

The Taxes and Growth Model— A Brief Overview

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The Tax Foundation's Taxes and Growth (TAG) model has two main, interactive components.¹ The first part, known as a production function, relates inputs of labor and capital to the economy's output. The particular type of production function chosen, Cobb-Douglas, has historically provided a good fit for U.S. economic data.

The quantities of labor and capital that people wish to supply in an economy depend on incentives, and some of those incentives are tax related. If tax changes reduce after-tax rewards for working or investing, people will be less eager to work or invest. Conversely, they will wish to work and invest more if tax changes increase after-tax rewards by taking a smaller bite at the margin out of the returns on productive efforts.

The production function computes how the tax-induced changes in labor and capital inputs will affect economic output. Empirically, the supply of labor responds modestly to changes in after-tax rewards, while people's willingness to save and invest is extremely sensitive to expected after-tax rewards. This means that while higher marginal tax rates on labor cause people to work less, taxes that increase the cost of capital, such as dividend and capital gains taxes, slower cost recovery schedules, and the corporate income tax, elicit much greater negative responses.

The second part of the TAG model is an individual income tax calculator. Using a sample of approximately 140,000 anonymous tax records from the Internal Revenue Service (the 2008 Public Use File), the model calculates people's marginal and average income tax rates and their tax liabilities. For proposed income tax changes, the model computes the effects on how much is taxable, income tax rates, and the resulting tax liabilities. If marginal tax rates or depreciation schedules change, that will lead to adjustments in the supplies of labor and capital, which will produce changes in employment, investment, productivity, output, and growth. These real economic changes will then feed back on the income tax, because the size and health of the economy have a strong impact on income tax collections. Because capital formation reacts so strongly to after-tax rewards, a tax change that is primarily assessed on returns to capital will generate an especially large positive or negative growth effect.

¹ Visit <http://taxfoundation.org/tax-topics/federal-taxes> for links to more information about the Tax Foundation's Taxes and Growth (TAG) model.

The TAG model is a long-run model. Its results estimate the economic and tax revenue changes after people have fully adjusted to the new tax rules. (This is known as a comparative statics model.) While the adjustment process is not instantaneous, it does not take that many years. With capital, experience indicates that most of the adjustments will have been completed after five years for equipment and ten years for structures.

Although the tax data is for 2008, tax parameters have been updated to reflect current law, and tax rates and liabilities have been recalculated accordingly. The production function's baseline is calibrated to National Income and Product Accounts (NIPA) data for 2008 as computed by the U.S. Bureau of Economic Analysis (BEA). That was the last year of reasonably normal NIPA data before the recession hit with full force.

Our Taxes and Growth model is a valuable policy tool in two respects. One is that it highlights the growth implications of tax proposals. The TAG model provides an estimate for how a tax change will affect the size of the economy (GDP), number of jobs, wages, and federal revenue, among other measures. If a tax change would expand investment, create new jobs, and bolster the nation's output, policymakers and voters should be informed of that. Positive growth effects make a tax proposal more desirable than otherwise. Conversely, if a tax change would shrink the economy, the public should be aware of that as well. Moreover, because the model's estimates are objective and quantitative, they allow different tax proposals to be ranked by the size of their growth effects.

The second valuable aspect of the TAG model is that its revenue estimates are more realistic than conventional revenue estimates when growth effects are large. Conventional revenue estimates usually assume that while tax changes may cause shifts within the economy, they do not alter the economy's total size and productivity. Because the economy's size has a major impact on government revenues, the static assumption causes conventional revenue scoring to exaggerate both the revenue gain from anti-growth tax measures and the revenue cost of pro-growth tax initiatives. The TAG model produces dynamic revenue estimates free of that bias.

Although tax proposals should be evaluated according to many criteria, among them simplicity, enforceability, and fairness, growth is one of the most important considerations. With its realistic, real-time, quantitative estimates, our Taxes and Growth model improves the policy debate by bringing into better focus the growth consequences of taxes.

The Tax Foundation is a 501(c)(3) non-partisan, non-profit research institution founded in 1937 to educate the public on tax policy. Based in Washington, D.C., our economic and policy analysis is guided by the principles of sound tax policy: simplicity, neutrality, transparency, and stability.

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