

## Summary

This brief reports Penn Wharton Budget Model's (PWBM) static and dynamic analysis of the Senate Tax Cuts and Jobs Act (TCJA), as passed by the Senate on December 2, 2017. Even with assumptions favorable to economic growth, the Senate TCJA increases debt by over \$1.5 trillion dollars over the next decade.

## Key Points

- By 2027, under our standard economics assumptions, GDP is projected to be between 0.5 percent and 1.0 percent larger, relative to no tax changes. Debt increases between \$1.8 trillion and \$1.9 trillion, inclusive of economic growth.
- By 2040, GDP is projected to be between 0.4 percent and 1.2 percent larger under our baseline assumptions, and debt increases by \$2.6 to \$3.1 trillion.
- Additional sensitivity analysis indicates that even under assumptions favorable to economic growth, by 2027, GDP is projected to be between 1.0 percent and 1.9 percent larger, and debt increases between \$1.5 trillion and \$1.8 trillion.

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# The Senate Tax Cuts and Jobs Act, as Passed by Senate (12/2/17): Static and Dynamic Effects on the Budget and the Economy

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## Introduction

Penn Wharton Budget Model (PWBM) previously reported [static and dynamic analysis](#) of the Senate Tax Cuts and Jobs Act (TCJA), as of November 9, 2017. The bill was [amended](#) on November 15, 2017, thereby generating updates to [static](#) and [dynamic](#) analysis. This brief reports our static and dynamic analysis for the newest version of bill [passed by the Senate](#) on December 2, 2017. Readers are encouraged to read some of our [previous analyses](#) for related definitions used in this brief.

## Amendments Passed by the Senate

The newest version of the Senate bill includes several major changes relative to the November 15th version. Amendments include retaining a modified individual Alternative Minimum Tax (AMT), retaining the corporate AMT, allowing an itemized deduction for State and Local property taxes up to \$10,000, increasing the deduction for income from pass-through businesses to 23 percent, increasing the deemed repatriation tax to 14.5 percent for cash and 7.5 percent for non-cash holdings, modifications to full expensing and modifications to the tax treatment of life insurance policies. Some smaller adjustments were also made.

## Modeling the Corporate AMT

Under current law, the statutory corporate tax rate is 35 percent with a corporate AMT rate of 20 percent. The bill passed by the Senate changes the corporate tax rate to 20 percent but retains the corporate AMT with no changes. One consequence of retaining the corporate AMT at a tax rate equal to the statutory rate is that many more corporations would incur AMT liability relative to current law. In addition, as has been widely reported

after the bill was passed, the effects of certain other provisions of the Senate bill would be substantially altered or offset.

In this brief, we assume that the Senate did not intend these interactions between the retained corporate AMT and the bill's other provisions. Instead, we model an alternative version of the corporate AMT, which adjusts the AMT tax rate and other AMT parameters such that a given corporation is just as likely to pay the AMT under the Senate bill as under current law. As shown below, our projected 10-year static revenue loss for the corporate tax rate cut is very close to that estimated by the Joint Committee on Taxation (JCT), which might indicate that JCT is following a similar modelling strategy.

### **Modeling Sunsets in the Dynamic Model**

To maintain consistency with budget reconciliation requirements, the Senate TCJA involves numerous major expiry of provisions (sunsets). However, in making those amendments, the bill's creators announced that they expect that sunset provisions would eventually be extended. We, therefore, model the *dynamic* (economic) effects of the amended bill as households and investors *expecting* no sunsets prior to the sunset dates. However, to be consistent with the actual bill, the sunsets then *unexpectedly* expire as scheduled. This modeling approach is generally more favorable for generating positive growth relative to alternatives.

### **Revenue Effects: Static and Dynamic**

PWBM reports the static effects on revenues with and without changes to federal outlays in Table 1. Including outlay effects is consistent with the [Joint Committee on Taxation's report](#), which finds that the Senate TCJA reduces revenue by \$1,447 billion from 2018 to 2027. PWBM's static model projects that, including outlay effects, the Senate bill reduces revenue by \$1,666 billion over the first 10 years. Not including outlays, PWBM finds a \$1,976 billion revenue loss over the first 10 years.

Between PWBM and JCT, there are considerable differences in the estimated costs of individual items, especially the individual AMT. These differences are due to several factors: interactions when changing multiple parts of the tax code at the same time; moderately different macroeconomic forecasts and parameters; and PWBM's forecast of demographic changes compared to JCT's focus on tax filers.

## **Table 1: Estimates of the Effect of the Senate Tax Cuts and Jobs Act on Federal Tax Revenues Relative to Current Policy 1**

Tax Provision	Revenue Effect 2018-2027 (billions of \$)		Revenue Effect 2018-2040 (billions of \$)
	JCT	PWBM	PWBM
<b>Individual</b>			
New tax rate and bracket structure	-1,174	-1,182	-1,239
Expand the standard deduction and repeal personal exemptions	484	462	462
Index tax provisions to chained CPI	134	89	766
New pass-through business deduction	-477	-625	-882
Pass-through business loss limits	137	146	133
Expand Child Tax Credit (CTC) and new non-child dependent credit	-580	-554	-530
Repeal and modifications to itemized deductions	829	620	614
Repeal Alternative Minimum Tax (AMT) <a href="#">2</a>	-636	-260	-287
Reforms to certain deductions and credits <a href="#">3</a>	31	28	53
Reforms to certain individual tax expenditures, including the ACA's individual mandate <a href="#">4</a> <a href="#">5</a>	313	316	1,188
Estate Tax Exemption Doubled <a href="#">6</a>	<u>-83</u>	<u>-83</u>	<u>-83</u>
<i>Subtotal</i>	<i>-1,021</i>	<i>-1,044</i>	<i>195</i>
<b>Corporate</b>			
Corporate tax rate 20% starting 2019	-1,329	-1,396	-4,237
Net interest deduction capped at 30% of income	308	308	862
Changes to the treatment of investment	-108	-144	-101
Modification to net operating loss deductions	158	117	117
Amortize research & experimentation costs	62	34	76

Tax Provision	Revenue Effect 2018-2027 (billions of \$)		Revenue Effect 2018-2040 (billions of \$)
	JCT	PWBM	PWBM
Repeal of Domestic Production Deduction	84	93	278
Reforms to certain business tax expenditures <sup>7</sup>	<u>138</u>	<u>136</u>	<u>500</u>
<i>Subtotal</i>	<i>-687</i>	<i>-852</i>	<i>-2,504</i>
<b>International <sup>8</sup></b>			
Territorial System	-216	-148	-415
Special one-time repatriation rate	298	205	188
Other international reforms <sup>9</sup>	<u>179</u>	<u>173</u>	<u>726</u>
<i>Subtotal</i>	<i>262</i>	<i>230</i>	<i>499</i>
<b>TOTAL (with Outlay Effects)</b>	<b>-1,447</b>	<b>-1,666</b>	<b>-1,810</b>
<b>REVENUE (Total without Outlay Effects)</b>	<b>-1,680</b>	<b>-1,976</b>	<b>-2,949</b>

Note: Effects on federal outlays, include tax refunds and the repeal of the individual mandate for health insurance.

Table 2 shows that over the 10-year budget window ending in 2027, the Senate Tax Cuts and Jobs Act is, on a dynamic basis, projected to reduce federal tax revenues between \$1.5 trillion (high initial return to capital) to \$1.8 trillion (low initial return to capital). Over this period, debt rises by more, between \$1.8 trillion to \$1.9 trillion, due to debt service. By 2040, revenue falls between \$1.5 trillion to \$2.3 trillion, whereas debt increases by \$2.6 trillion to \$3.1 trillion.

Table 2: TCJA Effects on Revenue and Debt Relative to Current Policy

Years	Cumulative Revenue (billions of \$)			Change in Debt (billions of \$)		
	Static	Dynamic		Static	Dynamic	
		High return to capital	Low return to capital		High return to capital	Low return to capital
2018-2027	-\$1,976	-\$1,535	-\$1,757	\$2,023	\$1,799	\$1,923
2018-2040	-\$2,949	-\$1,466	-\$2,281	\$3,508	\$2,570	\$3,142

Note: The revenue estimates in this table focuses on the official definition of “revenue” and, therefore, does not incorporate changes in outlays. Table 1 reports static analysis both inclusive and exclusive of changes in outlays. Changes in debt include changes in outlays.

**Economic Effects**

The Senate Tax Cuts and Jobs Act has effects beyond federal revenues, including effects on GDP, labor income and U.S. capital services, as summarized in Table 3. By 2027, GDP is between 0.5 percent and 1.0 percent larger than current policy in that year. However, this initial boost fades over time as more debt accumulates. By 2040, GDP is between 0.4 percent and 1.2 percent larger than current policy in that year.

The increase in debt by 2040 is less than half of the size that we previously projected for the [House-version](#) of the Tax Cuts and Jobs Act. However, the ultimate change in GDP is similar, although slightly larger in the Senate bill. The reason is that the lower debt in the long run for the Senate version is mostly achieved by sunsetting provisions that, if not deficit financed, would have encouraged economic growth.

**Table 3: TCJA Effects on Key Macroeconomic Variables Relative to Current Policy in Year Shown**

Year	GDP (% change)		Labor Income (% change)		Capital Services (% change)	
	High return to capital	Low return to capital	High return to capital	Low return to capital	High return to capital	Low return to capital
2027	1.0%	0.5%	1.0%	0.5%	2.6%	1.0%
2040	1.2%	0.4%	1.2%	0.4%	3.4%	1.0%

Note: Percentage change relative to current policy in 2027 and 2040, respectively. Consistent with our previous dynamic analysis and the [empirical evidence](#), the projections above assume that the U.S. economy is 40 percent open and 60 percent closed. Specifically, 40 percent of new government debt is purchased by foreigners.

Table 3 shows changes in the level of GDP in the shown years relative to current policy. An alternative measure, as shown in Table 4, is to examine changes in the *annual growth rate* of GDP that is needed to produce the different levels shown in GDP over time. PWBm finds that over the next 10 years, average annual GDP growth will be 0.05 percentage points to 0.10 percentage points higher under TCJA than with no tax changes. However, from 2028 to 2040, average annual GDP growth will be 0.00 percentage points to 0.02 percentage points *larger* than under current law, due to the effects of larger debt.

**Table 4: TCJA Effects on Average Annual GDP Growth Relative to Current Policy over Period of Time Shown**

Years	Average Annual GDP Growth Rate (percentage point change)	
	High return to capital	Low return to capital
2018-2027	0.10	0.05
2028-2040	0.02	0.00

Note: Percentage point change relative to current policy from 2018–2027 and 2028–2040, respectively. Consistent with our previous dynamic analysis and the [empirical evidence](#), the projections above assume that the U.S. economy is 40 percent open and 60 percent closed. Specifically, 40 percent of new government debt is purchased by foreigners.

**Sensitivity Analysis**

Consistent with our previous dynamic analysis and the [empirical evidence](#), the projections above assume that the U.S. economy is 40 percent open and 60 percent closed. Specifically, 40 percent of new government debt is purchased by foreigners.

To show the sensitivity of our results to this assumption, Table 5 considers two extreme cases: 100 percent open (consistent with a small open economy) and 0 percent open (consistent with a closed economy, maybe due to more trade restrictions). In general, the combination of a higher initial return to capital and more openness (fewer trade barriers) leads to more economic growth than a lower return, which also dampens the revenue effects of tax cuts. However, even in the extreme case of a 100 percent open economy, where debt effects have no impact on the economy’s growth rate, the Senate bill still increases debt by over \$1.5 trillion dollars over the next decade, even under the “high return to capital” assumptions.

**Table 5: Sensitivity of Dynamic Results to “Openness” of the Economy**

	<b>Cumulative Revenue (billions of \$)</b>		<b>10 Year Change in Debt</b>		<b>GDP Relative to Current Policy in 2027 (% change)</b>	
	<b>Dynamic</b>		<b>Dynamic</b>		<b>Dynamic</b>	
	<b>High return to capital</b>	<b>Low return to capital</b>	<b>High return to capital</b>	<b>Low return to capital</b>	<b>High return to capital</b>	<b>Low return to capital</b>
100% Open	-\$1,012	-\$1,512	\$1,532	\$1,805	1.9%	1.0%
0% Open	-\$1,886	-\$1,920	\$1,978	\$2,001	0.3%	0.2%

Note: The revenue estimates in this table focuses on the official definition of “revenue” and, therefore, does not incorporate outlays, including tax refunds.

**Conclusion**

Penn Wharton Budget Model’s dynamic analysis projects that The Senate Tax Cuts and Jobs Act increases federal debt in both the short- and long-run relative to current policy. In the near term, there is a small boost to GDP, but that increase diminishes over time.

1. PWBM’s integrated model includes both revenue and spending policy. For our tax simulator, we model “current law” that allows tax provisions to expire as scheduled, consistent with JCT’s approach. For our spending side, we model “current policy” that does not, for example, allow changes to mandatory changes when, for example, the Social Security’s trust funds are exhausted. For debt calculations and dynamic analysis, this integration provides a more holistic analysis since some government benefit formulas, including the initial calculation of Social Security benefits upon retirement, are explicitly tied to the growth in average wages throughout a participant’s lifetime. ↩
2. Absent other changes, PWBM’s estimate of the revenue loss of repealing the individual AMT compared to baseline is \$515 billion. ↩
3. Reforms to certain credits and deductions includes requiring Social Security numbers for for each child to claim refundable portion of CTC and repeal of the moving expense deduction. ↩
4. Reforms to certain exclusions includes repeal of exclusion for employer-provided bicycle commuter fringe benefit, qualified moving expense reimbursements, modified exclusion of gain from sale of a principal

residence, repeal of the ACA individual mandate, and other provisions. ↩

5. For these items PWBM applies PWBM's macroeconomic forecast to JCT estimates. ↩
6. For these items PWBM applies PWBM's macroeconomic forecast to JCT estimates. ↩
7. For these items PWBM applies PWBM's macroeconomic forecast to JCT estimates. ↩
8. PWBM's estimates include lower cross-border profit flows than JCT's. ↩
9. For these items PWBM applies PWBM's macroeconomic forecast to JCT estimates. ↩