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Taxes and Growth Model Update

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Taxes and Growth Model Updates

The Taxes and Growth (TAG) Model is constantly improved to maintain an up-to-date database of economic factors and to keep pace with new techniques from the economic modeling community. To ensure transparency with the public, the Tax Foundation institutes semi-annual updates of the TAG model. Each estimate from the TAG Model reported by the Tax Foundation identifies the version of the model being used. In general, the model updates follow the release of the Congressional Budget Office's updates to the Budget and Economic Outlook. All model analyses of tax policies after an update employ the same model version until the next release.

The formalized revision schedule has two functions: consistency and quality control.

One of the objectives of the TAG Model is to make it easier to compare different tax proposals. For maximum consistency when comparing proposals, the model's parameters and features should be held constant between analyses. However, for the estimates to be as accurate as possible, model changes need to be made as new data becomes available, new features are added, and new techniques are developed in the economic modeling community and incorporated in the model. The tension between maintaining consistent scores and improving the TAG Model is addressed by the semi-annual model updates and stating the version of the TAG Model used to produce an estimate.

The regular update schedule provides opportunities for others in the economic modeling community to comment on the twice-yearly revisions to the TAG Model and recommend changes for the following update. Using the academic approach of public debate, the Tax Foundation hopes to enhance the accuracy of the TAG Model. The Tax Foundation welcomes constructive comments on the TAG Model and any of the following updates.

Please contact ekins@taxfoundation.org with comments or questions regarding the TAG Model.

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Model Update Overview

- Calibrating the 10-year budget projections to CBO's January 25, 2016 Budget and Economic Outlook
- Adding an income shifting module
- Improved 10-year budget window projections
- Deflating tax parameters from 2016 levels to 2008 levels
- Updating earned income credit thresholds to current law
- Adding a calculation of other taxes in PUF
- Correcting alternative minimum tax calculation by consistently treating the foreign tax credit
- Changing label names and references

Model Update Details

Data Updates

The March model release updates the 10-year budget window projections in the Taxes and Growth (TAG) Model to the budget window projections in the January 25, 2016 release of the Congressional Budget Office's Budget and Economic Outlook report.¹ Since the TAG Model only estimates economic and budget changes after a tax proposal is implemented, the CBO baseline is used as the pre-tax-change starting point. That is, the TAG model does not attempt to estimate the economic and budget baselines; it defers to the CBO's projections.

Income Shifting Module

Academic publications and the OECD's Base Erosion and Profit Shifting (BEPS) project have highlighted the effect of income shifting on the corporate tax base. The empirical literature has shown that the amount of income shifting depends on the difference between the effective average tax rate on corporate income in the United States and other countries. The effective average tax rate includes both the statutory corporate rate as well as average deductions, such as depreciation and credits. Thus, a change in the tax system changes the effective average tax rate and, in turn, changes the incentives of multinational corporations to shift income abroad or keep income at home.

¹ "The Budget and Economic Outlook: 2016 to 2026." Congressional Budget Office. January 25, 2016. <https://www.cbo.gov/publication/51129>.

The TAG model has added an income shifting module to capture the changes in the corporate tax base as the tax system changes. The module follows the semi-elasticity approach that Kimberly Clausing (2006) introduced, using Bureau of Economic Analysis data on foreign affiliates of U.S. parent companies.² The module estimates the amount of income booked in the foreign affiliate after a new tax policy by using the new differences in the effective average tax rates between the United States and other countries. The difference in the total income declared by the foreign affiliate before and after the policy change is assumed to be shifted back to the parent and declared as income in the United States.

The module contains two important parameters: the semi-elasticity of profit shifting and the portion of revenues declared as after-tax income. The semi-elasticity parameter expresses the change in declared income due to the difference in the effective average tax rates. Although Clausing (2006) estimated a semi-elasticity of 3.3, the TAG model defaults to a lower estimate of 2.0. The minimum portion of revenues declared as after-tax income limits the amount of income that the foreign affiliates can transfer back to the United States, which limits the total amount of income shifting possible. In addition to the two parameters, a switch was added to allow the user to include income shifting into the estimates or retain an unchanged corporate tax base.

Improved 10-Year Budget Window Projections

A depreciation-system transition module was added to improve the 10-year budget window estimates. The module estimates the tax revenue impact of switching from one depreciation system to another within the 10-year budget window. When a new depreciation system is implemented, new capital expenditures are deducted according to the new schedule, but all capital expenditures before the new schedules are deducted according to the previous schedule. Because of the legacy capital expenditure deductions, deductions can be greater in the first few years than they will be in the longer run when asset lives are shortened. Conversely, when asset lives are lengthened, deductions can temporarily fall below their longer run level. For example, a switch to the Alternative Depreciation System (ADS) from current law will raise more revenue in the first decade than it will in subsequent decades. The end result is a reduction or an increase of tax revenues within the 10-year budget window for shortening or lengthening asset lives, respectively.

The module adjusts both corporate and individual income tax revenues each year to accurately account for the transition path. Adjustments to depreciation are made by asset type, weighted by the amount of investment in each category and follow the depreciation schedules under both the old and new policies. The transition path adjusts the taxable income within the 10-year budget window, which is reflected in the tax revenue estimates. The adjustments are applied to both static and dynamic revenue estimates.

2 Kimberly A. Clausing, "International Tax Avoidance and U.S. International Trade," *National Tax Journal* (June 2006): 269-287.

Tax Return Simulator

The TAG model will continue to use the 2008 Public Use Files (PUF) as the simulation baseline until the October 2016 update, at which time we hope to transition to the 2011 PUF. To ensure the accuracy of the baseline, the thresholds from 2016 law are deflated to 2008 levels to prevent artificially high thresholds. In addition, “other taxes,” a variable within the PUF, is now explicitly calculated.

There are several updates to the Tax Calculator. The Earned Income Tax Credit is updated to reflect 2016 law. The foreign tax credit is consistently treated in the Alternative Minimum Tax calculations.

Software Modifications

Several variable names within the code have been changed to improve readability and several parameters labels in the interface have been changed for clarity.
