include a proxy for the length of a firm's operating cycle ( $CYCLE_{it-1}$ ) because a longer operating cycle increases flexibility to engage in AEM (Cohen et al., 2008).

We control for a firm's operating profitability ( $ROA_{it}$ ), industry-adjusted size ( $ASSETS_{it}$ ), market valuation ( $MTB_{it}$ ), and pre-managed operating profitability which is the 'starting level' of any income manipulation ( $EARN_{it}$ ) (Beatty, Chamberlain, and Magliolo, 1995; Zang, 2012). Further, in addition to our linear trend control, we include three variables that control for the market and economic environment (Cohen et al., 2008; Ernstberger et al.,

2017). Specifically, we include the real growth rate of the U.S. gross domestic product ( $ECON_t^{GR}$ ), the return of the S&P 500 index ( $ECON_t^{RET}$ ), and overall stock market liquidity ( $ECON_t^{VOL}$ ). Appendix C provides detailed variable definitions.

### **3.5 Results**

#### **Descriptive Statistics and Correlations**

Panel A (Panel B) of Table 2 shows descriptive statistics for our CFM and AEM variables (control variables). Overall, the means and medians are consistent with the prior literature (Cohen et al., 2008) suggesting a representative sample of large publically traded firms. Table 3 presents correlations for our dependent and explanatory variables. Consistent with prior literature, we find that  $CFM_{it}$  and  $AEM_{it}$  are positively correlated with each other ( $p < 1\%$ ) (Roychowdhury, 2006; Cohen and Zarowin, 2010; Zang, 2012). The remaining correlations among our explanatory variable suggest multicollinearity is not a material concern.

**Table 2: Descriptive Statistics**

Statistic	Mean	St. Dev.	P25	Median	P75	N
<i>Panel A: Measures of Cash Flow Management and Accrual-Based Earnings Management</i>						
<i>CFM</i>	-1.382	9.493	-6.429	-1.567	3.330	24,690
<i>CFM</i> <sup>RD</sup>	-0.527	2.464	-1.424	-0.073	0.522	24,690
<i>CFM</i> <sup>SGA</sup>	-0.149	4.567	-1.977	0.112	1.943	24,690
<i>CFM</i> <sup>PROD</sup>	-0.723	4.782	-3.450	-1.031	1.596	24,690
<i>CFM</i> <sup>OCF</sup>	0.265	5.420	-1.792	0.589	2.647	24,690
<i>AEM</i>	0.319	5.600	-2.008	0.032	2.286	24,690
<i>AEM</i> <sup>C</sup>	0.090	4.459	-1.658	0.043	1.787	24,690
<i>AEM</i> <sup>NC</sup>	0.231	4.670	-1.470	-0.019	1.545	24,690
<i>Panel B: Control Variables</i>						
<i>SHARE</i>	0.011	0.031	0.000	0.001	0.006	24,690
<i>ZSCORE</i>	5.294	9.899	1.872	3.969	7.191	24,690
<i>INST</i>	0.628	0.333	0.349	0.731	0.901	24,690
<i>BIGFOUR</i>	0.662	0.473	0	1	1	24,690
<i>TENURE</i>	8.618	5.614	4.000	9.000	13.000	24,690
<i>CYCLE</i>	158.235	123.813	78.278	136.658	197.776	24,690
<i>NOA</i>	0.663	0.629	0.287	0.543	0.911	24,690
<i>ROA</i>	0.210	5.714	-1.227	1.416	3.165	24,690
<i>MTB</i>	3.957	7.434	1.454	2.637	4.783	24,690
<i>ASSETS</i>	0.000	2.127	-1.417	0.016	1.477	24,690
<i>EARN</i>	1.267	12.010	-3.857	2.357	7.945	24,690
<i>ECON</i> <sup>GR</sup>	2.284	0.458	1.875	2.294	2.594	24,690
<i>ECON</i> <sup>RET</sup>	11.791	11.309	-0.003	11.391	19.420	24,690
<i>ECON</i> <sup>VOL</sup>	152.282	48.482	115.418	138.329	173.285	24,690

Panel A shows descriptive statistics for CFM ( $CFM_{it}$ ), abnormal R&D expenses ( $CFM_{it}^{RD}$ ), abnormal SG&A expenses ( $CFM_{it}^{SGA}$ ), abnormal production costs ( $CFM_{it}^{PROD}$ ), abnormal operating cash flows ( $CFM_{it}^{OCF}$ ), AEM ( $AEM_{it}$ ), AEM through the manipulation of current accruals ( $AEM_{it}^C$ ), and AEM through the manipulation of non-current accruals ( $AEM_{it}^{NC}$ ) as defined in Appendix B. Panel B shows descriptive statistics for our control variables as defined in Appendix C. All continuous variables are winsorized at the 1<sup>st</sup> and 99<sup>th</sup> percentile, respectively.

**Table 3: Correlations**

		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
<i>CFM</i>	(a)	1	0.21*	0.11*	-0.12*	-0.09*	-0.14*	-0.01	-0.1*	0.07*	0.11*	-0.24*	0.05*	-0.8*	0.01	0.01	-0.03*
<i>AEM</i>	(b)	0.21*	1	0	0.06*	-0.08*	-0.1*	-0.02*	0.02*	-0.02*	0.28*	-0.02*	-0.02*	-0.43*	0.01	0.01	0.01
<i>SHARE</i>	(c)	0.06*	0	1	0.11*	0.58*	0.56*	0.52*	-0.15*	0.21*	0.44*	0.12*	0.87*	0.12*	-0.01	0	0
<i>ZSCORE</i>	(d)	-0.12*	0	-0.01	1	0.23*	0.13*	0.12*	0.03*	0.04*	0.39*	0.32*	0.15*	0.25*	0.01	-0.02	0.08*
<i>INST</i>	(e)	-0.13*	-0.1*	0.16*	0.24*	1	0.55*	0.47*	-0.06*	0.2*	0.26*	0.24*	0.67*	0.23*	0.02*	0.01	-0.07*
<i>BIGFOUR</i>	(f)	-0.15*	-0.1*	0.22*	0.13*	0.6*	1	0.54*	-0.11*	0.12*	0.17*	0.21*	0.64*	0.23*	-0.02*	0.01	0.04*
<i>TENURE</i>	(g)	-0.02*	-0.04*	0.24*	0.1*	0.49*	0.53*	1	-0.01	0.16*	0.24*	0.14*	0.56*	0.12*	0.03*	0.01	-0.12*
<i>CYCLE</i>	(h)	-0.12*	0.01	-0.09*	0.02*	-0.08*	-0.11*	-0.04*	1	0.28*	-0.05*	-0.07*	0	0.05*	0.01	0.01	-0.02*
<i>NOA</i>	(i)	0.05*	-0.05*	0.04*	0.08*	0.15*	0.09*	0.11*	0.26*	1	0.1*	-0.11*	0.37*	0.01	0.02*	0.02*	-0.07*
<i>ROA</i>	(j)	0.15*	0.27*	0.16*	0.34*	0.29*	0.19*	0.23*	-0.12*	0.09*	1	0.16*	0.39*	0.2*	-0.01	0	0.11*
<i>MTB</i>	(k)	-0.14*	-0.04*	0	0.14*	0.11*	0.1*	0.04*	-0.02*	-0.08*	-0.01	1	0.18*	0.25*	0.06*	-0.01	-0.13*
<i>ASSETS</i>	(l)	-0.02*	-0.07*	0.48*	0.18*	0.69*	0.63*	0.55*	-0.05*	0.29*	0.4*	0.06*	1	0.15*	0	0	0
<i>EARN</i>	(m)	-0.8*	-0.49*	0.03*	0.25*	0.29*	0.25*	0.14*	0.04*	0.03*	0.24*	0.12*	0.24*	1	-0.01	-0.02	0.07*
<i>ECON</i> <sup>GR</sup>	(n)	0.01	0.01	-0.01	0.02*	0.02	-0.02*	0.04*	0.02*	0.02*	-0.02	0.03*	0	-0.01	1	-0.36*	-0.04*
<i>ECON</i> <sup>RET</sup>	(o)	0.01	0.01	0	-0.03*	0.02*	0.01	0.03*	0	0.02*	-0.01	0.02*	0	-0.02*	-0.28*	1	-0.04*
<i>ECON</i> <sup>VOL</sup>	(p)	-0.02*	-0.01	0.01	0.01	-0.07*	0.04*	-0.13*	-0.04*	-0.09*	0.09*	-0.08*	0	0.07*	-0.16*	-0.29*	1

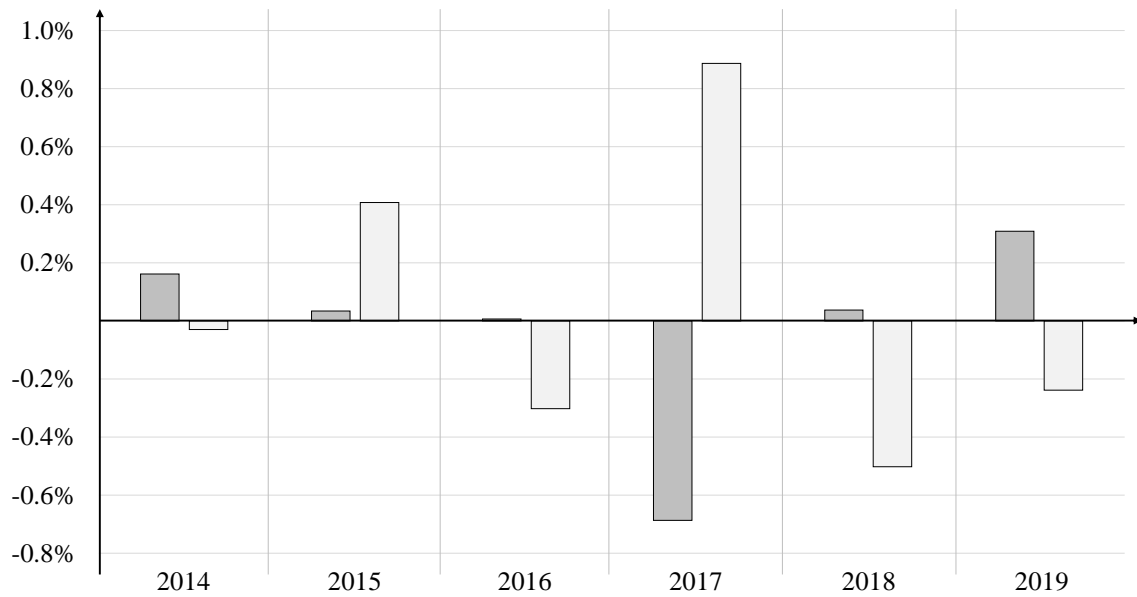
This table shows Pearson correlations (lower triangle) and Spearman rank-correlations (upper triangle) for CFM ( $CFM_{it}$ ), AEM ( $AEM_{it}$ ), and control variables. Measures as defined in Appendix B and C. All continuous variables are winsorized at the 1<sup>st</sup> and 99<sup>th</sup> percentile, respectively. \* indicates two-tailed significance on the 1% level.

## Univariate Results

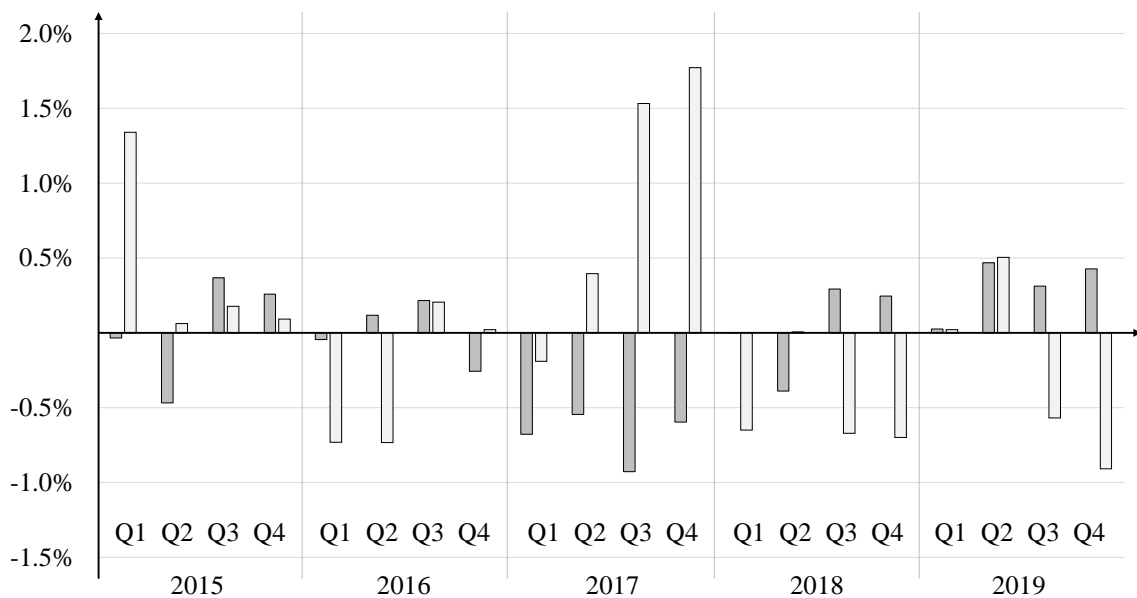
Panel A (Panel B) of Table 4 provides univariate tests of CFM (AEM) and their components for the two treatment periods vis-à-vis the control period. Consistent with hypothesis 1, we find that firms exhibit mean income-decreasing CFM in the period prior to the TCJA (i.e., expect interval), relative to the control period ( $p < 1\%$ ). We also document that firms conduct mean income-increasing AEM in the period prior to the TCJA, relative to the control period ( $p < 1\%$ ) presumably to offset the decrease in book income due to CFM. Furthermore, we observe income-decreasing AEM in the period following the TCJA (i.e., effective interval,  $p < 1\%$ ). Figure 2 shows the calendar year (Panel A) and calendar quarter (Panel B) means of  $CFM_{it}^{ADJ}$ , and  $AEM_{it}^{ADJ}$  around the effectiveness of the TCJA. These variables are adjusted for a linear trend ( $TREND_t$ ) and fiscal and calendar quarter effects. The figure patterns are consistent with firms using CFM to lower taxable income in the high-tax period and the use of AEM to offset the decrease in book income with a subsequent reversal of AEM in the period following the TCJA. These effects do not appear to be present or as pronounced in other years or calendar-quarters, thus providing univariate evidence consistent with our hypotheses.

**Figure 2: Intertemporal Income Shifting around the Enactment of the ‘Tax Cuts and Jobs Act’**

**Panel A: Calendar Year Means**



**Panel B: Calendar Quarter Means**



This figure shows the calendar year means (Panel A) and the calendar quarter means (Panel B) of our CFM and AEM measures, adjusted for a linear time trend and effects related to the end of quarter. Adjusted CFM ( $CFM_{it}^{ADJ}$ ) is presented in dark grey columns and AEM ( $AEM_{it}^{ADJ}$ ) is shown in light grey columns. Variables are defined in Appendix B. Measures are winsorized at the 1<sup>st</sup> and 99<sup>th</sup> percentile, respectively.



**Table 4: Univariate Results for Cash Flow Management and Accrual-Based Earnings Management**

	Mean	St. Dev.	P25	Median	P75	N
<i>Panel A: Cash Flow Management</i>						
<b>CFM</b>						
Expect interval	-1.940***	10.039	-6.750	-1.708	3.278	2,569
Effective interval	-1.099	9.698	-5.949	-1.197**	3.680	2,409
Control period	-1.344	9.392	-6.430	-1.600	3.291	19,712
<b>CFM<sup>ADJ</sup></b>						
Expect interval	-0.673***	10.040	-5.501	-0.459	4.484	2,569
Effective interval	0.126	9.696	-4.699	0.022	4.886	2,409
Control period	0.072	9.385	-5.002	-0.192	4.706	19,712
<b>RD</b>						
Expect interval	2.468***	2.766	0.522	1.558**	3.452	2,569
Effective interval	2.415*	2.557	0.623	1.600	3.313	2,409
Control period	2.321	2.440	0.583	1.663	3.169	19,712
<b>CFM<sup>RD</sup></b>						
Expect interval	-0.648***	2.658	-1.496	-0.063	0.522	2,569
Effective interval	-0.583	2.517	-1.448	-0.173***	0.443	2,409
Control period	-0.504	2.431	-1.411	-0.061	0.529	19,712
<b>SGA</b>						
Expect interval	7.643***	6.805	2.978	5.437	10.057	2,569
Effective interval	7.161	6.463	2.940	5.069**	8.977	2,409
Control period	7.230	5.992	3.188	5.382	9.221	19,712
<b>CFM<sup>SGA</sup></b>						
Expect interval	-0.696***	5.063	-2.682	-0.067***	1.852	2,569
Effective interval	0.006	4.839	-1.854	0.341***	2.250	2,409
Control period	-0.096	4.459	-1.913	0.108	1.912	19,712
<b>PROD</b>						
Expect interval	13.054***	12.468	4.546	9.142***	17.264	2,569
Effective interval	12.661***	11.997	4.250	9.080***	16.955	2,409
Control period	14.050	13.302	5.024	9.971	18.442	19,712
<b>CFM<sup>PROD</sup></b>						
Expect interval	-0.615	4.884	-3.256	-0.879***	1.625	2,569
Effective interval	-0.547**	4.776	-3.186	-0.792***	1.781	2,409
Control period	-0.759	4.769	-3.520	-1.082	1.570	19,712

*Table continued on the next page.*

**Table 4 (continued)**

	Mean	St. Dev.	P25	Median	P75	N
<i>Panel B: Accrual-Based Earnings Management</i>						
<b>AEM</b>						
Expect interval	1.259***	6.448	-1.670	0.406***	3.124	2,569
Effective interval	-0.009**	5.433	-2.153	-0.214***	1.968	2,409
Control period	0.237	5.489	-2.034	0.019	2.221	19,712
<b>AEM<sup>ADJ</sup></b>						
Expect interval	0.840***	6.457	-2.058	0.002***	2.687	2,569
Effective interval	-0.465***	5.419	-2.601	-0.630***	1.386	2,409
Control period	-0.053	5.452	-2.274	-0.260	1.895	19,712
<b>TAC</b>						
Expect interval	-1.802***	4.705	-3.340	-1.337***	0.327	2,569
Effective interval	-1.707***	4.431	-3.246	-1.295***	0.338	2,409
Control period	-1.396	4.601	-3.000	-1.066	0.692	19,712
<b>AEM<sup>C</sup></b>						
Expect interval	0.217	4.747	-1.625	0.162*	1.939	2,569
Effective interval	0.154	4.330	-1.450	0.145**	1.731	2,409
Control period	0.066	4.436	-1.692	0.018	1.772	19,712
<b>AEM<sup>NC</sup></b>						
Expect interval	1.056***	5.527	-1.392	0.119**	2.277	2,569
Effective interval	-0.179***	4.736	-1.895	-0.307***	1.208	2,409
Control period	0.173	4.526	-1.422	0.002	1.503	19,712

Panel A shows univariate results for CFM ( $CFM_{it}$ ), adjusted CFM ( $CFM_{it}^{ADJ}$ ), components of CFM ( $CFM_{it}^{RD}$ ,  $CFM_{it}^{SGA}$ , and  $CFM_{it}^{PROD}$ ) and the first stage dependent variables ( $RD_{it}$ ,  $SGA_{it}$ , and  $PROD_{it}$ ) as defined in Appendix B. Panel B shows univariate results for AEM ( $AEM_{it}$ ), adjusted AEM ( $AEM_{it}^{ADJ}$ ), components of AEM ( $AEM_{it}^C$  and  $AEM_{it}^{NC}$ ), and the first stage dependent variable ( $TAC_{it}$ ) as defined in Appendix B. All measures are defined that higher values indicate income-increasing manipulations. All continuous variables are winsorized at the 1<sup>st</sup> and 99<sup>th</sup> percentile, respectively. Two-tailed significance of mean equality and median equality tests relative to the control period is indicated by \*, \*\*, and \*\*\* for significance on the 10%, 5%, and 1% level, respectively.

## Main Regression Results

Table 5 presents the main regression results. In Column 1, where  $CFM_{it}$  is the dependent variable (equation 1), we find a significantly negative coefficient on  $EXP_t$  consistent with firms using CFM to reduce taxable income in the period prior to the enactment of the TCJA ( $\beta_1 < 0$ ,  $p < 1\%$ ). We observe a significantly positive coefficient on  $EFF_t$  consistent with a reversal of CFM in the subsequent period ( $\beta_2 > 0$ ,  $p < 1\%$ ). An F-test shows that the unsigned magnitudes of the coefficients for CFM significantly differ ( $p < 5\%$ ), which suggests only a partial reversal of CFM in the year following the TCJA. Combined, these results suggest that firms use CFM to shift income from the high-tax to the low-tax period.

In Column 2, where  $AEM_{it}$  is the dependent variable, we find a significantly positive coefficient on  $EXP_t$  consistent with firms using AEM to increase book income in the period prior to the TCJA enactment to offset the observed decrease in book income due to CFM ( $\beta_1 > 0, p < 1\%$ ). We also observe a significantly negative coefficient on  $EFF_t$  consistent with the AEM reversing in the subsequent period ( $\beta_2 < 0, p < 1\%$ ). An F-test indicates that the unsigned magnitudes of these coefficients significantly differ ( $p < 5\%$ ) suggesting a partial reversal of AEM in the year following the TCJA. Combined, these results suggest that firms use AEM to increase book income in the period prior to the TCJA to offset the decrease in book income due to CFM.

### **Magnitude of Taxable Income Shifting Incentives**

We also examine whether the intertemporal income shifting around the TCJA differs based on the magnitude of the potential tax saving incentives. Due to the blended tax rate approach, the tax saving incentives depend on the date of the firm's fiscal year end. In a first set of analyses, for the four fiscal quarters preceding the 21% tax rate ('expect interval'), we replace our binary indicator ( $EXP_t$ ) with a measure for the magnitude of the potential tax saving benefits, i.e., the tax rate of the current fiscal year minus the tax rate of the next fiscal year ( $EXP_t^{\text{INCENTIVE}}$ ). Our findings reported in Columns 3 and 4 of Table 5 suggest that firms with higher tax rate differentials, and therefore stronger intertemporal income shifting incentives, decrease (increase) income with CFM (AEM) to a larger extent in the four quarters prior to the effectiveness of the TCJA.

**Table 5: Regression Results for Cash Flow Management and Accrual-Based Earnings Management**

		Full Sample				Full Sample with $EXP = EXP^{INCENTIVE}$				Calendar Year End Firms Only			
		Column (1)		Column (2)		Column (3)		Column (4)		Column (5)		Column (6)	
Predicted Sign		Cash Flow Management (CFM)		Accrual-Based Earnings Management (AEM)		Cash Flow Management (CFM)		Accrual-Based Earnings Management (AEM)		Cash Flow Management (CFM)		Accrual-Based Earnings Management (AEM)	
		Coeff.	Sig.	Coeff.	Sig.	Coeff.	Sig.	Coeff.	Sig.	Coeff.	Sig.	Coeff.	Sig.
<i>EXP</i>	– (H1, $\beta_1$ )	–0.862	(8.47)***			–7.193	(9.04)***			–1.028	(8.78)***		
<i>EFF</i>	+ (H1, $\beta_2$ )	0.446	(4.03)***			0.477	(4.40)***			0.731	(4.56)***		
<i>EXP</i>	+ (H2, $\beta_1$ )			0.787	(8.49)***			6.586	(9.07)***			0.946	(8.91)***
<i>EFF</i>	– (H2, $\beta_2$ )			–0.400	(3.58)***			–0.428	(3.89)***			–0.804	(5.42)***
<i>TREND</i>		0.012	(1.80)*	–0.010	(1.76)*	0.012	(1.84)*	–0.011	(1.82)*	0.011	(1.60)	–0.009	(1.38)
<i>SHARE</i>		–1.484	(0.30)	3.801	(0.78)	–1.628	(0.33)	3.935	(0.80)	–3.219	(0.59)	4.690	(0.87)
<i>ZSCORE</i>		0.028	(3.25)***	–0.021	(2.50)**	0.028	(3.27)***	–0.021	(2.51)**	0.029	(3.01)***	–0.017	(1.83)*
<i>INST</i>		–0.383	(1.14)	0.166	(0.49)	–0.379	(1.13)	0.163	(0.49)	–0.407	(1.08)	0.145	(0.40)
<i>BIGFOUR</i>		0.195	(0.71)	–0.053	(0.20)	0.189	(0.68)	–0.048	(0.18)	0.121	(0.40)	0.040	(0.14)
<i>TENURE</i>		–0.014	(0.81)	0.009	(0.54)	–0.014	(0.84)	0.009	(0.57)	–0.022	(1.18)	0.018	(0.99)
<i>CYCLE</i>		–0.006	(7.01)***	0.006	(7.70)***	–0.006	(7.02)***	0.006	(7.68)***	–0.005	(5.40)***	0.005	(6.68)***
<i>NOA</i>		0.571	(3.72)***	–0.627	(5.04)***	0.567	(3.70)***	–0.623	(5.01)***	0.477	(2.96)***	–0.514	(3.99)***
<i>ROA</i>		0.211	(10.03)***	0.755	(38.41)***	0.211	(10.03)***	0.756	(38.45)***	0.239	(10.07)***	0.740	(32.87)***
<i>MTB</i>		0.001	(0.12)	0.001	(0.13)	0.001	(0.11)	0.001	(0.14)	0.004	(0.48)	0.000	(0.04)
<i>ASSETS</i>		0.475	(2.69)***	–0.462	(3.03)***	0.484	(2.75)***	–0.470	(3.09)***	0.647	(3.24)***	–0.576	(3.33)***
<i>EARN</i>		–0.401	(37.78)***	–0.536	(54.90)***	–0.401	(37.83)***	–0.535	(54.94)***	–0.394	(32.32)***	–0.534	(45.94)***

Table continued on the next page.

**Table 5 (continued)**

	Column (1)	Column (2)	Column (3)	Column (4)	Column (5)	Column (6)
$ECON^{GR}$	-0.022 (0.43)	0.115 (2.20)**	-0.034 (0.66)	0.125 (2.41)**	-0.017 (0.29)	0.122 (2.31)**
$ECON^{RET}$	0.011 (3.73)***	-0.010 (3.54)***	0.013 (4.30)***	-0.012 (4.08)***	0.022 (5.08)***	-0.023 (6.03)***
$ECON^{VOL}$	-0.001 (1.44)	0.001 (0.63)	-0.001 (1.21)	0.000 (0.40)	-0.000 (0.09)	-0.001 (0.64)
Fixed Effects	F, CQ, and FQ	F, CQ, and FQ	F, CQ, and FQ	F, CQ, and FQ	F and FQ	F and FQ
Firm-Quarters	24,690	24,690	24,690	24,690	18,694	18,694
Firms	950	950	950	950	731	731
R <sup>2</sup>	0.448	0.636	0.448	0.637	0.435	0.637
F-Test for: $\beta_1 = -\beta_2$	6.040	5.696			1.990	0.527
P-Value for F-Test	0.014	0.017			0.159	0.468

This table shows the results of regression analyses for CFM ( $CFM_{it}$ ) and AEM ( $AEM_{it}$ ) as defined in Appendix B. In Column 1, 2, 5, and 6, the ‘expect interval’ ( $EXP$ ) is defined as the four fiscal quarters preceding the effectiveness of the 21% federal tax rate. The ‘effective interval’ ( $EFF_t$ ) is defined as the four fiscal quarters right after the effectiveness of the 21% federal tax rate. In Column 3 and 4, we substitute  $EXP_t$  with  $EXP_t^{INCENTIVE}$  which is the potential tax saving benefits (i.e., the tax rate of the current fiscal year minus the tax rate of the next fiscal year) in the ‘expect interval’ and zero outside the ‘expect interval’. In Column 5 and 6, the sample is restricted to the firms with the highest potential tax saving benefits (i.e., the firms with fiscal year equal to the calendar year). F-statistics refer to the reversal of CFM and AEM conducted during the ‘expect interval’ ( $\beta_1$ ) in the course of the ‘effective interval’ ( $\beta_2$ ), respectively. Control variables as defined in Appendix C. Test statistics are calculated based on firm-level clustered standard errors. All continuous variables are winsorized at the 1<sup>st</sup> and 99<sup>th</sup> percentile, respectively. \*, \*\*, and \*\*\* indicate two-tailed significance on the 10%, 5%, and 1% level, respectively.

Second, we recognize that the tax saving incentives are highest for firms with a fiscal year equal to the calendar year. Therefore, for the analyses presented in Columns 5 and 6, we restrict our sample to these firms. We find that the magnitudes of the CFM and AEM coefficients are significantly larger.<sup>47</sup> An F-test indicates that the unsigned magnitudes of these coefficients do not significantly differ in both columns ( $p > 10\%$ ) consistent with a full reversal of both CFM and AEM in the year following the TCJA for calendar year-end firms. Overall, these results are consistent with tax incentives being the primary driver of our results.

### **3.6 Additional Analyses**

To provide further evidence that the tax rate change drives the observed patterns in firm behavior, we examine both the timing of the response and the specific transactions used to engage in intertemporal income shifting. Further, we examine if pressure to meet/beat earnings targets is a determinant of our AEM results. For all additional analyses, we use calendar year end firms as they have the strongest intertemporal income shifting incentives around the TCJA.<sup>48</sup>

#### **Timing of Intertemporal Income Shifting**

The passage of the tax reform did not occur until the end of 2017 and there was significant uncertainty about its specific details throughout the process (Gaertner et al., 2020). Our primary research design treats all four quarters of 2017 as the ‘expect interval’ for calendar year taxpayers. However, it is possible that firms’ responses occurred primarily in the quarters immediately prior to effectiveness of the new tax rate. To investigate this possibility we examine each of the four quarters prior to the TCJA separately.

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<sup>47</sup> To test whether calendar year end firms differ from other firms, we include an indicator that equals one if the firm is a calendar year end firm and its interaction with the indicator for the ‘expect interval’ into our regression model (equation 1). In untabulated analyses, we note that the coefficient on this interaction term is significant ( $p < 1\%$ ) while the first-order effect becomes insignificant ( $p > 10\%$ ). This finding suggests that calendar year end firms drive our primary results, consistent with tax incentives affecting income shifting around the TCJA.

<sup>48</sup> Inferences remain unchanged when we run these analyses for the full sample (untabulated).

**Table 6: Regression Results for Quarterly Taxable Income Shifting and Accrual-Based Earnings Management**

	Predicted Sign	4 <sup>th</sup> Quarter 2017		3 <sup>rd</sup> Quarter 2017		2 <sup>nd</sup> Quarter 2017		1 <sup>st</sup> Quarter of 2017	
		Cash Flow Management (CFM)	Accrual-Based Earnings Management (AEM)	Cash Flow Management (CFM)	Accrual-Based Earnings Management (AEM)	Cash Flow Management (CFM)	Accrual-Based Earnings Management (AEM)	Cash Flow Management (CFM)	Accrual-Based Earnings Management (AEM)
		Coeff. (t-stat)	Coeff. (t-stat)	Coeff. (t-stat)	Coeff. (t-stat)	Coeff. (t-stat)	Coeff. (t-stat)	Coeff. (t-stat)	Coeff. (t-stat)
<i>EXP</i>	− (H1, $\beta_1$ )	-1.485 (8.17)***		-1.520 (7.89)***		-0.701 (4.32)***		-0.381 (2.59)***	
<i>EFF</i>	+ (H1, $\beta_2$ )	0.724 (4.55)***		0.712 (4.49)***		0.744 (4.71)***		0.750 (4.76)***	
<i>EXP</i>	+ (H2, $\beta_1$ )		1.422 (7.91)***		1.311 (7.22)***		0.764 (5.41)***		0.291 (2.01)**
<i>EFF</i>	− (H2, $\beta_2$ )		-0.827 (5.55)***		-0.810 (5.44)***		-0.820 (5.56)***		-0.822 (5.57)***
Control Variables		Included	Included	Included	Included	Included	Included	Included	Included
Fixed Effects		F and FQ	F and FQ	F and FQ	F, FQ	F, FQ	F, FQ	F, FQ	F, FQ
Firm-Quarters		17,180	17,180	17,181	17,181	17,167	17,167	17,161	17,161
Firms		731	731	731	731	731	731	731	731
R <sup>2</sup>		0.438	0.637	0.440	0.634	0.451	0.631	0.457	0.630

This table shows the results of regression analyses for CFM ( $CFM_{it}$ ) and AEM ( $AEM_{it}$ ), as defined in Appendix B. The ‘expect interval’ ( $EXPt$ ) is defined as the respective quarter of 2017 referred to in the column header. The other quarters of 2017 are eliminated from the sample. The ‘effective interval’ ( $EFF_t$ ) is defined as the four fiscal quarters right after the effectiveness of the 21% federal tax rate. Control variables are included in all specifications as defined in Appendix C. The sample is restricted to the firms with the highest potential tax saving benefits, i.e., the firms with fiscal year equal to the calendar year. Test statistics are calculated based on firm-level clustered standard errors. All continuous variables are winsorized at the 1<sup>st</sup> and 99<sup>th</sup> percentile, respectively. \*, \*\*, and \*\*\* indicate two-tailed significance on the 10%, 5%, and 1% level, respectively.

Specifically, we separately define the ‘expect interval’ as each of the four separate fiscal quarters before the TCJA ( $EXP_t$ ). We present these results in Table 6.

The results of these tests are consistent with the majority of CFM and AEM occurring in the two quarters immediately before the TCJA. Specifically, the coefficient estimates for ( $EXP_t$ ) in the 3<sup>rd</sup> and 4<sup>th</sup> quarter of 2017 are about twice the size of the coefficients in the 1<sup>st</sup> and 2<sup>nd</sup> quarter of 2017.<sup>49</sup> Overall, these patterns suggest that the majority of CFM and AEM occurs in the quarters immediately prior to the TCJA enactment when the tax rate decrease became more certain.

### **Taxable Income Shifting Techniques**

To better understand the use of different taxable income shifting techniques, we decompose our CFM measure to examine the specific strategies of abnormal R&D expenses ( $CFM_{it}^{RD}$ ), abnormal SG&A expenses ( $CFM_{it}^{SGA}$ ), and abnormal production ( $CFM_{it}^{PROD}$ ).<sup>50</sup> Our findings presented in Table 7 suggest that firms use all three techniques to lower tax burdens in the high-tax period prior to the TCJA. Our results also indicate that firms quickly restock their inventories in the ‘effective interval’ after the observed underproduction in the ‘expect interval’.<sup>51</sup>

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<sup>49</sup> We note that the coefficient estimates for the 1<sup>st</sup> and 2<sup>nd</sup> quarter are still statistically significant. This could be due to the fact that certain intertemporal income shifting techniques require firms to change activities earlier in the year in anticipation of tax reform. For example, shifting R&D expenses require that the R&D actually takes place during the tax year in order to be eligible for a tax deduction.

<sup>50</sup> We acknowledge that some R&D expenditures qualify for a tax credit, which in our setting reduces but does not eliminate the incentives to accelerate R&D tax credit eligible expenditures. For example, accelerating \$1 of R&D tax credit eligible expenses (which are eligible to the top 20% R&D tax credit rate) from 2018 to 2017 results in tax savings of  $(\$1 - \$0.2) \times 14\% = \$0.112$ . However, it is important to note that many firms do not qualify for the R&D tax credit and if they do qualify not all R&D expenditures will generate a tax credit (BDO, 2018). Eliminating R&D from our CFM proxy results in estimated tax savings of \$5.7 billion, which is slightly below the range generated from our primary analysis (untabulated).

<sup>51</sup> Section 263A provides guidance on what costs are capitalized into inventory and in general requires more indirect costs to be capitalized in contrast to GAAP (Nitti, 2015). Underproduction allows firms to apply this indirect costs to a smaller number of units and assuming the same number of units are sold this increases the costs of goods sold [COGS] deduction. Given this necessary assumption, we note that our CFM results are robust to excluding abnormal production costs. Furthermore, the estimated tax savings when excluding abnormal production costs amount to \$13.1 billion and fall within the range from our primary analyses (untabulated).



**Table 7: Regression Results for Specific Taxable Income Shifting Accounts**

	Predicted Sign	Column (1)	Column (2)	Column (3)
		Abnormally Low SG&A Expenses ( $CFM^{SGA}$ )	Abnormally Low R&D Expenses ( $CFM^{RD}$ )	Abnormally High Production Costs ( $CFM^{PROD}$ )
		Coeff. (t-stat)	Coeff. (t-stat)	Coeff. (t-stat)
<i>EXP</i>	$-(H1, \beta_1)$	-0.636 (8.09)***	-0.094 (2.22)**	-0.277 (4.28)***
<i>EFF</i>	$+(H1, \beta_2)$	0.116 (1.22)	0.127 (1.89)*	0.453 (4.47)***
Control Variables		Included	Included	Included
Fixed Effects		F and FQ	F and FQ	F and FQ
Firm-Quarters		18,694	18,694	18,694
Firms		731	731	731
R <sup>2</sup>		0.243	0.143	0.305
F-test for: $\beta_1 = -\beta_2$		17.89	0.168	1.876
P val for F-test		0.000	0.682	0.171

This table shows the results of regression analyses of CFM components, i.e., abnormal SG&A expenses ( $CFM_{it}^{SGA}$ ), abnormal R&D expenses ( $CFM_{it}^{RD}$ ), and abnormal production costs ( $CFM_{it}^{PROD}$ ) as defined in Appendix B. All measures are defined such that positive coefficients indicate income increasing cash flow management. The ‘expect interval’ ( $EXP_t$ ) is defined as the four fiscal quarters preceding the effectiveness of the 21% federal tax rate. The ‘effective interval’ ( $EFF_t$ ) is defined as the four fiscal quarters right after the effectiveness of the 21% federal tax rate. Control variables are included in all specifications as defined in Appendix C. The sample is restricted to the firms with the highest potential tax saving benefits, i.e., the firms with fiscal year equal to the calendar year. Test statistics are calculated based on firm-level clustered standard errors. All continuous variables are winsorized at the 1<sup>st</sup> and 99<sup>th</sup> percentile, respectively. \*, \*\*, and \*\*\* indicate two-tailed significance on the 10%, 5%, and 1% level, respectively.

We also document a reversal of R&D activities in the ‘effective interval’ but do not find a reversal of SG&A activities in the period after the TCJA.<sup>52, 53</sup>

### Accrual-Based Earnings Management and Financial Reporting Pressure

A key assumption of our predictions is that firms experience pressure to meet/beat earnings targets. Thus, we explicitly study whether income-increasing AEM in the high-tax

<sup>52</sup> Concurrent research finds that firms accelerated bonuses and compensation into 2017 to take advantage of the higher tax deduction, illustrating how firms are sharing corporate tax savings from the TCJA with workers, and/or respond to changes in the deductibility of executive compensation (Rosenthal, 2019; Durrant, Gong, and Howard, 2021; Hutchens, Lynch, and Stomberg, 2021). To the extent the SG&A results capture compensation changes, the lack of reversal for SG&A suggests a more permanent increase in compensation and/or a one-time bonus.

<sup>53</sup> Assets with a useful life of 15 years or less that are purchased and placed into service between September 27, 2017 and December 31, 2017 are eligible for immediate expensing under the TCJA. This strategy would not be captured in either of our measures of CFM as capital expenditures are classified as an investing activity on the statement of cash flows. Furthermore, the book depreciation journal entry would create an income-decreasing non-current accrual, which is the opposite of our predicted and observed effect in 2017.

period is stronger for firms that face financial reporting pressure to meet/beat earnings targets. We argue that ‘habitual earnings targets beaters’, i.e., firms that frequently meet/beat earnings targets, are more likely to experience pressure to meet/beat such thresholds in the current fiscal quarter (Bartov, Givoly, and Hayn, 2002; Zang, 2012). We code the indicator  $HABITUAL_{it}$  as one if the firm is in the upper quartile of the number of suspect fiscal quarters over the prior three fiscal years (Lynch, Romney, Stromberg, Wangerin, and Robinson, 2019, see Appendix C for details). We include  $HABITUAL_{it}$  and its interactions with our treatment indicators in equation (2):

$$AEM_{it} = \beta_0 + \beta_1 HABITUAL_{it} + \beta_2 EXP_t + \beta_3 (EXP_t \times HABITUAL_{it}) + \beta_4 EFF_t + \beta_5 (EFF_t \times HABITUAL_{it}) + \text{controls} + \sum \beta FQ_t + u_{it} \quad (3)$$

Based on our prior results and the conjecture that meeting/beating benchmarks in the 4<sup>th</sup> quarter is particularly important, we define our treatment periods ‘expect’ and ‘effective’ based on the last quarter before and after the effectiveness of the 21% tax rate, respectively. The results of this model are presented in Table 8. We find that that the coefficient on  $EXP_{it}$  is 1.8% ( $p < 1\%$ ) and that the coefficient on the interaction ( $EXP_t \times HABITUAL_{it}$ ) is 1.3% ( $p < 5\%$ ). This pattern suggests that AEM in the interval prior to the TCJA is significantly larger for firms that face high financial reporting pressure. These findings support our primary analyses and illustrate that firms facing higher financial reporting pressure are more likely to use AEM to offset earnings decreases due to CFM.<sup>54</sup>

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<sup>54</sup> While the habitual analysis is based on past realizations of suspect quarters, we also examine the financial reporting pressure in the ‘expect period’. We find that the likelihood to generate a suspect quarter in the ‘expect period’ is positively associated with the use of AEM in the ‘expect period’ (untabulated,  $p < 5\%$ ). This implies that firms that generate a suspect quarter in the ‘expect period’ exhibit higher AEM consistent with firms using AEM to reach financial reporting targets in the period immediately prior to the TCJA.

**Table 8: Regression Results for Accrual-Based Earnings Management of Firms with Financial Reporting Pressure**

	Accrual-Based Earnings Management ( <i>AEM</i> )
	Coeff. (t-stat)
<i>EXP</i> × <i>HABITUAL</i>	1.332 (2.03)**
<i>EFF</i> × <i>HABITUAL</i>	0.665 (1.43)
<i>HABITUAL</i>	0.050 (0.33)
<i>EXP</i>	1.757 (6.64)***
<i>EFF</i>	-0.334 (1.70)*
Control Variables	Included
Fixed Effects	FQ
Firm-Quarters	15,437
R <sup>2</sup>	0.394

This table shows the results of a regression analysis of AEM ( $AEM_{it}$ ) as defined in Appendix B. The ‘expect interval’ ( $EXP_t$ ) is defined as the last fiscal quarter preceding the effectiveness of the 21% federal tax rate. The ‘effective interval’ ( $EFF_t$ ) is defined as the first fiscal quarter right after the effectiveness of the 21% federal tax rate.  $HABITUAL_{it}$  is an indicator that takes a value of 1 if the firm is a ‘habitual earnings target beater’ and zero otherwise as defined in Appendix C. Control variables are included in all specifications as defined in Appendix C. The sample is restricted to the firms with the highest potential tax saving benefits, i.e., the firms with fiscal year equal to the calendar year. Test statistics are calculated based on firm-level clustered standard errors. All continuous variables are winsorized at the 1<sup>st</sup> and 99<sup>th</sup> percentile, respectively. \*, \*\*, and \*\*\* indicate two-tailed significance on the 10%, 5%, and 1% level, respectively.

### Earnings Management through Current and Non-Current Accruals

There is a different degree of book-tax conformity for certain types of accruals. Non-current accruals (e.g., change in depreciation expense accrual for book purposes) generally exhibit lower book-tax conformity than current accruals (e.g., accrual of property taxes; Guenther 1994). Therefore, if book-tax conformity is a factor in choosing the method of how to increase book income, we predict that firms use *non-current* accruals to offset reductions in book income through CFM. In contrast, we argue that *current* accruals are unlikely to offset tax saving-motivated CFM due to the relatively higher level of book-tax conformity (e.g., an income-increasing current accrual of sales will also increase taxable income). Furthermore, we also acknowledge some CFM techniques to reduce taxable income will actually create current

accruals. For example, pre-paying certain expenses will result in a tax deduction but will be recorded as a prepaid expense for GAAP purposes, which is classified as an income-increasing current accrual.

Table 9 displays the results after bifurcating  $AEM_{it}$  into earnings management through *current* accruals ( $AEM_{it}^C$ ) and *non-current* accruals ( $AEM_{it}^{NC}$ ). Consistent with our predictions, we find no evidence of the use of current accruals to shift book income around the TCJA. In contrast, we find positive (negative) coefficients on  $EXP_t$  ( $EFF_t$ ) using  $AEM_{it}^{NC}$  as the dependent variable ( $p < 1\%$ ). Taken together, these results suggest that firms primarily manage non-current accruals, which have lower book-tax conformity, to increase book income in the period prior to the TCJA to offset the decreases in book income due to CFM.

**Table 9: Regression Results for Current and Non-Current Accrual Management**

	Predicted Sign	Column (1)	Column (2)
		Abnormal Current Accruals ( $AEM^C$ )	Abnormal Non-Current Accruals ( $AEM^{NC}$ )
		Coeff. (t-stat)	Coeff. (t-stat)
$EXP$	+ (H2, $\beta_1$ )	-0.045 (0.45)	1.047 (8.28)***
$EFF$	- (H2, $\beta_2$ )	-0.125 (0.88)	-0.634 (4.32)***
Controls		Included	Included
Fixed Effects		F and FQ	F and FQ
Firm-Quarters		18,694	18,694
Firms		731	731
R <sup>2</sup>		0.237	0.230
F-Test for: $\beta_1 = -\beta_2$		0.921	4.377
P-Value of the F-test		0.338	0.037

This table shows the results of regression analyses of the components of AEM, i.e., AEM through the management of current accruals ( $AEM_{it}^C$ ) and AEM through the management of non-current accruals ( $AEM_{it}^{NC}$ ) as defined in Appendix B. The ‘expect interval’ ( $EXP_t$ ) is defined as the four fiscal quarters preceding the effectiveness of the 21% federal tax rate. The ‘effective interval’ ( $EFF_t$ ) is defined as the four fiscal quarters right after the effectiveness of the 21% federal tax rate. Control variables are included in all specifications as defined in Appendix C. The sample is restricted to the firms with the highest potential tax saving benefits, i.e., the firms with fiscal year equal to the calendar year. Test statistics are calculated based on firm-level clustered standard errors. All continuous variables are winsorized at the 1<sup>st</sup> and 99<sup>th</sup> percentile, respectively. \*, \*\*, and \*\*\* indicate two-tailed significance on the 10%, 5%, and 1% level, respectively.

### **Alternative Measure of Cash Flow Management**

We next employ an alternative measure of CFM based on operating cash flows. We use this alternative measure to proxy for taxable income shifting strategies that are potentially not captured by our primary measure and provide a range of economic significance of the taxes saved by our sample of firms. We measure abnormal operating cash flows ( $CFM_{it}^{OCF}$ ) as the residual of a regression of operating cash flows on lagged sales in line with the calculation of abnormal expenses (see Appendix B for details). Results from estimating equation (1) with  $CFM_{it}^{OCF}$  as the CFM proxy are displayed in Table 10. Consistent with our primary results, we find evidence that firms use CFM to decrease taxable income in 2017 ( $p < 1\%$ ) and that these results are strongest in the 3<sup>rd</sup> and 4<sup>th</sup> quarter of 2017 ( $p < 1\%$ ).

**Table 10: Regression Results for the Alternative Cash Flow Management Measure**

		Baseline Results for Abnormal Operating Cash Flow ( $CFM^{OCF}$ )			Quarter-by-Quarter Analysis for Abnormal Operating Cash Flow ( $CFM^{OCF}$ )			
		Column (1)	Column (2)	Column (3)	Column (4)	Column (5)	Column (6)	Column (7)
		Full Sample	Full Sample with $EXP_t = EXP^{INCENTIVE}$	Calendar Year End Firms Only	4 <sup>th</sup> Quarter 2017	3 <sup>rd</sup> Quarter 2017	2 <sup>nd</sup> Quarter 2017	1 <sup>st</sup> Quarter of 2017
Predicted Sign		Coefficient (t-Statistic)	Coefficient (t-Statistic)	Coefficient (t-Statistic)	Coefficient (t-Statistic)	Coefficient (t-Statistic)	Coefficient (t-Statistic)	Coefficient (t-Statistic)
<i>EXP</i>	$-(H1, \beta_1)$	-0.363 (4.07)***	-3.060 (4.58)***	-0.455 (4.77)***	-0.930 (4.98)***	-0.867 (5.16)***	-0.263 (1.43)	0.191 (1.11)
<i>EFF</i>	$+(H1, \beta_2)$	0.220 (2.17)**	0.232 (2.33)**	0.322 (2.29)**	0.342 (2.44)**	0.311 (2.26)**	0.358 (2.56)**	0.346 (2.49)**
Controls		Included	Included	Included	Included	Included	Included	Included
Fixed Effects		F and FQ	F and FQ	F and FQ	F and FQ	F and FQ	F and FQ	F and FQ
Firm-Quarters		24,690	24,690	18,694	17,180	17,181	17,167	17,161
Firms		0.148	0.148	0.156	731	731	731	731
R <sup>2</sup>		950	950	731	0.166	0.167	0.168	0.169
F-test for: $\beta_1 = -\beta_2$		0.919		0.566				
P-Value for F-Test		0.338		0.452				

This table shows the results of regression analyses for CFM measured as abnormal operating cash flow ( $CFM_{it}^{OCF}$ ) as defined in Appendix B. In Column 1 and 3, the ‘expect interval’ ( $EXP_t$ ) is defined as the four fiscal quarters preceding the effectiveness of the 21% federal tax rate. In Column 2, we substitute  $EXP_t$  with  $EXP_t^{incentive}$  which is the potential tax saving benefits (i.e., the tax rate of the current fiscal year minus the tax rate of the next fiscal year) in the ‘expect interval’ and zero outside the ‘expect interval’. In Columns 4 to 7,  $EXP_t$  is defined as the respective quarter of 2017 referred to in the column header. The other quarters of 2017 are eliminated from the sample in Columns 4 to 7. The ‘effective interval’ ( $EFF_t$ ) is defined as the four fiscal quarters right after the effectiveness of the 21% federal tax rate in all columns. Columns 1 and 2 consider all firms and Columns 3 to 7 restrict the sample to firms with the highest potential tax saving benefits, i.e., the firms with fiscal year equal to the calendar year. Control variables are included in all specifications as defined in Appendix C. Test statistics are calculated based on firm-level clustered standard errors. All continuous variables are winsorized at the 1<sup>st</sup> and 99<sup>th</sup> percentile, respectively. \*, \*\*, and \*\*\* indicate two-tailed significance on the 10%, 5%, and 1% level, respectively.

## Book-Tax Conformity

In this section, we empirically examine the book-tax conformity of CFM relative to AEM and the economic significance of the tax savings resulting from intertemporal income shifting around the TCJA. Consistent with prior literature, we argue that CFM has a higher book-tax conformity compared to AEM (Zang, 2012). Furthermore, we predict that non-current accruals exhibit lower book-tax conformity than current accruals (Guenther, 1994).

We test these predictions by examining the association of CFM and AEM proxies with estimated taxable income (Dyreng, 2009). We define taxable income ( $TI_{it}$ ) as current tax expenses divided by the statutory tax rate, net of the change in tax loss carry forwards (Dyreng, 2009), scaled by lagged total assets. Since data to construct  $TI_{it}$  is only available on an annual basis, we conduct this analysis with yearly data and calculate the sum of our CFM ( $CFM_{it}$ ) and AEM measures ( $AEM_{it}^C$  and  $AEM_{it}^{NC}$ ) over the calendar year, respectively. We also include unmanipulated book income ( $BI_{it}$ ) in the regression.  $BI_{it}$  is defined as the annual pre-tax income scaled by lagged total assets less annual  $CFM_{it}$ ,  $AEM_{it}^C$ , and  $AEM_{it}^{NC}$ . We estimate the following firm fixed effect regression:<sup>55</sup>

$$TI_{it} = \beta_0 + \beta_1 CFM_{it} + \beta_2 AEM_{it}^C + \beta_3 AEM_{it}^{NC} + \beta_4 BI_{it} + \sum \beta F_i + u_{it} \quad (4)$$

The results tabulated in Table 11 suggest that the CFM proxies exhibit higher book-tax conformity than the two AEM proxies. Furthermore, we find that non-current accruals have lower book tax conformity compared to current accruals. Overall, these results support our conjecture that the differences in book-tax conformity of CFM versus AEM affect how firms

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<sup>55</sup> We restrict the regression sample to calendar year-end firms. Estimating the relation between taxable income and book income would be complicated and potentially confounded because of blended tax rates of non-December fiscal year end firms. Furthermore, we restrict this sample to pre-TCJA years, i.e., years with a constant statutory tax rate.

use these techniques around the TCJA to both reduce taxes while continuing to report higher book earnings.

**Table 11: Regression Results for Book-Tax Conformity**

	Taxable Income ( $TI$ )	
	Column (1)	Column (2)
	Coefficient (t-Statistic)	Coefficient (t-Statistic)
$CFM$	0.487 (3.84)***	
$CFM^{OCF}$		0.659 (4.91)***
$AEM^C$	0.472 (2.70)***	0.515 (2.99)***
$AEM^{NC}$	0.182 (1.25)	0.160 (1.10)
$BI$	0.437 (4.85)***	0.321 (3.06)***
Fixed effects	F	F
Firm-years	2,915	2,915
Firms	619	619
$R^2$	0.011	0.013

This table shows the results of regression analyses of taxable income ( $TI_{it}$ ) as defined in Appendix C. Taxable income is regressed on CFM, i.e., either  $CFM_{it}$  (Column 1) or  $CFM_{it}^{OCF}$  (Column 2), AEM through the manipulation of current accruals ( $AEM_{it}^C$ ), AEM through the manipulation of non-current accruals ( $AEM_{it}^{NC}$ ), and unmanipulated pre-tax income ( $BI_{it}$ ). Quarterly measures are annualized by summing up the respective measure across the four quarters of the fiscal year. Test statistics are calculated based on firm-level clustered standard errors. All continuous variables are winsorized at the 1<sup>st</sup> and 99<sup>th</sup> percentile, respectively. \*, \*\*, and \*\*\* indicate two-tailed significance on the 10%, 5%, and 1% level, respectively.

### Economic Significance of the Tax Savings

We use the specific coefficients of book-tax conformity of CFM versus AEM to provide an estimate of the tax savings firms realize. We first calculate the effects on taxable income in 2017 and 2018 by multiplying the coefficients for CFM (Table 5, Column 5) and abnormal current and non-current accruals (Table 9) with the estimate for the book-tax conformity of each variable.

$$\text{Effect}_{2017}^{TI} = 4 \times (-1.03) \times 0.49 + 4 \times (-0.05) \times 0.47 + 4 \times 1.05 \times 0.18 = -1.36$$

$$\text{Effect}_{2018}^{TI} = 4 \times 0.73 \times 0.49 + 4 \times (-0.13) \times 0.47 + 4 \times (-0.63) \times 0.18 = 0.73$$



Multiplying these numbers by the tax rates of 2017 and 2018 respectively, results in tax savings in percentage points of assets of  $1.36 \times 35\% - 0.73 \times 21\% = 0.32$ . Dividing by 100 and multiplying with the average assets of the calendar year firms results in tax savings of  $0.32/100 \times \$4,355$  million = \$13.94 million per firm, which is equal to aggregated tax savings of  $\$13.94$  million  $\times 731 = \$10.2$  billion across our sample.<sup>56</sup> Additionally, we apply an analogous calculation for our alternative CFM measure ( $CFM_{it}^{OCF}$ ). Calculations based on the coefficients in Column 3 of Table 10 and Column 2 of Table 11 result in tax savings of \$8.28 million per firm, which results in aggregated tax savings of \$6.1 billion across our sample. Lastly, we note that non-current AEM does not significantly affect taxable income (Table 11). If we calculate the tax savings for both measures after omitting the insignificant coefficient of non-current AEM, the calculations suggests tax savings of \$21.34 million per firm or \$15.6 billion across our sample (\$10.8 billion based on  $CFM_{it}^{OCF}$ ). Overall, these results support our primary conjectures about the book-tax conformity of CFM versus AEM and provide an estimate of the tax savings of the firms in our sample.<sup>57</sup>

## Robustness Tests

We perform the following robustness tests to improve the validity of our primary results (Table 5). First, we create pseudo-event dates that are assigned around the TCJA enactment date as a falsification test. Then, we re-run our CFM and AEM regressions with these pseudo-event dates. Supporting the internal validity of our study, we find that the documented effects for CFM and AEM around the enactment of the TCJA steadily weaken when we

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<sup>56</sup> We acknowledge that not all of the observed effects in 2017 reverse in 2018. If we restrict the tax savings estimation only to the mean reversal amount in 2018, we estimate tax savings of \$3.2 billion.

<sup>57</sup> Additionally, we consider a CFM measure based on *total* cash flow rather than operating cash flows. We define total cash flows as the change in cash and cash equivalents (*#che*) and estimate abnormal changes in total cash flow analogously to the computation of  $CFM_{it}^{OCF}$ . Using this measure, we estimate tax saving of \$5.7 billion, which is just below the range reported in our primary analyses. Moreover, we also examine aggregate tax burdens of firms that engage in the most CFM. Specifically, we find that firms in the lowest quartile of CFM (i.e., most negative values of CFM) in 2017 have significantly lower cash taxes paid ( $p < 5\%$ ), current tax expense ( $p < 1\%$ ), and total tax expense ( $p < 1\%$ ) (untabulated).

counterfactually move away from the true effectiveness date of the TCJA (Christensen, Hail, and Leuz, 2016).<sup>58</sup> These results (untabulated) suggest that the intertemporal income shifting behavior of firms changed around the effective date of the TCJA and not around other financial reporting dates.

Second, we examine the potential effects of the TCJA on changes in investment incentives. It is possible that part of the documented CFM effects results from increased investment because of improved expectations regarding future performance due to the TCJA. As documented in the prior section and our book tax conformity analyses, this would also result in lower tax burdens for firms in 2017 and lower government revenues not taken into account by the CBO. However, it is important to understand whether our results are due to increased investments incentives rather than intertemporal income shifting. To empirically examine this possibility, we adjust the first stage of our estimation procedure. Specifically, we include the change in sales between the current quarter and the same fiscal quarter in the next year scaled by lagged assets as a control variable when estimating the normal level of CFM and AEM.<sup>59</sup> We expect that firms experiencing high growth in response to the TCJA, are likely the firms that increase investment.<sup>60</sup> The results from this alternative specification that controls for future sales growth are consistent with our primary results (untabulated). Furthermore, the estimated tax savings across our sample using this specification are \$8.6 billion and thus are within the range reported in our primary analyses.

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<sup>58</sup> More specifically, for CFM (AEM), the coefficient on the indicator for the ‘expect interval’ ( $p < 1\%$ ) reduces to  $-0.6\%$  (0.6%),  $-0.8\%$  (0.7%),  $-0.8\%$  (0.8%), and  $-0.7\%$  (0.6%) when we counterfactually shift the end date of the ‘expect interval’ two quarters backwards, one quarter backwards, one quarter ahead, and two quarters ahead in equation (1), respectively.

<sup>59</sup> Around a large shock to the economy triggered by tax reform, we expect that ‘normal’ levels of investment depend on future expectations. By including future sales realizations, we assume that current expectations are reflective of future sales, (i.e., that expectations are on average correct).

<sup>60</sup> Some prior studies suggest that established two-step approaches, i.e., estimation of CFM and AEM in a first step (Appendix B) and then analyses of the calculated residuals in a second step, might lead to biased inferences (Chen, Hribar, and Melessa, 2018). The suggested procedure by Chen et al. (2018) requires including interactions between all first step explanatory variables, industry and quarter fixed effects and our second step explanatory variables. However, the main variables of interest are ‘expect’ and ‘effective’ and do not vary across quarters or years. We note that including the first step variables as additional explanatory variables in the second step does not affect our results.

Third, we attempt to rule out the effects of other TCJA changes that could explain our results. The TCJA fundamentally changed the international taxation of U.S. firms, by moving to a quasi-territorial system with a deemed repatriation tax, creating the GILTI, implementing the foreign derived intangible income incentive (FDII), and installing the BEAT (Donohoe et al., 2019; Samuel, 2021). These international provisions likely affect firm behavior *after* taking effect in 2018 and therefore, are unlikely to affect our estimates during the ‘expect interval’. However, to account for the possibility that international provisions affect our results, we split the sample into domestic and international firms, defined as firms that report non-zero foreign pre-tax income (*#pifo*) during our sample period. We find that both domestic and international firms engage in CFM and AEM around the TCJA similar to our primary analyses (untabulated). Specifically, in the CFM and AEM regressions, we find significant coefficients on the ‘expect interval’ indicator ( $p < 1\%$ ) while the CFM reversal effect becomes insignificant for domestic firms. Fifth, the TCJA changed the treatment of tax losses. To rule out that the changes in loss-provisions drive our result we re-estimate our primary analyses after eliminating loss firms. The coefficients for the ‘expect’ and ‘effective’ interval remain highly significant for both CFM and AEM ( $p < 1\%$ ).

Sixth, the reduction of the corporate tax rate required firms to revalue their deferred tax balances in 2017. To ensure that our observed pattern of AEM is not affected by the reevaluation of deferred taxes, we split our sample at the median of net deferred taxes (*#txndb*) scaled by lagged total assets in the year before the reevaluation (i.e., 2016). We find that AEM results are unchanged for the firms across these two groups (untabulated). More specifically, we find significant coefficients on the ‘expect interval’ indicator ( $p < 1\%$ ) and on the ‘effective interval’ indicator ( $p < 1\%$ ). We also note that we use pre-tax accruals in our main analyses to avoid changes in net income arising due to the TCJA affecting our AEM proxy. However, it is also common to use net income when estimating accruals. The coefficients of ‘expect interval’

and ‘effective interval’ remain significant and similar in size ( $p < 1\%$ ) if we follow this approach.<sup>61</sup>

### 3.7 Conclusion

This paper provides evidence on firms’ intertemporal income shifting around the corporate tax rate decrease of the TCJA. We predict and find that firms engage in CFM to shift taxable income from the high-tax period prior to the TCJA to the low-tax period after the TCJA to reduce tax burdens. We also find that firms use AEM, which has a lower book-tax conformity, to offset the decrease in book income from taxable income shifting, presumably due to financial reporting incentives. These results are stronger for firms with greater taxable income shifting incentives (i.e., larger tax rate differentials) and firms subject to higher financial reporting pressure. Taken together, our findings suggest that firms use CFM to shift taxable income from the high-tax to the low-tax period to avoid taxes while using AEM to still report high book earnings.

Our findings provide useful insights for policymakers, tax authorities, and academics. We update and expand the literature on intertemporal income shifting around tax rate changes and on the effects of the TCJA on firm behavior. We identify book-tax conformity as a major determinant of the use of different intertemporal income shifting strategies around tax reforms. Our findings suggest that intertemporal income shifting incentivized by the TCJA resulted in an economically significant decrease in tax collections of between \$6.1 billion and \$15.6 billion that was not taken into account in CBO estimates of the effects of the TCJA. Importantly, our estimates likely represent a lower bound of the true decrease in tax collections due to intertemporal income shifting as we only observe large publically traded firms and cannot

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<sup>61</sup> Applying this specification, the estimated tax savings are within the range reported in the primary analyses (\$9.6 billion across our sample).

observe the full population of public and private firms. Overall, our results suggest that regulators should carefully weigh the costs and benefits of substantial tax rate reductions.

This paper is subject to several caveats. First, due to the archival nature of our analyses, we are not able to establish a causal relationship between the TCJA's corporate tax rate decrease and intertemporal income shifting. However, we believe the timing of the TCJA and consistent findings from a wide set of empirical analyses, including the concentration of results in the quarters immediately prior to the TCJA, make it unlikely that our conclusions are biased. Second, we focus on a relatively short window around the enactment of the TCJA, which is characterized by several changes of political, societal, and economic parameters. Although our research design controls for general time trends and the economic environment, we ultimately cannot rule out confounding effects. Nonetheless, we believe this study offers insights into how the largest U.S. tax reform since 1986 affects firms' behavior.

## Appendix

### *Appendix A: Example of Taxable Income Shifting and Accrual-Based Earnings Management around a Tax Rate Reduction*

Facts of the Example:

- In 2017 and 2018, the firm has \$500 of pre-managed taxable and book income (fiscal year ends on December 31).
- The firm identifies flexibility to shift \$100 of taxable income from 2017 (tax rate of 35%) to 2018 (tax rate of 21%). Thus, the firm wants to lower taxable income in 2017 by \$100 but still report \$500 in book income to meet/beat a given earnings target.

Manipulation of Taxable and Book Income:

- As a form of cash flow management, pay \$100 for an advertising campaign in (late) 2017 that normally would be undertaken in (early) 2018.
- As a form of accrual-based earnings management, defer \$100 of depreciation expense for book purposes which has no effect on taxable income as tax depreciation is fixed by the tax code rules. The effects of deferred taxes are ignored for simplicity.

Summary of Taxable Income, Book Income, and Income Taxes:

	Year 2017			Year 2018			Total Income Tax
	Taxable Income	Book Income	Income Tax (35%)	Taxable Income	Book Income	Income Tax (21%)	
Pre-managed income	500	500	175	500	500	105	<b>280</b>
Prepay an advertising campaign	(100)	(100)		100	100		
Income after CFM	<b>400</b>	<b>400</b>	<b>140</b>	<b>600</b>	<b>600</b>	<b>126</b>	<b>266</b>
Defer book depreciation charge	0	100		0	(100)		
Income after CFM and AEM	<b>400</b>	<b>500</b>	<b>140</b>	<b>600</b>	<b>500</b>	<b>126</b>	<b>266</b>
						<b>Total tax saving:</b>	<b>14</b>

## *Appendix B: Definition of Cash Flow Management and Accrual-Based Earnings Management Measures*

Building on the prior literature (Roychowdhury, 2006; Cohen and Zarowin, 2010; Gunny, 2010), this appendix provides definitions of our income shifting measures. Financial *position* variables (e.g., total assets) are defined as the amount at the end of the fiscal quarter and financial *performance* variables (e.g., sales) are defined as the value of the fiscal quarter calculated based on the cumulative items provided in the Compustat database.

### **Cash Flow Management**

#### *Abnormal Discretionary Expenses*

We consider cutting discretionary expenses as a CFM technique. A reduction of R&D and SG&A expenses boosts current period's earnings. We follow Gunny (2010) and separately determine the normal level of R&D and SG&A expenses using the model applied by Cohen et al. (2008).<sup>62</sup> We estimate these equations on the industry-calendar quarter level and require at least 15 observations per regression.

$$RD_{it} = \beta_1 \left( \frac{1}{A_{it-1}} \right) + \beta_2 S_{it-1} + u_{it} \quad (\text{A.1})$$

$$SGA_{it} = \beta_1 \left( \frac{1}{A_{it-1}} \right) + \beta_2 S_{it-1} + u_{it} \quad (\text{A.2})$$

$RD_{it}$  is R&D expenses ( $\#xrd$ ) to lagged total assets ( $\#at$ ).  $SGA_{it}$  is SG&A expenses ( $\#xsga$  less  $\#xrd$ ) to lagged total assets ( $\#at$ ) (Gunny, 2010). We subtract R&D expenses from SG&A expenses because the Compustat item  $\#xsga$  refers to both R&D and SG&A expenses.  $S_{it-1}$  is lagged net sales ( $\#sale$ ) to lagged total assets ( $\#at$ ). Ceteris paribus, higher values of abnormal R&D expenses, defined as the residual of equation (A.1), and higher values of

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<sup>62</sup> Abnormal discretionary expenses are often estimated in a single regression, i.e., using the sum of R&D and SG&A expenses as the explained variable in the first-step regression (Cohen et al., 2008). To provide more detailed evidence about the techniques used for income shifting around the TCJA, we estimate separate first-step regressions (Gunny, 2010). We note that our conclusions are unaffected by this choice.

abnormal SG&A expenses, defined as the residual of equation (A.2), indicate income-decreasing CFM, respectively. For our analyses, we multiply these abnormal measures with  $(-1)$ , defined as  $CFM_{it}^{RD}$  and  $CFM_{it}^{SGA}$ , respectively, to ease the interpretation of our findings.

### ***Abnormal Production Costs***

We also apply a measure of overproduction (Zang, 2012). *Ceteris paribus*, a firm can increase (decrease) taxable income when the firm produces more (less) units due to a decrease (increase) of the fixed overhead costs per unit because they are spread over a larger (smaller) number of units. As long as the reduction (increase) in fixed overhead costs per unit is not offset by any increase (decrease) in marginal costs per unit, total cost per unit declines (increases) (Roychowdhury, 2006). In our setting, we assume that sales of inventory are held constant such that the effect of underproduction decreases taxable income by allocating indirect costs to less units of inventory leading to a higher COGS deduction. Adopting the approach of Cohen et al. (2008), we model the normal level of production costs as follows. We estimate this equation on the industry-calendar quarter level and require at least 15 observations per regression.

$$PROD_{it} = \beta_1 \left( \frac{1}{A_{it-1}} \right) + \beta_2 S_{it} + \beta_3 \Delta S_{it} + \beta_4 \Delta S_{it-1} + u_{it} \quad (A.3)$$

$PROD_{it}$  is production cost, defined as COGS ( $\#cogs$ ) plus the change in total inventories ( $\#inv$ ), to lagged total assets ( $\#at$ ).  $A_{it-1}$  is lagged total assets ( $\#at$ ).  $S_{it}$  is net sales ( $\#sale$ ) to lagged total assets ( $\#at$ ).  $\Delta S_{it}$  is the change in net sales ( $\#sale$ ) to lagged total assets ( $\#at$ ).  $\Delta S_{it-1}$  is the lagged change in net sales ( $\#sale$ ) to lagged total assets ( $\#at$ ). Higher values of abnormal production costs ( $CFM_{it}^{PROD}$ ), defined as the residual of this regression, indicate income-increasing CFM.



### ***Aggregated Measure for Cash Flow Management***

We define an aggregated measure for income-increasing CFM ( $CFM_{it}$ ) as the sum of the income-increasing CFM measures, i.e.,  $CFM_{it}^{RD}$ , plus  $CFM_{it}^{SGA}$ , plus  $CFM_{it}^{PROD}$ . For our univariate analyses, we adjust  $CFM_{it}$  for a linear time trend and effects related to the end of the quarter. More specifically, we regress  $CFM_{it}$  on  $TREND_t$ , on four indicators for the calendar quarters ( $\sum CQ_{it}$ ), and four indicators for the fiscal quarters ( $\sum FQ_{it}$ ).  $CFM_{it}^{ADJ}$  is the residual of this regression.

### ***Alternative Measure for Cash Flow Management: Abnormal Operating Cash Flows***

As an alternative measure of CFM, we consider abnormal operating cash flows. Due to the modified cash basis of accounting employed by the Internal Revenue Code, changes in operating cash flows generally impact taxable income. Consistent with this conjecture, prior research uses operating cash flows as a measure of conforming tax planning (Hanlon and Heitzman, 2010). We estimate the following equation on the industry-calendar quarter level and require at least 15 observations per regression.

$$OCF_{it} = \beta_1 \left( \frac{1}{A_{it-1}} \right) + \beta_2 S_{it-1} + u_{it} \quad (A.4)$$

$OCF_{it}$  is net cash flow from operations ( $\#oancf$ ) to lagged total assets.  $S_{it-1}$  is lagged net sales ( $\#sale$ ) to lagged total assets ( $\#at$ ). Ceteris paribus, higher values of abnormal operating cash flow ( $CFM_{it}^{OCF}$ ), defined as the residual of equation (A.4), indicate income-increasing CFM.

## Accrual-Based Earnings Management

### *Total Accruals Manipulations*

In line with Zang (2012), we use discretionary accruals to proxy for AEM. We estimate the following Jones (1991)-type model on the industry-calendar quarter level and require at least 15 observations per regression.

$$TA_{it} = \beta_1 \left( \frac{1}{A_{it-1}} \right) + \beta_2 \Delta S_{it} + \beta_3 PPE_{it} + u_{it} \quad (\text{A.5})$$

$TA_{it}$  is total accruals, defined as pre-tax income ( $\#pi$ ), minus cash flow from operations ( $\#oancf$ ), to lagged total assets ( $\#at$ ).  $\Delta S_{it}$  is the change in net sale ( $\#sale$ ) to lagged total assets ( $\#at$ ).  $PPE_{it}$  is net property, plant, and equipment ( $\#ppent$ ) to lagged total assets ( $\#at$ ). For our univariate analyses, we adjust  $AEM_{it}$  for a linear time trend and effects related to the end of the quarter. More specifically, we regress  $AEM_{it}$  on  $TREND_t$ , on four indicators for the calendar quarters ( $\sum CQ_{it}$ ), and four indicators for the fiscal quarters ( $\sum FQ_{it}$ ).  $AEM_{it}^{ADJ}$  is the residual of this regression.

### *Current and Non-Current Accruals Manipulations*

Following Guenther (1994), we note that total accruals consist of current accruals and non-current accruals. We approximate current accruals as the change in current assets ( $\#act$ ), minus the change in cash and cash equivalents ( $\#che$ ), minus the change in current liabilities ( $\#lct$ ), plus the change in debt in current liabilities ( $\#dlc$ ), plus change in tax payables ( $\#txp$ ), to lagged total assets ( $\#at$ ). If quarterly taxes payable ( $\#txp$ ) is missing, we substitute with the annual value divided by 4. Substituting  $TA_{it}$  with current accruals to lagged total assets in equation (A.5), our empirical proxy for abnormal current accruals ( $AEM_{it}^C$ ) is the residual of this regression. Then, we calculate abnormal non-current accruals ( $AEM_{it}^{NC}$ ) as the difference between  $AEM_{it}$  and  $AEM_{it}^C$ .

### ***Appendix C: Definitions of Control Variables***

This appendix provides definitions of our control variables. Similar to Appendix B, financial *position* variables (e.g., total assets) are defined as the amount at the end of the fiscal quarter and financial *performance* variables (e.g., sales) are defined as the value of the fiscal quarter defined based on the cumulative items provided in the Compustat database.

**Table A1: Variable Definitions**

<b>Variable</b>	<b>Definition</b>
<i>ASSETS</i>	Industry-adjusted firm size (Zang, 2012), defined as the industry-adjusted natural logarithm of total assets ( <i>#at</i> ).
<i>BI</i>	Annual unmanaged book income (in %), defined as annual pre-tax income ( <i>#pi</i> ) to total assets ( <i>#at</i> ), minus annual sum of quarterly CFM over the fiscal year, minus annual sum of quarterly AEM over the fiscal year.
<i>BIGFOUR</i>	Indicator that takes a value of 1 if the yearly financial report is audited by a big four audit firm, (calculated based on the item <i>#au</i> from the annual file).
<i>CYCLE</i>	Operating cycle (Dechow, 1994), defined as the mean trade receivables ( <i>#rectr</i> ) at the beginning and end of the quarter to sales ( <i>#sale</i> ), plus mean total inventories ( <i>#inv</i> ) at the beginning and end of the quarter to COGS ( <i>#cogs</i> ), multiplied by 360, and annualized through division with four.
<i>EARN</i>	Unmanaged return on assets (Zang, 2012) (in %), defined as return on assets ( <i>ROA</i> ), minus income increasing CFM, minus AEM as defined in Appendix B.
<i>ECON<sup>GR</sup></i>	U.S. real gross domestic product growth, defined as the yearly change in the gross domestic product less the inflation rate of the calendar year (obtained from the World Bank).
<i>ECON<sup>RET</sup></i>	Calendar year return of the S&P 500 stock index (obtained from S&P Index).
<i>ECON<sup>VOL</sup></i>	Economy-wide stock trading volume, defined as the value of domestic shares traded divided by their market capitalization of the calendar year (obtained from the World Bank).

**Table A1 (continued)**

<i>HABITUAL</i>	Indicator that takes a value of 1 if the firm is a ‘habitual earnings target beater’ (Bartov et al., 2002) defined as a firm has a suspect quarter in more than 5 quarters (upper quartile of the sample distribution) over the prior 12 fiscal quarters (Lynch et al., 2019). We define a fiscal quarter to be suspect for earnings management to meet/beat earnings targets when the earnings per share (obtained from IBES), (i) are larger or equal to zero and do not exceed 1 cent, and/or (ii) are larger or equal to the earnings per share in the same fiscal quarter in the previous fiscal year and do not exceed them by more than one cent, and/or (iii) are larger or equal to the last earnings per share financial analyst consensus forecast available prior to the end of the fiscal quarter and do not exceed it by more than one cent.
<i>MTB</i>	Market value ( <i>#mkvalt</i> ) to book value of common equity ( <i>#ceq</i> ) at the end of the quarter.
<i>NOA</i>	Net operating assets (Barton and Simko, 2002), defined as book value of equity ( <i>#ceq</i> ), less cash and cash equivalents ( <i>#che</i> ), plus total debt ( <i>#dlc</i> plus <i>#dltt</i> ), to sales in the previous quarter ( <i>#sale</i> ).
<i>ROA</i>	Return on assets (in %), defined as earnings before interest and taxes ( <i>#pi</i> plus <i>#xint</i> ) to lagged total assets ( <i>#at</i> ).
<i>SHARE</i>	Sales-market share of the firm, defined as sales of the firm ( <i>#sale</i> ) to total sales of the industry.
<i>INST</i>	Percentage of common shares outstanding owned by institutional investors (obtained from Thomson Reuters).
<i>TENURE</i>	Audit tenure, defined as the number of years the auditor has audited the financial reports of the firm (calculated based on the item <i>#au</i> from the annual file).
<i>TI</i>	Annual taxable income to lagged total assets ( <i>#at</i> ). Taxable income is current tax expenses of the fiscal year ( <i>#txc</i> ) to the statutory tax rate minus the change in net operating loss carryforwards ( <i>#tlcf</i> ) (Dyreng, 2009)).
<i>TREND</i>	Linear time trend (Cohen et al., 2008), defined as the difference between the number of the current calendar quarter and the first calendar quarter of 2010.
<i>ZSCORE</i>	Z-score for financial health (Altman, 1968), defined as $1.2 \times$ working capital ( <i>#wcap</i> ) to total assets ( <i>#at</i> ), plus $1.4 \times$ retained earnings ( <i>#re</i> ) to total assets ( <i>#at</i> ), plus $3.3 \times$ earnings before interest and taxes ( <i>#pi</i> minus <i>#xint</i> ) to total assets ( <i>#at</i> ) $\times 4$ (annualized), plus $0.6 \times$ market value of equity ( <i>#mkvalt</i> ) to total liabilities ( <i>#dltt</i> plus <i>#lct</i> ), plus $1.0 \times$ sales ( <i>#sale</i> ) to total assets ( <i>#at</i> ).

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## References

- Altman, E. (1968). Financial ratios, discriminate analysis, and the prediction of corporate bankruptcy. *The Journal of Finance*, 23(4), 589-609.
- Andries, K., Cools, M., & Van Uytbergen, S. (2017). To shift or not to shift? Intertemporal income shifting as a response to the risk capital allowance introduction in Belgium. *European Accounting Review*, 26(3), 531-559.
- Barton, J., & Simko, P. J. (2002). The balance sheet as an earnings management constraint. *The Accounting Review*, 77(s-1), 1-27.
- Bartov, E., Givoly, D., & Hayn, C. (2002). The rewards to meeting or beating earnings expectations. *Journal of Accounting and Economics*, 33(2), 173-204.
- BDO. 2018. *Tax reform impacts the research tax credit, domestic production activities deduction, and orphan drug credit*. Available at: <http://www.bdo.com/insights/tax/federal-tax/tax-reform-impacts-the-research-tax-credit,-domest>
- Beatty, A., Chamberlain, S. L., & Magliolo, J. (1995). Managing financial reports of commercial banks: The influence of taxes, regulatory capital, and earnings. *Journal of Accounting Research*, 33(2), 231-261.
- Becker, C. L., DeFond, M. L., Jiambalvo, J., & Subramanyam, K. R. (1998). The effect of audit quality on earnings management. *Contemporary Accounting Research*, 15(1), 1-24.
- Blaylock, B., Gaertner, F. B., & Shevlin, T. (2017). Book-tax conformity and capital structure. *Review of Accounting Studies*, 22(2), 903-932.
- Boynton, C. E., Dobbins, P. S., & Plesko, G. A. (1992). Earnings management and the corporate alternative minimum tax. *Journal of Accounting Research*, 30, 131-153.
- Bushee, B. J. (1998). The influence of institutional investors on myopic R&D investment behavior. *The Accounting Review*, 305-333.
- Carrizosa, R., Gaertner, F. B., & Lynch, D. (2020). Debt and taxes? The effect of TCJA interest limitations on capital structure. *Working paper*.
- Chen, W. E. I., Hribar, P., & Melessa, S. (2018). Incorrect inferences when using residuals as dependent variables. *Journal of Accounting Research*, 56(3), 751-796.
- Cohen, D. A., Dey, A., & Lys, T. Z. (2008). Real and accrual-based earnings management in the pre-and post-Sarbanes-Oxley periods. *The Accounting Review*, 83(3), 757-787.
- Cohen, D. A., & Zarowin, P. (2010). Accrual-based and real earnings management activities around seasoned equity offerings. *Journal of Accounting and Economics*, 50(1), 2-19.
- Collins, J., Kemsley, D., & Lang, M. (1998). Cross-jurisdictional income shifting and earnings valuation. *Journal of Accounting Research*, 36(2), 209-229.
- Congressional Budget Office (CBO). 2018. How the 2017 tax act affects CBO's projections. Available at: <https://www.cbo.gov/publication/53787>.
- Christensen, H. B., Hail, L., & Leuz, C. (2016). Capital-market effects of securities regulation: Prior conditions, implementation, and enforcement. *The Review of Financial Studies*, 29(11), 2885-2924.
- Cushing, B. E., & LeClere, M. J. (1992). Evidence on the determinants of inventory accounting policy choice. *The Accounting Review*, 355-366.

- De Simone, L. (2016). Does a common set of accounting standards affect tax-motivated income shifting for multinational firms? *Journal of Accounting and Economics*, 61(1), 145-165.
- Dechow, P. M. (1994). Accounting earnings and cash flows as measures of firm performance: The role of accounting accruals. *Journal of Accounting and Economics*, 18(1), 3-42.
- Dhaliwal, D., & Wang, S. W. (1992). The effect of book income adjustment in the 1986 alternative minimum tax on corporate financial reporting. *Journal of Accounting and Economics*, 15(1), 7-26.
- Dharmapala, D. (2018). The consequences of the Tax Cut and Jobs Act's international provisions: Lessons from existing research. *National Tax Journal*, 71(4), 707-728.
- Donohoe, M. P., McGill, G. A., & Outslay, E. (2019). The geometry of international tax planning after the tax cuts and jobs act: A riff on circles, squares, and triangles. *National Tax Journal*, 72(4), 647-670.
- Durrant, J., Gong, J. J., & Howard, J. (2021). In the nick of time: Performance-based compensation and proactive responses to the Tax Cuts and Jobs Act. *Journal of Management Accounting Research*, 33(1), 53-74.
- Dyreng, S. (2009). The cost of private debt covenant violation. *Working paper*.
- Ernstberger, J., Link, B., Stich, M., & Vogler, O. (2017). The real effects of mandatory quarterly reporting. *The Accounting Review*, 92(5), 33-60.
- Gaertner, F. B., Hoopes, J. L., & Williams, B. M. (2020). Making only America great? Non-US market reactions to US tax reform. *Management Science*, 66(2), 687-697.
- Gale, W. G., Gelfond, H., Krupkin, A., Mazur, M. J., & Toder, E. J. (2019). Effects of the tax cuts and jobs act: A preliminary analysis. *National Tax Journal*, 71(4), 589-612.
- Guenther, D. A. (1994). Earnings management in response to corporate tax rate changes: Evidence from the 1986 Tax Reform Act. *The Accounting Review*, 230-243.
- Guenther, D. A., Maydew, E. L., & Nutter, S. E. (1997). Financial reporting, tax costs, and book-tax conformity. *Journal of Accounting and Economics*, 23(3), 225-248.
- Gunny, K. A. (2010). The relation between earnings management using real activities manipulation and future performance: Evidence from meeting earnings benchmarks. *Contemporary Accounting Research*, 27(3), 855-888.
- Hanlon, M., & Heitzman, S. (2010). A review of tax research. *Journal of Accounting and Economics*, 50(2-3), 127-178.
- Huizinga, H., & Laeven, L. (2008). International profit shifting within multinationals: A multi-country perspective. *Journal of Public Economics*, 92(5-6), 1164-1182.
- Huizinga, H., Laeven, L., & Nicodeme, G. (2008). Capital structure and international debt shifting. *Journal of Financial Economics*, 88(1), 80-118.
- Hutchens, M., Lynch, D., & Stomberg, B. (2021). Sharing the Wealth: The Effects of TCJA Bonuses on Employee Pay Sentiment. *Working paper*.
- Internal Revenue Service (IRS). 2019. About publication 538: Accounting periods and methods. Available at: <https://www.irs.gov/forms-pubs/about-publication-538>.
- Johnson, W. B., & Dhaliwal, D. S. (1988). LIFO abandonment. *Journal of Accounting Research*, 236-272.
- Jones, J. J. (1991). Earnings management during import relief investigations. *Journal of Accounting Research*, 29(2), 193-228.

- Koutney, C. Q., & Mills, L. F. (2018). The immediate impact of tax reform on corporate earnings. In *Proceedings. Annual Conference on Taxation and Minutes of the Annual Meeting of the National Tax Association*, 111, 1-41.
- Lin, B., Lu, R., & Zhang, T. (2012). Tax-induced earnings management in emerging markets: Evidence from China. *The Journal of the American Taxation Association*, 34(2), 19-44.
- Lopez, T. J., Regier, P. R., & Lee, T. (1998). Identifying tax-induced earnings management around TRA 86 as a function of prior tax-aggressive behavior. *The Journal of the American Taxation Association*, 20(2), 37.
- Lynch, D., Romney, M., Stomberg, B., Wangerin, D., & Robinson, J. R. (2019). Trade-offs between tax and financial reporting benefits: Evidence from purchase price allocations in taxable acquisitions. *Contemporary Accounting Research*, 36(3), 1223-1262.
- Matsunaga, S., Shevlin, T., & Shores, D. (1992). Disqualifying dispositions of incentive stock options: Tax benefits versus financial reporting costs. *Journal of Accounting Research*, 30, 37-68.
- Maydew, E. L. (1997). Tax-induced earnings management by firms with net operating losses. *Journal of Accounting Research*, 35(1), 83-96.
- Myers, J. N., Myers, L. A., & Omer, T. C. (2003). Exploring the term of the auditor-client relationship and the quality of earnings: A case for mandatory auditor rotation? *The Accounting Review*, 78(3), 779-799.
- Nitti, T. (2015). Tax Geek Tuesday: Daring To Take On The Section 263A Adjustment. Available at: <https://www.forbes.com/sites/anthonymitti/2015/10/13/tax-geek-tuesday-daring-to-take-on-the-section-263a-adjustment/?sh=8c6db501ad05>
- Randolph, D. W., Salamon, G. L., & Seida, J. A. (2005). Quantifying the Costs of Intertemporal Taxable Income Shifting: Theory and Evidence from the Property-Casualty Insurance Industry. *The Accounting Review*, 80(1), 315-348.
- Rosenthal, S. M. (2019). Post TCJA Bonuses Were Mostly a Timing Shift, Not a Boost in Long-Term Worker Pay. *Tax Vox*.
- Roychowdhury, S. (2006). Earnings management through real activities manipulation. *Journal of Accounting and Economics*, 42(3), 335-370.
- Samuel, D. (2021). The effect of the Tax Cuts and Jobs Act on foreign investment of US multinational corporations. *Working paper*.
- Scholes, M. S., Wilson, G. P., & Wolfson, M. A. (1990). Tax planning, regulatory capital planning, and financial reporting strategy for commercial banks. *The Review of Financial Studies*, 3(4), 625-650.
- Scholes, M. S., Wilson, G. P., & Wolfson, M. A. (1992). Firms' Responses to Anticipated Reductions in Tax Rates: The Tax Reform Act of 1986. *Journal of Accounting Research*, 30, 161-185.
- Shackelford, D. A., & Shevlin, T. (2001). Empirical tax research in accounting. *Journal of Accounting and Economics*, 31(1-3), 321-387.
- Shane, P. B., & Stock, T. (2006). Security analyst and stock market efficiency in anticipating tax-motivated income shifting. *The Accounting Review*, 81(1), 227-250.
- Shevlin, T. (2021). Key Note Address to Ohio State Tax Conference.

- Slemrod, J. (2018). Tax reform and tax experts. *The Journal of the American Taxation Association*, 40(2), 83-88.
- Wagner, A. F., Zeckhauser, R. J., & Ziegler, A. (2018a). Company stock price reactions to the 2016 election shock: Trump, taxes, and trade. *Journal of Financial Economics*, 130(2), 428-451.
- Wagner, A. F., Zeckhauser, R. J., & Ziegler, A. (2018b). Unequal rewards to firms: Stock market responses to the trump election and the 2017 corporate tax reform. In *AEA Papers and Proceedings*, 108, 590-96.
- Wilde, J. H., & Wilson, R. J. (2018). Perspectives on corporate tax planning: Observations from the past decade. *The Journal of the American Taxation Association*, 40(2), 63-81.
- Zang, A. Y. (2012). Evidence on the trade-off between real activities manipulation and accrual-based earnings management. *The Accounting Review*, 87(2), 675-703.



## **Chapter 4**

### **The Effects of the U.S. Tax Reform on Investments in Low-Tax Jurisdictions – Evidence from Cross-Border M&As**

# **The Effects of the U.S. Tax Reform on Investments in Low-Tax Jurisdictions – Evidence from Cross-Border M&As**

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## **Abstract:**

This paper examines the effects of the 2017 U.S. tax reform, commonly known as the ‘Tax Cuts and Jobs Act’ [TCJA] on cross-border M&As of U.S. acquirers. The TCJA replaced the U.S. worldwide tax system by a territorial system, albeit with one important exception: the ‘Global Intangible Low-Taxed Income’ [GILTI] provision. Our results suggest that the outbound acquisition pattern changed significantly for those U.S. acquirers that are affected by the new GILTI provision. GILTI-affected firms acquire targets in low-tax countries and tax havens significantly less often after the TCJA. We also provide weak evidence that U.S. firms not affected by the GILTI regime acquire more often targets in low-tax countries and tax havens.

**Keywords:** Cross-Border M&As, U.S. Tax Reform, International Taxation, Global Intangible Low-Taxed Income

**JEL Classifications:** G34, H26, H32

## Chapter 4

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## 4.1 Introduction

This paper examines effects of the ‘Tax Cuts and Jobs Act of 2017’ [TCJA] on U.S. firms’ cross-border merger and acquisition [M&A] decisions. We scrutinize how the shift to a territorial tax system and the ‘Global Intangible Low-Taxed Income’ [GILTI] provision affect cross-border acquisitions of U.S. firms. The GILTI regime aims to deter tax avoidance via low-tax jurisdictions. In particular, we investigate how the pattern of U.S. acquisitions in low-tax versus high-tax countries is affected. Our results suggest that the outbound acquisition pattern changed significantly for those U.S. acquirers that are affected by the new GILTI provision.

The TCJA is the most significant tax reform in the U.S. for decades. For example, the TCJA reduced the U.S. corporate tax rate significantly from 35% to 21% and changed the existing worldwide tax system into a territorial one. Due to the abolition of the worldwide tax systems, foreign profits can be repatriated without additional home-country taxes. Thus, one might expect an increase of U.S. cross-border M&As in low-tax countries because U.S. firms can benefit from higher after-tax income earned in low-tax countries without additional taxes upon repatriation. However, the TCJA also instituted the GILTI provision as an important exception to the territorial tax system. This provision aims to deter tax avoidance through investments in low-tax jurisdictions. The GILTI provision results in additional taxes on certain foreign excess returns. Therefore, we expect GILTI-affected firms to be less likely to acquire targets in low-tax jurisdictions.

Prior literature has shown that both, the corporate tax rate and the tax system, i.e., worldwide versus territorial tax system, affect M&A decisions (Soled, 2008; Barrios, Huizinga, Laeven, and Nicodème, 2012; Arulampalam, Devereux, and Liberini, 2019). In particular, previous studies have documented that the former U.S. tax system distorted M&A decisions (Huizinga and Voget, 2009; Feld, Ruf, Scheuering, Schreiber, and Voget, 2016; Bird, Edwards, and Shevlin, 2017; Harris and O’Brien, 2018). The worldwide tax system prior to the TCJA

incentivized U.S. firms to accumulate cash abroad rather than repatriate foreign profits (Graham, Hanlon, and Shevlin, 2010). Correspondingly, the U.S. international tax system was often associated with inefficient investment decisions (Hanlon, Lester, and Verdi, 2015; Edwards, Kravet, and Wilson, 2016; Harford, Wang, and Zhang, 2017).

We examine potential effects of the U.S. tax reform and, in particular, of the GILTI provision on the pattern of U.S. cross-border M&As. Therefore, we distinguish between GILTI-affected and non-GILTI-affected U.S. firms. We consider two different measures to classify GILTI-affected firms. For both measures, we find strong evidence that the GILTI regime deters investments in low-tax jurisdictions of U.S. acquirers. In addition, we find weak evidence for changes in cross-border M&A activities of U.S. firms that are unaffected by the GILTI provision. More precisely, our results suggest that unaffected firms invest more often in low-tax countries after the TCJA. This finding is in accordance with incentives for U.S. firms to invest in low-tax countries due to the adoption of a territorial tax system. However, the effect is not robust across all of our specifications.

Two contemporaneous papers are closely related to our study. Atwood, Downes, Henley, and Mathis (2020) investigate whether the TCJA affects domestic and foreign investments differently. They find that after the TCJA, not only the number of foreign acquisitions but also the number of domestic acquisitions decreased on average. Amberger and Robinson (2020) analyze the overall effect of the TCJA on cross-border M&A decisions of U.S. firms. They find a reduced probability that a foreign target is acquired by a U.S. firm after the TCJA, particularly in low-growth and low-tax countries. We add to this literature and focus specifically on the new GILTI regime. Our results suggest that only GILTI-affected firms decrease their number of acquisitions in low-tax countries. Moreover, we find weak evidence that U.S. firms not affected by the GILTI regime acquire more often targets in low-tax and tax haven countries.

Our study makes several contributions. First, we document how the cross-border acquisition behavior of U.S. firms is affected by the TCJA. More precisely, we show that the GILTI regime prevents firms from investing in low-tax countries. There is an ongoing international debate across OECD countries how to curb profit shifting. In particular, investments in low-tax or tax haven countries are often motivated by tax considerations. Our finding that the GILTI anti-avoidance rule effectively deters investments in low-tax jurisdictions adds to this debate. Furthermore, evaluating the GILTI-related effects is of particular importance because the Biden administration is considering to expand and enhance the GILTI regime significantly.<sup>63</sup> Additionally, cross-border M&A flows are an important channel affecting both the U.S. and foreign economies. Our findings suggest that a specific provision in the tax code could have significant effects on M&A decisions. Therefore, future research concerning M&As could consider tax provisions in more detail. Lastly, we add to the growing literature examining one of the largest tax reforms in western countries for decades (Koutney and Mills, 2018; Slemrod, 2018; Hanlon, Hoopes, and Slemrod, 2019; Carrizosa, Gaertner, and Lynch, 2020; Gaertner, Hoopes, and Williams, 2020).

The remainder of the paper is structured as follows. Section 4.2 briefly reviews the TCJA provisions likely affecting the M&A market and derives our hypotheses. Section 4.3 discusses the sample selection, explorative results, and the empirical approach. Section 4.4 presents empirical results and Section 4.5 concludes.

#### **4.2 The U.S. Tax Reform and the Potential Effects on M&As**

The TCJA includes several provisions potentially affecting cross-border investments of U.S. acquirers. First, the TCJA reduced the corporate tax rate considerably from 35 percent to 21 percent. This implies that U.S. firms have more after-tax income and thus, more funds

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<sup>63</sup> ‘The Made In America Tax Plan’ suggests an increase of the GILTI tax to 21 percent and additionally changes the calculation to a country-by-country basis ([https://home.treasury.gov/system/files/136/MadeInAmericaTaxPlan\\_Report.pdf](https://home.treasury.gov/system/files/136/MadeInAmericaTaxPlan_Report.pdf)).

available to pursue cross-border investments. However, it is unclear whether the reduction of the corporate tax rate ultimately affects the decision to acquire targets in high- or low-tax countries.

More importantly, the TCJA changed the U.S. tax system from a worldwide tax system to a territorial one.<sup>64</sup> Under a territorial tax system, a multinational enterprise [MNE] can repatriate foreign profits without any additional taxes imposed by the home country. Thus, the foreign tax rate becomes particularly important and investments in low-tax countries are more attractive relative to foreign investments under a worldwide tax system. Prior to the TCJA, however, U.S. firms could avoid U.S. repatriation taxes by permanently reinvesting their foreign earnings. Therefore, it remains an empirical question whether the change to the territorial tax system increased the attractiveness of M&As in low-tax jurisdictions. As our null hypothesis, we state that the shift to a territorial tax system has an effect on the cross-border acquisition decisions:

*H1: After the TCJA, U.S. firms become more likely to acquire targets in low-tax countries than in high-tax countries.*

Beside other provisions affecting international taxation, the GILTI provision is most prominently discussed.<sup>65</sup> The GILTI regime constitutes an important exception to the territorial tax system. The GILTI provision states that 50 percent of the income of a U.S. controlled foreign corporation, net of interest payments, might be subject to U.S. taxation if it exceeds a certain return on its ‘qualified business asset investment’ [QBAI]. However, this rule applies only if the foreign tax rate is less than 13.125 percent until 2025 or less than 16.4 percent from 2026

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<sup>64</sup> The TCJA also contains a one-time transition tax on foreign earnings. However, given that this tax applies to past earnings, we do not believe that it significantly alters the future M&A decisions of the firms.

<sup>65</sup> We acknowledge that the TCJA contained multiple other provisions affecting taxation nationally and internationally, the most discussed of which are ‘Foreign Derived Intangible Income’ [FDII] and the ‘Base Erosion and Anti Abuse Tax’ [BEAT]. We cannot rule out that these or other provisions also affect cross-border M&As of U.S. firms. However, we expect that the GILTI provision has the strongest effect on the decision to invest in either a high-tax or low-tax country because GILTI taxes directly depend on the aggregated level of a U.S. MNE’s foreign taxation.



onwards.<sup>66</sup> Importantly, the GILTI regime generally applies to the aggregated income of all foreign affiliates of a U.S. firm.<sup>67</sup> Thus, if a U.S. firm already reports a low foreign tax rate, income from additional foreign low-taxed operations can be subject to GILTI taxes. U.S. acquirers might therefore refrain from investing in low-tax countries if the new investment generates profits subject to the GILTI provision. Accordingly, we state the following hypothesis:

*H2: U.S. firms subject to the GILTI provision are less likely to acquire targets in low-tax countries following the TCJA.*

### **4.3 Data and Empirical Approach**

#### **4.3.1 Sample Selection and Explorative Results**

Our initial sample contains all cross-border acquisitions available in Refinitiv's SDC Database, announced between 2010 and 2019. We chose this sample period to avoid distortive effects associated with the financial crisis or the virus pandemic from 2020 onward. We limit the sample to deals in which an acquirer seeks a majority stake in the target and exclude internal restructurings. We eliminate firms from financial and utility industries and those lacking sufficient data on control variables in Compustat. Moreover, we exclude deals with U.S. targets.<sup>68</sup> We also require a minimum of ten deals per target country to ensure an active M&A market. Finally, we restrict our sample to target countries that do not switch between the low-tax and high-tax group during the sample period.<sup>69</sup>

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<sup>66</sup> Lyon and McBride (2018) argue that the GILTI regime may at least partly offset the benefits of the territorial tax system. Therefore, the new tax system is often referred to as a quasi-territorial tax system.

<sup>67</sup> Note that the after-tax earnings (excluding subpart F income) are aggregated across all foreign subsidiaries of a U.S. MNE and reduced by ten percent of all foreign subsidiaries' QBAI only if the after-tax earnings are positive.

<sup>68</sup> Excluding deals with U.S. targets is in line with prior literature (Amberger and Robinson, 2020). The results are robust if we include U.S. targets for non-U.S. acquirers.

<sup>69</sup> We exclude these target countries from our sample to avoid distortive effects. A change of assignment to a low-tax or high-tax country due to a change of the statutory tax rate in the investigation period might have a significant, though only mechanical, effect on the share of M&A flows between low-tax and high-tax countries.

**Table 1: Sample Selection**

Description	No. of Deals
All cross-border M&A deals with non-missing deal value of U.S. and non-U.S. acquirers announced between 2010 and 2019 (Source: Refinitiv's SDC Platinum). Deals with U.S. targets are excluded.	45,860
Less: M&A deals in which the acquirer does not or will not hold a majority stake in the target and deals that are declared as internal restructurings.	(11,005)
Less: M&A deals of acquirers not included in Compustat.	(16,918)
Less: M&A deals of firms from the financial and utility industries.	(3,808)
Less: M&A deals with missing financial data. Also requiring at least 10 deals per target country and eliminating target countries that switch between a low-tax and high-tax group during the sample period.	(5,531)
Global Sample	8,598
U.S. Sample	873

Note: Table 1 shows our sample selection process. We obtain deal-level data from Refinitiv's SDC Platinum and acquirer-level and target-level financial statement data from Compustat.

Our final sample consists of 8,598 cross-border deals ('Global Sample'). Of these, 873 deals have a U.S. acquirer ('U.S. Sample').<sup>70</sup> We consider the U.S. Sample as our baseline sample for the first part of our empirical analysis.<sup>71</sup> Table 1 illustrates the sample selection process.

To study potential effects of the GILTI regime on M&A activities, we need to identify firms that are likely affected by the new provision. We employ two different strategies to determine whether a firm is GILTI-affected. As described in Section 4.2, the GILTI regime only applies if the consolidated foreign tax rate of a U.S. firm is below 16.4 percent (13.125 percent until 2025). Accordingly, we consider a firm as affected by the GILTI provision when it has a foreign effective tax rate [FETR] below the GILTI threshold of 16.4 percent. We use the FETR in the fiscal year prior to the deal to alleviate concerns regarding reverse causality, i.e., that the deal itself affects the FETR.

In an additional analysis, we classify firms by considering the potential GILTI tax base. The GILTI tax due is based on excess returns defined as follows (see Dharmapala, 2018):

<sup>70</sup> Henceforth, the term U.S. acquirer applies to acquisitions where the acquirer or its global ultimate owner is from the U.S.

<sup>71</sup> We again require at least 10 M&A deals in target countries.

$GILTI = Foreign\ Pretax\ Income - Foreign\ Taxes - 0.1 * QBAI$ . QBAI is defined as the basis in foreign depreciable physical assets. Due to limited data availability, we have to approximate potential excess returns using consolidated acquirer level data. We argue that firms exhibiting large excess returns in their consolidated accounts are also likely to have large foreign excess returns. More precisely, we substitute foreign pretax income with consolidated pretax income, foreign taxes with total taxes, and QBAI with consolidated property, plant and equipment.<sup>72</sup> We scale the excess return with lagged total assets and consider those firms as GILTI-affected if their excess return is in the upper quantile of our sample. We chose this conservative cutoff for two reasons. First, we aim to classify only those firms as GILTI-affected that are *significantly* affected. For instance, the GILTI taxes for firms with low excess returns would be very low and are unlikely to affect foreign acquisition decisions. Second, our measure is based on consolidated data. Accordingly, we consider only firms with very large *consolidated* excess returns because they are more likely to exhibit positive *foreign* excess returns, too.<sup>73</sup>

Figure 1 shows the results of an explorative analysis of U.S. cross-border M&As around the TCJA. We plot the average annual deal value of U.S. cross-border acquisitions. First, we split the sample across targets into high-tax and low-tax countries using the annual median statutory tax rate.<sup>74</sup> Panel A shows that the average annual deal value of U.S. cross-border acquisitions increased from \$22.71 billion to \$28.63 billion after the TCJA. However, the amount invested in low-tax countries decreased from \$6.75 billion to \$6.01 billion in the period following the TCJA. Panel B shows how investments in low-tax countries differ depending on whether firms are GILTI-affected using the FETR. The graph displays heterogeneity across

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<sup>72</sup> Results are qualitatively unchanged if we consider an alternative QBAI approximation, computed as total assets net of current assets and intangibles (untabulated),

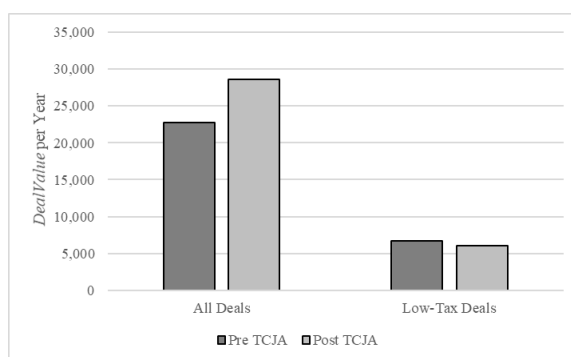
<sup>73</sup> Utilizing different cutoffs, for instance zero, might result in larger classification bias. That is, firms with consolidated excess returns just above zero might have negative foreign excess returns and are thus not affected by GILTI. However, untabulated results are robust when we consider either the zero or a median cutoff for the excess returns.

<sup>74</sup> More precisely, we compute the annual median treating each country as one observation. Computing the median annually across all observations would prevent us from analyzing changes in the low-tax versus high-tax shares across periods.

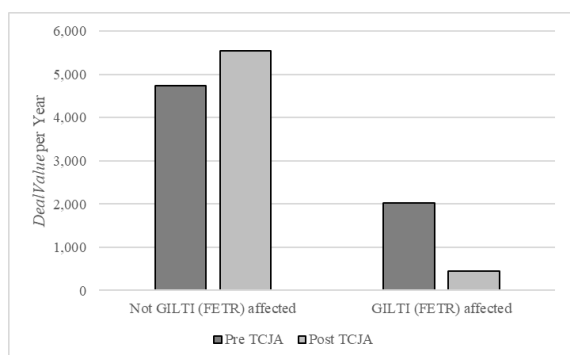
GILTI- and non-GILTI-affected firms. For unaffected firms, the annual value of M&A deals in low-tax countries increased after the TCJA. By contrast, considering firms that are subject to the GILTI provision, the annual deal value in low-tax countries decreased considerably following the TCJA. For instance, Panel B suggests a decline of 77 percent, from \$2.02 billion to \$455 million. Moreover, Panel C considers our alternative GILTI measure based on excess returns. We likewise observe an increase of investments in low-tax countries for non-affected firms. Firms that are affected by GILTI reduce their investments in low-tax countries post TCJA.

**Figure 1: Annual Cross-Border M&A Deal Value pre and post TCJA**

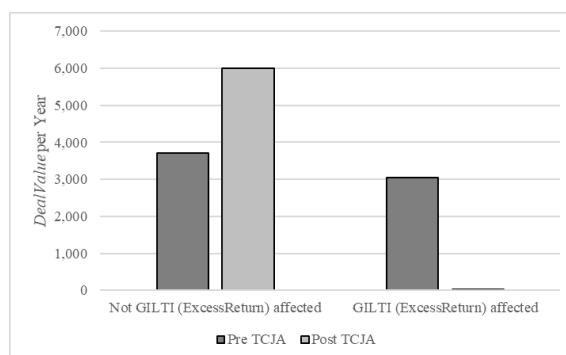
Panel A: Annual *DealValue*



Panel B: Annual *DealValue* by GILTI (FETR) Affected Firms in Low-Tax Countries



Panel C: Annual *DealValue* by GILTI (ExcessReturn) Affected Firms in Low-Tax Countries



Note: Figure 1 plots the average annual deal value (in million U.S. Dollar) in the pre and post TCJA period for all U.S. cross-border M&A deals and U.S. cross-border M&A deals in low-tax countries (Panel A). Low-tax countries are defined as having a below median statutory tax rate, computed annually across countries. In Panel B, we split the low-tax sample depending on whether an acquirer is GILTI-affected. We define a firm to be GILTI-affected if the FETR is below 16.4 percent, where FETR is defined as Compustat items foreign income taxes (txfo) divided by foreign pre-tax income (pifo) for positive values of txfo and pifo. FETR is winsorized at values 0 and 1. In Panel C, we consider the alternative approximation of GILTI-affected firms based on excess returns of the acquirer. An acquirer is assumed to be affected if its excess return is in the upper quantile of our sample. Excess return is defined as the difference of pre-tax income (pi) and total tax expense (txt) less 10 percent of property, plant and equipment (ppent), scaled by lagged total assets (at).

### 4.3.2 Empirical Approach

#### *Acquisitions in Low-Tax Countries*

We examine potential effects of the U.S. tax reform on the pattern of U.S. cross-border M&As. Therefore, we model the investment decision of a U.S. acquirer to either invest in a low-tax or high-tax country. As dependent variable, we use the dummy variable *LowTaxCountry*. We classify a country as a *LowTaxCountry* when its statutory tax rate is below the median. We examine the factors affecting the probability that the target country of an M&A deal is a low-tax country. Therefore, we estimate a logit model based on the following equation (firm and time indices omitted):

$$\begin{aligned} LowTaxCountry = & \alpha_0 + \alpha_1 PostTCJA + \alpha_2 X + \alpha_3 PostTCJA * X + \alpha_4 Year \\ & + \alpha_5 DealValue + \alpha_6 Size + \alpha_7 SalesGrowth + \alpha_8 Leverage \\ & + \alpha_9 WorkingCapital + \alpha_{10} ROA + \alpha_{11} CashRatio \\ & + \alpha_{12} Intangibles + \alpha_{13} CapitalIntensity + Industry FE + \varepsilon \end{aligned} \quad (1)$$

We mark M&A deals that were announced after the TCJA came into force with an indicator variable *PostTCJA*. That is, *PostTCJA* equals one if the deal is announced in 2018 or 2019. If we consider only M&A deals of U.S. firms ('U.S. Sample'), coefficient  $\alpha_1$  in equation (1) depicts whether U.S. acquirers are more or less likely to invest in low-tax countries in the aftermath of the TCJA. In line with hypothesis 1, we expect  $\alpha_1$  to be positive.

In addition, we include the dummy variable *X* that indicates if the acquirer is likely subject to the GILTI provision. An acquirer is assumed to fall within the GILTI regime if its FETR is below a certain threshold or if its excess return is in the upper quantile as described above. The interaction coefficient  $\alpha_3$  depicts whether GILTI-affected firms are more or less likely to acquire targets in low-tax countries following the TCJA. In accordance with hypothesis 2, we expect  $\alpha_3$  to be negative.

Our set of control variables follows prior literature (Amberger and Robinson, 2020; Atwood et al., 2020). We control for firm characteristics of acquiring firms that could have an impact on M&A activities. Moreover, we consider the deal value as a proxy for target size. All financial variables are based on the year prior to the announcement date.<sup>75</sup> Furthermore, we control for acquirer industry fixed effects and include a time trend in the regressions. Descriptive statistics for employed variables are presented in Table 2.

**Table 2: Descriptive Statistics**

	N	Mean	Std. dev.	Q1	Median	Q3
<i>Panel A: U.S. Sample</i>						
<i>CorpTaxRate</i>	873	27.83	5.79	26.00	29.72	31.00
<i>TaxHaven</i>	873	0.12	0.32	0.00	0.00	0.00
<i>FETR</i>	873	0.28	0.21	0.16	0.25	0.34
<i>ExcessReturn</i>	873	0.04	0.06	0.01	0.04	0.08
<i>DealValue</i>	873	3.48	2.45	2.15	3.73	5.20
<i>Size</i>	873	8.04	1.79	6.82	8.04	9.23
<i>SalesGrowth</i>	873	0.11	0.27	-0.01	0.07	0.18
<i>Leverage</i>	873	0.23	0.19	0.08	0.20	0.35
<i>WorkingCapital</i>	873	0.07	0.16	-0.01	0.07	0.16
<i>ROA</i>	873	0.09	0.09	0.04	0.08	0.13
<i>CashRatio</i>	873	0.15	0.14	0.06	0.11	0.19
<i>Intangibles</i>	873	0.34	0.26	0.12	0.29	0.49
<i>CapitalIntensity</i>	873	0.20	0.19	0.07	0.14	0.26
<i>Panel B: Global Sample</i>						
<i>CorpTaxRate</i>	8,598	26.09	7.13	25.00	26.00	30.00
<i>TaxHaven</i>	8,598	0.16	0.36	0.00	0.00	0.00
<i>USAcquirer</i>	8,598	0.12	0.32	0.00	0.00	0.00
<i>ExcessReturn</i>	8,598	-0.01	0.19	-0.02	0.02	0.06
<i>DealValue</i>	8,598	1.59	3.33	-0.19	1.94	3.87
<i>Size</i>	8,598	6.93	2.48	5.28	6.99	8.69
<i>SalesGrowth</i>	8,598	0.17	0.57	-0.05	0.07	0.23
<i>Leverage</i>	8,598	0.17	0.19	0.01	0.13	0.26
<i>WorkingCapital</i>	8,598	0.00	0.22	-0.08	0.01	0.10
<i>ROA</i>	8,598	0.04	0.23	0.02	0.07	0.12
<i>CashRatio</i>	8,598	0.18	0.23	0.06	0.11	0.22
<i>Intangibles</i>	8,598	0.22	0.28	0.02	0.11	0.35
<i>CapitalIntensity</i>	8,598	0.28	0.26	0.08	0.21	0.41

Note: Table 2 presents descriptive statistics for the U.S. Sample (Panel A) and the Global Sample (Panel B). All financial variables are based on the year prior to the announcement date of an M&A deal. Variables are defined in Table A1 in the Appendix.

<sup>75</sup> All continuous variables are winsorized at the 1<sup>st</sup> and 99<sup>th</sup> percentiles. A description of all variables employed can be found in Table A1 in the Appendix.

In additional specifications, we also include cross-border M&A deals of non-U.S. acquirers ('Global Sample'). This allows controlling for potential global trends. For instance, global initiatives in combating harmful tax avoidance schemes, such as the OECD's 'Base Erosion and Profit Shifting' initiative, could have influenced M&A activities. Particularly, the preference to invest in low-tax countries could be affected as well. In these specifications, we define  $X$  equal to one for U.S. acquirers (equal to zero for acquirers outside the U.S.). To examine how the GILTI regime affects the probability of an acquisition in a low-tax country, we separately estimate this equation for GILTI and non-GILTI-affected U.S. firms. According to the above-discussed hypothesis 2, we expect  $\alpha_3$  to be negative for the GILTI-affected U.S. firms, i.e., GILTI-affected U.S. firms are less likely to acquire targets in low-tax countries compared to international peers. For the set of non-GILTI-affected firms we expect  $\alpha_3$  to be positive (hypothesis 1).

### ***M&A Market Share of U.S. Acquirers***

In a second analysis, we investigate whether the share of U.S. acquisitions in the global M&A market has changed after the TCJA. Therefore, we consider all cross-border M&A deals in our sample. As dependent variable, we use a dummy variable *USAcquirer* that equals one if the acquirer is from the U.S. We examine whether the likelihood that the acquiring firm of a cross-border M&A deal is from the U.S. has changed after the introduction of the TCJA. We estimate the following logit model:

$$\begin{aligned}
 USAcquirer = & \beta_0 + \beta_1 PostTCJA + \beta_2 Year + \beta_3 DealValue + \beta_4 Size \\
 & + \beta_5 SalesGrowth + \beta_6 Leverage + \beta_7 WorkingCapital \\
 & + \beta_8 ROA + \beta_9 CashRatio + \beta_{10} Intangibles \\
 & + \beta_{11} CapitalIntensity + Industry FE + \varepsilon
 \end{aligned} \tag{2}$$

$\beta_1$  indicates whether the likelihood that a cross-border deal has a U.S. acquirer has changed after the TCJA. Utilizing sample splits, we also investigate how this likelihood has

changed with respect to low-tax and high-tax countries after the TCJA. Moreover, we consider subsamples of U.S. firms that are likely affected by the GILTI regime and those that are not. Particularly, we expect  $\beta_1$  to be negative (positive) for the subsample of GILTI-affected (non-GILTI-affected) U.S. firms investing in low-tax jurisdictions.

## 4.4 Empirical Results

### 4.4.1 U.S. M&As in Low-Tax versus High-Tax Countries

In this section, we present our empirical results. Table 3 presents the results corresponding to the logit regression of equation (1).<sup>76</sup> In Column (1), we analyze how the overall number of U.S. outbound acquisitions changed following the TCJA. The coefficient of *PostTCJA* is insignificant. This result suggests that the probability of acquisitions in low-tax versus high-tax countries does not significantly differ between the pre and post TCJA period.

However, this could be due to offsetting effects. That is, GILTI-affected firms might invest less in low-tax countries, while unaffected U.S. firms could increase their investments in low-tax countries, as described in Section 4.2. In Column (2), we therefore include the variable *X*, indicating those firms affected by the GILTI regime. We approximate GILTI-affected firms using the FETR (see Section 4.3). The interaction between *X* and *PostTCJA* is negative and highly significant.<sup>77</sup> This finding suggests that GILTI-affected firms invest less often in low-tax countries after the TCJA, confirming hypothesis 2. Moreover, the positive effect of the *PostTCJA* variable indicates that the U.S. firms unaffected by the new GILTI regime are even more likely to acquire targets in low-tax countries after the TCJA.<sup>78</sup> This finding is in

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<sup>76</sup> Results are robust if we consider probit estimations instead of the logit model (untabulated).

<sup>77</sup> Ai and Norton (2003) show that the sign of the interaction coefficient can differ from the marginal effect. However, Puhani (2012) demonstrates that the sign of the marginal effect does not differ in the case of a dummy interaction. Henceforth, since it is not possible to interpret corresponding coefficient magnitudes, we focus on the sign and significance of the respective coefficients.

<sup>78</sup> The finding for the interaction between *X* and *PostTCJA* remains statistically unchanged if we consider year fixed effects instead of a time trend (untabulated). Using a time trend, however, allows us to interpret the *PostTCJA* coefficient.



accordance with hypothesis 1. The analysis thus far is based solely on the U.S. Sample. In Columns (3) to (5) of Table 3, we consider our Global Sample of cross-border M&A deals to control for global trends.

**Table 3: The GILTI Regime and Investments in Low-Tax Countries – FETR**

<i>Dependent Variable</i>	(1)	(2)	(3)	(4)	(5)
	U.S. Sample		Global Sample		
	<i>LowTaxCountry</i>		<i>LowTaxCountry</i>		
<i>X=</i>	<i>Low FETR</i>		<i>USAcquirer</i>	<i>USAcquirer &amp; Low FETR</i>	<i>USAcquirer &amp; High FETR</i>
<i>PostTCJA</i>	0.26 (0.17)	0.55*** (0.00)	0.01 (0.92)	0.00 (0.99)	0.02 (0.86)
<i>X</i>		0.11 (0.68)	-0.40 (0.16)	-0.27 (0.49)	-0.44 (0.11)
<i>X*PostTCJA</i>		-1.26*** (0.00)	0.08 (0.74)	-1.24** (0.01)	0.39 (0.16)
<i>Year</i>	-0.01 (0.69)	-0.02 (0.66)	0.01 (0.59)	0.02 (0.53)	0.01 (0.64)
<i>DealValue</i>	-0.02 (0.91)	-0.03 (0.85)	0.01 (0.89)	0.01 (0.84)	0.01 (0.89)
<i>Size</i>	0.15* (0.07)	0.15* (0.09)	-0.06 (0.15)	-0.07 (0.11)	-0.06 (0.13)
<i>SalesGrowth</i>	0.59* (0.09)	0.58* (0.10)	-0.03 (0.64)	-0.04 (0.52)	-0.04 (0.56)
<i>Leverage</i>	0.48 (0.47)	0.69 (0.32)	0.33 (0.14)	0.32 (0.19)	0.37* (0.09)
<i>WorkingCapital</i>	0.57 (0.51)	0.56 (0.53)	-0.31* (0.07)	-0.35** (0.04)	-0.33* (0.06)
<i>ROA</i>	-1.56 (0.24)	-1.34 (0.28)	0.51*** (0.00)	0.57*** (0.00)	0.55*** (0.00)
<i>CashRatio</i>	0.30 (0.72)	0.22 (0.78)	0.01 (0.98)	0.01 (0.98)	0.01 (0.96)
<i>Intangibles</i>	-0.85 (0.28)	-0.88 (0.27)	-0.51 (0.22)	-0.55 (0.21)	-0.52 (0.22)
<i>CapitalIntensity</i>	-1.78 (0.11)	-1.94* (0.09)	-0.16 (0.48)	-0.14 (0.55)	-0.17 (0.47)
<i>Industry FE</i>	✓	✓	✓	✓	✓
Observations	873	873	8,598	7,860	8,328
Pseudo R2	0.040	0.047	0.012	0.012	0.012

Note: Table 3 presents logit regression results of equation (1). Columns (1) and (2) are based on the U.S. Sample, containing U.S. acquirers only, *X* is set equal to one if the *FETR* is below 16.4 percent. In Columns (3) to (5), the sample additionally comprises cross-border acquisitions of acquirers located outside the U.S. For these Columns, *X* is set equal to one if the acquirer is from the U.S. In Column (4), we omit U.S. acquirers with *FETR* > 16.4 percent, whereas in Column (5), we omit acquirers with *FETR* < 16.4 percent. In all regressions, we employ robust standard errors clustered at the target-country level. P-values are shown in parentheses. \*, \*\* and \*\*\* indicate significance at the 10 percent, 5 percent and 1 percent levels, respectively. Variables are defined in Table A1 in the Appendix.

We set  $X$  equal to one if the acquirer is a U.S. firm, and zero otherwise. The interaction effect of  $X$  and  $PostTCJA$  is insignificant.<sup>79</sup> However, the insignificant result might be associated with offsetting effects of different TCJA provisions.

We therefore differentiate again between U.S. firms that are subject to the GILTI regime and U.S. firms that are not. In Column (4), we keep only those U.S. firms that are affected by GILTI and in Column (5) those that are not. The negative and significant interaction effect in Column (4) suggests a reduced likelihood of acquisitions in low-tax countries for GILTI-affected U.S. firms compared to their international peers. This strengthens our findings based on the U.S. Sample (Column (2)). However, when considering U.S. firms not subject to the GILTI regime, the interaction effect is insignificant (Column (5)). The latter result does not confirm our finding that unaffected U.S. firms invest more in low-tax countries after the TCJA.

In Table 4, we present additional results considering the alternative approximation of GILTI-affected firms based on excess returns of the acquirer (see Section 4.3). The main findings of Table 3 carry over. GILTI-affected firms acquire significantly less often targets in low-tax countries (Columns (1) and (2)). Analogously to column (1) Table 3, we find that firms not affected by GILTI acquire significantly more targets in low-tax countries after the TCJA when we consider the sample of U.S. firms only. However, this finding is not confirmed if we consider the Global Sample (Column (3)).

In sum, GILTI-affected U.S. firms exhibit a significantly reduced probability to invest in low-tax jurisdictions following the TCJA. This result is robust when controlling for the acquisition pattern of non-U.S. acquirers and for different GILTI approximations. By contrast, the evidence is less conclusive for U.S. firms not affected by the GILTI regime. If we examine a sample comprising U.S. firms only, these firms acquire significantly more often targets in

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<sup>79</sup> To alleviate concerns that our results are driven by systematic differences across U.S. and non-U.S. firms, we show that all results carry over if we perform a Propensity Score Matching [PSM] before the main regressions as part of our robustness tests).

low-tax jurisdictions after the TCJA. However, the result is insignificant when including worldwide M&A deals (Global Sample).

**Table 4: The GILTI Regime and Investments in Low-Tax Countries – ExcessReturn**

<i>Dependent Variable</i>	(1)	(2)	(3)
	U.S. Sample <i>LowTaxCountry</i>	Global Sample <i>LowTaxCountry</i>	
<i>X=</i>	High <i>ExcessReturn</i>	<i>USAcquirer</i> & High <i>ExcessReturn</i>	<i>USAcquirer</i> & Low <i>ExcessReturn</i>
<i>PostTCJA</i>	0.48** (0.05)	0.25 (0.19)	-0.08 (0.59)
<i>X</i>	0.06 (0.83)	-0.17 (0.59)	-0.47* (0.10)
<i>X*PostTCJA</i>	-1.13* (0.08)	-0.72** (0.03)	0.40 (0.19)
<i>Year</i>	-0.01 (0.70)	-0.01 (0.73)	0.02 (0.36)
<i>DealValue</i>	-0.03 (0.87)	-0.00 (1.00)	0.01 (0.87)
<i>Size</i>	0.15* (0.09)	-0.09* (0.08)	-0.05 (0.22)
<i>SalesGrowth</i>	0.57 (0.10)	-0.21 (0.19)	0.01 (0.86)
<i>Leverage</i>	0.59 (0.38)	-0.16 (0.69)	0.43 (0.11)
<i>WorkingCapital</i>	0.53 (0.56)	-0.19 (0.55)	-0.37* (0.08)
<i>ROA</i>	-1.14 (0.50)	0.40 (0.53)	0.49** (0.02)
<i>CashRatio</i>	0.20 (0.80)	0.28 (0.41)	-0.06 (0.81)
<i>Intangibles</i>	-0.89 (0.25)	-0.13 (0.75)	-0.60 (0.18)
<i>CapitalIntensity</i>	-1.89* (0.09)	0.61 (0.12)	-0.29 (0.27)
<i>Industry FE</i>	✓	✓	✓
Observations	873	2,149	6,449
Pseudo R2	0.045	0.027	0.013

Note: Table 4 presents logit regression results of equation (1). Column (1) is based on the U.S. Sample, containing U.S. acquirers only, *X* is set equal to one if the *ExcessReturn* is in the upper quantile of our sample. In Columns (2) and (3), the sample additionally comprises cross-border acquisitions of acquirers located outside the U.S. For these Columns, *X* is set equal to one if the acquirer is from the U.S. In Column (2), we omit U.S. acquirers with *ExcessReturn* below the upper quantile, whereas in Column (3), we omit acquirers with *ExcessReturn* above the upper quantile. In all regressions, we employ robust standard errors clustered at the target-country level. P-values are shown in parentheses. \*, \*\* and \*\*\* indicate significance at the 10 percent, 5 percent and 1 percent levels, respectively. Variables are defined in Table A1 in the Appendix.

#### 4.4.2 M&A Market Share of U.S. Acquirers after the TCJA

In the second part of our analysis, we investigate whether the share of acquisitions of U.S. firms in international M&As has changed following the TCJA. Put differently, we scrutinize whether U.S. firms are more or less likely to acquire foreign targets compared to acquirers from other countries after the TCJA. We again differentiate between acquisitions in low-tax and high-tax countries.

Table 5 shows the regression results of equation (2). The dependent variable *USAcquirer* is set equal to one if the acquirer is from the U.S., and zero otherwise. In Column (1), we consider all cross-border deals, in Column (2), we consider only deals in high-tax countries, and in Column (3), we consider only deals in low-tax countries. The *PostTCJA* coefficient indicates how the share of U.S. acquirers has changed after the TCJA. We do not find any significant effect. Thus, our results suggest that the likelihood that a deal has a U.S. acquirer has not significantly changed after the TCJA.

In additional specifications, we again differentiate between GILTI-affected (Columns (4) - (6)) and non-GILTI-affected U.S. acquirers (Columns (7) - (9)). For acquisitions in low-tax countries, we find a significant decline in the probability that the acquirer is a GILTI-affected U.S. firm (Column (6)). However, the probability is not significantly different for acquisitions in high-tax countries (Column (5)). Considering U.S. firms not subject to the GILTI regime in Columns (7) to (9), we do not find any significant effect.

Table 6 presents regression results analogously to Table 5. Here, we again consider our alternative classification of GILTI-affected firms using excess returns (see Section 4.3). In Columns (1) to (3), we compare M&A deals of GILTI-affected U.S. acquirers with non-U.S. acquirers, and in Columns (4) to (6), we compare M&A deals of *non*-GILTI-affected U.S. acquirers with non-U.S. acquirers. Results of Column (3) strengthens our previous finding that GILTI-affected firms exhibit a reduced likelihood to be the acquirer in low-tax countries

following the TCJA. Analogously to Table 5, the *PostTCJA* coefficients for *non-GILTI*-affected firms are insignificant.

**Table 5: Cross-Border M&As – Market Share of U.S. Acquirers post TCJA – FETR**

<i>Dependent Variable</i>	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Total <i>USAcquirer</i>			GILTI <i>USAcquirer</i>			Non-GILTI <i>USAcquirer</i>		
	Overall	High-Tax	Low-Tax	Overall	High-Tax	Low-Tax	Overall	High-Tax	Low-Tax
<i>PostTCJA</i>	-0.11 (0.46)	-0.13 (0.48)	0.02 (0.92)	-0.08 (0.75)	0.11 (0.70)	-1.44** (0.03)	-0.15 (0.34)	-0.24 (0.15)	0.32 (0.31)
<i>Year</i>	-0.04** (0.04)	-0.04* (0.07)	-0.04 (0.34)	-0.06* (0.06)	-0.07* (0.08)	-0.02 (0.84)	-0.03 (0.14)	-0.03 (0.21)	-0.05 (0.28)
<i>DealValue</i>	0.17*** (0.00)	0.17*** (0.00)	0.14*** (0.00)	0.11* (0.05)	0.11* (0.08)	0.12 (0.16)	0.19*** (0.00)	0.19*** (0.00)	0.16*** (0.00)
<i>Size</i>	0.22*** (0.00)	0.18*** (0.00)	0.39*** (0.00)	0.25*** (0.00)	0.21*** (0.00)	0.43*** (0.00)	0.21*** (0.00)	0.17*** (0.00)	0.38*** (0.00)
<i>SalesGrowth</i>	-0.78*** (0.00)	-0.88*** (0.00)	-0.40 (0.18)	-0.57** (0.01)	-0.71** (0.03)	0.02 (0.94)	-0.86*** (0.00)	-0.94*** (0.00)	-0.56* (0.10)
<i>Leverage</i>	2.33*** (0.00)	2.49*** (0.00)	1.93*** (0.00)	2.21*** (0.00)	2.68*** (0.00)	0.30 (0.78)	2.19*** (0.00)	2.24*** (0.00)	2.36*** (0.00)
<i>WorkingCapital</i>	3.54*** (0.00)	3.24*** (0.00)	4.87*** (0.00)	2.82*** (0.00)	2.44*** (0.00)	4.84*** (0.00)	3.78*** (0.00)	3.54*** (0.00)	4.83*** (0.00)
<i>ROA</i>	2.00*** (0.00)	2.40*** (0.00)	0.80 (0.44)	2.92*** (0.01)	3.38** (0.02)	1.46 (0.11)	1.63** (0.01)	1.99*** (0.01)	0.81 (0.58)
<i>CashRatio</i>	-0.19 (0.56)	-0.13 (0.74)	-0.27 (0.51)	0.26 (0.46)	0.36 (0.39)	0.21 (0.62)	-0.59 (0.11)	-0.57 (0.21)	-0.51 (0.32)
<i>Intangibles</i>	1.10*** (0.00)	1.04*** (0.00)	1.10** (0.02)	0.75** (0.02)	0.69* (0.06)	1.11* (0.09)	1.21*** (0.00)	1.17*** (0.00)	1.02** (0.04)
<i>CapitalIntensity</i>	-1.41*** (0.00)	-1.24*** (0.00)	-2.78*** (0.00)	-1.45** (0.01)	-1.36** (0.02)	-1.51 (0.38)	-1.47*** (0.00)	-1.24*** (0.00)	-3.38*** (0.00)
<i>Industry FE</i>	✓	✓	✓	✓	✓	✓	✓	✓	✓
Observations	8,598	6,488	2,110	7,631	5,736	1,822	8,328	6,265	2,063
Pseudo R2	0.206	0.194	0.282	0.189	0.186	0.256	0.203	0.192	0.282

Note: Table 5 reports logit regression results of equation (2). The dependent variable is an indicator variable equal to one if the acquirer is U.S. resident, and zero otherwise. In Column (1), we consider the full sample of U.S.-based acquirers. In Column (2), we keep only deals in high-tax target countries, whereas in Column (3), we keep only deals in low-tax target countries. A target country is indicated as high-tax (low-tax) if the country's statutory tax rate is above (below) the median, computed annually across country-years. The Columns (4) to (6) contain regressions results analogously to Columns (1) to (3), however, only including U.S. acquirers that are GILTI-affected based on the *FETR* cutoff of 16.4 percent. The Columns (7) to (9) contain regressions results analogously to Columns (1) to (3), however only including U.S. acquirers that are *not* GILTI-affected. In all regressions, we employ robust standard errors clustered at the target-country level. P-values are shown in parentheses. \*, \*\* and \*\*\* indicate significance at the 10 percent, 5 percent and 1 percent levels, respectively. Variables are defined in Table A1 in the Appendix.

**Table 6: Cross-Border M&As – Market Share of U.S. Acquirers post TCJA – ExcessReturn**

	(1)	(2)	(3)	(4)	(5)	(6)
<i>Dependent Variable</i>	GILTI USAcquirer			Non-GILTI USAcquirer		
	Overall	High-Tax	Low-Tax	Overall	High-Tax	Low-Tax
<i>PostTCJA</i>	-0.15 (0.48)	0.03 (0.91)	-1.02* (0.06)	-0.18 (0.39)	-0.27 (0.24)	0.11 (0.79)
<i>Year</i>	-0.08** (0.02)	-0.08** (0.03)	-0.07 (0.22)	-0.01 (0.79)	-0.01 (0.82)	0.00 (0.96)
<i>DealValue</i>	0.15*** (0.00)	0.16** (0.01)	0.12** (0.05)	0.17*** (0.00)	0.17*** (0.00)	0.16*** (0.00)
<i>Size</i>	0.33*** (0.00)	0.28*** (0.00)	0.58*** (0.00)	0.22*** (0.00)	0.19*** (0.00)	0.32*** (0.00)
<i>SalesGrowth</i>	-1.14*** (0.00)	-1.32*** (0.00)	-0.36 (0.48)	-0.67*** (0.00)	-0.70*** (0.00)	-0.51* (0.07)
<i>Leverage</i>	2.00*** (0.00)	2.30*** (0.00)	1.37 (0.21)	2.30*** (0.00)	2.41*** (0.00)	2.49*** (0.00)
<i>WorkingCapital</i>	3.42*** (0.00)	3.06*** (0.00)	6.23*** (0.00)	3.70*** (0.00)	3.57*** (0.00)	4.12*** (0.00)
<i>ROA</i>	10.76*** (0.00)	11.49*** (0.00)	9.83*** (0.00)	-1.02** (0.04)	-0.85 (0.16)	-1.27** (0.04)
<i>CashRatio</i>	-0.74* (0.07)	-0.58 (0.23)	-1.14* (0.06)	-1.13*** (0.00)	-1.21*** (0.00)	-0.79** (0.04)
<i>Intangibles</i>	0.82** (0.02)	0.89** (0.02)	0.24 (0.80)	1.16*** (0.00)	1.08*** (0.00)	1.05** (0.01)
<i>CapitalIntensity</i>	-3.88*** (0.00)	-4.08*** (0.00)	-3.87*** (0.00)	-0.65 (0.11)	-0.34 (0.37)	-3.20*** (0.01)
<i>Industry FE</i>	✓	✓	✓	✓	✓	✓
Observations	7,962	5,966	1,403	8,226	6,181	2,045
Pseudo R2	0.299	0.297	0.351	0.187	0.176	0.252

Note: Table 6 reports logit regression results of equation (2). The dependent variable is an indicator variable equal to one if the acquirer is U.S. resident, and zero otherwise. In Column (1), we consider the sample of U.S.-based acquirers that are GILTI-affected based on the *ExcessReturn* cutoff at the upper quantile. In Column (2), we keep only deals in high-tax target countries, whereas in Column (3), we keep only deals in low-tax target countries. A target country is indicated as high-tax (low-tax) if the country's statutory tax rate is above (below) the median, computed annually across country-years. The Columns (4) to (6) contain regressions results analogously to Columns (1) to (3), however, only including U.S. acquirers that are *not* GILTI-affected. In all regressions, we employ robust standard errors clustered at the target-country level. P-values are shown in parentheses. \*, \*\* and \*\*\* indicate significance at the 10 percent, 5 percent and 1 percent levels, respectively. Variables are defined in Table A1 in the Appendix.

#### 4.4.3 Robustness Tests

We provide several robustness tests for our main result in Tables 7 and 8. First, we show that our results regarding the acquisition patterns in Table 3 carry over if we consider the

alternative FETR threshold of 13.125 percent (see Panel A of Table 7).<sup>80</sup> The interaction coefficient of  $X$  and  $PostTCJA$  in Columns (2) and (4) is negative and statistically significant.

In Panel B of Table 7, we replace the dependent variable  $LowTaxCountry$  by the indicator variable  $TaxHaven$ .  $TaxHaven$  is set equal to one if the target country is identified as a tax haven by Dyreng and Lindsey (2009). The results for the interaction term in Columns (2) and (4) suggest that U.S. acquirers also invest significantly less often in tax haven countries if they are subject to the GILTI regime.

To alleviate concerns that our results are driven by structural differences between U.S. and non-U.S. firms, we perform Propensity Score Matching [PSM], a commonly used matching technique to improve covariate balance in Panel C. PSM is a feasible technique to identify an adequate control group regarding various firm characteristics and is based on a two-step approach (Rosenbaum and Rubin, 1983; Shipman, Swanquist, and Whited, 2017). In the first step, we apply a probit regression model including a vector with all control variables of equation (1). In the second step, we perform a one to one nearest neighbor matching algorithm (with replacement). Using the propensity scores derived from the first step, we attempt to match each deal with a U.S. acquirer to a deal of a non-U.S. acquirer. Therefore, we set the caliper, the maximum deviation between the propensity score of U.S. cross-border deals and matched non-U.S. cross-border deals, to 0.02 (Lunt, 2014; Shipman et al., 2017). Panel C of Table 7 shows results for the Global Sample, employing PSM to reshape the sample. We provide evidence that the results of our baseline analysis carry over if we conduct PSM in advance of the regressions (Column (4)).<sup>81</sup>

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<sup>80</sup> For years until 2026, the relevant threshold is 13.125 percent.

<sup>81</sup> If we consider the alternative GILTI threshold using excess returns, the results of Table 4 remain qualitatively unchanged when changing the dependent variable to  $TaxHaven$  or performing PSM (untabulated). We also build an alternative excess return variable where QBAI is approximated by  $Total\ Assets - Current\ Assets - Intangible\ Assets$ . Again, we confirm robustness of our results.



**Table 7: Robustness Tests for Specification 1**

	(1)	(2)	(3)	(4)	(5)
	U.S. Sample		Global Sample		
<i>X</i> =	Low <i>FETR</i>		<i>USAcquirer</i>	<i>USAcquirer</i> & Low <i>FETR</i>	<i>USAcquirer</i> & High <i>FETR</i>
<i>Panel A: Investments in Low-Tax Countries - Alternative FETR Cutoff at 13.125%</i>					
<i>PostTCJA</i>	0.26 (0.17)	0.42*** (0.01)	0.01 (0.92)	-0.00 (0.99)	0.02 (0.84)
<i>X</i>		0.05 (0.75)	-0.40 (0.16)	-0.31 (0.43)	-0.42 (0.12)
<i>X*PostTCJA</i>		-0.96** (0.03)	0.08 (0.74)	-0.90* (0.07)	0.26 (0.29)
<i>Panel B: Investments in Tax Havens</i>					
<i>PostTCJA</i>	0.39** (0.03)	0.52*** (0.00)	-0.05 (0.75)	-0.08 (0.63)	-0.05 (0.75)
<i>X</i>		-0.09 (0.67)	-0.47 (0.15)	-0.26 (0.56)	-0.54 (0.11)
<i>X*PostTCJA</i>		-1.27* (0.09)	0.02 (0.95)	-1.89*** (0.01)	0.36 (0.34)
<i>Panel C: Investments in Low-Tax Countries - PSM Sample</i>					
<i>PostTCJA</i>			0.41 (0.17)	0.36 (0.25)	0.53* (0.08)
<i>X</i>			-0.22 (0.38)	-0.11 (0.78)	-0.24 (0.32)
<i>X*PostTCJA</i>			-0.12 (0.64)	-1.38*** (0.00)	0.19 (0.52)
<i>Controls</i>	✓	✓	✓	✓	✓
<i>Industry FE</i>	✓	✓	✓	✓	✓
Panel A: Observations	873	873	8,598	7,786	8,402
Panel A: Pseudo R <sup>2</sup>	0.040	0.043	0.012	0.011	0.012
Panel B: Observations	873	873	8,598	7,860	8,328
Panel B: Pseudo R <sup>2</sup>	0.075	0.079	0.049	0.051	0.049
Panel C: Observations			1,738	1,025	1,477
Panel C: Pseudo R <sup>2</sup>			0.022	0.030	0.029

Notes: Table 7 presents robustness tests for the logit regression results of equation (1). Panel A repeats the regressions of Table 3 with an alternative GILTI cutoff. We set the variable *X* equal to one if the *FETR* is below 13.125 percent. In Panel B, we replace the dependent variable *LowTaxCountry* by the variable *TaxHaven* and employ the *FETR* cutoff at 16.4 percent for building the variable *X*. Panel C presents regression results based on the Global Sample with an employed PSM to reshape the sample. In the first step of the PSM, we apply a probit regression including all control variables of equation (1). In the second step, we perform a one to one nearest neighbor matching algorithm (with replacement, caliper set to 0.02). Again, we employ the *FETR* cutoff at 16.4 percent for building the variable *X*. In all panels, we include the control variables of equation (1) and industry fixed effects. We employ robust standard errors clustered at the target-country level. P-values are shown in parentheses. \*\*\*, \*\* and \* indicate significance at the 1%, 5% and 10% levels, respectively. Variables are defined in Table A1 in the Appendix.

**Table 8: Robustness Tests for Specification 2**

<i>Dependent Variable</i>	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Total USAcquirer			GILTI USAcquirer			Non-GILTI USAcquirer		
	Overall	High-Tax	Low-Tax	Overall	High-Tax	Low-Tax	Overall	High-Tax	Low-Tax
<b>Panel A: Market Share of U.S. Acquirers in High-Tax and Low-Tax Countries – Alternative FETR Cutoff at 13.125%</b>									
<i>PostTCJA</i>				0.13 (0.67)	0.32 (0.31)	-1.32* (0.09)	-0.17 (0.26)	-0.24 (0.16)	0.22 (0.41)
<b>Panel B: Market Share of U.S. Acquirers in Tax Havens and non-Tax Havens</b>									
<i>PostTCJA</i>	-0.11 (0.46)	-0.16 (0.33)	0.19 (0.52)	-0.08 (0.75)	0.03 (0.91)	-2.15** (0.01)	-0.15 (0.34)	-0.24 (0.12)	0.51 (0.17)
<b>Panel C: Market Share of U.S. Acquirers in High-Tax and Low-Tax Countries – PSM Matched Sample</b>									
<i>PostTCJA</i>	-0.18 (0.37)	-0.11 (0.66)	-0.06 (0.88)	-0.21 (0.51)	0.03 (0.93)	-1.90** (0.04)	-0.16 (0.41)	-0.16 (0.53)	0.30 (0.55)
<i>Controls</i>	✓	✓	✓	✓	✓	✓	✓	✓	✓
<i>Industry FE</i>	✓	✓	✓	✓	✓	✓	✓	✓	✓
Panel A: Observations				7,557	5,675	1,730	8,402	6,326	2,076
Panel A: Pseudo R2				0.182	0.179	0.277	0.206	0.194	0.283
Panel B: Observations	8,598	7,266	1,332	7,631	6,411	1,139	8,328	7,027	1,301
Panel B: Pseudo R2	0.206	0.196	0.331	0.189	0.181	0.367	0.203	0.195	0.317
Panel C: Observations	1,738	1,399	339	1,017	806	210	1,477	1,184	293
Panel C: Pseudo R2	0.012	0.009	0.106	0.064	0.065	0.175	0.024	0.021	0.125

Note: Table 8 presents robustness tests for the logit regression results of equation (2). Panel A repeats the regressions of Table 5 with an alternative GILTI cutoff. We set the variable *X* equal to one if the *FETR* is below 13.125 percent. In Panel B, we replace the dependent variable *LowTaxCountry* by the variable *TaxHaven* and employ the *FETR* cutoff at 16.4 percent for building the variable *X*. Panel C presents regression results based on the Global Sample with an employed PSM to reshape the sample. In the first step of the PSM, we apply a probit regression including all control variables of equation (2). In the second step, we perform a one to one nearest neighbor matching algorithm (with replacement, caliper set to 0.02). Again, we employ the *FETR* cutoff at 16.4 percent for building the variable *X*. In all panels, we include the control variables of equation (2) and industry fixed effects. We employ robust standard errors clustered at the target-country level. P-values are shown in parentheses. \*, \*\* and \*\*\* indicate significance at the 10 percent, 5 percent and 1 percent levels, respectively. Variables are defined in Table A1 in the Appendix.

Table 8 provides additional robustness tests regarding the development of the probability that a deal has a U.S. acquirer (Table 5). In Panel A of Table 8, we change the FETR threshold to 13.125 percent, in Panel B, we use the *TaxHaven* dummy variable as dependent variable instead of the *LowTaxCountry* variable, and in Panel C, we again perform the PSM as described above. Considering the *PostTCJA* variable for GILTI-affected U.S. acquirers in contrast to non-U.S. acquirers (Column (6)), throughout all panels, we find negative and significant coefficients. Accordingly, this confirms robustness of the results of Table 5.<sup>82</sup>

#### **4.5 Conclusion**

Analyzing one of the most far-reaching tax reforms in decades, we investigate how the U.S. tax reform of 2017 affects the cross-border M&A decisions of firms. The TCJA considerably altered the international taxation of U.S. firms. Notably, the tax system has been changed to a territorial tax system, albeit with an important exception referred to as GILTI.

Our empirical results suggest that the GILTI provision significantly affected the cross-border investments of U.S. firms. That is, GILTI-affected firms invest significantly less often in low-tax countries and tax havens. However, we find mixed evidence for U.S. firms that are not affected by the GILTI regime. Based on a set comprised of only U.S. firms, we find evidence that these firms increased investments in low-tax countries. However, we find only weak evidence for this effect when augmenting our dataset with cross-border deals of acquirers from outside the U.S. Overall, our results suggest that specific provisions in the corporate tax code may impact M&A decisions significantly.

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<sup>82</sup> We also consider the excess return for the GILTI approximation in this setting. Our baseline results remain unchanged (untabulated).

## Appendix

**Table A1: Variable Definitions**

Variable	Definition (Compustat items in parentheses)	Source
<i>CorpTaxRate</i>	= The statutory corporate income tax rate in the target country in the year prior to the deal.	KPMG Corporate Tax Rates Table and the Tax Foundation
<i>DealValue</i>	= The natural log of the deal value (in million \$).	SDC Platinum
<i>LowTaxCountry</i>	= An indicator variable which is set to one if the target country has a statutory corporate income tax rate below the median, computed annually across countries, and zero otherwise.	KPMG Corporate Tax Rates Table and the Tax Foundation
<i>PostTCJA</i>	= An indicator variable equal to one for deal announcements after 2017, and zero otherwise.	SDC Platinum
<i>TaxHaven</i>	= An indicator variable which is set to one if the target country is a tax haven country following Dyreng and Lindsey (2009). A list of all tax haven countries can be found on Dyreng's website ( <a href="https://sites.google.com/site/scottdyreng/Home/data-and-code/EX21-Dataset">https://sites.google.com/site/scottdyreng/Home/data-and-code/EX21-Dataset</a> ).	Dyreng and Lindsey (2009)
<i>USAcquirer</i>	= An indicator variable which is set to one if the ultimate owner of the firm that acquires a foreign target is located in the U.S. or the acquirer of a foreign target is located in the U.S., and zero otherwise.	SDC Platinum
<i>FETR</i>	= Foreign effective tax rate of an acquirer, defined as foreign income taxes (txfo) divided by foreign pre-tax income (pifo) in year $t-1$ and winsorized at values 0 and 1. Note that the FETR can only be computed for firms from Compustat North America.	Compustat
<i>ExcessReturn</i>	= Excess return of an acquirer, defined as the difference of pre-tax income (pi) and total tax expense (txt) less 10 percent of property, plant and equipment (ppent), scaled by lagged total assets (at) at the end of year $t-1$ .	Compustat
<i>Year</i>	= Announcement year of a deal which runs from 2010 to 2019.	SDC Platinum

**Table A1 (continued)**

<i>CashRatio</i>	= Cash (ch), scaled by lagged total assets (at) at the end of year t-1.	Compustat
<i>CapitalIntensity</i>	= Net value of property plant and equipment (ppent), scaled by lagged total assets (at) at the end of year t-1.	Compustat
<i>Intangibles</i>	= Intangible assets (intan), scaled by lagged total assets (at) at the end of year t-1.	Compustat
<i>Leverage</i>	= Long-term debt (dltt), scaled by lagged total assets (at) at the end of year t-1.	Compustat
<i>ROA</i>	= Return on Assets, defined as pre-tax income (pi) divided by lagged total assets (at) at the end of year t-1.	Compustat
<i>SalesGrowth</i>	= Sales (sale) growth from year t-2 to year t-1, scaled by year t-2 sales.	Compustat
<i>Size</i>	= The natural log of total assets (at) at the end of year t-1.	Compustat
<i>WorkingCapital</i>	= Current assets (act), less current liabilities (lct), less cash and cash equivalents (che), scaled by lagged total assets (at) at the end of year t-1.	Compustat

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## References

- Ai, C., & Norton, E. C. (2003). Interaction terms in logit and probit models. *Economics Letters*, 80(1), 123-129.
- Amberger, H., & Robinson, L. (2020). The Effect of the 2017 US Tax Reform on US Acquisitions of Foreign Firms. *Working paper*.
- Arulampalam, W., Devereux, M. P., & Liberini, F. (2019). Taxes and the location of targets. *Journal of Public Economics*, 176, 161-178.
- Atwood, T. J., Downes, J., Henley, J., & Mathis, M. (2020). The Impact of US tax reform on US firm acquisitions of domestic and foreign targets. *Working paper*.
- Barrios, S., Huizinga, H., Laeven, L., & Nicodème, G. (2012). International taxation and multinational firm location decisions. *Journal of Public Economics*, 96(11-12), 946-958.
- Bird, A., Edwards, A., & Shevlin, T. (2017). Does US foreign earnings lockout advantage foreign acquirers? *Journal of Accounting and Economics*, 64(1), 150-166.
- Carrizosa, R., Gaertner, F. B., & Lynch, D. (2020). Debt and taxes? The effect of TCJA interest limitations on capital structure. *Working paper*.
- Dharmapala, D. (2018). The consequences of the Tax Cut and Jobs Act's international provisions: Lessons from existing research. *National Tax Journal*, 71(4), 707-728.
- Dyreng, S. D., & Lindsey, B. P. (2009). Using financial accounting data to examine the effect of foreign operations located in tax havens and other countries on US multinational firms' tax rates. *Journal of Accounting Research*, 47(5), 1283-1316.
- Edwards, A., Kravet, T., & Wilson, R. (2016). Trapped cash and the profitability of foreign acquisitions. *Contemporary Accounting Research*, 33(1), 44-77.
- Feld, L. P., Ruf, M., Scheuering, U., Schreiber, U., & Voget, J. (2016). Repatriation taxes and outbound M&As. *Journal of Public Economics*, 139, 13-27.
- Hanlon, M., Hoopes, J. L., & Slemrod, J. (2019). Tax reform made me do it! *Tax Policy and the Economy*, 33(1), 33-80.
- Hanlon, M., Lester, R., & Verdi, R. (2015). The effect of repatriation tax costs on US multinational investment. *Journal of Financial Economics*, 116(1), 179-196.
- Harford, J., Wang, C., & Zhang, K. (2017). Foreign cash: Taxes, internal capital markets, and agency problems. *The Review of Financial Studies*, 30(5), 1490-1538.
- Harris, J., & O'Brien, W. (2018). US worldwide taxation and domestic mergers and acquisitions. *Journal of Accounting and Economics*, 66(2-3), 419-438.
- Huizinga, H. P., & Voget, J. (2009). International taxation and the direction and volume of cross-border M&As. *The Journal of Finance*, 64(3), 1217-1249.
- Gaertner, F. B., Hoopes, J. L., & Williams, B. M. (2020). Making only America great? Non-US market reactions to US tax reform. *Management Science*, 66(2), 687-697.
- Graham, J. R., Hanlon, M., & Shevlin, T. (2010). Barriers to mobility: The lockout effect of US taxation of worldwide corporate profits. *National Tax Journal*, 63(4), 1111-1144.
- Koutney, C. Q., & Mills, L. F. (2018). The immediate impact of tax reform on corporate earnings: Investor expectations and reactions. *Working paper*.

- Lunt, M. (2014). Selecting an appropriate caliper can be essential for achieving good balance with propensity score matching. *American Journal of Epidemiology*, 179(2), 226-235.
- Lyon, A. B., & McBride, W. A. (2018). Assessing US Global Tax Competitiveness after Tax Reform. *National Tax Journal*, 71(4), 751-788.
- Puhani, P. A. (2012). The treatment effect, the cross difference, and the interaction term in nonlinear “difference-in-differences” models. *Economics Letters*, 115(1), 85-87.
- Rosenbaum, P. R., & Rubin, D. B. (1983). The central role of the propensity score in observational studies for causal effects. *Biometrika*, 70(1), 41-55.
- Shipman, J. E., Swanquist, Q. T., & Whited, R. L. (2017). Propensity score matching in accounting research. *The Accounting Review*, 92(1), 213-244.
- Slemrod, J. (2018). Tax reform and tax experts. *The Journal of the American Taxation Association*, 40(2), 83-88.
- Soled, J. A. (2008). How Do Tax and Financial Reporting Policies Affect Cross-Border Mergers and Acquisitions? *The Journal of the American Taxation Association*, 30(2), 149.

## **Chapter 5**

The Investors' Assessment of Cross-Border M&A –  
Repatriation Taxes, Agency Conflicts and the TCJA



# **The Investors' Assessment of Cross-Border M&A – Repatriation Taxes, Agency Conflicts and the TCJA**

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**ABSTRACT:** This paper analyzes stock market reactions to announcements of cross-border M&A deals before and after the 'Tax Cuts and Jobs Act of 2017' [TCJA]. Prior literature established that the repatriation tax system resulted in agency conflicts and correspondingly low announcement returns due to excess cross-border acquisitions. The TCJA abolished the repatriation tax. Therefore, M&A decisions by the managers might more closely align with the investors' perspective post TCJA. Correspondingly, announcement returns could become more positive. However, if managers continue to pursue excess cross-border acquisitions, investors might be particularly dissatisfied because of the alternative option of tax-exempt repatriation post TCJA. In line with excess M&A acquisitions post TCJA, I present evidence that abnormal returns to cross-border M&A announcements by U.S. firms are significantly lower in the period after the TCJA. The effects are concentrated in U.S. acquirers most affected by the repatriation tax prior to the TCJA, in cross-industry deals, and in acquisitions by firms with low leverage and low payout ratios. Overall, my findings suggest that the negative perception of cross-border M&A is driven by agency conflicts not solved by the TCJA.

**Keywords:** Cross-Border M&A, Stock Market Reaction, M&A Announcement Returns, Tax Cuts and Jobs Act.

**JEL Codes:** H25, G34, F23

**Acknowledgements:** I am thankful for helpful comments and suggestions by Katie Boylen, Mathias Dunker, McKay Jones, Dongsheng Li, Dan Lynch, Jessica Nysten, Michael Overesch, and Leon Reichert.

## Chapter 5

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## 5.1 Introduction

The ‘Tax Cuts and Jobs Act of 2017’ [TCJA] is considered the most significant tax overhaul in a western economy for decades. Considering cross-border mergers and acquisitions [M&As], the abolishment of the repatriation tax constitutes one of the most important changes enacted through the TCJA. Prior literature suggests that the repatriation tax before the TCJA resulted in agency conflicts related to ‘trapped cash’ abroad and correspondingly inefficient foreign acquisitions (Foley, Hartzell, Titman, and Twite, 2007; Hanlon, Lester, and Verdi, 2015). This paper analyzes how investors perceive cross-border M&As before and after the TCJA. To this end, I analyze stock market reactions to announcements of cross-border M&A deals around the TCJA enactment.

Post TCJA, repatriation instead of a foreign acquisition is more beneficial from the investors’ perspective because it no longer results in additional repatriation taxes. Furthermore, the accumulated foreign cash is burdened with a one-time transition tax and subsequently can be repatriated without additional repatriation taxes. Therefore, the former ‘trapped foreign cash’ is unshackled post TCJA. In line with Hanlon et al. (2015), this could result in less agency conflicts and thus in acquisition decisions that are more aligned with the investors’ perspective post TCJA. In this case, investor reactions to M&A deals could become more positive, on average. However, the important question is whether managers’ M&A decisions reflect the altered trade-off of the investors. In case the managers continue pursuing inefficient excess acquisitions instead of repatriating, this could harm investors even more post TCJA. The reason for this is that the alternative option to repatriate becomes relatively more attractive from the investors’ perspective in the absence of repatriation taxes. Furthermore, prior to the TCJA, managers were able to argue that the repatriation tax system rendered foreign acquisitions beneficial to avoid the repatriation tax. Correspondingly, investors might have expected that post TCJA, managers will pursue fewer M&As and choose repatriation instead. If, however,

managers continue to pursue excessive foreign acquisitions, investors' expectations would be particularly disappointed. In this case, investors could react more negatively to cross-border M&A announcements post TCJA.

In line with prior literature, I use abnormal returns based on a market model for the primary analyses (MacKinlay, 1997). I utilize a difference-in-differences design comparing abnormal returns around M&A announcements between U.S. and non-U.S. acquirers before and after the TCJA. I find that abnormal returns for U.S. acquirers are significantly lower post TCJA. Furthermore, average abnormal returns of U.S. acquirers are positive before the TCJA and turn negative afterwards. Thus, my empirical results provide evidence that post TCJA investors perceive cross-border M&A deals more negatively. This is in line with agency conflicts prevailing even in the absence of the repatriation tax.

Renneboog and Vansteenkiste (2019) state that “Mergers and acquisitions are among the most important events in a company’s lifecycle”. Additionally, the amount of M&A volume and the number of deals have reached record highs in 2021. Globally, the amount of cross-border M&As amounted to \$2.15 trillion, surpassing \$2 trillion for the first time, which equals about 2.5% of the global gross domestic product [GDP].<sup>83</sup> Given the economic significance of cross-border M&A deals and the finding that the abolishment of the repatriation tax did not solve agency conflicts presumably related to ‘trapped cash’ abroad, my results should be of interest to policymakers and academics.

Prior literature shows that taxes affect stock market returns around the announcement of cross-border M&A deals for acquisitions by U.S. firms (Manzon, Sharp, and Travlos, 1994) and by foreign firms in the U.S. (Servaes and Zenner, 1994). The TCJA significantly changes the corporate tax landscape for U.S. firms in terms of domestic and international taxation and

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<sup>83</sup> Alex Irwin-Hunt. “Cross border M&A reaches all-time high of \$2.1tn in 2021”, January 18, 2022 (<https://www.fdiintelligence.com/article/80599>).

has met broad interest in the academic literature.<sup>84</sup> Concurrent research examines the effects of different TCJA provisions on the M&A market (Amberger and Robinson, 2020; Atwood, Downes, Henley, and Mathis, 2020). These studies show that the TCJA and its different international provisions affected M&A decisions regarding domestic and cross-border acquisitions by U.S. firms. My study extends this literature by scrutinizing how investors perceive these decisions, i.e., whether the changes in M&A behavior reflect the investors altered trade-off between foreign M&As and repatriation.

Furthermore, literature has documented that prior to the TCJA, managers had incentives to reinvest foreign earnings rather than repatriate to the U.S. Literature also suggests this resulted in inefficient cross-border investments, as indicated by lower returns (Hanlon et al., 2015). Furthermore, Hanlon et al. (2015) state that the lower returns likely relate to agency conflicts, e.g., empire building. Given these insights from prior studies, the abolishment of the repatriation tax system may well constitute one of the most important changes affecting the value of cross-border acquisitions. Post TCJA, the distortion through the repatriation tax is no longer in place. To the extent that the repatriation tax resulted in agency conflicts, post TCJA, managers might pursue investments that are more aligned with the investors' perspectives.<sup>85</sup> If this holds true, I hypothesize that stock market reactions to cross-border deal announcements for U.S. acquirers are, on average, higher in the post TCJA period.

However, prior literature suggests that managers often follow their own interests and that these interests do not perfectly align with the interests of shareholders (Jensen and Meckling, 1976; Jensen, 1986). Furthermore, many of the studies regarding agency conflicts are not concerned with repatriation taxes. Therefore, it seems unclear ex ante whether the

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<sup>84</sup> Examples include Dharmapala (2018), Wagner, Zeckhauser, and Ziegler (2018), Hanlon, Hoopes, and Slemrod (2019), Carrizosa, Gaertner, and Lynch (2020), Dyreng, Gaertner, Hoopes, and Vernon (2020), Gaertner, Hoopes, and Williams (2020).

<sup>85</sup> This is also in line with prior literature simulating the effect of the abolishment of the repatriation tax in the U.S. and suggesting that this results in efficiency gains in acquisitions (Feld, Ruf, Scheuering, Schreiber, and Voget, 2016).

repatriation tax and its abolishment through the TCJA affects the empire-building behavior of managers. The repatriation tax system prior to the TCJA provided incentives for excess acquisitions in foreign targets. Considering the investor perspective, a foreign acquisition or the accumulation of foreign cash was beneficial if the associated costs were lower compared to the outside option, i.e., the cost of the repatriation tax in the case of a dividend paid out to the U.S. This holds, in particular, if investors expected opportunities to repatriate in the future without the repatriation tax, for instance, through a tax holiday (Blouin and Krull, 2009). In line with that, firms like Apple have also directly referred to the high repatriation costs and openly demanded tax holidays.<sup>86</sup> Post TCJA, repatriation is possible without repatriation tax. Therefore, investors might have expected that firms will repatriate the foreign funds following the TCJA. If, however, managers M&A behavior post TCJA does not reflect the altered trade-off for investors, investors could be particularly dissatisfied. Therefore, to the extent that managers continue to pursue excessive acquisitions instead of repatriating, investors might react more negatively to cross-border M&A announcements post TCJA.

Comparing abnormal returns around cross-border M&A announcements of U.S. acquirers and acquirers outside the U.S., I document significantly lower returns for U.S. acquirers post TCJA. This is in line with investors' discontent regarding managers M&A decisions after the abolishment of the repatriation tax. The effect is strongest for firms that were more affected by the repatriation tax system prior to the TCJA. This suggests that the negative perception of cross-border M&A announcements is related to the abolishment of the repatriation tax.

In additional analyses, I consider different cross-sections to provide further insights into whether the documented effects are linked to agency conflicts (Jensen, 1986). Following Titman, Wei, and Xie (2004), I consider debt ratios as a proxy for the ability to engage in empire

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<sup>86</sup> Tim Bradshaw, "Apple chief Tim Cook rounds on outdated US tax code", December 20, 2015 (<https://www.ft.com/content/c7fc1e3a-a786-11e5-955c-1e1d6de94879>).

building. Firms with high leverage are more constrained and have less free cash flows available. Correspondingly, I expect and find that the negative reaction is concentrated in acquisition announcements by firms with low debt ratios. Next, I examine results depending on whether the acquisition takes place within the same industry. Acquisitions motivated by empire building are unlikely to be limited to acquisitions in the same industry (Amihud and Lev, 1981; Morck, Shleifer, and Vishny, 1990). Correspondingly, I find that the negative reaction is driven by acquisitions of targets outside the acquirers' industry.

Furthermore, the potential agency conflicts relate to the trade-off decision to either acquire a foreign target or repatriate profits and payout to the investors. Therefore, I examine whether the return reaction depends on the payout profile of the firm. Investors of firms that did not pay out due to the repatriation tax system prior to the TCJA, might have expected these firms to increase payout ratios after the abolishment of the repatriation tax. If, however, the managers of these firms continue to pursue acquisitions rather than paying out, investors might be particularly dissatisfied. Consistent with this reasoning, I find that the negative reaction is concentrated in acquisition announcements by firms that have low payout ratios in the years prior to the deal. Furthermore, my results show that the negative return reaction after the TCJA does not occur for firms that have high payout ratios in the announcement year. This suggests that investors are less concerned that the M&A announcement comes at their expense when the firm pays out a high amount in the year of the deal announcement.

Due to the archival nature of my study, my analyses cannot provide causal inference. However, the finding of significantly lower abnormal returns for U.S. cross-border acquisitions post TCJA holds for various robustness tests with respect to return transformations, alternative control groups and sample selection steps. Furthermore, I examine whether the negative reaction also occurred in the year following the election of Donald Trump to rule out that the negative reaction is due to an overall change in sentiment with respect to foreign acquisitions. I do not find a negative effect for the year following the election. This lends support to the idea



that the TCJA changed the investor perception on cross-border M&As and suggests that the results are not driven by the election.

I believe that the paper makes the following contributions to the literature. First, I contribute to the literature on acquirer returns around M&A announcements. I document how return reactions change around the TCJA and offer the abolishment of the repatriation tax as a potential explanation for this pattern. Second, I add to the literature that examines the effects of the U.S. tax system, in particular the repatriation tax prior to the TCJA, on the investors' assessment of M&A decisions (Hanlon et al., 2015; Chen and Shevlin, 2018; Harris O'Brien, 2018). I document significantly lower abnormal returns around M&A announcements after the abolishment of the repatriation tax. My results suggest that the abolishment of the repatriation tax did not stop inefficient excess acquisitions but revealed agency conflicts linked to empire building. More precisely, I document that investors' discontent with respect to managers M&A decisions increased post TCJA.

## **5.2 The TCJA, Literature and Hypotheses**

### **5.2.1 TCJA Changes and Potential Effects on M&As**

The TCJA was one of the largest tax reforms in the history of the U.S. It contains multiple significant changes to domestic and international taxation. Below, I briefly discuss the tax system prior to the TCJA and the corresponding literature (see Atwood et al. (2020) for a more detailed review of the institutional background). Then, I discuss the most important changes enacted through the TCJA and point to concurrent research regarding the potential effects on M&A decisions.

Prior to the TCJA, the U.S. followed a modified worldwide tax system. The U.S. taxed income of foreign subsidiaries of multinational corporations [MNCs] incorporated in the U.S.

when repatriated.<sup>87</sup> The system implied that U.S. MNCs could avoid the repatriation tax if the firm reinvested its foreign earnings rather than paying out dividends to the U.S. parent corporations. This incentivized firms to reinvest foreign earnings permanently and resulted in excessive amounts of foreign cash holdings referred to as ‘trapped cash’ (Foley et al., 2007). Furthermore, literature has shown that this resulted in excessive foreign acquisitions (Hanlon et al., 2015).

The TCJA contained two important changes regarding the repatriation tax system. First, the TCJA includes a 100% dividends-received deduction for repatriations occurring from 2018 onwards. This means an abolishment of the repatriation tax and changing the tax system to a territorial system, with some exceptions discussed below. Second, it includes a transition tax on all unremitted foreign earnings. This potentially solves the issue of excessive foreign cash holdings given that these cash holdings are no longer ‘trapped’ and could be repatriated without additional repatriation taxes.

Furthermore, the TCJA contains multiple provisions potentially affecting M&A decisions. Among the most prominently discussed domestic provisions is the change in the corporate tax rate from 35% to 21% and the immediate expensing of certain investments. The effect of these provisions on cross-border M&A decisions is unclear ex ante. On the one hand, firms have more after tax cash flows available for investment, which could result in more cross-border M&As (Amberger and Robinson, 2020). On the other hand, these provisions may render investment into domestic targets beneficial compared to acquisitions outside the U.S. potentially reducing foreign acquisitions (Atwood et al., 2020).

Besides the change to the territorial system, three international provisions have attracted most attention in the public and the academic literature. These are the ‘base erosion and anti-abuse tax’ [BEAT], ‘foreign derived intangible income’ [FDII] and the ‘global intangible low-

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<sup>87</sup> Dividends received from foreign subsidiaries were grossed up to pre-tax values and the system allowed foreign tax credits (Atwood et al., 2020).

tax income' [GILTI] provisions. These provisions aim to curb profit shifting and to allocate intellectual property to the U.S. The FDII provision provides a reduced tax rate of 13.125% for income obtained from goods and services used outside the U.S. The BEAT provision states that the final income tax due is the maximum of either the regular tax liability or 5% on income ignoring all deductible payments to international affiliates (10% in 2019 through 2025 and 12.5% thereafter). BEAT aims to deter profit shifting by reducing the amount of intercompany deductions. However, early evidence suggests that BEAT might not be effective given that firms reclassify costs to avoid BEAT-related payments (Laplante, Lewellen, Lynch, and Samuel, 2021). Lastly, GILTI constitutes a backstop to the territorial tax system in case of low-taxed foreign income. Affectively, GILTI may result in additional tax payments for foreign income taxed below 13.125%. Early evidence suggests that GILTI affected M&A behavior and reduced investments in low-tax countries (Amberger and Robinson, 2020).

While the mentioned concurrent literature has established that the TCJA altered M&A decisions of U.S. firms, I scrutinize the assessment of investors of these M&A decisions. More precisely, I focus on agency conflicts and the investor perception of cross-border M&A announcements before and after the TCJA.

## **5.2.2 Literature on M&A Announcement Returns and Hypotheses Development**

Prior literature has examined the stock market reactions to M&A announcements. However, regarding the return reaction for the acquiring firm, there is not a clear pattern of results across different studies. Multiple studies document a finding of zero or even negative returns for acquiring firms (Jensen and Ruback, 1983; Faccio, McConnell, and Stolin, 2006; Jaffe, Jindra, Pedersen, and Voetmann, 2015; Wang and Lahr, 2017; Xu, 2017). On the other hand, some recent studies document positive returns for acquirers in the post-financial crises period (Alexandridis, Antypas, and Travlos, 2017), or for unexpected M&A deals (Tunyi, 2021). For the study at hand, it is interesting to note that taxes affect stock market returns around

the announcement of cross-border M&A deals for acquisitions by U.S. firms (Manzon et al., 1994) and by foreign firms in the U.S. (Servaes and Zenner, 1994).

The most related literature to the study at hand focusses on the U.S. setting before the TCJA. Foley et al. (2007) develop a measure depicting to what extent a U.S. corporation would be subject to the repatriation tax if it repatriates foreign cash. Based on this measure, they show that the repatriation tax resulted in high amounts of foreign cash holdings ('trapped cash'). Based on the measure of Foley et al. (2007), Hanlon et al. (2015) examine the economic consequences of the foreign cash related to the repatriation tax. More precisely, Hanlon et al. (2015) examine whether the amount of foreign cash holdings is associated with more foreign acquisitions and whether these acquisitions are value-enhancing or value-destroying. They find evidence that higher foreign cash balances are associated with more acquisitions. Furthermore, these acquisitions are value-decreasing, as indicated by negative investor reactions. Hanlon et al. (2015) suggest that the negative perception of cross-border acquisitions relates to agency conflicts, i.e., empire building, which is facilitated by the large amounts of foreign cash induced by the repatriation tax. Furthermore, in a similar setting, Edwards, Kravet, and Wilson (2016) show that a temporary reduced tax rate on repatriation enacted through 'The American Jobs Creation Act of 2004' [AJCA] reduced these inefficiencies.

The TCJA abolished the repatriation tax and imposed a one-time transition tax on the presumably 'trapped cash' which can be seen as a sunk cost (Atwood et al., 2020). Therefore, the TCJA eliminated the incentives to accumulate foreign cash instead of repatriation and the former 'trapped cash' has been unshackled. From the investor perspective, the TCJA altered the trade-off between a foreign acquisition and repatriation. Repatriation has become more attractive due to the abolishment of the repatriation tax. To the extent that the abolishment of the repatriation tax resolved agency conflicts, M&A decisions by the manager could more

closely align with the interest of the investor post TCJA.<sup>88</sup> This means that managers might no longer pursue excess acquisitions post TCJA and choose repatriation instead. In line with agency conflicts being resolved by the TCJA, I state as my first hypothesis below that stock market reactions became more positive after the TCJA.

*H1: The change to the territorial tax system reduced agency conflicts between the manager and the shareholder. Investor reactions to cross-border M&A announcements become more positive post TCJA.*

However, plenty of literature suggests that managers often follow their own interests and that oftentimes these interests do not perfectly align with the interests of the shareholders (Jensen and Meckling, 1976; Jensen, 1986). The discussion so far might suggest that the repatriation tax system is a necessary condition for empire building by U.S. managers. However, many of the studies discussing empire building and inefficient M&As are *not* concerned with repatriation taxes (Stulz, 1990; Hope and Thomas, 2008). For instance, literature has established various characteristics of chief executive officers' [CEOs'] and firms that affect empire-building behavior (Chen, Lu, and Sougiannis, 2012; Kozhikode and Krishnan, 2016).<sup>89</sup> In addition, corporate governance and the market of corporate control have been shown to affect empire building (Masulis, Wang, and Xie, 2007). In sum, many different factors can affect the empire building behavior of managers. It appears unclear *ex ante* whether the repatriation tax and its abolishment through the TCJA indeed affects empire building.

As discussed before, the repatriation tax system prior to the TCJA provided incentives for excess acquisitions of foreign targets. Considering the investor perspective, a foreign acquisition or the accumulation of foreign cash was acceptable or beneficial if the associated

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<sup>88</sup> The expectation of improved efficiency through the abolishment of the repatriation tax system is also in line with Amberger, Markle, and Samuel (2021). The authors show that repatriation taxes result in agency conflicts between parent and subsidiaries.

<sup>89</sup> Furthermore, Gul, Krishnamurti, Shams, and Chowdhury (2020) show that corporate social responsibility [CSR] is negatively associated with empire-building behavior and that this link is mediated by the level of overconfidence of the CEO.

costs were lower compared to the outside option, i.e., the cost of the repatriation tax in case of a dividend paid out to the U.S. Post TCJA, the value of the outside option, i.e., repatriation, increases due to the abolishment of the repatriation tax. The important question is whether managers indeed altered their M&A decisions reflecting the change in the investors' trade-off. In case the managers continue to pursue empire-building interests, this could harm investors even more because of the more beneficial treatment of the outside option, i.e., repatriation, following the TCJA. Furthermore, the prior system constituted a setting that could be seen as encouraging or enabling empire building. Therefore, one might expect managers with strong empire-building tendencies to self-select into U.S. MNC's in the period prior to the TCJA. This renders it likely that at least some managers will continue to pursue inefficient acquisitions post TCJA. Given that repatriation as the outside option became more beneficial, investors might react more negatively to M&A announcements post TCJA.

*H2: Agency conflicts with respect to cross-border acquisitions prevail post TCJA. Due to the higher value of repatriation as the outside option, investors react more negatively to cross-border M&A announcements.*

Furthermore, if negative stock market reactions post TCJA are indeed driven by disagreement between managers and investors, I expect the reactions to be particularly pronounced for M&A deals that are more likely related to empire building. To this end, I conduct cross-sectional tests examining whether acquisitions likely related to empire building drive the negative reaction and formulate hypothesis 3 as follows.

*H3: The negative stock market reaction to cross-border M&A announcements post TCJA is more pronounced for M&A deals that are more likely related to empire building.*

In addition, investor reactions to the announcements of cross-border M&A deals after the TCJA could relate to the payout behavior of the firm. Recall that a negative reaction likely signals that investors disagree with the acquisition decision and would have preferred

repatriation and payout instead. I expect a particularly negative reaction for firms that did not payout to investors in the past or current period. Investors of firms that did not repatriate prior to the TCJA might have expected that these firms were waiting for a future tax holiday to repatriate at lower or no costs (Blouin and Krull, 2009). For instance, companies like Apple openly blamed the high tax burden upon repatriation and demanded tax holidays. Post TCJA, these firms could repatriate without additional tax costs. However, evidence suggests that only a very small number of firms increased payouts to investors after the TCJA (Hanlon et al., 2019). If managers of firms that refrained from payout prior to the TCJA still decide to engage in foreign acquisitions rather than repatriating post TCJA, investors might be particularly dissatisfied. Correspondingly, I formulate hypothesis 4 as follows.

*H4: The negative stock market reaction to cross-border M&A announcements post TCJA is more pronounced for acquirers that have low payout ratios*

### **5.3 Sample, Empirical Strategy and Explorative Results**

#### **5.3.1 Sample**

To test the hypotheses, I rely on multiple data sources. The starting point of the sample includes all cross-border acquisitions contained in the SDC Platinum database between 2010 and 2019. I chose this period to avoid distortive effects due to the financial crisis and the ongoing virus pandemic. Additionally, I obtain data on stock returns and control variables from Compustat North America and Compustat Global. I eliminate internal restructurings ('buy backs') and deals with missing deal value. I also eliminate deals with missing data on stock returns and control variables. For the main part of my analyses, I limit the sample to acquirers from G7 countries.<sup>90</sup> I chose the G7 countries to obtain a comparable control group for the U.S. firms. However, as part of my robustness checks, I provide evidence that results also hold for

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<sup>90</sup> The G7 countries consist of Canada, France, Germany, Italy, Japan, the United Kingdom and the U.S.

including all OECD countries or every country covered in the SDC Platinum database. My final sample consists of 5,582 cross-border M&A deals containing 2,218 acquisitions by U.S. firms.

### 5.3.2 Empirical Approach

The following analyses use abnormal returns. I follow the common event study methodology to compute abnormal and cumulative abnormal returns as discussed, for example, by MacKinlay (1997). I calculate abnormal returns according to equation (1) below.

$$AR_{it} = R_{it} - E [R_{it} | X] \quad (1)$$

$AR_{it}$  is the abnormal return,  $R_{it}$  is the observed return and  $E [R_{it} | X]$  is the expected return in the absence of the event, each for firm  $i$  in period  $t$ . For some specifications, I also compute abnormal returns for different event windows by summing up daily returns. Different ways of computing the expected returns are employed in the literature. I follow the most common approach to compute the expected return by using a market model described in equation (2).

$$R_{it} = \alpha_i + \beta_i \cdot MR_t + \epsilon_{it} \quad (2)$$

$MR_t$  is the market return. Given that my sample consists of deals from different countries and continents, I chose the MSCI World Index as the market portfolio. I estimate the parameters  $\alpha_i, \beta_i$  for each firm with the data from the 250 trading days ending 20 days before the respective announcement date (-270;-20). I obtain the abnormal return as the difference of the observed return and the fitted values from equation (2).

In a second step, I utilize a difference-in-differences design to obtain insights regarding my hypotheses. To test whether investors react differently to cross-border deal announcements by U.S. firms after the TCJA, I estimate the following OLS regression.

$$AR_i = \beta_0 + \beta_1 Post + \beta_2 US + \beta_3 US \times Post + controls + \epsilon_i \quad (3)$$



*Post* is a dummy variable equal to one if the announcement of the deal occurs after the effectiveness of the TCJA (i.e., years 2018 and 2019) and zero otherwise. *US* is a dummy variable indicating deals with an acquirer from the U.S. *US x Post* constitutes the corresponding interaction term. I include control variables for deal- and acquirer characteristics and the logarithm of the deal value to approximate the size of the target. I include the leverage ratio and the logarithm of assets as acquirer characteristics. Furthermore, I include the relative deal value scaled by total assets of the acquirer to capture the relative magnitude of the deal from the acquirers' perspective. I also include the geographical distance between the acquirer and the target. In addition, I include the logarithm of GDP and GDP per capita as macroeconomic control variables on the target country level. Lastly, I include target nation fixed effects.<sup>91</sup>

### 5.3.3 Explorative Results

Table 1 provides descriptive statistics for control variables and returns separately for U.S. firms and non-U.S. firms. U.S. and non-U.S. firms exhibit similar descriptive statistics. However, U.S. firms are on average slightly larger and pursue larger deals. For both U.S. and non-U.S. firms abnormal returns around the announcement of a deal are positive, on average.

Figure 1 plots the mean and median abnormal returns around announcement dates for the whole sample period. Panel A suggests that there are positive reactions in the mean and median abnormal returns on the day of the announcement and the day afterwards. Mean abnormal returns reach up to 0.51% on the day of the announcement. Panel B plots abnormal returns separately for U.S. acquirers and acquirers from other countries. The abnormal return pattern is similar for U.S. and non-U.S. acquirers, which suggests that they follow a parallel trend. Mean abnormal returns for U.S. firms appear somewhat smaller but still reach up to

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<sup>91</sup> Given that I include target nation fixed effects, the control for GDP and GDP per capita captures the change, i.e., the growth rate of these variables.

0.43%. Median abnormal returns exhibit a similar pattern. The U.S. firms exhibit a larger median abnormal return (0.1%) compared to non-U.S. firms (0.01%).

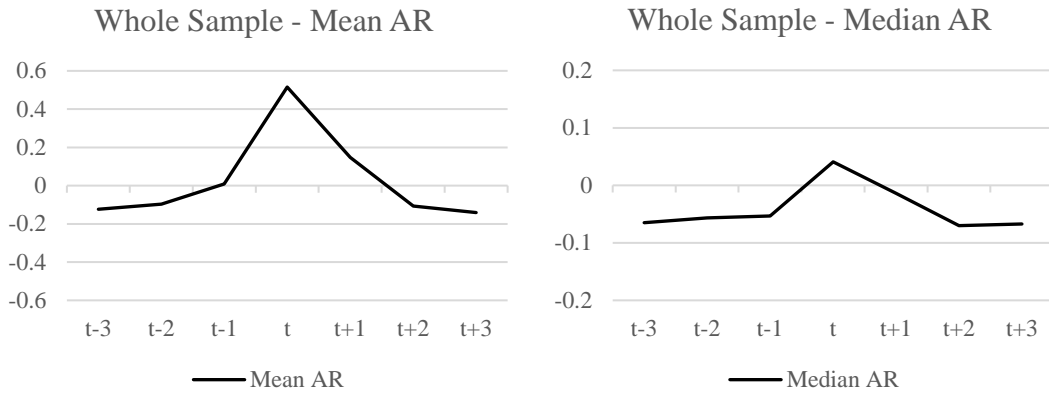
**Table 1: Descriptive Statistics**

	Mean	Std.	Q25	Q50	Q75	N
<b>Panel A: U.S. Acquirers - Control Variables</b>						
Leverage	0.210	0.180	0.037	0.188	0.328	2,218
Log GDP Target	27.875	1.083	27.363	28.131	28.621	2,218
Log GDP per Capita Target	10.357	0.904	10.425	10.658	10.817	2,218
Relative Deal Value	0.260	1.134	0.003	0.023	0.107	2,218
Distance	8.479	1.020	8.625	8.677	9.108	2,218
Size	7.773	2.668	6.231	7.948	9.612	2,218
Log Absolute Deal Value	3.486	2.714	2.054	3.835	5.320	2,218
<b>Panel B: Non-U.S. Acquirers - Control Variables</b>						
Leverage	0.142	0.150	0.004	0.106	0.231	3,364
Log GDP Target	27.396	1.403	26.537	27.766	28.375	3,364
Log GDP per Capita Target	9.897	1.175	9.059	10.491	10.778	3,364
Relative Deal Value	0.207	1.003	0.000	0.007	0.054	3,364
Distance	8.156	1.206	7.220	8.651	9.127	3,364
Size	6.999	2.982	5.084	7.059	8.983	3,364
Log Absolute Deal Value	1.394	3.665	-0.629	1.903	3.943	3,364
<b>Panel C: U.S. Firms - Abnormal Returns (%)</b>						
Abnormal Return	0.433	4.333	-0.981	0.098	1.324	2,218
Cumulative Abnormal Return (0,1)	0.544	5.498	-1.366	0.211	2.067	2,218
Cumulative Abnormal Return (0,2)	0.485	5.960	-1.784	0.267	2.384	2,218
<b>Panel D: No U.S. Firms - Abnormal Returns (%)</b>						
Abnormal Return	0.570	4.725	-1.003	0.016	1.507	3,364
Cumulative Abnormal Return (0,1)	0.740	6.112	-1.486	0.215	2.563	3,363
Cumulative Abnormal Return (0,2)	0.602	6.940	-1.964	0.153	2.881	3,363

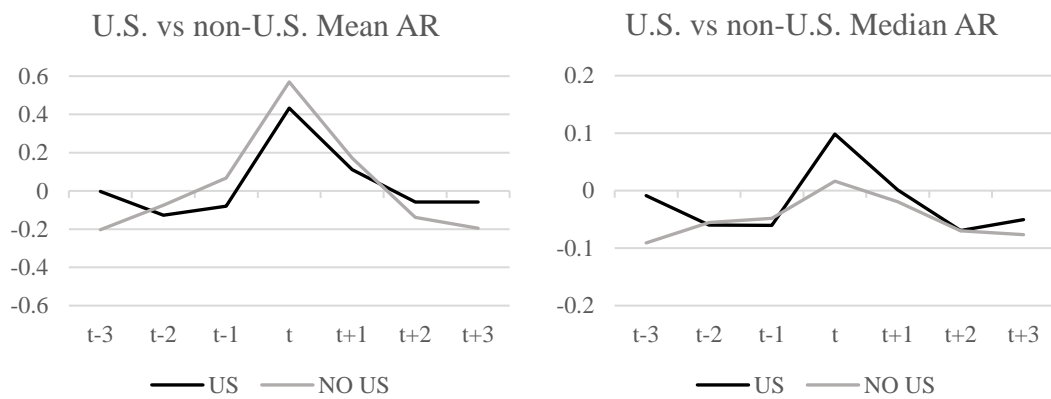
Notes: *Leverage* is defined as total long-term debt scaled by assets (Compustat *#dltt* divided by Compustat *#at*), *Log GDP Tar* and *Log GDP per Capita Target* are defined as the natural logarithm of GDP and GDP per capita of the target country obtained from the Worldbank database. *Relative Deal Value* measures the deal value obtained from the SDC Platinum Database divided by total assets (Compustat *#at*). *Log Absolute Deal Value* is the natural logarithm of the deal value in million U.S. dollar. *Distance* is the natural logarithm of the distance between the most populated cities of the acquirer and target nation. *Size* is the natural logarithm of acquirer assets (Compustat *#at*). Panel A and Panel B show descriptive statistics for these control variables separately for U.S. and non-U.S. acquirers (acquirers from other G7 countries). Panel C and D provide descriptive statistics of abnormal returns around the announcement of cross-border acquisition calculated as described in Section 5.3.

**Figure 1: Returns around Announcement Dates of Cross-Border M&A**

*Panel A: Whole Sample*

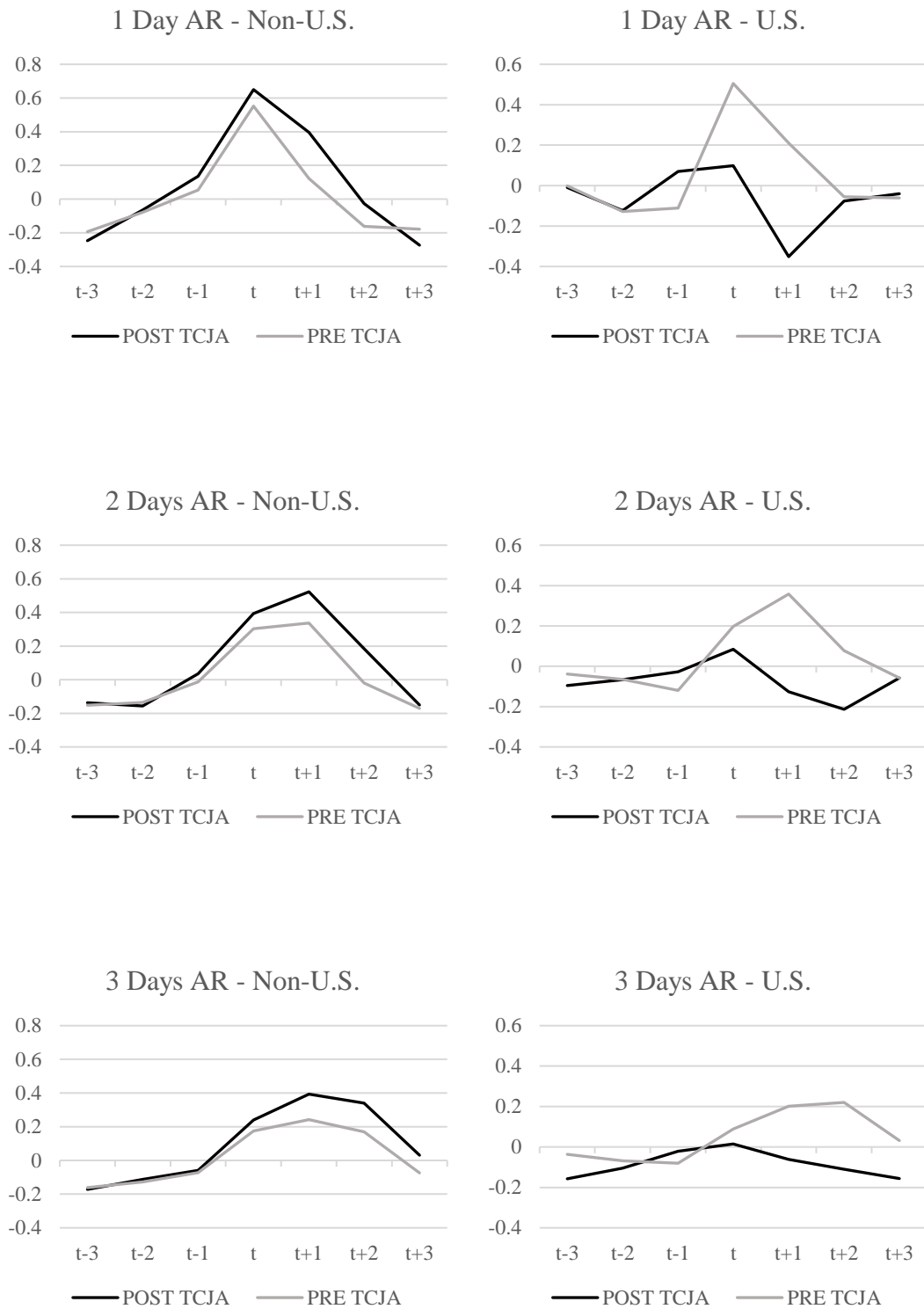


*Panel B: Abnormal Returns of U.S. versus non-U.S. Firms*



Notes: Panel A plots mean and median abnormal returns around the announcement of a cross-border M&A acquisition at day  $t$  for the whole sample. Panel B plots mean and median returns for acquirers from the U.S. (black line) and outside the U.S. (grey line) separately. Abnormal returns are calculated as described in Section 5.3.

**Figure 2: Abnormal Returns before and after the TCJA**



Notes: Figure 2 plots abnormal returns and averaged abnormal returns (averaged across 2 and 3 days) for non-U.S. acquirers (on the left) and U.S. acquirers (on the right), separately for the period before- (grey line) and after the TCJA (black line). Abnormal returns are calculated as described in Section 5.3.

Figure 2 plots abnormal returns for U.S. and non-U.S. acquirers during the pre- and post TCJA period. I calculate mean abnormal returns on a daily basis and averaged across two and three days. For non-U.S. acquirers, the abnormal return pattern before and after the TCJA behaves quite similarly. Post TCJA returns of non-U.S. acquirers are slightly higher. For U.S. acquirers, however, there is a large discrepancy for the mean abnormal return between the pre- and post TCJA period. Consider, for instance, the two-day average abnormal return. While U.S. acquirers reach positive abnormal returns on day  $t+1$  of 0.36% before the TCJA, they exhibit a negative mean abnormal return of -0.13% in the period after the TCJA. This provides descriptive evidence in line with hypothesis 2. Investors react more negatively to cross-border M&A announcements of U.S. acquirers after the TCJA.

## **5.4 Empirical Results**

### **5.4.1 Investor Reactions to CB Acquisition Announcements before and after the TCJA**

In line with the descriptive results in Section 5.3, I conduct the following analyses using the three different event windows (0;0), (0;1), and (0;2) around the announcement of the deal. Table 2 contains regression results for equation (3). Columns (1) to (3) consider a sample of U.S. acquirers only and columns (4) to (6) include deals of acquirers from all G7 countries. Abnormal returns as the dependent variable are in percentage points. For both samples, abnormal returns of U.S. acquirers are significantly lower after the effectiveness of the TCJA. The coefficients are also economically significant. Considering the sample of U.S. firms only, Column (3) suggests a one percentage point lower cumulative abnormal return for the two-day window around cross-border deal announcements of U.S. acquirers after the TCJA. The effect is even larger when including deals of acquirers from other countries. The interaction coefficient of Column (6) suggests that cumulative abnormal returns for cross-border M&A announcements of U.S. acquirers are 1.34 percentage points lower after the TCJA.

**Table 2: Abnormal Returns around M&A Announcements**

VARIABLES	U.S. Sample			Global Sample		
	(1) [0;0]	(2) [0;1]	(3) [0;2]	(4) [0;0]	(5) [0;1]	(6) [0;2]
POST	-0.49 (-1.72)*	-0.98 (-2.65)***	-1.00 (-2.86)***	-0.19 (-0.84)	0.04 (0.15)	0.14 (0.42)
US				0.10 (0.67)	0.09 (0.47)	0.21 (1.00)
US#POST				-0.43 (-1.40)	-1.18 (-2.97)***	-1.34 (-3.26)***
Leverage	-0.15 (-0.30)	-0.54 (-0.80)	-0.19 (-0.26)	0.51 (1.20)	0.36 (0.62)	0.57 (0.93)
Log GDP Target	5.92 (1.54)	2.76 (0.58)	0.07 (0.02)	7.10 (2.90)***	7.11 (2.25)**	6.74 (1.86)*
Log GDP per Capita Target	-6.09 (-1.45)	-2.02 (-0.40)	1.75 (0.35)	-6.82 (-2.80)***	-6.69 (-2.09)**	-5.96 (-1.62)
Relative Deal Value	0.32 (1.06)	0.51 (1.66)*	0.24 (0.68)	0.22 (1.19)	0.16 (0.91)	0.01 (0.07)
Distance	-5.35 (-0.57)	3.56 (0.34)	16.16 (1.58)	-0.08 (-1.23)	-0.13 (-1.42)	-0.21 (-1.98)**
Size	-0.15 (-2.68)***	-0.12 (-1.73)*	-0.18 (-2.33)**	-0.22 (-5.33)***	-0.29 (-6.30)***	-0.32 (-5.86)***
Log Absolute Deal Value	-0.08 (-1.19)	-0.02 (-0.31)	0.02 (0.29)	0.06 (1.56)	0.10 (2.13)**	0.14 (2.45)**
Target Nation Fixed Effects	✓	✓	✓	✓	✓	✓
Observations	2,218	2,218	2,218	5,582	5,581	5,581
R-squared	0.07	0.07	0.05	0.05	0.06	0.05

Notes: This table contains regression results with (cumulative) abnormal returns for different event windows calculated as described in Section 3. Columns (1) to (3) contain acquisitions by U.S. firms only, columns (4) to (6) contain acquisitions of U.S. acquirers and acquirers from other G7 countries. *POST* is an indicator set equal to one for years after the TCJA, i.e., after 2017, and equals zero otherwise. *US* is set equal to one if the acquirer is from the U.S. and zero otherwise. *US#POST* is the interaction of *US* and *POST*. *Leverage* is defined as total long-term debt scaled by assets (Compustat *#dltt* divided by Compustat *#at*), *Log GDP Tar* and *Log GDP per Capita Target* are defined as the natural logarithm of GDP and GDP per capita of the target country obtained from the Worldbank database. *Relative Deal Value* measures the deal value obtained from the SDC Platinum Database divided by total assets (Compustat *#at*). *Log Absolute Deal Value* is the natural logarithm of the deal value in million U.S. dollar. *Distance* is the natural logarithm of the distance between the most populated cities of the acquirer and target nation. *Size* is the natural logarithm of acquirer assets (Compustat *#at*). All specifications include target nation fixed effects. t-statistics based on standard errors clustered on the industry-year level are displayed in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

The results are in line with hypothesis 2. Investors react more negatively to cross-border M&A announcements post TCJA. Furthermore, this contradicts hypothesis 1. Results suggest that the TCJA and the abolishment of the repatriation tax *did not* result in M&A decisions that

are more aligned with the investors' preferences. The remainder of the paper considers cross-sectional analyses to shed more light on the reasons behind this negative reaction.

#### 5.4.2 Cross-Sectional Analyses

##### Repatriation Tax

Table 3 contains results based on a regression of equation (3) for two different sets of U.S. firms. I utilize the approximation of the repatriation tax from prior literature (Hanlon et al., 2015). I define *Repat* as  $0.35 \times \text{foreign pretax income} - \text{foreign taxes}$ . I scale *Repat* by lagged assets and compute the three-year average prior to the deal year. Given data restrictions, *Repat* is only available for U.S. firms. Then, I split the sample of U.S. firms into high and low repatriation taxes using the median of *Repat*. For all columns of Table 3, I include non-U.S. deals in the sample. In columns (1) to (3), I include deals of U.S. acquirers with presumably low repatriation taxes. In columns (4) to (6) I include deals of U.S. acquirers with presumably high repatriation taxes. The negative coefficient of the interaction *USxPost* in columns (4) to (6) suggest that the negative reaction of investors is particularly pronounced for firms most affected by the repatriation tax system prior to the TCJA. Furthermore, the negative coefficient for U.S. firms with low repatriation taxes is either insignificant or only borderline significant.

This suggests that the negative reaction post TCJA is related to the abolishment of the repatriation tax. In line with hypothesis 2, this implies that investors of firms most affected by the repatriation tax prior to the TCJA are particularly dissatisfied with the managers' decision to pursue cross-border M&As after the abolishment of the repatriation tax.

**Table 3: Repatriation Tax**

VARIABLES	Low Repatriation Taxes			High Repatriation Taxes		
	(1) [0;0]	(2) [0;1]	(3) [0;2]	(4) [0;0]	(5) [0;1]	(6) [0;2]
POST	-0.06 (-0.35)	-0.28 (-1.21)	-0.20 (-0.78)	0.09 (0.52)	0.10 (0.45)	0.21 (0.87)
US	-0.25 (-1.07)	0.00 (0.01)	0.09 (0.25)	-0.22 (-0.96)	0.02 (0.05)	0.12 (0.35)
US#POST	-0.49 (-1.35)	-0.90 (-1.78)*	-0.84 (-1.39)	-0.88 (-2.38)**	-1.36 (-2.70)***	-1.40 (-2.67)***
Leverage	1.20 (2.23)**	1.23 (1.69)*	1.49 (1.90)*	0.79 (1.35)	0.86 (1.08)	1.10 (1.32)
Log GDP Target	7.51 (2.83)***	7.82 (2.21)**	8.49 (2.12)**	7.26 (2.83)***	7.63 (2.19)**	7.98 (2.01)**
Log GDP per Capita Target	-6.81 (-2.53)**	-7.48 (-2.03)**	-7.96 (-1.92)*	-6.67 (-2.55)**	-7.23 (-1.99)**	-7.54 (-1.83)*
Relative Deal Value	0.17 (0.86)	-0.07 (-0.36)	-0.12 (-0.60)	0.13 (0.70)	-0.10 (-0.53)	-0.15 (-0.75)
Distance	-0.12 (-1.74)*	-0.18 (-1.83)*	-0.26 (-2.23)**	-0.11 (-1.67)*	-0.13 (-1.28)	-0.20 (-1.83)*
Size	-0.22 (-4.77)***	-0.32 (-6.07)***	-0.34 (-5.48)***	-0.24 (-5.33)***	-0.37 (-6.64)***	-0.38 (-5.96)***
Log Absolute Deal Value	0.08 (1.92)*	0.13 (2.12)**	0.15 (2.15)**	0.12 (2.79)***	0.18 (3.10)***	0.21 (3.14)***
Target Nation Fixed Effects	✓	✓	✓	✓	✓	✓
Observations	4,190	4,189	4,189	4,201	4,200	4,200
R-squared	0.05	0.06	0.06	0.06	0.07	0.06

Notes: This table contains regression results with (cumulative) abnormal returns for different event windows computed as described in Section 3. All columns contain deals from non-U.S. acquirers. In addition, the sample in columns (1) to (3) (columns (4) to (6)) contains acquisitions of U.S. acquirers with below (above) median *REPAT*. *REPAT* is defined as the three-year average of foreign pretax income (Compustat *#pifo*) multiplied with 0.35 net of foreign taxes (Compustat *#txfo*) and scaled by assets (Compustat *#at*). *POST* is an indicator set equal to one for years after the TCJA, i.e., after 2017, and equals zero otherwise. *US* is set equal to one if the acquirer is from the U.S. and zero otherwise. *US#POST* is the interaction of *US* and *POST*. *Leverage* is defined as total long-term debt scaled by assets (Compustat *#dltt* divided by Compustat *#at*), *Log GDP Tar* and *Log GDP per Capita Target* are defined as the natural logarithm of GDP and GDP per capita of the target country obtained from the Worldbank database. *Relative Deal Value* measures the deal value obtained from the SDC Platinum Database divided by total assets (Compustat *#at*). *Log Absolute Deal Value* is the natural logarithm of the deal value in million U.S. dollar. *Distance* is the natural logarithm of the distance between the most populated cities of the acquirer and target nation. *Size* is the natural logarithm of acquirer assets (Compustat *#at*). All specifications include target nation fixed effects. t-statistics based on standard errors clustered on the industry-year level are displayed in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1



## **Deal Characteristics**

So far, the analyses suggest that investors react negatively to cross-border acquisitions of U.S. firms post TCJA. This suggests agency conflicts between investors and managers. Put differently, these deals are not maximizing shareholder value but potentially arise because of the empire-building self-interest of the managers. If this holds true, I expect the return reaction to depend on whether the M&A deal likely signals empire building. I consider two different characteristics that relate to empire building. First, I examine whether the M&A deal occurs within one industry. If the acquisition results from the self-interest of the manager, the acquisition decision is unlikely to be limited to the same industry (Amihud and Lev, 1981; Morck et al., 1990). Therefore, I expect that empire building occurs in cross-industry deals, i.e., acquisitions of targets outside the acquirers core industry. Second, I consider the ability of the acquirer to pursue empire building. I utilize debt ratios as an approximation for the investment discretion. Higher debt ratios reduce the flexibility to engage in empire-building behavior (Titman et al., 2004).

Table 4 presents results for deals in the same industry (Panel A, columns (1) to (3)) and across industries (Panel A, columns (4) to (6)). The negative reaction to M&A announcements by U.S. acquirers post TCJA is significant in the set of cross-industry deals, consistent with empire building. Furthermore, there is no significant negative reaction for deals within the same industry. Columns (1) to (3) of Panel B contain results for firms with a below median leverage ratio, computed by country. Consistent with these firms having more flexibility to continue empire building post TCJA, the negative reaction is much stronger compared to firms with high leverage ratios (Columns (4) to (6)).

Overall, these results are consistent with hypothesis 3. This suggests that agency conflicts prevail post TCJA and managers continue empire building even in the absence of the repatriation tax.

**Table 4: Agency Conflicts – Empire Building**

VARIABLES	(1) [0;0]	(2) [0;1]	(3) [0;2]	(4) [0;0]	(5) [0;1]	(6) [0;2]
<b>Panel A: Industry</b>	<b>Same Industry</b>			<b>Different Industry</b>		
POST	-0.19 (-0.56)	0.03 (0.06)	0.14 (0.30)	-0.15 (-0.53)	0.12 (0.29)	0.22 (0.48)
US	-0.02 (-0.10)	-0.26 (-0.89)	-0.15 (-0.48)	0.17 (0.82)	0.38 (1.50)	0.50 (1.84)*
US#POST	0.08 (0.10)	-0.76 (-0.93)	-0.90 (-1.22)	-0.67 (-1.76)*	-1.51 (-2.90)***	-1.72 (-2.88)***
<b>Panel B: Leverage</b>	<b>Low Leverage</b>			<b>High Leverage</b>		
POST	-0.290 (-0.71)	0.119 (0.27)	0.130 (0.30)	-0.085 (-0.30)	0.018 (0.04)	0.117 (0.22)
US	0.375 (1.47)	0.224 (0.72)	0.292 (0.90)	-0.106 (-0.51)	-0.095 (-0.37)	0.129 (0.44)
US#POST	-0.766 (-1.19)	-1.731 (-2.10)**	-2.035 (-2.50)**	-0.209 (-0.60)	-0.826 (-1.70)*	-0.828 (-1.42)
Controls?	✓	✓	✓	✓	✓	✓
Target Nation Fixed Effects	✓	✓	✓	✓	✓	✓
Panel A: Observations	2,633	2,632	2,632	2,949	2,949	2,949
Panel A: R-squared	0.08	0.08	0.08	0.09	0.09	0.08
Panel B: Observations	2,797	2,796	2,796	2,785	2,785	2,785
Panel B: R-squared	0.080	0.085	0.078	0.086	0.085	0.096

Notes: This table contains regression results with (cumulative) abnormal returns for different event windows computed as described in Section 3. Panel A contains deals within the same industry in columns (1) to (3) and between industries in columns (4) to (6) defined based on the ‘Mid’ industry classification (SDC Platinum Database *#AcquirorMidIndustry* and *#TargetMidIndustry*). Panel B contains deals of acquirers with a below median *Leverage* in columns (1) to (3) and above median *Leverage* in columns (4) to (6). The median of *Leverage* is computed by acquirer nation. *POST* is an indicator set equal to one for years after the TCJA, i.e., after 2017, and equals zero otherwise. *US* is set equal to one if the acquirer is from the U.S. and zero otherwise. *US#POST* is the interaction of *US* and *POST*. All specifications include target nation fixed effects and control variables as defined in Table 3. t-statistics based on standard errors clustered on the industry-year level are displayed in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## Payout Profile

Given that the investor reaction likely relates to the trade-off between repatriation and pursuing cross-border M&As, abnormal returns could also depend on the payout profile of the firms. I consider two different approaches regarding the payout profile of the firms. The first approach relates to the payout in the past. Firms with low payout ratios might have utilized the repatriation tax system prior to the TCJA as a justification for not paying out (to avoid the repatriation tax). After the TCJA, the repatriation tax is no longer in place. Therefore, investors

of firms with low payout ratios prior to the TCJA might have expected that these firms will increase payout after the abolishment of the repatriation tax. If these firms, however, continue to pursue cross-border M&As rather than paying out post TCJA, the investors might be particularly dissatisfied. Second, I also examine the payout profile in the year of the deal announcement. In a similar vein, investors might be particularly dissatisfied if the cross-border deal comes at the expense of payout in the current period. Evidence suggests that some firms, for instance Apple, announced significant repatriation and stock buybacks in response to the TCJA potentially reducing the amount of cash abroad and inefficient acquisitions.<sup>92</sup> Interestingly, the payout to investors via share repurchases and dividends was concentrated in a small number of firms (Hanlon et al., 2019). This suggests heterogeneity with respect to how firms change the payout profile in response to the TCJA.

I construct two different measures to capture the payout ratio, either based on the year of the deal or averaged across the three preceding years. The first consists of total dividends paid out (Compustat *#dvt*) relative to net income (Compustat *#ib*). This measure is available for U.S. acquirers and non-U.S. acquirers. In Panels A and C of Table 5, I compute the median dividend payout ratio by country and sort firms into high and low payout samples. For both payout in the past years (Panel A) and payout in the current year (Panel C), the negative reaction to cross-border M&A announcements by U.S. acquirers is much stronger in the set of firms with low payout ratios. The abnormal return reaction is only borderline significant or insignificant and much smaller for firms that have a high payout profile. This is once again in line with the altered trade-off decision (to pursue M&As or repatriate and payout to investors) driving the negative reaction to cross-border announcements of U.S. acquirers after the TCJA.

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<sup>92</sup> Daisuke Wakabayashi and Brian X. Chen, “Apple, Capitalizing on New Tax Law, Plans to Bring Billions in Cash Back to U.S.”, January 17, 2018 (<https://www.nytimes.com/2018/01/17/technology/apple-tax-bill-repatriate-cash.html>).

**Table 5: Agency Conflicts – Payout Profile**

VARIABLES	(1) [0;0]	(2) [0;1]	(3) [0;2]	(4) [0;0]	(5) [0;1]	(6) [0;2]
<b>Panel A: Dividends</b>						
	<b>Low Payout in the Past</b>			<b>High Payout in the Past</b>		
POST	-0.409 (-0.95)	-0.118 (-0.23)	-0.041 (-0.07)	0.116 (0.47)	0.270 (0.84)	0.416 (1.00)
US	0.109 (0.42)	0.024 (0.07)	0.252 (0.71)	0.067 (0.39)	0.128 (0.58)	0.196 (0.80)
US#POST	-0.926 (-1.43)	-2.060 (-2.37)**	-2.440 (-2.85)***	-0.102 (-0.31)	-0.612 (-1.67)*	-0.564 (-1.18)
<b>Panel B: Stock buy backs</b>						
	<b>Low Payout in the Past</b>			<b>High Payout in the Past</b>		
POST	-0.252 (-1.09)	-0.066 (-0.22)	0.040 (0.12)	-0.195 (-0.85)	0.084 (0.28)	0.177 (0.52)
US	0.141 (0.76)	0.064 (0.25)	0.170 (0.61)	-0.078 (-0.46)	-0.012 (-0.05)	0.147 (0.62)
US#POST	-0.805 (-1.52)	-1.729 (-2.66)***	-2.029 (-3.21)***	-0.120 (-0.41)	-0.718 (-1.65)*	-0.818 (-1.69)*
<b>Panel C: Dividends</b>						
	<b>Low Payout in the Year of the Deal</b>			<b>High Payout in the Year of the Deal</b>		
POST	-0.093 (-0.19)	0.372 (0.67)	0.608 (1.03)	0.007 (0.02)	0.143 (0.38)	0.150 (0.32)
US	0.214 (0.76)	0.071 (0.21)	0.207 (0.57)	-0.036 (-0.24)	0.053 (0.26)	0.133 (0.56)
US#POST	-0.557 (-0.83)	-1.933 (-2.34)**	-2.548 (-3.13)***	-0.324 (-0.89)	-0.672 (-1.52)	-0.489 (-0.88)
<b>Panel D: Stock buy backs</b>						
	<b>Low Payout in the Year of the Deal</b>			<b>High Payout in the Year of the Deal</b>		
POST	-0.223 (-0.98)	0.015 (0.05)	0.135 (0.39)	-0.188 (-0.82)	0.044 (0.14)	0.144 (0.42)
US	-0.131 (-0.83)	0.074 (0.35)	0.255 (1.05)	-0.199 (-1.22)	-0.357 (-1.68)*	-0.223 (-0.96)
US#POST	-0.341 (-1.06)	-1.328 (-2.68)***	-1.694 (-3.28)***	-0.156 (-0.44)	-0.458 (-0.99)	-0.425 (-0.80)
Controls	✓	✓	✓	✓	✓	✓
Target Nation Fixed Effects	✓	✓	✓	✓	✓	✓
Panel A: Observations	2,845	2,844	2,844	2,732	2,732	2,732
Panel A: R-squared	0.068	0.077	0.069	0.066	0.066	0.081
Panel B: Observations	4,424	4,423	4,423	4,444	4,443	4,443
Panel B: R-squared	0.053	0.058	0.055	0.057	0.062	0.059
Panel C: Observations	2,778	2,777	2,777	2,597	2,597	2,597
Panel C: R-squared	0.065	0.077	0.070	0.056	0.067	0.074
Panel D: Observations	4,260	4,259	4,259	4,263	4,262	4,262
Panel D: R-squared	0.058	0.065	0.063	0.055	0.063	0.062

## Table 5 (continued)

Notes: This table contains regression results with (cumulative) abnormal returns for different event windows. Panel A and C contain deals with below (above) median dividend payout ratios in columns (1) to (3) (columns (4) to (6)). Payout ratios are defined as total dividends scaled by net income (Compustat *#dvt* and *#ib* respectively). In Panel A (Panel C), payout ratios are defined based on the three-year average (current year). Median values are computed by acquirer nation. Panel B and D contain all deals from non-U.S. acquirers. In addition, Panel B and Panel D contain deals with below (above) median payout ratios based on stock repurchases in columns (1) to (3) (columns (4) to (6)). Payout ratios are defined as funds used for the purchase of common and preferred stock scaled by net income (Compustat *#prstk* and *#ib* respectively). In Panel B, payout ratios are defined based on the three-year average, in Panel D based on the payout ratio in the year of the deal. *POST* is an indicator set equal to one for years after the TCJA, i.e., after 2017, and equals zero otherwise. *US* is set equal to one if the acquirer is from the U.S. and zero otherwise. *US#POST* is the interaction of *US* and *POST*. All specifications include target nation fixed effects and control variables as defined in Table 3. t-statistics based on standard errors clustered on the industry-year level are displayed in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

I consider stock buybacks as a second payout measure. However, data is only available for U.S. firms. I construct the payout ratio as the amount of funds used for purchases of common and preferred stock (Compustat *#prstk*) scaled by net income (Compustat *#ib*). Then, I split the U.S. sample at the median of this payout ratio. Once again, I consider the payout in the three years prior to the deal (Panel B) and in the announcement year (Panel D). I include all deals of non-U.S. acquirers in both samples. In line with the prior results, I find that the negative reactions to cross-border M&A announcements of U.S. firms post TCJA are much more pronounced for firms with low payout ratios in the past and current period (columns (1) to (3)). Announcement returns for U.S. firms with high payout ratios are less negative and either insignificant (Panel D) or only borderline significant (Panel B). In line with hypothesis 4, these results suggest that investor's post TCJA are particularly dissatisfied with cross-border M&A decisions if the firm has a low payout ratio.

### 5.4.3 Robustness and Further Tests

Table 6 presents robustness tests for the baseline effect documented in Table 2. For the main part of the analyses, I consider a sample of acquirers from the G7 countries.

**Table 6: Robustness Tests**

VARIABLES	(1) [0;0]	(2) [0;1]	(3) [0;2]	(4) [0;0]	(5) [0;1]	(6) [0;2]
	Panel A: Whole Sample			Panel B: OECD Sample		
POST	-0.34 (-2.52)**	-0.32 (-1.93)*	-0.20 (-1.06)	-0.53 (-2.87)***	-0.49 (-2.08)**	-0.35 (-1.36)
US	-0.08 (-0.50)	-0.10 (-0.57)	-0.00 (-0.00)	-0.21 (-1.26)	-0.25 (-1.30)	-0.16 (-0.77)
US#POST	-0.10 (-0.34)	-0.72 (-1.98)**	-0.92 (-2.58)**	0.03 (0.08)	-0.64 (-1.58)	-0.84 (-2.12)**
	Panel C: Excluding Penny Stocks			Panel D: Industry Screening		
POST	-0.04 (-0.21)	-0.03 (-0.11)	0.09 (0.28)	-0.10 (-0.41)	0.14 (0.46)	0.30 (0.89)
US	-0.00 (-0.03)	-0.06 (-0.33)	0.04 (0.20)	0.09 (0.50)	0.05 (0.20)	0.16 (0.63)
US#POST	-0.30 (-1.11)	-0.79 (-2.15)**	-0.89 (-2.14)**	-0.58 (-1.55)	-1.53 (-3.16)***	-1.93 (-4.23)***
	Panel E: Normal Returns			Panel F: Election effects		
POST	-0.13 (-0.58)	0.10 (0.36)	0.21 (0.73)	-0.79 (-2.15)**	-1.14 (-2.48)**	-1.19 (-2.54)**
US	0.10 (0.65)	0.06 (0.31)	0.13 (0.62)	0.07 (0.41)	0.01 (0.06)	0.14 (0.63)
US#POST	-0.45 (-1.47)	-1.04 (-2.71)***	-1.14 (-3.01)***	0.28 (0.66)	0.29 (0.54)	0.20 (0.39)
Controls	✓	✓	✓	✓	✓	✓
Target Nation Fixed Effects	✓	✓	✓	✓	✓	✓
Panel A/B: Observations	11,785	11,780	11,777	8,180	8,178	8,177
Panel A/B: R-squared	0.05	0.05	0.04	0.07	0.06	0.06
Panel C/D: Observations	5,057	5,056	5,056	4,636	4,635	4,635
Panel C/D: R-squared	0.04	0.05	0.05	0.06	0.06	0.06
Panel E/F: Observations	5,588	5,587	5,587	4,583	4,583	4,583
Panel E/F: R-squared	0.06	0.08	0.07	0.06	0.07	0.06

Notes: This table contains regression results with (cumulative) abnormal returns for different event windows. In Panels A to E, *POST* is an indicator set equal to one for years after the TCJA, i.e., after 2017, and equals zero otherwise. *US* is set equal to one if the acquirer is from the U.S. and zero otherwise. *US#POST* is the interaction of *US* and *POST*. Panel A extends the sample to all acquirer nations contained in the SDC Platinum database and Panel B contains the sample of all OECD countries. Panel C eliminates penny stocks (stock price below 1\$) from the sample. Panel D eliminates financial and regulated industries (Compustat *#sic* between 4000-4999 and 6000-6999). Panel E contains winsorized gross returns instead of winsorized abnormal returns. Panel F sets *POST* equal to one for the year after the election of Donald Trump (2017) and excludes years after 2017 from the sample. All specifications include target nation fixed effects and control variables as defined in Table 3. t-statistics based on standard errors clustered on the industry-year level are displayed in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Panel A and Panel B show that results are robust to either using all countries covered by the SDC Platinum database or limiting the sample to OECD countries.<sup>93</sup>

I consider a broad sample of deals without requiring many sample selection steps in my main analyses. Panels C and D show that results are robust after implementing the common selections of eliminating penny stocks (stock price below \$1) or eliminating the financial and regulated industries. Panel E shows that results are robust if I consider unadjusted gross returns rather than abnormal returns.

Lastly, I present the result for an alternative post period based on the year following the 2016 election. I examine whether the negative reaction also occurred in the year following the election of Donald Trump to rule out that the negative reaction is due to an overall change in sentiment with respect to foreign acquisitions. More precisely, I set POST equal to one for year 2017 and eliminate years 2018 and 2019 from the sample.<sup>94</sup> The coefficient of the interaction is insignificant. This lends support to the idea that the TCJA changed the investor perception on cross-border M&A and suggests that the results are not driven by the election.

## **5.5 Conclusion**

I document that the TCJA altered the investors' perception of cross-border M&A deals of U.S. acquirers. Prior literature suggests that M&A decisions of U.S. acquirers might be less distorted post TCJA due to the abolishment of the repatriation tax system. Somewhat to the contrary, I document that investors react much more negatively to cross-border M&A announcements by U.S. acquirers in the period after the TCJA. Furthermore, my cross-sectional results are consistent with agency conflicts driving these reactions. More precisely, the TCJA, *ceteris paribus*, changed the trade-off decision for shareholders by rendering repatriation and payout more beneficial. However, even after the abolishment of the repatriation tax, managers

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<sup>93</sup> For the OECD sample, I eliminate Mexico, Chile, Israel and South Korea because these countries follow a worldwide tax system. However, results are also robust if I consider all OECD countries.

<sup>94</sup> Results are unaffected if I include the years after the election as a control period.

continue to pursue value-decreasing cross-border acquisitions rather than repatriating foreign funds. Cross-sectional results reveal that the negative reaction post TCJA is driven by deal announcements that are likely related to empire building and by acquirers that have low payout ratios.



## References

- Alexandridis, G., Antypas, N., & Travlos, N. (2017). Value creation from M&As: New evidence. *Journal of Corporate Finance*, 45, 632-650.
- Amberger, H., & Robinson, L. (2020). The Effect of the 2017 US Tax Reform on US Acquisitions of Foreign Firms. *Working paper*.
- Amberger, H. J., Markle, K. S., & Samuel, D. M. (2021). Repatriation taxes, internal agency conflicts, and subsidiary-level investment efficiency. *The Accounting Review*, 96(4), 1-25.
- Amihud, Y., & Lev, B. (1981). Risk reduction as a managerial motive for conglomerate mergers. *The Bell Journal of Economics*, 605-617.
- Atwood, T. J., Downes, J., Henley, J., & Mathis, M. (2020). The Impact of US tax reform on US firm acquisitions of domestic and foreign targets. *Working paper*.
- Blouin, J., & Krull, L. (2009). Bringing it home: A study of the incentives surrounding the repatriation of foreign earnings under the American Jobs Creation Act of 2004. *Journal of Accounting Research*, 47(4), 1027-1059.
- Carrizosa, R., Gaertner, F. B., & Lynch, D. (2020). Debt and taxes? The effect of TCJA interest limitations on capital structure. *Working paper*.
- Chen, C. X., Lu, H., & Sougiannis, T. (2012). The agency problem, corporate governance, and the asymmetrical behavior of selling, general, and administrative costs. *Contemporary Accounting Research*, 29(1), 252-282.
- Chen, N. X., & Shevlin, T. (2018). "US worldwide taxation and domestic mergers and acquisitions" a discussion☆. *Journal of Accounting and Economics*, 66(2-3), 439-447.
- Dharmapala, D. (2018). The consequences of the Tax Cut and Jobs Act's international provisions: Lessons from existing research. *National Tax Journal*, 71(4), 707-728.
- Dyreng, S., Gaertner, F., Hoopes, J., & Vernon, M. (2020). The Effect of US Tax Reform on the Taxation of US Firms' Domestic and Foreign Earnings. *Working paper*.
- Edwards, A., Kravet, T., & Wilson, R. (2016). Trapped cash and the profitability of foreign acquisitions. *Contemporary Accounting Research*, 33(1), 44-77.
- Faccio, M., McConnell, J. J., & Stolin, D. (2006). Returns to acquirers of listed and unlisted targets. *Journal of Financial and Quantitative Analysis*, 41(1), 197-220.
- Feld, L. P., Ruf, M., Scheuering, U., Schreiber, U., & Voget, J. (2016). Repatriation taxes and outbound M&As. *Journal of Public Economics*, 139, 13-27.
- Foley, C. F., Hartzell, J. C., Titman, S., & Twite, G. (2007). Why do firms hold so much cash? A tax-based explanation. *Journal of Financial Economics*, 86(3), 579-607.
- Gaertner, F. B., Hoopes, J. L., & Williams, B. M. (2020). Making only America great? Non-US market reactions to US tax reform. *Management Science*, 66(2), 687-697.
- Gul, F. A., Krishnamurti, C., Shams, S., & Chowdhury, H. (2020). Corporate social responsibility, overconfident CEOs and empire building: Agency and stakeholder theoretic perspectives. *Journal of Business Research*, 111, 52-68.
- Hanlon, M., Hoopes, J. L., & Slemrod, J. (2019). Tax reform made me do it! *Tax Policy and the Economy*, 33(1), 33-80.

- Hanlon, M., Lester, R., & Verdi, R. (2015). The effect of repatriation tax costs on US multinational investment. *Journal of Financial Economics*, 116(1), 179-196.
- Harris, J., & O'Brien, W. (2018). US worldwide taxation and domestic mergers and acquisitions. *Journal of Accounting and Economics*, 66(2-3), 419-438.
- Hope, O. K., & Thomas, W. B. (2008). Managerial empire building and firm disclosure. *Journal of Accounting Research*, 46(3), 591-626.
- Jaffe, J., Jindra, J., Pedersen, D., & Voetmann, T. (2015). Returns to acquirers of public and subsidiary targets. *Journal of Corporate Finance*, 31, 246-270.
- Jensen, M. C. (1986). Agency costs of free cash flow, corporate finance, and takeovers. *The American Economic Review*, 76(2), 323-329.
- Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3(4), 305-360.
- Jensen, M. C., & Ruback, R. S. (1983). The market for corporate control: The scientific evidence. *Journal of Financial Economics*, 11(1-4), 5-50.
- Kozhikode, R. K., & Krishnan, R. (2016). Acquisition spree of new CEOs: A consequence of social comparison with predecessors. *Academy of Management Proceedings*, 2016(1), 18195.
- Laplante, S. K., Lewellen, C., Lynch, D., & Samuel, D. M. (2021). "Just BEAT It" Do firms reclassify costs to avoid the base erosion and anti-abuse tax (BEAT) of the TCJA? *Working paper*.
- MacKinlay, A. C. (1997). Event studies in economics and finance. *Journal of Economic Literature*, 35(1), 13-39.
- Manzon Jr, G. B., Sharp, D. J., & Travlos, N. G. (1994). An empirical study of the consequences of US tax rules for international acquisitions by US firms. *The Journal of Finance*, 49(5), 1893-1904.
- Masulis, R. W., Wang, C., & Xie, F. (2007). Corporate governance and acquirer returns. *The Journal of Finance*, 62(4), 1851-1889.
- Morck, R., Shleifer, A., & Vishny, R. W. (1990). Do managerial objectives drive bad acquisitions? *The Journal of Finance*, 45(1), 31-48.
- Renneboog, L., & Vansteenkiste, C. (2019). Failure and success in mergers and acquisitions. *Journal of Corporate Finance*, 58, 650-699.
- Servaes, H., & Zenner, M. (1994). Taxes and the returns to foreign acquisitions in the United States. *Financial Management*, 42-56.
- Stulz, R. (1990). Managerial discretion and optimal financing policies. *Journal of Financial Economics*, 26(1), 3-27.
- Titman, S., Wei, K. J., & Xie, F. (2004). Capital investments and stock returns. *Journal of Financial and Quantitative Analysis*, 39(4), 677-700.
- Tunyi, A. A. (2021). Revisiting acquirer returns: Evidence from unanticipated deals. *Journal of Corporate Finance*, 66, 101789.
- Wagner, A. F., Zeckhauser, R. J., & Ziegler, A. (2018). Unequal rewards to firms: Stock market responses to the trump election and the 2017 corporate tax reform. In *AEA Papers and Proceedings* (Vol. 108, pp. 590-96).

- Wang, Y., & Lahr, H. (2017). Takeover law to protect shareholders: Increasing efficiency or merely redistributing gains? *Journal of Corporate Finance*, 43, 288-315.
- Xu, E. Q. (2017). Cross-border merger waves. *Journal of Corporate Finance*, 46, 207-231.

## **Chapter 6**

### Concluding Remarks

## **6 Concluding Remarks**

This thesis aims to improve the understanding of the effects of tax legislation on firms and firm behavior. To this end, the contained essays utilize some of the key provisions of the far-reaching tax reform in the U.S. of 2017, commonly referred to as the ‘Tax Cuts and Jobs Act’. In particular, this thesis examines whether and how the TCJA affects firms in foreign countries, how it affects the tax avoidance behavior of U.S. firms with respect to intertemporal and cross-jurisdictional profit shifting, and how the TCJA affects agency conflicts between the investors and managers of U.S. firms in case of M&A activities.

Even though the four essays of this thesis build on different provisions of the TCJA, the implications extend beyond the TCJA and the U.S. case. The novel findings with respect to the effects of different TCJA provisions on firm behavior and spillover effects of the TCJA should be of interest to policymakers in and outside the U.S. as they consider future tax reforms.

Chapter 2 addresses the research question through which channels tax legislation can affect firms in foreign countries. While prior research has focused mostly on the effects of tax legislation changes on firms in the country the tax legislation is implemented in, we provide novel evidence that tax reforms also affect firms in foreign countries. To this end, we utilize an event study and examine stock returns around key dates of the legislative process of the TCJA. First, we show that foreign firms can be affected if they operate to some extent in the country where the tax reform takes place. Furthermore, we also show that foreign firms can be indirectly affected through changes in their relative global competitiveness.

Chapter 3 provides insights into the behavioral response of firms if they face changes in tax rates across different periods. Changes in the corporate tax rate are discussed constantly in policy debates. In particular, decreases in corporate tax rates are considered frequently because of tax competition across countries leading to the so-called ‘race to the bottom’. We provide novel evidence that firms exploit tax rate changes through intertemporal income shifting, i.e.,

shifting taxable income to years with a lower corporate income tax rate. Importantly, the corresponding revenue loss is so far not taken into account by the relevant institutions examining the revenue effects of tax reforms (for instance, the Congressional Budget Office in case of the U.S.). Furthermore, we show that due to the financial reporting costs of reducing income in high tax periods, firms engage in additional manipulations affecting financial accounting income. Overall, our findings suggest that policymakers should carefully weigh the consequences of tax rate decreases and incorporate the revenue effects of intertemporal income shifting in their calculations.

Chapter 4 examines a novel anti-tax avoidance legislation enacted through the TCJA called ‘Global Intangible Low Tax Income’ [GILTI]. This rule aims to reduce the incentive to generate low tax burdens through cross-border tax avoidance. We examine the M&A activity of U.S. acquirers before and after the TCJA depending on whether they are potentially affected by the GILTI provision. Our findings suggest that GILTI effectively deters low-tax and tax haven investments by U.S. firms. This finding is of particular interest to policymakers, who are debating about how to curb profit shifting by multinational corporations. Furthermore, the Biden administration currently considers extending the GILTI provision extensively.

Chapter 5 examines the effects of a global versus territorial tax system on agency conflicts between shareholders and managers. The TCJA changes the tax system to a territorial system by abolishing the former repatriation tax. Prior literature suggests that the repatriation tax before the TCJA resulted in agency conflicts and excessive foreign acquisitions. Therefore, acquisition decisions after the abolishment of the repatriation tax post TCJA might more closely align with the investor perspective. However, examining investor reactions to cross-border acquisition announcements, I provide evidence that agency conflicts prevail post TCJA. More precisely, investors react more negatively to respective announcements after the TCJA. This suggests that the abolishment of the repatriation tax did not resolve agency conflicts between investors and managers.

In conclusion, this thesis offers multiple insights into how tax policy changes affect firms and firm behavior. Therefore, the essays of this thesis are meant to provide useful insights to inform the ongoing tax policy debates on the national and multilateral level.

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