

## **Effect of Corporate Tax Cuts on Capital Structure in the US: A Short Run Analysis**

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**Abstract:** *This paper studies the short-term effect on capital structure because of the Tax Cuts and Jobs Act (TCJA) of 2017, the largest tax overhaul in the US since 1986 bringing the US rate to below the average for most other OECD countries and eliminates the graduated corporate rate schedule. The TCJA substantially reduces the tax advantages of debt financing by lowering the corporate income tax rate from 35 percent to 21 percent and imposes new limitations on the deductibility of interest, making interest deductions less valuable to the US corporations. Standard Capital structure trade-off theory predict a dynamic readjustment to the debt ratio in response to such a tax cut. I argue that capital structure changes suffer from inertia and companies are very slow to readjust their debt ratios. Using data on Capital Structure and debt issuances for a large sample US firms over 2017 and 2018, I find that the US corporations on average did not reduce corporate debt and did not adjust their capital structure in favor of lower debt in the short run.*

**Keywords:** *Tax, Capital Structure, Debt*

### **1. Introduction**

The trade-off theory of capital structure states that firms determine their debt-equity mix by trading-off the benefits of raising debt capital against the direct and indirect costs of debt. The primary benefit of issuing debt is interest paid to debtholders is deducted before corporate income taxes are calculated whereas payments to equity holders in the US do not receive a tax deduction. So, a reduction in corporate tax rate will reduce the weight of debt in capital structure as the corporations will find debt less beneficial due to reduction of interest tax shield. I test the hypotheses whether US corporations dynamically adjust their Capital structure in response to an event like a sharp drop in corporate tax rates.

U.S. tax law provides businesses with an incentive to use debt rather than equity financing by subsidizing debt through interest deductibility. That is, businesses may deduct net interest payments from their taxable income, thereby lowering their effective tax rate. However, payments to shareholders (dividends and capital gains) may not be deducted from taxable income. United States had one of the highest marginal tax rates for a developed country and from 1986 to 2017, the highest federal tax rate for corporations was 35% and with state and local taxes, a large profitable US corporation paid on average about 40% marginal tax on their earnings. As part of President Donald Trump’s election promise, the passage of the Tax Cuts and Jobs Act (TCJA) was passed on December 20, 2017, where the corporate federal tax rate in the US was changed to a flat 21% starting January 1, 2018, and with state and local taxes, the new average marginal tax rate is around 27%. This brings the US rate to below the average for most other OECD countries and TCJA also repeals the corporate alternative minimum tax. In 2017, before the TCJA, U.S. businesses could, in general, deduct the full value of their interest costs from their taxable income. Therefore, the value of the tax benefit a business receives depends primarily on the tax rate it faces because interest payments don’t affect tax liability directly. Now, the TCJA limits the amount of interest a business can deduct to its “net business interest expense” equal to no more than 30% of the earnings before interest, taxes, depreciation, and amortization (EBITDA) for taxable years 2018 through 2021. EBITDA is essentially a measures pre-tax cash flow from operations before the firm makes any investment back to either maintain existing assets or for growth. All these changes imply that the TCJA substantially reduces the tax advantages of debt financing with the direct effect being an increase the after-tax cost of debt financings.

The indirect costs of debt include an increase in distress costs due to increased probability of bankruptcy and all the associated costs that come with it. Debt also creates additional business risk to the equity investors by making the firm riskier which is reflected through higher “beta” and higher cost of equity of levered firms. At the leverage optimum, the benefit of the last dollar of debt just offsets the cost. So, if the costs of debt outweigh the benefits of debt which are primarily due to tax savings, firms will have lower debt for their optimal capital structure. This is the crux of the Trade-off theory for Capital Structure and recent studies such as Gale et. al (2008) and Carrizosa et. Al (2019) have predicted a lowering of debt ratios due to the TCJA. I argue that Capital structure changes suffer from inertia and companies are very slow to readjust their debt ratios. I offer some explanations for my argument and using data from 2017 and 2018.

## 2. Literature Review

Taxes appear to be as important as other traditional variables in explaining capital structure choices. Faccio and Xu (2015) using nearly 500 shifts in statutory corporate and personal income tax rates across Organisation for Economic Co-Operation and Development (OECD) countries find both corporate and personal income taxes to be significant determinants of capital structure. Graham (1996) used simulated firm-specific marginal tax rates to examine the firm's capital structure decision. He finds that high tax rate firms issue more debt than low tax rate firms. Fleckenstein et. al (2019) using an extensive data set constructed from all corporate income tax returns filed with the IRS in the United States from 1926 to 2009 find that an increase in the marginal corporate tax rate of 1% translates into a 0.15% increase in corporate leverage.

The recent empirical evidence on the trade-off theory for capital structure choice is mixed (for a discussion see Graham and Leary, 2011) though there is a consensus that corporate taxes are a strong influence on amount of debt financing. What is less clear is the speed of adjustment. Dynamic duration models of Capital Structure show that firms behave as though adhering to a dynamic trade-off policy in which they actively rebalance their leverage to stay within an optimal range. Fama and French (2002) note that firms' debt ratios adjust slowly toward their targets. That is, firms appear to take a long time to return their leverage to its optimal level and these characteristics can be due to inertia or indifference. Graham and Leary (2005) suggest that the presence of adjustment costs often prevents this response from occurring immediately (Graham and Leary, 2005), resulting in shocks to leverage that have a persistent effect. This persistence is more likely a result of optimizing behavior in the presence of adjustment costs.

## 3. Data and Descriptive Analysis

The data for Table 1 is compiled from Thomson Reuters. Table 1 shows the growth of the level of US Corporate Debt, the new issue growth (which includes re-financing of bonds) as well as the average 10-year Treasury bond rate during that year.

TABLE I: Interest Rates & Rate of growth of US Corporate Debt

Year	10 -year US Treasury	Total Debt Growth	New Issue growth
2010	3.11%	2.02%	10.79%
2011	2.60%	2.42%	-3.56%
2012	1.74%	2.36%	33.00%
2013	2.42%	8.67%	1.83%
2014	2.40%	4.82%	4.17%
2015	2.12%	2.88%	2.70%
2016	1.87%	4.60%	2.28%
2017	2.35%	4.13%	8.36%
2018	2.88%	3.39%	2.40%

There is a -0.40 negative correlation between the 10-year treasury rate and new issue rate which is causal and companies tends to use debt financing and refinance debt when interest rates fall.

Figure 1 depicts the dollar value of debt and new debt issuance. There has been a steady increase in debt levels since 2010 from \$6.72 trillion to \$9.3 trillion. In the aggregate, US non-financial service companies did not reduce debt, but instead added \$305 billion to their debt load in one year since the introduction of TCJA in 2018. The growth rate of new issue debt did reduce from 8.36% in 2017 to 2.4% in 2018.

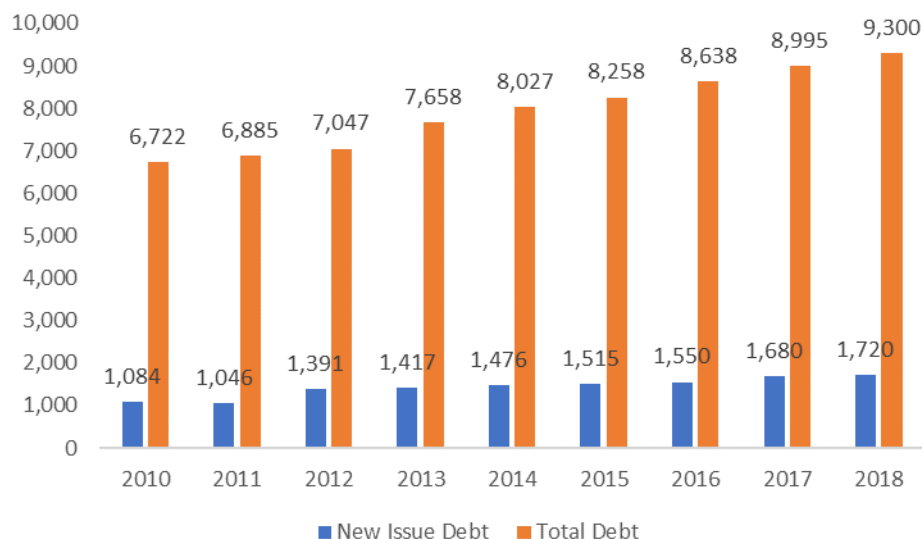
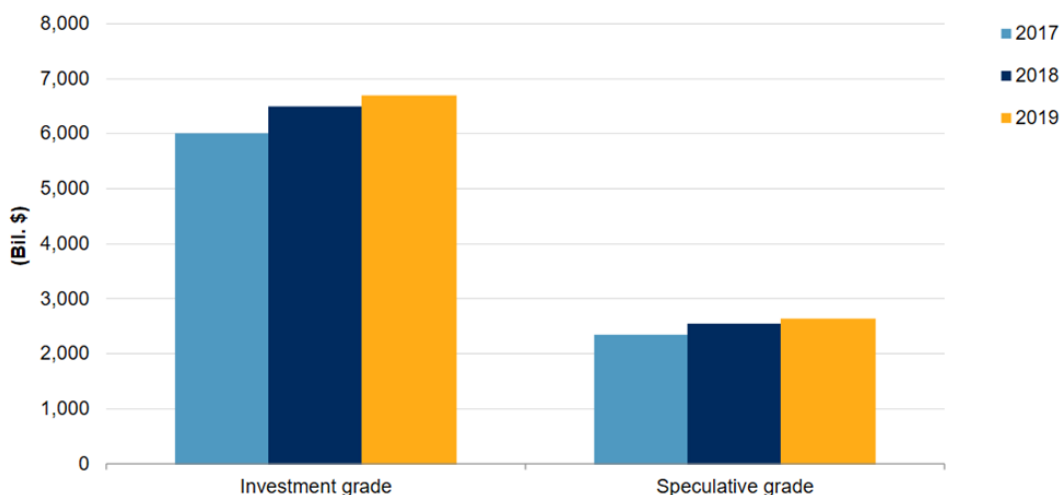


Fig. 1: Total Debt and New Issue Debt (in Billions of \$'s)

Figure 2 shows the US corporate debt levels by investment grade and speculative grade for beginning of the years 2017, 2018, and 2019. It is evident from figure 1 that the TCJA have failed to stop the debt levels to increase atleast in the short run.



US Corporate Debt issuances Includes bonds, loans, and revolving credit facilities that are rated by S & P Global Ratings from financial and non-financial issuers as of the beginning of each year. Source: S & P Global Fixed Income Research.

Fig. 2: US Corporate Debt levels (2017-19)

Table 2 shows some finance and macroeconomic variables for 2017 and 2018. There are macroeconomic

factors that can effect the level of debt and new debt issuance by the US companies. Average 10 -year treasury bond rates were higher in 2018 than 2017 by about 58 basis points which would increase before tax cost of new debt. However, the corporate credit spreads declined in 2018 so the yield on an average 10 year Corporate Aaa bond was only 16 basis points higher than 2017. For Baa bonds, the yield difference was bit higher at 33 basis points. The GDP growth rate increased in 2018 that might have resulted in more optimism about future investing projects hence issuance of more debt.

Let us look at some measures of Capital structure from Table 2. The Book debt to Capital is almost unchanged in 2017 and 2018. The book debt to total Capital which is measured by dividing the total interest-bearing debt by sum of total interest-bearing debt, total shareholder equity and Preferred Equity (if any). The Market Debt to Capital and Market Debt to Equity ratio is higher in 2018 than 2017. The Market Debt to Capital is estimated by dividing the Market value of Debt by Market value of capital which is simple the sum of Market value of debt, Market value of equity or Market Capitalization and market value of preferred equity. The Market Debt to Capital in 2017 was 26% and in 2018 was 30%. Market Debt to Equity is market value of debt divided by market value of equity. In 2017, the Market D/E was 50% and in 2018 that number went up to 61%. The increase in these ratios market ratios seems to be steep, but this effect is due to decrease in Debt as well as decrease in market values of equity due to negative stock market returns in 2018. The market values of Capital structure are more volatile than book values, but it is clear from the data that the debt ratios did not decline from 2017 to 2018 though the marginal tax rates as well as the effective tax rates both sharply declined due to the effect of TCJA.

TABLE II: Financial and Macroeconomics Data

Variables	2017	2018
Number of firms	7247	7209
Book Debt to Capital	50.04%	50.21%
Market Debt to Capital	26%	30%
Market D/E	50%	61%
Effective tax rate	11.77%	8.48%
Marginal Tax rate	40.00%	27.00%
Average 10 Year Treasury Bond Yield	2.33%	2.88%
Inflation	2.10%	1.50%
GDP growth rate	1.40%	2.50%
Moody's Aaa spread	1.41%	1.02%
Average Yield (10 year Aaa)	3.74%	3.90%
Moody's Baa spread	2.11%	1.89%
Average yield (10 year Baa)	4.44%	4.77%

## 4. Conclusion

It is evident that in the short term the TCJA did not result in decrease in debt ratios as predicted by capital structure theories in the short run. There are a few reasons behind this, the companies enjoying the low credit spreads over the treasury bond rates and a robust US economy. However, in opinion three reasons stand out - the presence of adjustment costs in financing behavior, corporate inertia or indifference and uncertainty over future tax changes. Whether there will be an adjustment in the near term (2-4 years) remains to be soon. I leave for future research when data from 2019-2022 is available.

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