ISSUE BRIEF

How the GOP Tax Bill Will Affect the Economy

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On November 16, the House passed its version of the Tax Cuts and Jobs Act, a bill that would reform the tax code by lowering marginal rates for most households, corporations, and small businesses.

The Senate Finance Committee reported its version of the bill out of committee on November 16, and the full Senate is expected to take up the bill in the week of November 27. Though the complete details are yet to be finalized, both the House and Senate versions have enough in common that it is possible to estimate the effect this bill would have on the economy in the long run.

The following estimates reflect the House bill as reported out of the Ways and Means Committee[1] and the Chairman's mark in the Senate Finance Committee.[2] (The version that the House passed is nearly identical to the bill reported out of committee).

Main Reforms in the Bill

Both versions of the Tax Cuts and Jobs Act reduce the corporate tax rate from 35 percent to 20 percent, reduce tax rates on non-corporate (pass-through) businesses, and increase the present discounted value of capital cost recovery allowances.

The capital-cost-recovery-allowance improvements are primarily a function of a reduced class

life for structures in the Senate bill, and higher section 179 expensing thresholds, as well as temporary expensing for machinery and equipment in both the House and Senate bills.

The Senate bill generally lowers the rates on pass-through entities to a greater degree than the House bill.

Long-Run Estimates

The economy and the U.S. tax code are complex systems. A complete analysis of any tax reform proposal should reflect that complexity. However, a simple estimate that focuses on the key marginal rate and tax base changes is sufficient to give an idea of the magnitude of the economic effects without resorting to complicated models.

The estimates presented here are within a reasonable range of values, based on empirical studies as described below in the methodology section.

We estimate that the House bill would increase the capital stock related to equipment by 4.9 percent, and the capital stock related to structures by 9.1 percent. These estimates are very similar to the comparable projections for the Senate bill (4.6 percent and 10.9 percent for equipment and structures, respectively).

The House bill is projected to boost long-run gross domestic product (GDP) by 2.6 percent, and the Senate version is expected to increase long-run GDP by 2.8 percent. To put that number in perspective, the increase in GDP translates into an increase of $4,000 to $4,400 per household.

Both bills only temporarily change the rules for expensing of new investment. We calculated the effects of the bills when the expensing rules are in

place and the effects after the expensing changes have expired. Our reported estimates are the simple average of the two, which reflects that businesses will have some expectation that the expensing rules may be made permanent at a later date.

If the expensing rules were made permanent, we estimate that GDP would be 2.8 percent higher under the House bill and 3.0 percent under the Senate bill. If the expensing rules were to expire, we estimate the House bill would increase GDP by 2.3 percent and the Senate bill would increase GDP by 2.6 percent.

The Tax Cuts and Jobs Act would lower the cost of capital and increase after-tax wages, which would increase the capital stock and number of hours worked, both of which would cause an increase in GDP.

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TABLE 1

Estimated Long-Run Effects from Tax Cut and Jobs Act

	HOUSE BILL	SENATE BILL
Capital stock (equipment)	+4.5%	+4.6%
Capital stock (structures)	+9.4%	+10.9%
Labor	+0.7%	+0.7%
Economic output (GDP)	+2.6%	+2.8%
Annual GDP per household (2017 dollars)	+$4,068	+$4,403

NOTES: Capital stock is the value of all the machinery, equipment, and structures in the economy. Labor is the total hours worked during a given year. Economic output is the market value of all the goods and services produced in the economy in a given year, or Gross Domestic Product (GDP). The change in annual GDP per household is based on the most recent value of GDP and an approximate number of 125 million U.S. households.
SOURCE: Heritage Foundation calculations. See methodology for details.

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1. Tax Cuts and Jobs Act, H.R. 1, 115th Congress, 2017, https://www.congress.gov/115/bills/hr1/BILLS-115hr1rh.pdf (accessed November 21, 2017).

2. Joint Committee of Taxation Staff, "Description of the Chairman's Mark of the 'Tax Cuts and Jobs Act,'" November 9, 2017, https://www.finance.senate.gov/imo/media/doc/11.9.17%20Chairman's%20Mark.pdf (accessed November 21, 2017).

Methodology

Our estimate is based on a standard neoclassical production function, which shows how the amount of capital and labor used in production determines economic output. When more capital or labor is used in production, output increases.

Our estimates reflect the steady-state values of capital and labor. In the steady state, the capital stock and hours worked per person have reached their equilibrium values because the marginal costs from additional investment and work equal the marginal benefits, after taxes. However, economic growth continues due to increases in population and technological innovation.

The presence of taxes on businesses and households creates differences between the returns generated by investment and the returns paid to savers, as well as differences between the wages paid by employers and the wages received by workers.

These differences create lost opportunities. Firms do not invest in, and households do not work on, projects where the marginal benefit is lower than the amount of the tax. Economists often call this loss dead-weight loss or excess burden.

Our analysis shows the effects of the Tax Cuts and Jobs Act through two channels. The first channel focuses on the demand for financing capital. A firm considering an investment in capital has to weigh the marginal cost of the capital investment against its marginal benefit, which is its projected return. The cost of capital to a firm is a function of the return it pays to equity and debt holders, the rate of depreciation of capital, and the taxes due on that capital. The equation for calculating the cost, originally set forth by Robert Hall and Dale Jorgenson,[3] is referred to as the user cost of capital. Higher corporate tax rates increase the user cost of capital. Additionally, increases in the present discounted value of capital-cost recovery allowances decrease the user cost of capital.

The second channel focuses on the supply of labor. When households decide how much to work, they have to weigh the marginal benefit of their after-tax wages against the marginal cost of activities other than work. An increase in after-tax wages increases the benefit to households from forgoing other activities, resulting in additional hours worked.

The lower the corporate tax rate, the greater the number of investment projects that are economically worthwhile, and the higher the steady-state level of capital. Similarly, the lower the income tax rate, the greater the number of job opportunities that are economically worthwhile, and the higher the steady-state level of hours worked.

Economic growth would increase temporarily following the passage of the Tax Cuts and Jobs Act as the economy would move to a new steady state with a higher per capita GDP. The benefits of these reforms would accrue every year, as the economy would operate in a steady state with higher GDP into the indefinite future.

Details About How the Estimate Was Conducted

We take the nominal rate of the return to capital to be 9 percent, which is the approximate average annual nominal return on the S&P 500 from 1871 to 2017. Recent yields on Baa corporate bonds have averaged around 5 percent. We take the inflation rate to be 2 percent, which is the value that the Federal Open Market Committee judges to constitute stable prices. Assuming that companies rely on debt for 25 percent of their financing, these values imply a required real rate of return of 6 percent. We assume that interest rates remain the same following the change in taxes.

The marginal tax rates for pass-through entities change with income and type of pass-through entity. We simplify the range of rates and take the current law to have a federal marginal rate of 28 percent, the House bill to lower the marginal rate to 25 percent, and the Senate bill to lower the marginal rate to 21 percent.[4]

For depreciation rates, we use 0.13 for equipment and 0.03 for structures, which correspond to

3. Robert E. Hall and Dale W. Jorgenson, "Tax Policy and Investment Behavior: Reply and Further Results," *American Economic Review*, Vol. 57 (June 1967), pp. 391–414, https://web.stanford.edu/~rehall/Tax-Policy-AER-June-1967.pdf (accessed November 21, 2017).

4. It is difficult to precisely estimate the relative impact of the two bills on pass-through rates and calculate weighted average marginal tax rates because of the complexity of the provisions and the lack of good data on passive compared to active investors in pass-through entities, the share of businesses that would be "specified service" businesses not eligible for the rate reductions, the share of pass-through income that would fall into the new brackets, and the scope of the Senate's "reasonable compensation" rules.

the average depreciation relative to the current-cost stock of each asset type as reported by the Bureau of Economic Analysis[5] between 2006 and 2016.

The user-cost elasticity of capital describes the percentage change in the capital stock given a 1 percent increase in the user cost of capital. It also corresponds to the elasticity of substitution between capital and labor in production. The larger this value, the easier it is for firms to change the mix of capital and labor used in production. The standard neoclassical Cobb–Douglas production function implies a value for this elasticity of –1. A recent report from the Council of Economic Advisers[6] notes a consensus in the literature around this value.

The cut in the corporate tax rate only applies to C corporations,[7] which hold about 75 percent of private, non-residential fixed assets, according to data from the Bureau of Economic Analysis. The changes in expensing will apply to all firms. Our estimates of the change in capital stock reflect the distribution of capital holdings by legal form of organization.

The output elasticity of capital describes the percentage change in output that follows a 1 percent increase in capital. We use values of 0.15 for equipment and 0.13 for structures, which are both taken from a 2008 study by Akos Valentinyi and Berthold Herrendorf.[8]

Though both bills maintain the graduated income tax brackets, for simplicity we reduce the several marginal income tax brackets to a single marginal rate. We take a weighted average of the marginal rates according to the proportion of filers in each bracket as reported by the U.S. Census.[9] The weighted changes are dominated by the $15,000-to-$75,000 bracket, which contains approximately half of households. We take both bills to increase after-tax wages by 4 percent.

We use a labor-supply elasticity of 0.3. In a 2011 survey, Michael Keane[10] suggests that this is a typical estimate for the labor supply elasticity of individuals. It is also the value used by the Tax Foundation in its Taxes and Growth model.[11]

We use a value of 0.6 for the output elasticity of labor. That value approximately corresponds to the share of labor's compensation in output.[12]

Additional Considerations. The estimates we report are for our preferred values. Changing the parameters of our model or incorporating additional features will produce slightly different estimates, though they should be within the range of what we report here.

There is some disagreement in the literature about the appropriate value for the user-cost elasticity of capital. However, a relatively recent survey by Robert Chirinko[13] reports a number of estimates in that range, but places more weight on estimates in the range of –0.4 to –0.6. Using these alternative values suggests that the change in GDP due to changes in the cost of capital would be half as large as reported in the table above. We also note that the lower the elasticity of substitution between capital and labor, the higher the increase in labor productivity and wages from additional investment.[14]

5. U.S. Bureau of Economic Analysis, "Table 1.1. Current-Cost Net Stock of Fixed Assets and Consumer Durable Goods" and "Table 1.3. Current-Cost Depreciation of Fixed Assets and Consumer Durable Goods," https://bea.gov/iTable/index_FA.cfm (accessed November 8, 2017).

6. Council of Economic Advisers, "Corporate Tax Reform and Growth," https://www.whitehouse.gov/sites/whitehouse.gov/files/images/Corporate%20Tax%20Reform%20and%20Growth%20Final.pdf (accessed November 21, 2017).

7. S corporations are taxed as pass-through entities.

8. Ákos Valentinyi and Berthold Herrendorf, "Measuring Factor Income Shares at the Sectoral Level," *Review of Economic Dynamics*, Vol. 11, No. 4 (2008), pp. 820–835, https://doi.org/10.1016/j.red.2008.02.003 (accessed November 21, 2017).

9. U.S. Census Bureau, HINC-06. Income Distribution to $250,000 or More for Households, https://www.census.gov/data/tables/time-series/demo/income-poverty/cps-hinc/hinc-06.2016.html (accessed November 27, 2017).

10. Michael P. Keane, "Labor Supply and Taxes: A Survey," *Journal of Economic Literature*, Vol. 49, No. 4 (2011), pp. 961–1075.

11. Tax Foundation, "Overview of the Taxes and Growth Model," https://taxfoundation.org/overview-tax-foundation-s-taxes-and-growth-model/ (accessed November 15, 2017).

12. University of Groningen and University of California, Davis, "Share of Labour Compensation in GDP at Current National Prices for United States [LABSHPUSA156NRUG]," Federal Reserve Bank of St. Louis Economic Research, https://fred.stlouisfed.org/ (accessed November 15, 2017).

13. Robert S. Chirinko, "σ: The Long and Short of It," *Journal of Macroeconomics*, Vol. 30, No. 2 (2008), pp. 671–686, https://doi.org/10.1016/j.jmacro.2007.10.010 (accessed November 21, 2017).

14. Salim Furth, "Why American Workers Should Care About Business Investment," Heritage Foundation *Issue Brief* No. 4756, August 24, 2017, http://www.heritage.org/jobs-and-labor/report/why-american-workers-should-care-about-business-investment.

Additionally, there is a range of estimates for labor-supply elasticity. This range is in part due to differences between labor supply at the individual household level and at the aggregate, economy-wide level. Individuals tend to work around 40-hour weeks, and may change hours only a little in response to lower taxes. However, lower income taxes are more substantial factors for people deciding whether to enter the workforce. Thus, while the micro estimates may place the elasticity of labor supply around 0.3, Edward Prescott and Johanna Wallenius[15] suggest that the aggregate labor supply elasticity is around 3. That elasticity would imply that the effects of the Tax Cuts and Jobs Act on labor supply are 10 times larger than what we have reported in our estimates. However, we choose to use the conservative elasticity value in our estimates.

All of our estimates assume that wages and interest rates remain constant. The changes in the tax code constitute shifts in the demand for capital financing and the supply of labor. Interest rates and wages will only stay constant if the supply of savings and the demand for labor are perfectly elastic. The former is more plausible once the international mobility of capital is considered. The lower the elasticity of these curves, the larger the increase in returns and decrease in pre-tax wages, and the smaller the increases in capital and labor.

This calculation is not meant to substitute for the full analysis of a more detailed model. However, the simplicity of the calculation clarifies the mechanisms at work.

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15. Edward C. Prescott and Johanna Wallenius, "Aggregate Labor Supply," *Federal Reserve Bank of Minneapolis Quarterly Review* (October 2012), https://www.minneapolisfed.org/research/qr/qr3521.pdf (accessed November 21, 2017).