

# **FOREIGN EXPOSURE LEVEL AND THE IMPACT OF THE 2017 TAX CUTS AND JOBS ACT ON VALUATION OF US MULTINATIONAL COMPANIES**

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## **ABSTRACT**

*U.S. multinational corporations conduct a significant amount of their business and book a significant portion of their sales and profits in foreign countries. Prior to the passage of the Tax Cuts and Jobs Act, which was signed into law by President Trump on December 22, 2017, income generated by US multinational corporations was not subject to US taxation until repatriated to the US. The Tax Cuts and Jobs Act reduced US corporate tax rates, changed the corporate taxation of US multinational corporations to a territorial system, and created an immediate tax liability for US multinationals' "deemed repatriation" of their past foreign earnings. This study examines the impact of these complex changes to the US corporate tax system on the short-term valuation of US multinational firms. Our results indicate the Tax Cuts and Jobs Act had a net negative impact on US multinational corporations' valuation in the short-term, with higher levels of foreign exposure leading to lower returns. Our results are robust to alternate measures of foreign exposure and abnormal returns.*

**JEL:** G14, G38, H25

**KEYWORDS:** Valuation, Multinational Corporations, Tax Cut and Jobs Act

## **INTRODUCTION**

In today's global economy, many U.S based corporations conduct a significant amount of business in other countries, and book a significant portion of their sales and profits in those countries. Traditionally, income generated by US companies in foreign countries was not taxed by US authorities until these funds were repatriated to the US. This policy created a significant incentive for these multinational corporations (MNCs) to retain income earned internationally in their foreign operations and subsidiaries. According to some estimates, by the end of 2017, US MNCs had accumulated approximately \$1 trillion in foreign holdings of cash and cash equivalents, excluding amounts permanently invested in the companies' foreign operations (Smolyansky, Suarez, and Tabova, 2018). Much of this cash is held in US-dollar denominated fixed income assets such as US Treasury Bonds (Pozsar 2018). There has been significant growth in the amount of permanently reinvested earnings of US MNCs over the last decade. Blouin, Krull, and Robinson (2019) estimate the aggregate permanently reinvested earnings of US MNCs at \$808 billion as of 2009. McKeon (2017) reports that the total amount of permanently reinvested earnings held overseas by Russell 1000 companies reached \$2.6 trillion in 2016, reflecting a significant growth trend. Arguably, this hoarding of idle foreign cash and excessive investment in foreign operations as a tax reduction strategy can cause inefficiencies in these MNCs, and therefore depress the values of these companies, in addition to the negative impact on US tax collections. For example, Harford, Wang, and Zhang (2017) show that foreign cash is valued less than domestic cash and that this discount is greater than the pure tax effect. They find that MNCs subject to repatriation taxes underinvest domestically and overinvest abroad.

The American Job Creation Act (AJCA), enacted in 2004 as a temporary tax holiday to induce repatriation of foreign earnings and increase tax revenue, was initially successful in encouraging the repatriation of “trapped” foreign cash. The AJCA resulted in repatriation of over \$290 billion in foreign earnings (Blouin and Krull, 2009) and reduced the propensity for value-decreasing acquisitions (Edwards, Kravet, and Wilson, 2016). DeSimone, Piotroski, and Tomy (2019) argue that the temporary nature of the AJCA and the discussion of further similar legislation (introduced but not enacted beginning in 2008) resulted in expectations of similar future legislation and created an incentive for MNCs to accumulate even more foreign cash in anticipation of future tax relief. The Tax Cuts and Jobs Act (TCJA), which was passed by the Senate and House on December 20, 2017, and signed into law by President Trump on December 22, 2017, reduced US corporate tax rates, changed the corporate taxation of US MNCs to a territorial system, and created an immediate tax liability for these MNCs’ “deemed repatriation” of their past unrepatriated foreign earnings. In this study, we review the pertinent details of the TCJA regarding corporate taxation and its potential impact on US corporations, and examine the impact of these complex changes in the taxation of foreign income and foreign cash holdings on the short-term valuation of US MNCs. Our results indicate the TCJA had a net negative impact on US MNCs’ valuation in the short-term, as shown by 3-day and 5-day cumulative abnormal returns. We find that those firms with greater foreign exposure have more negative announcement returns. The remainder of the paper is organized as follows. The next section summarizes the relevant literature. Next, we discuss the data and methodology used in the study. The results are presented in the following section. The paper closes with some concluding comments.

## LITERATURE REVIEW

Leading up to the passage of the Tax Cuts and Jobs Act (TCJA) in 2017, the US corporate income tax rate was one of the highest in the world. Specifically, Jahnsen and Pomerleau (2017) estimate that the combined federal and state taxation for US corporations of 38.91% gave the United States the fourth highest statutory corporate income tax rate in the world. According to Bunn (2018), the passage of the TCJA reduced the combined Federal and state corporate tax rate in the US to 25.84%, lowering its rank to 83<sup>rd</sup> highest in the world. Table 1 provides a summary of statutory corporate income tax rates by region in 2017 and 2018, as reported by Jahnsen & Pomerleau (2017) and Bunn (2018).

Table 1: Average Statutory Corporate Tax Rate by Region or Group

Region or Group	2017		2018	
	Average Rate	GDP Weighted Average Rate	Average Rate	GDP Weighted Average Rate
Africa	28.73%	28.20%	28.81%	28.39%
Asia	20.05%	26.26%	20.65%	26.42%
Europe	18.35%	25.58%	18.38%	25.43%
North America	23.08%	37.01%	23.01%	26.22%
Oceania	23.67%	27.10%	22.00%	27.04%
South America	28.73%	32.98%	28.08%	32.20%
BRICS	28.32%	27.34%	28.40%	27.33%
EU	21.82%	26.25%	21.86%	26.03%
G20	28.04%	30.90%	27.37%	27.18%
G7	29.57%	33.48%	27.63%	27.21%
OECD	24.18%	31.12%	23.93%	26.58%
World	22.69%	29.41%	23.03%	26.47%
USA	38.91%		25.84%	

Source: Tax Foundation Fiscal Fact No: 559, Jahnsen and Pomerleau (2017) and Tax Foundation Fiscal Fact No: 623 Dann (2018).

Under the existing US tax code prior to 2017, US based corporations were taxed on foreign earnings only when they repatriated these earnings to the US, with credit for foreign taxes paid. With US tax rates

significantly above the tax rates in most countries where US multinational corporations (MNCs) operate, repatriation of these earnings would result in a significant tax liability for those MNCs. This structure provided a clear incentive for MNCs to keep, accumulate, and invest those funds off-shore, in order to minimize their tax liability. There is a significant amount of evidence to indicate the US MNCs indeed behaved as would be expected given the above incentive structure, and accumulated significant amounts of permanently reinvested foreign earnings, as well as significant amounts of foreign cash. Foley, Hartzell, Tittman, and Twite (2007) show that firms facing higher repatriation tax rates hold higher levels of cash abroad in affiliates in lower tax jurisdictions. Faulkender, Hankins, and Petersen (2019) find that MNCs' foreign cash balances are explained by low foreign tax rates and relaxed restrictions on income shifting. Smolyansky, Suarez, and Tabova (2018) estimate that by the end of 2017, US MNCs had accumulated approximately \$1 trillion in foreign holdings of cash and cash equivalents, excluding amounts permanently invested in the companies' foreign operations.

Our estimates based on hand collected data from US corporations' SEC 10-K filings place the aggregate foreign cash holdings of Russell 1000 companies at over \$923 billion in 2016 and over \$912 billion in 2017. In addition, McKeon (2017) reported that Russell 1000 companies held over \$2.6 trillion in permanently reinvested earnings (PRE) in their foreign operations and affiliates in 2016. In addition to the negative impact on US tax collections, this hoarding of idle foreign cash and excessive investment in foreign operations as a tax reduction strategy has numerous real effects for these MNCs. Harford, Wang, and Zhang (2017) show that shareholders place a lower value on foreign cash than domestic cash and that this discount is greater than the pure tax effect. They find that this valuation effect is related to financing frictions and agency problems, as MNCs subject to repatriation taxes underinvest domestically and overinvest abroad. Similarly, Edwards, Kravet, and Wilson (2016) and Hanlon, Lester, and Verdi (2015) find that US MNCs with significant permanently reinvested earnings held as cash make less profitable cash acquisitions of foreign targets. By contrast, Campbell, Dhaliwal, Krull, and Schwab (2018) find that overall excess foreign cash is not discounted relative to domestic cash, but that excess foreign cash held in high agency cost environments carries a discount. They suggest that such a discount is due to the country-specific location of assets and is likely to persist even after corporate tax reform.

Albring (2006) and De Simone and Lester (2018) demonstrate that trapped cash abroad induces MNCs to increase their domestic borrowing to fund shareholder payout and domestic investment. Finally, Fabrizi, Parbonetti, Ipino, and Magnan (2016) show that cash held abroad generates uncertainty among market participants. Greater foreign cash holdings are associated with greater information uncertainty among analysts and causes more dispersed beliefs and abnormal trading volumes among investors. The American Job Creation Act (AJCA) enacted in 2004 provided a temporary repatriation tax holiday to induce repatriation of foreign earnings and increase tax revenue. The AJCA created a onetime dividend received deduction of 85% on extraordinary repatriations of up to \$500 million of PRE disclosed in the most recent financial statements, which reduced the effective U.S. tax on those foreign earnings from 35 to 5.25 percent. Blouin and Krull (2009) estimate that the AJCA resulted in the repatriation of over \$290 billion of foreign earnings. Smolyanski et al (2018) place the estimated repatriation in 2005 at \$312 billion. However, the AJCA was only a temporary solution. DeSimone, Piotroski, and Tomy (2019) find that the temporary nature of the AJCA and discussion of further similar legislation, which was introduced but not enacted beginning in 2008, resulted in expectations of similar future legislation and created an incentive for MNCs to accumulate even more foreign cash in anticipation of future tax relief.

The TCJA addressed the foreign cash hoarding issue by changing to a territorial taxation system for US corporations, where corporate income is taxed in the country it is earned, and only income earned by corporations in the US is taxed in the US. Related changes included a reduction in the top US corporate tax rate to 21%, more in line with rates in the rest of the world. In addition, the TCJA "deemed repatriation" provision imposed a one-time tax of 15.5% on foreign liquid assets and 8% on illiquid assets, payable over eight years, regardless of whether these funds are repatriated (York 2018). Other important provisions

included the minimum tax on global intangible low-taxed income (GILTI), which is explained in detail in Pomerlauer (2019); the base erosion and anti-abuse tax (BEAT), explained in detail in Forst and Fuller (2020); the deduction for foreign derived intangible income (FDII), explained in detail in Karnis (2019); 100% deduction for dividends received from 10% owned foreign corporations; and 100% bonus depreciation for most capital expenditures for the next five years. The combined impact of these changes should be to eliminate or reduce the incentive for MNCs to hoard cash abroad, serving the dual purpose of increasing US tax revenue and incentivizing more efficient and value maximizing investments by MNCs. Wagner, Zeckhauser, and Ziegler (2018) review the valuation of US firms during the “legislative period” leading up to the passage of the TCJA, and find that high tax firms were big beneficiaries, while firms with significant foreign exposures lagged. The changes imposed by the TCJA may have both positive and negative impacts on US MNCs. Some possible factors are listed in Table 2. To examine the net impact of the various changes resulting from the TCJA on US corporations, we examine the short-term stock market reaction of large US corporations upon the enactment of the TCJA. In addition, we explore any differences in the market reaction resulting from the extent of these firms’ international activities.

Table 2: Factors Resulting from TCJA Impacting Valuation of US Multinational Corporations

Positive Factors	Negative Factors
The elimination of the worldwide taxation of corporate income	A significant immediate tax liability stemming from the “deemed repatriation” provision, resulting in immediate assessment of US taxes on unrepatriated past foreign earnings
Reduction of corporate tax rates applied to future domestic and foreign earnings	Loss of tax advantage from foreign operations relative to US operations
Discounted taxation of past foreign earnings	Impact of the GILTI and BEAT provisions possibly increasing total tax liability for MNCs
Reduced likelihood of tax-driven overinvestment in foreign operations and related inefficiencies	Loss of a significant strategic tax management tool for MNCs relative to domestic counterparts resulting from timing options on repatriation decisions
Favorable treatment of new capital expenditures	
Favorable treatment of foreign derived intangible income (FDII)	

## DATA AND METHODOLOGY

To examine the impact of the Tax Cuts and Jobs Act (TCJA) on US corporations, we start with all firms included in the Russell 1000 index in 2018, which roughly represents the largest 1000 US firms by market capitalization. Eliminating Utilities and REITs leaves a sample of 835 firms which have data available on both CRSP and Compustat during the study period. We collect 2014 - 2016 fiscal year financial information from Compustat, along with returns data from CRSP. We also hand collect the amount of cash held in foreign jurisdictions in fiscal year 2016, prior to the enactment of the TCJA, by examining their SEC 10-K filings. Control variables are defined using fiscal year 2016 data. We use the average ratio of pretax foreign income (PIFO) to total revenue for 2014 – 2016 and the ratio of foreign cash to assets as two alternative measures of a firm’s foreign exposure. We calculate three-day and five-day cumulative abnormal returns (CARs) in response to the passage of the final bill in both the House and the Senate on December 20, 2017 to estimate the valuation consequences of the TCJA. We also considered the date that the House approved the bill (November 16, 2017), the date that the Senate approved the amended bill (December 2, 2017), the date the House and Senate conference committee unveiled the new version (December 15, 2017), and the date that the President signed the final version (December 22, 2017). At each stage prior to signing, there were various changes made to the bill. Our qualitative conclusions are robust to the use of alternative event dates during the process of announcing, passing, and signing the bill. Those results are available from the authors upon request. We calculate 3-day (5-day) CARs using two methods for robustness. We calculate *CAR3A* (*CAR5A*) as the cumulative sum of the 3-day (5-day) deviations from the firm’s average return during the 60-day estimation window. We use the 60 trading days immediately prior to the initial

introduction of the bill in the US House of Representatives as H.R. 1 on November 2, 2017 as the estimation period. For each firm  $i$ , the average rate of return  $R_{i,ave}$  is calculated as:

$$R_{i,ave} = \frac{1}{60} \sum R_{i,t}, \quad (1)$$

where,  $R_{i,t}$  is the daily return over the window from 08/09/2017 to 11/01/2017. The cumulative abnormal return is the cumulative sum of the 3-day ( $n=1$ ) and 5-day ( $n=2$ ) deviations from the firm's average return and is calculated as:

$$CAR_{i,(-n,n),A} = \sum_{t=-n}^n (R_{i,t} - R_{i,ave}), \quad (2)$$

where,  $R_{i,t}$  is stock  $i$ 's return on day  $t$  ( $t = 0$  is the TCJA signing date). We calculate  $CAR3M$  ( $CAR5M$ ) as the cumulative sum of the 3-day (5-day) deviations from the firm's expected return based on the one-factor market model using the CRSP value-weighted index. The one-factor model is used to estimate the beta of the firm  $\beta_i$  from the regression in equation (3), over the 60-trading day estimation window:

$$R_{i,t} = \alpha_i + \beta_i \times R_t^M + e_{i,t}, \quad (3)$$

where,  $R_{i,t}$  is the return on day  $t$  for firm  $i$ ,  $R_t^M$  is the return on the CRSP value-weighted index on day  $t$ , and  $e_{i,t}$  is the error term. The cumulative abnormal return, which is the cumulative sum of the 3-day ( $n=1$ ) and 5-day ( $n=2$ ) deviations from the firm's expected return from the one-factor capital asset pricing model, is calculated as:

$$CAR_{i,(-n,n),M} = \sum_{t=-n}^n (R_{i,t} - (\alpha_i + \beta_i \times R_t^M)), \quad (4)$$

where  $R_{i,t}$  is the return on day  $t$  for firm  $i$ ,  $R_t^M$  is the return on the CRSP value-weighted index on day  $t$ , and  $\alpha_i$  and  $\beta_i$  are the estimates for firm  $i$  from equation (3). No 3-day (5-day) CARs are reported for firms with less than 30 days of returns available during the 60-day estimation window or less than two (four) days of returns available during the period from one (two) day(s) before to one (two) day(s) after the event date. Table 3 provides descriptive statistics for our sample of companies. We winsorize all variables except *Size* at the 1% level to minimize the impact of outliers. *Size* is measured as the natural logarithm of total assets; therefore, the logarithmic transformation already reduces the influence of outliers. The descriptive statistics indicate that the average CARs are slightly positive, consistent with Wagner et al (2018). Of the maximum 835 firms in the sample, 621 report foreign income, earning the designation of an MNC. Only 377 firms report their 2016 foreign cash holdings. Yang (2015) documents that the Securities and Exchange Commission (SEC) began issuing comment letters on foreign cash holdings in its review of 10-K filings in 2011. These comment letters were more likely for large firms and those with a lot of permanently reinvested earnings. While the apparent SEC interest in foreign cash holdings increased their disclosure, not all firms choose to disclose this information. Of those reported, the average (median) foreign cash holdings is approximately 10% (5%) of total assets.

Table 3: Descriptive Statistics

	N	Mean	Median	SD	P10	P90
CAR3A	814	0.0017	-0.0009	0.0238	-0.0229	0.0297
CAR3M	813	0.0057	0.0032	0.0231	-0.0180	0.0316
CAR5A	814	0.0092	0.0045	0.0319	-0.0271	0.0513
CAR5M	813	0.0077	0.0036	0.0309	-0.0254	0.0703
Foreign Cash Ratio	377	0.0990	0.0514	0.1193	0.0092	0.2518
PIFO Ratio	621	0.0446	0.0294	0.0801	-0.0086	0.1445
Size	830	8.4595	8.4742	1.4595	6.7631	10.3172
CapEx	830	0.0362	0.0248	0.0387	0.0022	0.0817
MTB	737	4.0626	3.3288	13.5200	1.1345	9.9862
ROA	832	0.0415	0.0424	0.0894	-0.0312	0.1324

*CAR3A (CAR5A) is the 3-day (5-day) cumulative abnormal return, where the abnormal return is defined as the difference between the firm's observed return and the average firm return during the estimation window. CAR3M (CAR5M) is the 3-day (5-day) cumulative abnormal return, where the abnormal return is defined as the difference between the firm's observed return and the predicted return using the one-factor capital asset pricing model. Foreign Cash Ratio is defined as the ratio of prior-year foreign cash to total assets. PIFO Ratio is defined as the average ratio of foreign pre-tax income to total revenue for the prior three years. Size is defined as the natural logarithm of prior-year total assets. CapEx is defined as the ratio of prior-year capital expenditures to total assets. MTB is defined as the ratio of the prior-year market value of equity (product of end-of-fiscal-year price per share and number of shares outstanding) to the book value of common equity. ROA is defined as the ratio of prior-year net income to total assets. All variables are winsorized at the 1% level. SD is the standard deviation. P10 and P90 are the 10<sup>th</sup> and 90<sup>th</sup> percentiles, respectively.*

## RESULTS AND DISCUSSION

In Table 4, we focus on US multinational corporations (MNCs) and present univariate results on the difference in the market response to the Tax Cuts and Jobs Act (TCJA) based on the extent of foreign exposure. We define foreign exposure using two primary variables: the average ratio of foreign pre-tax income to total revenue over the prior three years from 2014-2016 (*PIFO Ratio*) and the prior year ratio of foreign cash holdings to total assets (*Foreign Cash Ratio*). We create two binary exposure variables for each of these two ratios; the first defines high (low) foreign exposure as the top (bottom) quartile of either *PIFO Ratio* or *Foreign Cash Ratio*, and the second defines high (low) foreign exposure as the top (bottom) half of either *PIFO Ratio* or *Foreign Cash Ratio*. That produces a total of four different definitions of foreign exposure which are used in Table 4.

We find that firms with greater foreign exposure have a significantly lower announcement return in both the 3- and 5-day periods surrounding the signing of the TCJA, as shown in column “H-L”. For three of the four measures of foreign exposure, we observe that the average cumulative abnormal return (CAR) for high-exposure firms is consistently negative across the different estimations, while the average CAR for low-exposure firms is consistently positive. This initial analysis indicates that while the overall CAR in response to the TCJA was slightly positive for our overall sample of firms, representative of the US market, this reaction was driven by firms with less foreign exposure who likely benefitted more from the reduction in the US corporate tax rate.

Table 4: Univariate Analysis – Cumulative Abnormal Returns by Foreign Exposure

<b>CAR3A</b>							
	<b>High Exposure</b>			<b>Low Exposure</b>			<b>H-L</b>
<b>Variable</b>	<b>N</b>	<b>Mean</b>	<b>SD</b>	<b>N</b>	<b>Mean</b>	<b>SD</b>	
PIFO_Quartile	153	-0.0066	0.0202	147	0.0033	0.0278	-0.0100***
PIFO_Med	308	-0.0033	0.0216	298	0.0033	0.0236	-0.0066***
FCASH_Quartile	94	-0.0116	0.0201	93	0.0035	0.0250	-0.0152***
FCASH_Med	189	-0.0063	0.0207	186	0.0031	0.0241	-0.0094***
<b>CAR3M</b>							
	<b>High Exposure</b>			<b>Low Exposure</b>			<b>H-L</b>
<b>Variable</b>	<b>N</b>	<b>Mean</b>	<b>SD</b>	<b>N</b>	<b>Mean</b>	<b>SD</b>	
PIFO_Quartile	153	-0.0017	0.0187	147	0.0075	0.0272	-0.0091***
PIFO_Med	308	0.0012	0.0206	298	0.0071	0.0228	-0.0060***
FCASH_Quartile	94	-0.0064	0.0172	93	0.0071	0.0242	-0.0135***
FCASH_Med	189	-0.0014	0.0187	186	0.0066	0.0237	-0.0080***
<b>CAR5A</b>							
	<b>High Exposure</b>			<b>Low Exposure</b>			<b>H-L</b>
<b>Variable</b>	<b>N</b>	<b>Mean</b>	<b>SD</b>	<b>N</b>	<b>Mean</b>	<b>SD</b>	
PIFO_Quartile	153	-0.0052	0.0249	147	0.0134	0.0397	-0.0185***
PIFO_Med	308	0.0009	0.0282	298	0.0120	0.0330	-0.0110***
FCASH_Quartile	94	-0.0074	0.0262	93	0.0108	0.0312	-0.0182***
FCASH_Med	189	-0.0014	0.0279	186	0.0111	0.0329	-0.0124***
<b>CAR5M</b>							
	<b>High Exposure</b>			<b>Low Exposure</b>			<b>H-L</b>
<b>Variable</b>	<b>N</b>	<b>Mean</b>	<b>SD</b>	<b>N</b>	<b>Mean</b>	<b>SD</b>	
PIFO_Quartile	153	-0.0049	0.0239	147	0.0117	0.0391	-0.0166***
PIFO_Med	308	0.0006	0.0273	298	0.0104	0.0320	-0.0099***
FCASH_Quartile	94	-0.0077	0.0231	93	0.0092	0.0293	-0.0170***
FCASH_Med	189	-0.0020	0.0265	186	0.0096	0.0320	-0.0116***

*CAR3A (CAR5A) is the 3-day (5-day) cumulative abnormal return, where the abnormal return is defined as the difference between the firm's observed return and the average firm return during the estimation window. CAR3M (CAR5M) is the 3-day (5-day) cumulative abnormal return, where the abnormal return is defined as the difference between the firm's observed return and the predicted return using the one-factor capital asset pricing model. PIFO ratio is defined as the average ratio of foreign pre-tax income to total revenue for the prior three years. High (Low) Exposure for PIFO\_Quartile is defined using the top (bottom) quartile PIFO ratio. High (Low) Exposure for PIFO\_Med is defined using the top (bottom) half of PIFO ratio. Foreign Cash Ratio is defined as the ratio of prior-year foreign cash holdings to total assets. High (Low) Exposure for FCASH\_Quartile is defined using the top (bottom) quartile of Foreign Cash Ratio. High (Low) Exposure for FCASH\_Med is defined using the top (bottom) half of Foreign Cash Ratio. H-L is the difference between the reported means for the high exposure minus low exposure categories. All variables are winsorized at the 1% level. SD is the standard deviation. \*\*\*, \*\*, and \* denote significance at the 1<sup>st</sup>, 5<sup>th</sup>, and 10<sup>th</sup> percentiles, respectively.*

In Table 5, we explore the relation between the market-value reaction to the TCJA and firms' foreign exposure in a multivariate setting. We conduct an ordinary least squares regression specified as:

$$CAR_i = \beta_0 + \beta_1 PIFO\ Ratio_i + \beta_2 Size_i + \beta_3 CapEx_i + \beta_4 MTB_i + \beta_5 ROA_i + \sum_{j=1}^9 \gamma_j D_j + \varepsilon_i, \quad (5)$$

where the specified dependent variable  $CAR_i$  measures abnormal returns for firm  $i$  over various event windows, as described in greater detail below. We use the *PIFO Ratio*, which is the prior three-year average ratio of pretax foreign income to total revenue, as the measure of foreign exposure. In addition, we use various control variables likely to influence security returns. *Size* is defined as the natural logarithm of total

assets. *CapEx* is defined as the ratio of prior-year capital expenditures to total assets. *MTB* is defined as the ratio of the prior-year market value of equity (product of end-of-fiscal-year price per share and number of shares outstanding) to the book value of common equity. *ROA* is defined as the ratio of prior-year net income to total assets.  $D_j$  are dummy variables to control for industry fixed effects based on 10 industry groups using two-digit SIC codes.  $D_j$  is equal to one for firm  $i$ 's two-digit industry code, or zero otherwise. Since we have used ten industry groups using two-digit SIC, we include nine

industry dummy variables in the regression specification to avoid multicollinearity. Finally,  $\varepsilon_i$  denotes the error term. All continuous variables except *Size* are winsorized at the 1% level.

We explore four different specifications for CAR: *CAR3A* (*CAR5A*) is the 3-day (5-day) cumulative abnormal return, where the abnormal return is defined as the difference between the firm's observed return and the average firm return during the estimation window. *CAR3M* (*CAR5M*) is the 3-day (5-day) cumulative abnormal return, where the abnormal return is defined as the difference between the firm's observed return and the predicted return using the one-factor capital asset pricing model.

Results indicate the coefficient on the *PIFO Ratio* is negative and significant for all specifications of CAR, indicating the greater the foreign exposure, the lower the market reaction. This confirms the univariate results that the TCJA was perceived as a net negative for multinational firms. In addition, while not tabulated, we note that all industry effects show significant coefficients.

Table 5: Multivariate Analysis – Cumulative Abnormal Returns by Foreign Exposure Using Pretax Foreign Income

	CAR3A	CAR5A	CAR3M	CAR5M
PIFO Ratio	-0.042*** (0.014)	-0.073*** (0.019)	-0.031** (0.013)	-0.053*** (0.018)
Size	0.001** (0.001)	0.002* (0.001)	0.001 (0.001)	0.001 (0.001)
CapEx	-0.046 (0.028)	0.005 (0.040)	-0.033 (0.027)	0.017 (0.038)
MTB	-0.000 (0.000)	-0.000** (0.000)	-0.000 (0.000)	-0.000** (0.000)
ROA	-0.008 (0.011)	-0.001 (0.015)	-0.017 (0.010)	-0.008 (0.015)
Constant	0.037*** (0.008)	0.046*** (0.011)	0.047*** (0.008)	0.058*** (0.011)
Industry Fixed Effects	YES	YES	YES	YES
Number of observations	552	552	552	552
R <sup>2</sup>	0.312	0.255	0.324	0.285
Adjusted R <sup>2</sup>	0.294	0.235	0.307	0.266

This table presents the results from an ordinary least squares regression where the specified dependent variable measures returns over various event windows, specified as  $CAR_i = \beta_0 + \beta_1 PIFO\ Ratio_i + \beta_2 Size_i + \beta_3 CapEx_i + \beta_4 MTB_i + \beta_5 ROA_i + \sum_{j=1}^9 \gamma_j D_j + \varepsilon_i$ , where  $CAR_i$  measures abnormal returns for firm  $i$  over various event windows. *CAR3A* (*CAR5A*) is the 3-day (5-day) cumulative abnormal return, where the abnormal return is defined as the difference between the firm's observed return and the average firm return during the estimation window. *CAR3M* (*CAR5M*) is the 3-day (5-day) cumulative abnormal return, where the abnormal return is defined as the difference between the firm's observed return and the predicted return using the one-factor capital asset pricing model. *PIFO Ratio* is the average ratio of pretax foreign income to total revenue for the prior three years. *Size* is defined as the natural logarithm of prior-year total assets. *CapEx* is defined as the ratio of prior-year capital expenditures to total assets. *MTB* is defined as the ratio of the prior-year market value of equity (product of end-of-fiscal-year price per share and number of shares outstanding) to the book value of common equity. *ROA* is defined as the ratio of prior-year net income to total assets.  $D_j$  are dummy variables to control for industry fixed effects based on 10 industry groups using two-digit SIC codes. All variables except *Size* are winsorized at the 1% level. Standard deviations are presented in parentheses. \*\*\*, \*\*, and \* denote significance at the 1<sup>st</sup>, 5<sup>th</sup>, and 10<sup>th</sup> percentiles, respectively.



We conduct a secondary multivariate test in Table 6, using the following OLS regression:

$$CAR_i = \beta_0 + \beta_1 ForeignCashRatio_i + \beta_2 Size_i + \beta_3 CapEx_i + \beta_4 MTB_i + \beta_5 ROA_i + \sum_{j=1}^9 \gamma_j D_j + \varepsilon_i \quad (6)$$

In Table 6, we examine the smaller sample of 377 firms which report foreign cash holdings in their fiscal year 2016 10-K reports. The dependent and independent variables in equation (6) are as described in the

Table 6: Multivariate Analysis – Cumulative Abnormal Returns by Foreign Exposure Using Foreign Cash Holdings

	CAR3A	CAR5A	CAR3M	CAR5M
Foreign Cash Ratio	-0.033*** (0.010)	-0.025* (0.014)	-0.028*** (0.010)	-0.023* (0.014)
Size	0.001 (0.001)	-0.000 (0.001)	0.001 (0.001)	-0.001 (0.001)
CapEx	-0.042 (0.039)	0.050 (0.053)	-0.015 (0.037)	0.072 (0.051)
MTB	-0.000 (0.000)	-0.000* (0.000)	-0.000 (0.000)	-0.000* (0.000)
ROA	-0.011 (0.016)	-0.018 (0.022)	-0.014 (0.015)	-0.010 (0.021)
Constant	0.047*** (0.011)	0.068*** (0.015)	0.055*** (0.011)	0.074*** (0.015)
Industry Fixed Effects	YES	YES	YES	YES
Number of observations	353	353	353	353
R <sup>2</sup>	0.284	0.231	0.288	0.257
Adjusted R <sup>2</sup>	0.254	0.199	0.259	0.226

This table presents the results from an ordinary least squares regression where the specified dependent variable measures returns over various event windows, specified as  $CAR_i = \beta_0 + \beta_1 ForeignCashRatio_i + \beta_2 Size_i + \beta_3 CapEx_i + \beta_4 MTB_i + \beta_5 ROA_i + \sum_{j=1}^9 \gamma_j D_j + \varepsilon_i$ , where  $CAR_i$  measures abnormal returns for firm  $i$  over various event windows.  $CAR3A$  ( $CAR5A$ ) is the 3-day (5-day) cumulative abnormal return, where the abnormal return is defined as the difference between the firm's observed return and the average firm return during the estimation window.  $CAR3M$  ( $CAR5M$ ) is the 3-day (5-day) cumulative abnormal return, where the abnormal return is defined as the difference between the firm's observed return and the predicted return using the one-factor capital asset pricing model. *Foreign Cash Ratio* is the ratio of prior-year foreign cash to total assets. *Size* is defined as the natural logarithm of prior-year total assets. *CapEx* is defined as the ratio of prior-year capital expenditures to total assets. *MTB* is defined as the ratio of the prior-year market value of equity (product of end-of-fiscal-year price per share and number of shares outstanding) to the book value of common equity. *ROA* is defined as the ratio of prior-year net income to total assets.  $D_j$  are dummy variables to control for industry fixed effects based on 10 industry groups using two-digit SIC codes. All variables except *Size* are winsorized at the 1% level. Standard deviations are presented in parentheses. \*\*\*, \*\*, and \* denote significance at the 1<sup>st</sup>, 5<sup>th</sup>, and 10<sup>th</sup> percentiles, respectively.

above discussion of equation (5), except the foreign exposure variable is the *Foreign Cash Ratio*, defined as the ratio of prior-year foreign cash to total assets. We once again find that the extent of foreign exposure, as shown by the coefficient on *Foreign Cash Ratio*, is negatively and significantly related to the market reaction to the TCJA for all specifications of CAR. These results indicate that the higher the level of foreign exposure, the more negative the impact of the TCJA on the firm's valuation. The untabulated industry effect variables remain significant in explaining the market response to the TCJA, as well.

## CONCLUDING COMMENTS

Prior studies have documented the accumulation of cash and permanently reinvested earnings in US multinational corporations (MNCs) foreign operations. In addition to the loss of US tax revenue, there are additional negative economic impacts, including the inefficient allocation of capital resources driven by tax avoidance considerations. The Tax Cuts and Jobs Act (TCJA), which was signed into law by President

Trump on December 22, 2017, reduced US corporate tax rates, changed the corporate taxation of US MNCs to a territorial system, and created an immediate tax liability for these MNCs' "deemed repatriation" of their past unrepatriated foreign earnings. Upon examining the short-term market impact of the TCJA on large US corporations using 3-day and 5-day cumulative abnormal returns (CARs), we find that the market responded favorably to the TCJA. However, there is a differential market response based on the extent of the foreign exposure of those firms. Using both univariate means tests and multivariate regression analysis, we find that the greater the foreign exposure, the more negative the market reaction to the signing of the TCJA. These results are robust to various definitions of CARs and foreign exposure. We conclude that the immediate tax liability resulting from the TCJA, the impact of the GILTI and BEAT provisions, and the loss of future tax minimization strategies relative to domestic counterparts result in a discount in the values of firms with the greatest foreign exposure.

One of the limitations of the study is the possibility that the results are influenced by the choice of event date. After the initial introduction of the bill in the US House of Representatives as H.R. 1 on November 2017, there were several milestones related to the bill in the House, Senate, and various committees. Each of these events themselves could convey relevant information to the market, and impact valuations. While our reported results use the passage of the bill by the Senate and House as the event date, we also considered the date that the House approved the bill (November 16, 2017), the date that the Senate approved the amended bill (December 2, 2017), the date the House and Senate conference committee unveiled the new version (December 15, 2017), and the date that the President signed the final version (December 22, 2017). Our qualitative conclusions are robust to the use of alternative event dates during the process of announcing, passing, and signing the bill. An additional limitation is the examination of only the short-term impact of the TCJA on US MNCs. While we would like to also examine the long-term impact of the TCJA on US MNCs, the year following the passage of the TCJA was marked by a significant focus by the Trump administration on international trade, and various trade disputes with China, the EU, and other countries, including the imposition of various import tariffs by all the parties involved. These international trade disputes are likely to confound the long-term returns of the US MNCs. We would expect these trade disputes between the U.S. and, most notably, China and the EU, to have a differential long-term impact on US MNCs that cannot be separated from the impact of the TCJA. Our findings show the complicated impacts of tax legislation and have important implications for policymakers considering future tax and trade policy changes. Future research into the real effects of the TCJA is warranted, including its effect on foreign cash holdings, the market valuation of foreign cash holdings, and the profitability of foreign acquisitions. Studies of this nature will reveal if the implementation of the TCJA increased the efficiency of corporate decision-making and may shed light on the long-term valuation effects of the TCJA.

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