

HOW MUCH DOES THE CORPORATE TAX ACTUALLY COST? AN ANALYSIS OF U.S. REVENUE GENERATION POLICY

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Abstract

In the recent battle for tax reform, one of the most frequently cited concerns was lost tax revenue. Some experts claim that tax receipts will increase now that the corporate tax has been cut; others fear that the Treasury will lose billions, if not trillions, of dollars. This debate stems from a disagreement about the location of the revenue-maximizing rate, or the tax percentage that would bring in the most possible revenue. While much literature has attempted to identify a revenue-maximizing rate, few studies have meta-analyzed leading literature regarding the revenue-maximizing rate and compared it to the state of research on current U.S. effective tax rates. Effective tax rates, or taxes after deductions and credits, may be significantly lower than the technical statutory rates. This study performs a meta-analysis on existing literature to determine the average effective rate and compares this rate to the scholarly consensus on the revenue-maximizing rate to determine if corporate tax cuts will increase revenue. Assuming that these averages are likely correct, it concludes that tax cuts have little potential to increase cash flow to the U.S. Treasury.

Introduction

While it is not the most sensational topic, few issues excite conservative policy wonks like corporate tax reform. Experts from organizations across the spectrum of conservative thought—from the libertarian Mises Institute (Filoso, 2010) to the more mainstream conservative Heritage Foundation (Michel, 2017)—have found common cause advocating for lower corporate tax rates. At first glance, it is not difficult to see why: statutory American corporate taxes were until recently the highest in the developed world, at almost double the Organization for Economic Cooperation and Development (OECD) average (Pomerleau, 2014). If one included state taxes, the average statutory rate came out to nearly 40% in 2014 (Pomerleau, 2014), prior to the Republicans' 2017 tax reform package. In an increasingly globalized world, high taxes may force many businesses to relocate to other countries, robbing the government of valuable tax revenue and American workers of their jobs. Conversely, slashing the tax seems like a win-win.

However, left-leaning politicians are quick to point out the controversial assumptions that conservatives have made when they call for lower corporate taxation. The assumption that companies that stay will boost revenue oversimplifies a complex issue. Even if some additional businesses remain in the United States, it is not clear that their taxes will match the lost revenue from lowering rates. The only way to determine whether lowering taxes will increase revenue is through identifying the *revenue-maximizing rate*: a hypothetical rate of taxation that will maximize the amount of cash inflow to the United States Treasury. While this idea was most famously expressed by Art Laffer, a prominent conservative economist, the basic hypothesis is uncontroversial. If taxes are set at zero percent, then no revenue can be generated. On the other hand, if taxes are set at one hundred percent, then most official economic activity will cease, since there will be no incentive to make profits. This will also result in little-to-no tax revenue. Therefore, on the “Laffer” bell curve set in-between these two points, a revenue-maximizing point must exist (Brill & Hassett, 2007). The real disagreement between the right and the left on this issue, therefore, is where that point is located.

Furthermore, even if the revenue-maximizing rate is below the current statutory corporate tax rate, lowering the tax might not increase revenue. That is because tax revenue is dependent on a different kind of tax rate: the effective rate. Effective rates measure what the taxpayer sends to the government after deductions, credits, and other loopholes (“Actual U.S. Corporate Tax Rates,” 2017). Thus, even if the previous statutory rate exceeded the revenue maximizing rate, the *effective rate* might average below it. If this were the case, then revenue would fall with tax cuts, not increase.

The research question that this study poses is whether the effective corporate

tax rate exceeded the revenue maximizing rate before the Republican tax reform. This question has significant consequence for the U.S. treasury in the wake of the 2017 tax reform. If the answer is yes, then the treasury may stand to increase its revenues in the years to come. If not, then the concerns of deficit hawks and Democrats will be vindicated. The hypothesis answers the question in the affirmative. The validity of the hypothesis will be tested through a meta-analysis of the current literature on both the effective corporate rate and the revenue maximizing rate.

Literature Review

The contentious nature of the debates over corporate tax reform has resulted in a wealth of research on the topic. However, none of the literature this study reviewed gave readers a broad overview of the research on the U.S. corporate effective rate and the corporate revenue maximizing rate, despite the relatedness of these questions. Therefore, the literature can be separated into two fairly distinct groups: inquiries into the U.S. effective rate, and study of the hypothetical corporate revenue-maximizing rate.

The U.S. effective rate has been studied using several different methodologies. However, a substantial body of research suggests that the effective rate is one of the highest in the world. Philip Dittmer (2011) claimed to cite no less than thirteen unique studies in his analysis of the literature, each of which concluded that the U.S. rate is nearly the highest in the developed world. Dittmer grouped these studies into three broad categories based on methodology. The first category sampled financial reports from real firms to find their average tax liability. The second created a hypothetical firm—or a set of hypothetical firms—and then subjected them to an algorithm meant to approximate the U.S. tax code. This approach can be further split into two subcategories: studies that examined the effective average tax rate (EATR) paid and those which examined the effective marginal tax rate (EMTR), or the tax paid on the final dollar of break-even investment. The final approach used IRS data to compare total firm profitability against total corporate taxes paid (Dittmer, 2011). However, as this last method is only applicable to U.S.-headquartered firms, it cannot provide data to compare effective rates outside the United States, making it useless for Dittmer's purposes.

Across these studies, results vary dramatically. The lowest estimate, which did not consider multinational corporations, calculated an effective rate of 23% using a sample of financial reports (Markle & Shackelford, 2011). Three EMTR studies put the rate between 23% and 24%: Klemm (2005), Bilicka, Devereux, and Fuest (2011), and Hassett and Mathur (2011). The highest rate was calculated by an EATR study

that put the tax at 34.9% (Bilicka et al., 2011).¹ This finding was closely matched by an EMTR study by Chen and Mintz (2011) which estimated the rate to be 34.6%. Dittmer (2011) found the overall average of these results to be about 28%. Despite the variety of these results, it is worth noting that every single study found that the U.S. effective rate is substantially (at least 4.8 points and in one case 17.1 points) higher than the average developed country.

The revenue-maximizing rate has likewise attracted significant controversy. American Enterprise Institute economists Alex Brill and Kevin Hassett (2007) used tax receipt data from the OECD countries from 1980-2005 to estimate the Laffer rate. They concluded that revenue-maximizing rates have changed over time. They found that the revenue-maximizing rate at the end of the studied period was 26%, and that the rate had been falling since the beginning of the study period as capital grew more mobile. They based their methodology largely off a study by Clausing (2007). Clausing concluded the overall revenue-maximizing rate was 33% from 1979-2002 for 36 OECD countries. While this rate did not account for changes over time, Clausing did introduce another nuance: small countries with more globalized economies were the most likely to have low revenue-maximizing rates, while large, poorly-integrated, countries had higher Laffer curves. In response to this potential concern, Brill and Hassett (2007) also conducted a regression analysis that left out outliers like Ireland, Switzerland, and Norway that might have skewed their average. However, their results remained largely unchanged. Similarly, Mintz (2007) conducted a study that focused on data from 2001-2005. He concluded that the average revenue-maximizing rate for a much larger sample of eighty countries was 28% during the study period.

On the other hand, Devereux (2006) used data from 26 OECD countries since 1965 and found weak evidence of a low, 33% revenue-maximizing rate but suggested that the relationship between tax revenue and tax rates in OECD countries is nearly random. Gravelle and Hungerford (2007) noted that, if Clausing's 33% worldwide average is specified for the large and comparatively closed U.S. economy, the revenue-maximizing rate is 57%—far above the old U.S. rate by all accounts. Gravelle and Hungerford's own estimations put the U.S. revenue-maximizing rate at a whopping 75%.

1. The Bilicka study is a single report that approached the effective rate from both the EATR and EMTR perspective. Thus its results are included among the highest and lowest effective rate estimates. It is also worth pointing out that Dittmer cited the Bilicka study as "(Devereux et al., 2011)" even though Bilicka is named at the top of the report. For this reason, and to avoid confusion with the 2006 Devereux study cited elsewhere in this study, all citations here will be formatted as Bilicka, et al.

Data and Methods

This study's data is drawn from the results of the research discussed in the literature review. Measurements of the effective rate will receive attention first. The literature's conclusions will first be tabulated and numerically compared. Afterward, the methodology of each study will receive qualitative scrutiny; this portion of the investigation will determine the strengths and weaknesses of each approach. Subsequently, the study will tentatively infer the former effective rate of the U.S. The revenue-maximizing tax rate will face an identical, inductive process. After the literature is analyzed quantitatively and qualitatively, the first stage of research will be complete.

The second stage of research will ascertain whether the effective rate was higher than the revenue-maximizing rate. A simple numerical comparison would theoretically suffice; however, given the widely variant state of the literature, some qualitative analysis will be necessary before any conclusions can be drawn. If the study infers that the effective rate is the higher number, then the hypothesis will be confirmed. If the revenue-maximizing rate is higher, then the null hypothesis will be confirmed.

Research

Inferring the Former U.S. Corporate Effective Tax Rate

Dittmer (2011, p. 4) provided a useful table summarizing the same research provided in the literature review.

It is important to note that the averages that Dittmer calculated do not weight all studies equally and do not attempt to establish any inference as to the true effective rate. For example, he cited Hassett and Mathur (2011), Bilicka et al. (2011), Markle and Shackelford (2011), and Klemm (2005) twice each. In some cases, these studies used independent methodologies to arrive at different, but universally applicable numbers. Bilicka et al. is one such case. In such cases, it is perhaps wise to treat the two conclusions as the results of two independent studies. However, not all of the literature meets this standard. Markle and Shackelford (2011) applied the same methodology to both multinational and domestic corporations, but Dittmer treated their results for the two types of businesses as separate.² Therefore, while Dittmer's chart may serve as a preliminary tabulation, some qualitative analysis is clearly necessary.

2. Markle and Shackelford (2011) found that multinational corporations pay a significantly higher sum, undercutting the popular narrative that multinational corporations hide away profits in obscure tax havens and pay less than their domestic rivals.

Methodology Category and Study	Methodology Note	Data Year(s)	Number of Nations in Study	U.S. Rank From Highest	U.S. Effective Tax Rate	Simple Average Rate, All Other Nations	Weighted (GDP) Average Rate	U.S. ETR Points Above Simple Average
Sample Data, ETR								
PwC/BRT (2011)	All Firm Types, Worldwide Income, National Mean	2006-2009	59	6	27.7%	19.5%	25.0%	8.2
Markle/Shackelford (2011)	Domestic Firms, Mean	2005-2009	15	3	23.0%	18.2%	24.2%	4.8
Markle/Shackelford (2011)	Multinationals, Mean	2005-2009	15	2	28.0%	20.6%	26.0%	7.4
Lee/Swenson (2009)	All Firm Types, Worldwide Income, Mean Firm ETR	2006-2007	70	8	29.5%	21.2%	28.5%	8.3
Average:					27.0%	19.9%	25.9%	7.2
Hypothetical Firm, ETR								
Devereux et al. (2011)	EATR, Investment in Four Asset Types	2010-2011	19	2	34.9%	25.7%	27.2%	9.2
Hassett/Mathur (2011)	EATR, Hypothetical Manufacturing Investment	2010	28	2	29.0%	20.6%	24.9%	8.4
KPMG (2010)	Average of 17 Hypothetical Firms	2009-2010	10	4	28.3%	23.4%	26.5%	4.9
PwC/World Bank (2010)	"Profit Tax" For Hypothetical Firm	2009	183	23	27.6%	17.8%	17.5%	9.8
Klemm/IFS (2005)	EATR, Manufacturing Investment	2005	19	3	29.0%	24.2%	27.4%	4.8
Average:					29.8%	22.3%	24.7%	7.4
Hypothetical Firm, EMTR								
Devereux et al. (2011)	EATR, Investment in Four Asset Types	2010-2011	19	4	23.3%	17.7%	19.0%	5.6
Hassett/Mathur (2011)	EMTR, Manufacturing Investment	2010	28	5	23.6%	17.3%	21.9%	6.3
Chen/Mintz (2011)	EMTR, Mixed Capital Investments	2010	84	5	34.6%	17.5%	23.6%	17.1
Klemm/IFS (2005)	EMTR, Manufacturing Investment	2005	19	5	23.6%	20.1%	23.4%	3.5
Average:					26.3%	18.2%	21.9%	8.1
Aggregate Average:					27.9%	20.3%	24.2%	7.6

Figure 1. Effective corporate income tax rates across nations, by study (Dittmer, 2011).

The studies’ particular definitions of “firm” also matter a great deal. As one can see from the table above, not all studies examine the same facet of corporate taxation in America. In fact, some of the outliers do not attempt to examine effective corporate taxes as a whole. Hassett and Mathur (2011) and Klemm (2005), studies with unusually low EMTR results, only examined manufacturing investments. Markle and Shackelford (2011) also offered no clear formula for weighting their two results, since their conclusions ought not count as separate methodologies or studies. If these studies are removed from the average, the effective rate estimate rises to 29.4%.

Of course, the level of uncertainty in these results and the qualitative factors at play make such a precise measure almost meaningless. However, an average effective rate somewhere in the high twenties or low thirties seems entirely reasonable, given the data.

Figure 2 gives a cursory summary of the findings described in the literature review. Once again, however, the listed average does not weight all studies equally or account for important differences in methodology. In two cases—Brill and Hassett (2007) and Clausing (2007)—the same study is cited twice, even

though only one independent methodology was used. Given Brill and Hassett’s stated emphasis on the importance of time in calculating revenue-maximizing rates, it seems judicious to pick their estimate of the rate at the end of the study period, rather than an overall average. Similarly, since Clausing herself makes a point of observing that revenue-maximizing rates differ from country to country, her global average of 33% seems less useful than the U.S. specifications made by Gravelle and Hungerford (2007).

Once these issues are resolved, the average revenue-maximizing rate shifts upward to 43.8%. Interestingly, this number is more than ten points above the median revenue-maximizing rate, which remains constant at 33%. This is dissimilar from the effective rate calculations, which reached a manageable 1.2% difference between the median and mean. However, given the much wider range of research conclusions on the revenue-maximizing rate—with a 49-point gap between the lowest and highest estimate, rather than the effective rate’s 11-point gap—divergence between the mean and median is unsurprising.

Study	Revenue-maximizing rate (%)	Notes
Brill and Hassett (2007)	26	Rate calculated for the end of the studied period.
Mintz (2007)	28	
Clausing (2007)	33	Clausing suggests that the rate may vary depending on the integration and size of an economy.
Brill and Hassett (2007)	33	Rate calculated by averaging the revenue-maximizing rate over the entire study period.
Devereux (2006)	33	Devereux suggests this result is weak and that a revenue-maximizing point may not exist.
Clausing (2007)	57	Rate calculated with Gravelle and Hungerford’s U.S. specifications.
Gravelle & Hungerford (2007)	75	
Average	40.7	

Figure 2. Revenue maximizing rates, by study.

Given the state of the literature, it is extremely difficult to infer a revenue-maximizing rate for the U.S. corporate tax. Perhaps Devereux (2006) was correct; other economic factors could so outweigh corporate tax considerations that no calculable revenue-maximizing rate exists. If one insists on a number, a rate in the thirties or mid-to-low forties seems most probable. However, it goes without saying that the average and median arrived at in this study are far too imprecise for the purposes of policy-making.

Comparing Effective and Revenue-Maximizing Rates

At this point in the study, it is important to address a topic that has been largely ignored thus far. Some of the studies research which statutory rates maximize revenue, not which effective rates maximize revenue. Devereux (2006), Clausing (2007), and Brill and Hassett (2007) adopt this approach. One cannot help but wonder if the state of the literature on revenue-maximizing rates would be clearer if more focus was given to effective rates, which are economically far more consequential than statutory rates.

At first, this might seem like a crucial obstacle to this study. However, the same studies which use statutory rates also largely rely on international data to calculate their Laffer curve. Furthermore, most of the data from these studies comes from the 1980s onward. This significantly mitigates the original problem, since most other developed countries ditched the United States' byzantine approach to corporate taxation in the 1980s in favor of a streamlined code with few exceptions (Solman, 2017). In other words, internationally, statutory rates are the effective rates. Therefore, it is not nearly as problematic to compare U.S. effective rates with the revenue-maximizing rates derived by these studies as one might imagine. This is even the case for the modified Clausing (2007) conclusions, since the original rate is calculated using international data and is only then modified by Gravelle and Hungerford (2007) to account for U.S. particularities.

With that issue addressed, this study turns its attention to comparing the results of the two previous research sub-sections. The likelihood that the U.S. effective rate exceeded the revenue-maximizing rate is small. To be sure, it is possible to assemble such a case. If we assume that Bilicka et al. (2011) correctly estimated the effective rate (about 35%) and that Brill and Hassett (2007) correctly estimated the revenue-maximizing rate (about 25%), then the recent tax cut could boost revenue. However, while Brill and Hassett certainly believe this, it cannot be reached without cherry-picking. The range for both numbers identified in this study, while large, is not so large as to present a hope that the U.S. was on the "right side of the Laffer curve" until recently.

With that said, three nuances must be introduced. First, Devereux (2006) could be right; there might not be any real semblance of a Laffer curve with respect to corporate taxes. This would certainly explain the failure of the literature to come to any consensus. If so, then attempts to predict revenue based on tax rates are inherently wrong-headed.

Second, as Brill and Hassett (2007) noted, it seems probable that the revenue-maximizing rate—if it exists at all has lowered over time as capital becomes more mobile. Furthermore, most of the data used to estimate the U.S. corporate Laffer curve is more than a decade old. Therefore, it is possible that the revenue-maximizing

rate has dived below the effective rate in the last decade. If so, the recent tax cuts were well-timed.

Finally, without Gravelle and Hungerford (2007), the results of this study would be rather different. There is no reason to discard their results; they are qualified economists who offered helpful insights for this study. However, without their conclusions and the modifications they made to Clausing (2007), the average revenue-maximizing rate would drop to 30%. A confirmation of the hypothesis would be, if not likely, at least quite plausible in this scenario.

Conclusion

The next several years will doubtless prove instructive to economists and political scientists alike. The results of the Republican tax plan will be watched with fascination. However, based upon the literature available, the null hypothesis should be accepted. The question, it seems, is not if corporate tax reform will cost the Treasury, but how much.

That is not to say there is no reason for conservatives to cheer for corporate tax reform. It is possible that increases in investment, jobs, wages, and productivity will make up for the increased deficit. Perhaps GDP will even grow in comparison to the debt, resulting in a more stable fiscal situation. After all, as noted by Dittmer (2011), the United States was almost surely one of the most afflicted countries in the world as measured by its corporate tax rate. It seems unlikely that this will be the case after the Republican reforms.

Deficit hawks and Democrats, however, have reason to grieve. Despite their severe legislative defeat, it seems that their concerns were legitimate. Furthermore, efforts to curb the growing debt through spending cuts face heavy political opposition. There is little chance that the country's growing fiscal gap will narrow in the foreseeable future. Tax cuts and spending increases pull in opposite directions, but both are nearly impossible to undo.

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