Effect of Tax Reform on Investments and Market Concentration: The Case of Tax Cut and Job Act in the US (Incomplete Draft)

Preliminary Draft

Cagin Keskin[1]

CERGE-EI[2]

July, 2024

Abstract

In December 2017, the United States Congress passed the Tax Cut and Jobs Act (TCJA), significantly reducing the corporate tax rate and introducing favorable policies for intangible assets. This paper aims to investigate the impact of the TCJA on various aspects of corporate behavior, including investments in tangible and intangibles, and CAPEX. I employ the difference in difference method using Compustat data from 2014 to 2020 to measure investment differences and incorporate these values into the model I developed for my Step-by-Step Intangibles project. Additionally, the paper explores how this policy change affects average productivity levels, markups, and market concentration. Furthermore, the study analyzes the implications of the TCJA on capital misallocation compared to Canada.

Keyword: TCJA, corporate tax, intangible asset, tangible asset, investment

JEL Classification: H25, H32, K34

[1] Cagin.Keskin@cerge-ei.cz

[2] CERGE-EI, a joint workplace of Charles University and the Economics Institute of the Czech Academy of Sciences, Politickych veznu 7, 111 21 Prague, Czech Republic

1. Introduction

Over the past fifty years, the United States has infrequently adjusted its corporate tax rates. A notable change occurred with the passage of the Tax Reform Act of 1986, which reduced the corporate tax rate from 50% to 35%. At that time, the US maintained a comparatively low corporate tax rate among developed nations. However, as globalization intensified, countries began implementing policies to attract and retain capital by often lowering corporate tax rates (OECD, 2007). During this period, the US did not modify its tax policies, resulting in a transition from a low to a high corporate tax rate compared to other developed countries.

On December 22, 2017, President Donald Trump signed the Tax Cut and Jobs Act (TCJA) into law. The primary objective of the TCJA is to stimulate economic activity by reducing tax barriers for businesses, thereby enhancing productivity. Internationally, the TCJA aims to incentivize the repatriation of offshore funds, given an estimated $2.6 trillion in retained earnings in offshore accounts as of 2015 (Auerbach, 2018). Moreover, the TCJA seeks to bolster investment and economic activity, which is anticipated to impact wages and job opportunities positively. Regarding specific tax law adjustments, the TCJA made minor changes to both the top and middle tax brackets for personal income taxes, lowering the top tax bracket from 39.6% to 37% for individuals. However, the most significant change was reducing the corporate tax rate for C corporations from 35% to 21%. Immediate deductions from taxable income were also revised, with the maximum allowable deduction increased to $1 million. Bonus depreciation was raised from 50% to 100%, albeit this increase is temporary; the 100% allowance will decrease by 20% annually from 2022 until 2027.

Before the TCJA, the US taxed the worldwide income of corporations and residents. This policy was revised to exempt taxes on offshore earnings and introduced a one-time tax of 15.5% on cash and 8% on assets during repatriation. Additionally, Congress introduced the Global Intangible Low-Taxed Income (GILTI) tax, requiring companies to pay an additional 10% tax on foreign intangible assets, slated to rise to 13.125% after 2025 (Auerbach, 2018). Notably, earnings from abroad linked to US intellectual property are subject to a reduced tax rate of 13.125% until 2025, increasing to 16.406% after that, making the US a more attractive location for intellectual property (Foreign Direct Intellectual Investment).

In terms of fiscal impact, these policy changes are estimated to cost approximately $1,348.5 billion by 2028 (Auerbach, 2018). Therefore, understanding the effects of the TCJA on tangible and intangible investments, R&D, SG&A, and capex is a crucial policy question. Additionally, there is an ongoing debate about whether the policy can generate more business and job opportunities than its costs on the budget. One aim of this research project is to shed light on this question. Numerous researchers have examined corporate and dividend taxes from theoretical and empirical perspectives. According to the traditional view, firms primarily finance their investments through equity, and dividend taxes introduce additional distortions in this process (Feldstein, 1970; Poterba and Summers, 1985). In contrast, the new view, advocated by Auerbach (1979), Bradford (1981), and King (1977), argues that firms use retained earnings and debt to finance their investments, with dividend taxes not significantly distorting a firm's investment decisions. They contend that corporate taxes create the main distortion. Sinn (1991) presents a mixed view, suggesting that younger firms rely on equity due to limited access to debt and retained earnings, whereas older firms prefer financing through retained earnings and debt.

Chetty and Saez (2005) studied the 2003 dividend tax cut in the US and found a substantial increase in firms' dividend payouts. Yagan (2015) utilized an administrative dataset and demonstrated that the 2003 dividend tax reduction boosted dividend payouts but did not noticeably affect investment decisions. Love (2022) distinguished between cash-short and M&A firms and found that cash-short firms increased equity issuance, operational expenses, and R&D expenditures due to the 2003 dividend tax cut. Moon (2022) and Boissel and Matray (2021) conducted similar analyses using Korean and French datasets. Moon (2022) showed that reducing the dividend tax increased investment and equity issuance for Korean firms, while Boissel and Matray (2021) found that lower dividend payments led firms to maintain higher liquidity. However, Harju et al. (2019) examined the impact of a six-percentage-point corporate tax reduction on small firms in Finland and did not find evidence of increased investment. In contrast, Becker et al. (2013) analyzed international panel data covering 25 countries from 1990 to 2008 and found that changes in dividend and capital gains taxes significantly affected corporate investment and growth. Alstadsaeter et al. (2017) used triple difference and difference-in-differences methods and showed that a dividend tax cut in Sweden increased investment for cash-constrained firms. However, their results aligned with Yagan (2015) at the aggregate level without considering firm cash constraints.

In summary, empirical evidence regarding the effects of corporate and dividend tax reductions on investment is mixed, with inconsistent support for the notion that tax cuts inevitably lead to lower capital costs and increased firm investment. Conversely, researchers argue that temporary and specific tax policies, such as accelerated depreciation, R&D tax credits, and deductions for domestic production activities, have a more pronounced impact on boosting investment (Agrawal et al., 2020; Ohrn, 2018; Ohrn, 2019; Rao, 2016; Zwick and Mahon, 2017).

In this study, I investigate the impact of the TCJA reform on capital expenditures (capex) and intangible and tangible investments using the difference-in-differences (DiD) method. For this purpose, I employ Canada and the US as the control and treated groups, respectively, from 2014 to 2019. The remainder of this paper is organized as follows: Section two will discuss the empirical approach and detail the data sources utilized, while Section three will present the results obtained through the DiD analysis.

2. Data and Summary Statistics

In this paper, I use the Compustat dataset, renowned for its extensive coverage of firms' financial statements, including balance sheets, income statements, and cash flows for both US and Canadian firms. Another advantage of the dataset, it contains quarterly units of observation which provides the ability to track firms' outcomes better than annual data. The dataset includes essential variables for this study, such as intangible and tangible assets, total assets, capital expenditure (capex), revenue, and standard industry classification (SIC) codes.

To standardize comparisons across firms, net tangible investment is scaled by lagged total assets averaged over four quarters, while net intangible investment and capex are similarly scaled by lagged total assets. This scaling ensures that firm size is appropriately accounted for in the analysis. By dividing outcomes by firm size, the dollar value of each outcome is derived, thus allowing for meaningful comparisons even when firms vary significantly in size relative to their total assets. Net tangible and intangible investments are calculated based on changes in the value of tangible and intangible assets from the same quarter of the previous year. Due to their distinct regulatory frameworks and asset structures, I excluded firms from the finance and utility sectors to maintain consistency in the dataset.

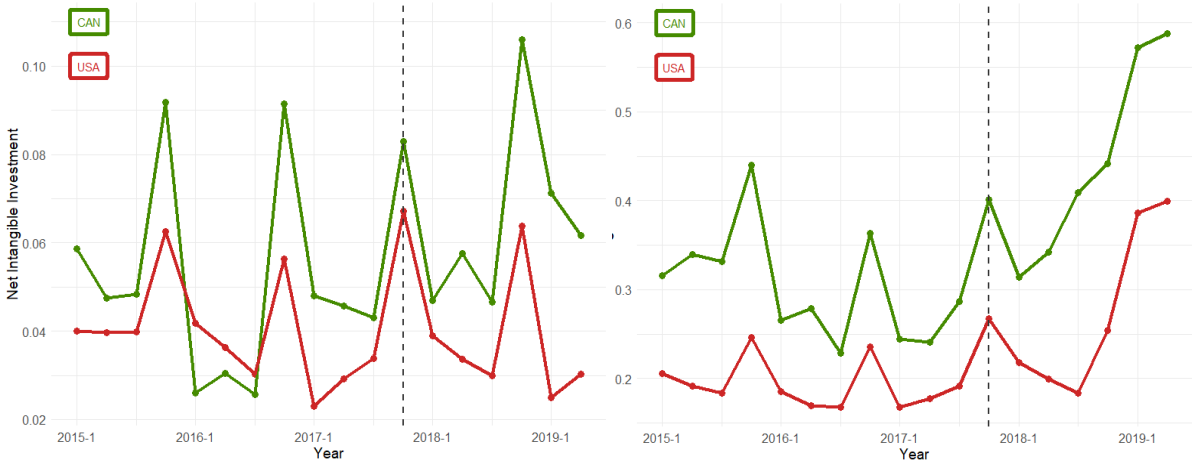
For robust statistical analysis, I applied Winsorization to the dependent variables, adjusting the bottom 5% and top 95% values based on the 2016 fourth-quarter data for the US. This process helps mitigate potential outlier effects that could skew the results.

I employ the difference-in-differences (DiD) method in this study, using Canada as the control group and the US as the treated group. Canadian firms are ideal for this role due to their extensive economic ties with US firms, geographical proximity, and shared characteristics such as the free movement of capital and labor. Canada's consistent corporate tax rate since 2014 enhances its suitability as a control group. Standard covariate variables used in the analysis include firm size (average fourth-quarter lagged revenue), lagged total assets, lagged cash reserves, firm growth (measured by changes in revenue), and two-digit SIC industry codes. These variables serve as essential controls to account for potential confounding factors and ensure the robustness of the research findings regarding the impact of the TCJA on corporate behavior and investment outcomes.

Figure 1 demonstrates parallel trends for net tangible and intangible investments. Given the substantial heterogeneity at the firm level, I employed conditional parallel trend analysis. Initially, I computed the mean value of the dependent variable for each year-quarter to establish regression weights. Weighted regressions were then conducted, incorporating standard control variables pertinent to this research. Subsequently, I computed residuals for each firm, adjusting them by subtracting the mean of the dependent variable and adding the residual mean for each year-quarter. This adjustment centered the residuals around the mean of the dependent variable, ensuring comparability across groups. By adding the difference between the dependent variable mean and residual mean to each residual, I aligned their average values with the dependent variable mean in each year-quarter before regression. This methodological adjustment facilitates a meaningful comparison of relative performance between Canadian and US firms while preserving the overall mean level of the outcome variable.

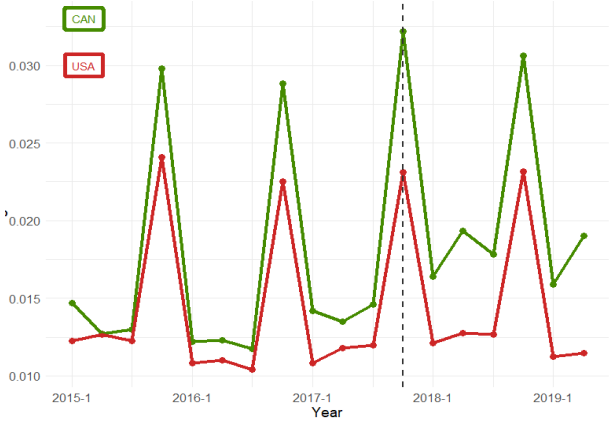
Both Figure 1 and Figure 2 confirm that parallel trends are maintained across net intangible investments, net tangible investments, and capital expenditures (capex). Table 1 provides summary statistics for the dataset, comprising 25,940 year-quarter observations for the United States and 3,571 year-quarter observations for Canada. The slightly lower number of Canadian firms notwithstanding, all variables exhibit right-skewed distributions for both countries. US firms generally exhibit higher mean values across most variables, though the mean values of scaled outcomes are comparable between the two countries.

Figure 1: Parallel Trends for Tangible and Intangible Assets



Source: Author Calculation. The figure on the left shows net intangible assets on the vertical axis, while the figure on the right illustrates net tangible assets on the same vertical axis.

Figure 2: Parallel Trends for CAPEX



Source: Author Calculation

3. Empirical Model and Preliminary Results

I use three dependent variables: net intangible investment, net tangible investment and capex in quarter t and firm i. $Outcome_{i,t}$ depends on which one is use and $\boldsymbol{X}_{i,t}$ vector of covariates and α_i and $\lambda_{t,s}$ firm and year-quarter-industry fixed effect, respectively. I employ modified year-quarter fixed effects primarily because reason some industries can get different

shocks across different year-quarters, whereas firms within the same two-digit industries in the same year-quarter face similar cyclical shock. $US_{i,t}$ is a dummy variable that equals 1 if firms are obligated by United States tax law and 0 if firms are subject to Canadian tax law. $Post_t$ equals 1 after 2017 quarter four and 0 before it. For robustness testing, I additionally winsorize outcome variables at the 1st and 99th percentiles and use balanced data. The regression equation for $Outcome_{i,t}$ is:

$$Outcome_{i,t} = \mu + \delta\, Post_t \times US_{i,t} + \boldsymbol{X}_{i,t} + \alpha_i + \lambda_{t,s} + \varepsilon_{i,t}.$$

Tables 2, 3 and 4 indicate that the TCJA does not affect firm net tangible, intangible and capex investments. All variables are statistically insignificant, and the results are robust to winsorization and balanced panel data. In Table 2, the coefficient for Post × Treat indicates that on average, there is a net intangible investment of 0.004 cents for each 1 dollar of total assets. This interpretation slightly differs for net tangible investments due to its scale with revenue. In table 3, the coefficient 0.017 value shows that firms invest in tangible assets for every 1 dollar of revenue. Event studies in Figures 3 and 4 (in the Appendix) support the findings from the difference-in-differences analysis, showing that treatment effects are not observed after the policy changes for all variables considered.

Table 1: Summary Statistics

	US		Canada	
	Mean	Median	Mean	Median
Intangible Assets	1,767	129	503	14
Tangible Assets	2,993	291	2593	75
Net Intangible Investment	0.044	0.001	0.180	0.010
Net Tangible Investment	0.215	0.097	1.2	0.200
Capex	0.015	0.008	0.031	0.010
Lag Total Assets	6,002	790	2328	165
Lag Cash	838	67	158	15
Lag Revenue	1,187	187	350	23
Revenue Growth	0.369	0.031	1	0.100
Number of Firms	2734		492	
Number of Year-Quarter Observations	25940		3571	

Source: Author Calculation. Net intangible assets and capex scaled with total assets and net tangible investment scaled with revenue in the summary statistics.

Table 2: DiD of Net Intangible Investment

Winsored	5^{th} - 95^{th} percent		1^{th} - 99^{th} percent	
	Unbalanced	Balanced	Unbalanced	Balanced
Post × Treat	0.004 (0.010)	-0.007 (0.007)	0.025 (0.025)	-0.011 (0.012)
Firm FE	X	X	X	X
Year Quarter × Industry FE	X	X	X	X
Control Variables	X	X	X	X
Observations	29551	14346	29551	14346
Clusters	3226	797	3226	797

Source: Author Calculation

REFERENCES

Agrawal, A., Rosell, C., & Simcoe, T. (2020). Tax credits and small firm R&D spending. *American Economic Journal: Economic Policy*, *12*(2), 1-21.

Alstadsæter, A., Jacob, M., & Michaely, R. (2017). Do dividend taxes affect corporate investment?. Journal of Public Economics, 151, 74-83.

Auerbach, A. J. (1979). Wealth maximization and the cost of capital. The Quarterly Journal of Economics, 93(3), 433-446.

Auerbach, A. J. (2018). Measuring the effects of corporate tax cuts. Journal of Economic Perspectives, 32(4), 97-120.

Becker, B., Jacob, M., & Jacob, M. (2013). Payout taxes and the allocation of investment. *Journal of Financial Economics*, *107*(1), 1-24.

Boissel, C., & Matray, A. (2022). *Dividend taxes and the allocation of capital* (No. w30099). National Bureau of Economic Research.

Bradford, D. F. (1981). The incidence and allocation effects of a tax on corporate distributions. Journal of Public Economics, 15(1), 1-22.

Chetty, R., & Saez, E. (2005). Dividend taxes and corporate behavior: Evidence from the 2003 dividend tax cut. The quarterly journal of economics, 120(3), 791-833.

De Loecker, J., Eeckhout, J., & Unger, G. (2020). The rise of market power and the macroeconomic implications. *The Quarterly Journal of Economics*, *135*(2), 561-644.

Feldstein, M. S. (1970). Corporate taxation and dividend behaviour. The Review of Economic Studies, 37(1), 57-72.

Harju, J., Koivisto, A., & Matikka, T. (2022). The effects of corporate taxes on small firms. Journal of Public Economics, 212, 104704..

Hsieh, C. T., & Klenow, P. J. (2009). Misallocation and manufacturing TFP in China and India. *The Quarterly journal of economics*, *124*(4), 1403-1448.

J. Poterba and L. Summers, "The Economic Effects of Dividend Taxation," in E. Altman and M. Subrahmanyam, eds., Recent Advances in Corporation Finance (Homewood, IL: Dow Jones-Irwin, 1985

King, M. A. (1977). Public policy and the corporation (No. 3). London: Chapman and Hall; New York: Wiley.

Love, M. (2022). Equity financing, dividend taxes and corporate non-capital investment. *Working Paper*.

Moon, T. S. (2022). Capital gains taxes and real corporate investment: Evidence from Korea. *American Economic Review*, *112*(8), 2669-2700.

OECD (2007), Fundamental Reform of Corporate Income Tax, OECD Tax Policy Studies, No. 16, OECD Publishing, Paris.

Ohrn, E. (2018). The effect of corporate taxation on investment and financial policy: Evidence from the DPAD. American Economic Journal: Economic Policy, 10(2), 272-301.

Ohrn, E. (2019). The effect of tax incentives on US manufacturing: Evidence from state accelerated depreciation policies. Journal of Public Economics, 180, 104084.

Rao, N. (2016). Do tax credits stimulate R&D spending? The effect of the R&D tax credit in its first decade. *Journal of Public Economics*, *140*, 1-12.

Sinn, H. W. (1991). Taxation and the cost of capital: The" old" view, the" new" view, and another view. Tax policy and the economy, 5, 25-54.

Yagan, D. (2015). Capital tax reform and the real economy: The effects of the 2003 dividend tax cut. American Economic Review, 105(12), 3531-63.

Zwick, E., & Mahon, J. (2017). Tax policy and heterogeneous investment behavior. American Economic Review, 107(1), 217-48.

APPENDIX

Table 3: DiD of Net Tangible Investment

Winsored	5^{th} - 95^{th} percent		1^{th} - 99^{th} percent	
	Unbalanced	Balanced	Unbalanced	Balanced
Post × Treat	0.017 (0.031)	-0.001 (0.029)	-0.046 (0.087)	-0.076 (0.089)
Firm FE	X	X	X	X
Year Quarter × Industry FE	X	X	X	X
Control Variables	X	X	X	X
Observations	29551	14346	29551	14346
Clusters	3226	797	3226	797

Table 4: DiD of CAPEX

Winsored	5^{th} - 95^{th} percent		1^{th} - 99^{th} percent	
	Unbalanced	Balanced	Unbalanced	Balanced
Post × Treat	-0.001 (0.001)	-0.001 (0.001)	-0.002 (0.002)	-0.002 (0.001)
Firm FE	X	X	X	X
Year Quarter × Industry FE	X	X	X	X
Control Variables	X	X	X	X
Observations	29551	14346	29551	14346
Clusters	3226	797	3226	797

Figure 3: Event Studies for Tangible and Intangible Assets

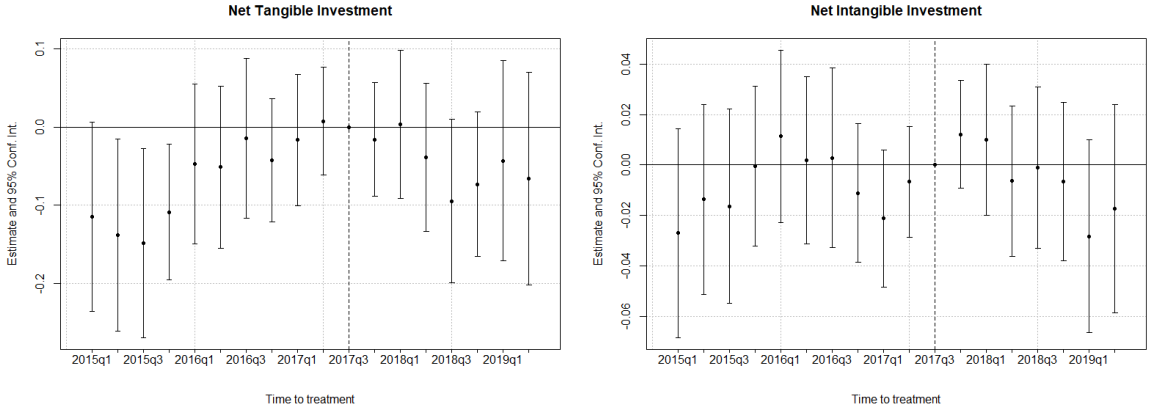


Figure 4: Event Study for CAPEX