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Taxes and Growth Model Update

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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.
Model Update Overview

- Calibrating the 10-year budget projections to CBO's August 25, 2015 baseline
- Updates of current economic factors to the August 2015 BEA updates
- Better accounting for refundable credits and the associated Treasury outlays
- Better modeling the dependence of the threshold for the Pease provision on filing status
- Better modeling of the Affordable Care Act's HI and Investment surtaxes
- Adding the phase-out of the Child Tax Credit to the model's Individual Income Tax Calculator
- Changing the growth factor for pension income
- Extending the TAG Model so it can better estimate the economic and revenue effects of a value-added tax (VAT)
- Extending the model to better estimate the economic and revenue effects of an "interest flip" (interest payments not deductible but interest income not taxable)
- Updating the corporate service price
- Rebasing the model to current law
- Adding IRS outlays to output display
- Adding 10-year budget window projections

Model Update Details

Data Updates

The October model release contains the 10-year budget window projections in the TAG Model that are calibrated to the August 25, 2015 CBO Budget and Economic Outlook baselines.\(^1\) 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.

The TAG Model uses BEA data to determine current economic factors, such as taxes paid by corporations, labor hours worked, and capital stocks. The BEA often revises data to reflect additional data gathered and better forecasting and interpolation models. As such, the TAG Model updates the database of the model when the BEA releases new or revised data. The National Income and Product Accounts (NIPA) were updated with the August 2015 release from the BEA.\(^2\) These updates reflect minor changes to the data.

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Tax Return Simulator

Refundable tax credits were added to the TAG Model. Previously the model considered non-refundable credits, but it did not track refundable credits, which represent Treasury outlays. The new Tax Return Simulator tallies the portion of the credit that is refundable for each representative filer and includes the amount in the display tables.

The tax calculator has been updated to include different filing statuses for the Pease deduction phase-outs. The model now contains separate phase-out starting and ending thresholds for single, joint, and head of household filers. All filing statuses use the same phase-out rate.

The Child Tax Credit’s phase-out and its refundable portion were added to the tax calculator. The Child Tax Credit’s phase-out thresholds are based on filing status. The rate and phase-out thresholds are parameterized for future changes.

Economic Model

The growth factor that scales pension income in the Tax Return Simulator was originally related to the growth of business income in the Economic Model. The growth factor has been changed to the growth of GDP in the Economic Model. The change reflects growth in government pensions which was not captured by the business income growth factor.

The TAG Model’s treatment of a value-added tax (VAT) has been revised and improved. The VAT is modeled by reducing production factor payments to labor and capital by weighted rates. The reduced amount received by factor inputs represents the VAT. Once the VAT is removed from the factor payments, the gross return to capital and the gross wage are calculated.

An interest flip was added the Economic Model. The interest flip sets the tax rate on interest income in the Tax Return Simulator to zero while adding interest payments to the taxable base for corporate and non-corporate businesses. The increase in the taxable base was calculated using BEA data.3

The corporate sector service price of capital was updated to more accurately reflect the effect of a two-layer tax system. The wedge from the individual tax rate was constrained to the real return and no longer affects the economic depreciation term in the equation.4

3 The data comes from table 1.14 and 7.11 of the NIPA data.
Software Modifications

The software has been modified to increase the user's experience. In particular, parameters and output values are easier to find in the input spreadsheet and output displays. Labels for all miscellaneous variables have been added to the column next to the variable codes. Summary tables have been added for the aggregate output, and 10 year budget breakdowns are placed in a separate spreadsheet.

Debugging has found several minor bugs in the code. All of the bugs had a negligible impact on the reported score. These bugs were related to the calculation of the Earned Income Tax Credit.

The baseline by which a tax proposal is compared has been updated to the 2015 tax code in the software. The new baseline ensures that the current tax code is coupled with the most up-to-date economic data. As such, the relative change in the tax code from the baseline to the new proposal changes the economic data proportionally.

For more information or comments, contact:

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