March 2017 Model Update Overview

Gavin Ekins
Research Economist

Model Update Overview

- Update of CBO baseline, macroeconomic data, and IRS public use file

- Expanded capital stock and depreciation model

- Territorial corporate income tax, international capital flows, and infrastructure spending modules added to the model

- Improved user interface

Model Update Details

Data Updates

The March 2017 update benefited from several releases of new data from the Congressional Budget Office (CBO), Bureau of Economic Analysis (BEA), and the Statistics of Income (SOI) division of IRS. The CBO released the first of its biannual budget projections on January 24. The CBO predicts that the U.S. federal government will collect $43 trillion in taxes over the 10-year budget window from 2018 through 2027, $3.9 trillion of that tax coming from corporate incomes taxes and $22.2 trillion coming from individual income taxes. The CBO expects tax revenues to grow about 4 percent per year on average over the budget window. The March model has calibrated the baseline to these projections.

BEA released its updated numbers for 2016 GDP growth and NIPA accounts with 2016 data on February 28 and March 1 of 2017, respectively. BEA data suggest that the U.S. economy grew 1.6 percent in real terms and experienced a 1 percent increase in the price index in 2016. These changes in the national accounts were integrated into the 2017 March update.

SOI released the Public Use Files (PUF) for 2011 tax returns. In 2011, the realization of capital gains rebounded and business purchasing began to recover, providing a more normal set of tax returns than in the PUF samples of the recession years of 2009 and 2010. In addition, the 2011 PUF dataset has been modified using a new Tax Foundation algorithm to gross up elements within each return to match 2016 macroeconomic data. The tax simulator has been updated to use the modified 2016 projection of the 2011 PUF as the baseline.

Model Expansions

The March 2017 update improves the classification of capital stocks and the tax depreciation of capital. Intellectual property (IP) has been separated from the equipment and structure stock and tracked in its own category of capital. IP is also given a separate treatment for tax depreciation, reflecting that more IP is expensed under current law. The new IP stocks enable the scoring of preferential tax rates for IP income.

Land stocks have been expanded to include commercial land. Commercial land has been separated from the nonfarm land stocks to reflect the higher value and greater volatility of commercial property prices.

The March 2017 update also includes a new parameter for enacting a maximum tax rate paid on business income of noncorporate or pass-through businesses. Previously, the tax simulator had a hard-coded function within the tax return simulator to accomplish this type of tax change. The new parameter allows the analysts to change the rate without changing the underlying code.

New Modules

The March 2017 update includes several new modules. Expanding from the spending model introduced in the October 2016 update, the March 2017 update includes an infrastructure spending module. The infrastructure spending module tracks the stock of government capital and its effect on economic output, allowing the TAG model to score an infrastructure spending bill with dedicated taxes to fund the expansion. Inclusion of the macroeconomic effects of an infrastructure spending and taxation policy allows a direct comparison between the economic benefits of infrastructure investment with the economic costs of taxation.

The March 2017 update also expands the spending model to include international tax flows. The wealth of the private sector is split into financial and nonfinancial assets. The financial assets are split between domestic and international assets. Nonfinancial assets are assumed to be held only by the private sector. The international financial assets produce a return which is not affected by the U.S. domestic production function. Instead, foreign assets return a rest-of-world return, which contributes to the demand for wealth by the U.S. private sector.

The March 2017 update includes a territorial module, which estimates the revenue effects of switching from a worldwide to a territorial corporate tax system. The new module uses IRS 1118 and 5471 data and world economic growth projections to determine how a change in tax policy would alter tax revenues from corporations with overseas operations. The module includes a variety of options to simulate the diversity of possible territorial systems. It includes options for deferral, percent-of-dividend-received deduction, and modifications to subpart F rules. The current model uses aggregate international data. Future expansions of the territorial module will include country by country estimates.

The March 2017 update also includes a module for transforming sample returns in the PUF of one year to match the aggregate IRS data for another year. For example, the 2011 PUF was transformed to match 2016 macroeconomic data from IRS and BEA. The module uses a shifting process, where the share of the different types of income within a cohort determines the additional income from an increase in economic activity.

Improved Interface

The March 2017 update includes several improvements to the user interface for the Tax Foundation analysts. The new interface has improved the labeling of tax law and economic parameters, relocated parameters from other areas of the model to a common page for easy alteration, and added new parameters (e.g., the separate top income bracket for noncorporate income).

In addition to the cleaner input interface, the March 2017 update displays a new set of static columns on the output interface. The static columns present the initial static revenue estimates before macroeconomic effects are integrated into the revenue estimates. The new static columns make it easier for Tax Foundation analysts to directly compare the baseline, static, and dynamic revenue estimates with one pass of the model.