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Trump Campaign's "Dynamic Scoring" of Revised Tax Plan Should Be Taken With More Than a Grain of Salt

Relies on Assumptions Well Outside Economic Mainstream

By Chad Stone and Chye-Ching Huang

The revised tax plan that Republican presidential nominee Donald Trump will release today was reportedly designed at least in part to reduce the cost of his earlier plan,[1] which would have generated very large revenue losses.[2] The revised plan now looks similar to the tax plan that House Republican leaders introduced in June, which cost less than Trump's original plan. Moreover, like the House plan, the Trump plan takes advantage of an aggressive approach to "dynamic scoring" that the Tax Foundation uses to estimate how tax cuts affect the economy and the budget, which sharply lowers the estimated revenue loss from certain tax-cut provisions.[3] We should, however, view such large dynamic effects derived from Tax Foundation estimates with considerable skepticism. That's because the Tax Foundation, with its unusually large dynamic estimates, is considerably outside the analytic mainstream.

In particular, the Tax Foundation assumes that certain tax cuts produce far larger increases in business investment than researchers typically find. Consequently, the Tax Foundation estimates that certain tax changes will produce far greater economic activity and a far smaller revenue loss than do Congress's highly respected official estimating bodies — the Joint Committee on Taxation (JCT) and the Congressional Budget Office (CBO).

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[1] Lynley Browning, "Trump to Tout Tax Plan's Growth Benefits Amid Questions of Cost," Bloomberg Politics, September 15, 2016, http://www.bloomberg.com/politics/articles/2016-09-15/trump-to-tout-tax-plan-s-growth-benefits-amid-questions-of-cost.

[2] Isaac Shapiro, "The Trump Tax Plan and National Priorities," Center on Budget and Policy Priorities, June 1, 2016, http://www.cbpp.org/research/federal-tax/the-trump-tax-plan-and-national-priorities and Tax Policy Center, "Analysis of Donald Trump's Tax Plan," December 22, 2015, http://www.taxpolicycenter.org/publications/analysis-donald-trumps-tax-plan.

[3] The Tax Foundation's estimate of the original Trump tax plan showed a large revenue loss even though the estimate included dynamic scoring effects. The new Trump plan includes (along with other changes) tax cuts like those in the House Republican tax plan released in June that under the Tax Foundation's model generate the largest boosts to the economy and revenues. See Mark Gimein, "So…Where's the Trump Tax Plan?" *Money*, July 18, 2016, http://time.com/money/4400318/trump-tax-plan-stephen-moore/.

Dynamic scoring supplements a standard estimate of the costs of legislation with an estimate of how a tax cut will boost the economy and, in turn, reduce the associated revenue loss as businesses and individuals earn more money and pay more taxes than they otherwise would.[4] The estimate of the revised Trump plan, apparently derived from Tax Foundation estimates, will likely state that the plan pays for a large portion of its costs through economic growth effects even larger than the Tax Foundation estimated for the original plan. Trump's revised plan incorporates elements of the tax plan that House Republican leaders released in June, and the Tax Foundation's assessment of that plan claimed that dynamic scoring lowered its net costs dramatically, from $2.4 trillion over the next decade to just $190 billion.[5] By contrast, Citizens for Tax Justice estimates that the House plan would cost $4 trillion over the decade.[6]

Analysts continue to debate whether and how to implement dynamic scoring.[7] It's new and controversial: the best way to model dynamic effects remains unsettled; and the estimates produced can vary depending on the assumptions used. Mainstream analysts typically find that any additional economic activity generated by tax cuts can offset, at most, a modest portion of their cost. With that in mind, the Tax Foundation's dynamic scoring estimates — including those that the Trump campaign is relying on for its estimates of its revised tax plan — should be viewed with particular skepticism.

For instance, in 2015, the Tax Foundation estimated that making permanent the bonus-depreciation tax break (which allows businesses to deduct a larger share of the cost of their equipment in the year they purchase it) would generate enough new revenue to pay for *more than 75 percent* of its costs, while JCT pegged the figure at less than 5 percent. While the Tax Foundation subsequently issued a cost estimate for this proposal with smaller dynamic effects (the extent to which this is due to changes in its estimating procedure remains unclear), other Tax Foundation estimates and the organization's modeling assumptions continue to be out of line with mainstream analysis in a number of respects.

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[4] Conventional Joint Committee on Taxation (JCT) and Congressional Budget Office (CBO) estimates of the fiscal impacts of legislation, which do not include macroeconomic effects, are often incorrectly labeled "static," implying that they do not take into account any behavioral responses to tax changes. In reality, these estimates incorporate many behavioral responses, such as expected changes in the timing of capital gains realizations and in the form of compensation that some taxpayers receive (e.g., changes in the proportion of wages versus non-wage benefits).

[5] Kyle Pomerleau, "Details and Analysis of the 2016 House Republican Tax Reform Plan," Tax Foundation, June 5, 2016, http://taxfoundation.org/article/details-and-analysis-2016-house-republican-tax-reform-plan.

[6] The Tax Policy Center is releasing its estimate of the cost of the House Republican plan tomorrow, but official estimates are not available. The Citizens for Tax Justice estimate does not include a dynamic scoring component. Citizens for Tax Justice, "Ryan Tax Plan Reserves Most Tax Cuts for Top 1 percent, Costs $4 Trillion Over 10 Years," June 29, 2016, http://ctj.org/ctjreports/2016/06/ryan_tax_plan_reserves_most_tax_cuts_for_top_1_percent_costs_4_trillion_over_10_years.php.

[7] See Douglas W. Elmendorf, "Dynamic Scoring: Why and How to Include Macroeconomic Effects in Budget Estimates for Legislative Proposals," Brookings Papers on Economic Activity, Fall 2015, https://www.brookings.edu/wp-content/uploads/2015/09/ElmendorfTextFall15BPEA.pdf; and Paul N. Van de Water and Chye-Ching Huang, "House 'Dynamic Scoring' Rule Likely Will Mean More Tax Cuts – Not More Information," Center on Budget and Policy Priorities, January 5, 2015, http://www.cbpp.org/research/house-dynamic-scoring-rule-likely-will-mean-more-tax-cuts-not-more-information.

In addition, the Tax Foundation's dynamic estimate of the proposed tax increases in the President's fiscal year 2016 budget claimed that they would cause so much economic damage that they would actually *lose* revenues in the long run. By contrast, CBO's macroeconomic analysis found these proposals would *raise* significant revenue.

In another example, the Tax Foundation estimated that repealing the estate tax would increase national saving and investment so much that it would generate enough new revenue to pay for over 90 percent of its costs. But CBO has estimated that *raising* estate taxes — the opposite policy course — would increase national saving available for investment. And earlier this year, the Tax Foundation estimated that cutting the corporate tax rate by 20 percentage points would generate enough new revenue to pay for 54 percent of the cost, while JCT estimates that corporate rate cuts would have dramatically smaller dynamic revenue impacts.

The Tax Foundation produces its dynamic scoring estimates very quickly, while JCT and CBO take much more time to develop theirs. And JCT and CBO don't analyze tax plans from candidates, so no official analysis of the Trump plan will be available. The nonpartisan Urban Institute-Brookings Institution Tax Policy Center (TPC) provides estimates of candidates' tax plans but usually takes some time to provide them. Thus, after Mr. Trump unveils his revised plan today, the estimate based on the Tax Foundation's model will likely be the most widely cited one for a while.

Consequently, one should approach any forthcoming estimate based on the Tax Foundation model with considerable caution.

Tax Foundation's Macroeconomic Estimates Are Very Different from JCT's and CBO's

The Tax Foundation's aggressive modelling assumptions produce a gulf between its macroeconomic estimates and those of JCT and CBO.[8] One can compare various analyses and revenue estimates by JCT and CBO that include the macroeconomic effects of tax proposals to dynamic-scoring estimates that the Tax Foundation has issued. Given the limited number of JCT and CBO macroeconomic analyses and dynamic scoring estimates, these examples generally do not provide precise apples-to-apples comparisons, but substantial discrepancies are evident.

- As noted, in 2015, the Tax Foundation estimated that making bonus depreciation permanent would generate such large increases in investment that the resulting economic growth would generate enough revenue to pay for more than three-quarters of the proposal's cost.[9]

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[8] This discussion focuses on results from CBO and JCT, using the CBO and JCT models most similar to the Tax Foundation model, as discussed below.

[9] See Alan Cole, "Economic and Budgetary Effects of Permanent Bonus Expensing," Tax Foundation, September 16, 2015, http://taxfoundation.org/article/economic-and-budgetary-effects-permanent-bonus-expensing.) A subsequent 2016 Tax Foundation estimate of the cost of making bonus depreciation permanent concluded that dynamic effects would pay for a much more modest 6 percent of the cost over the first ten years. (Tax Foundation, "Options for Reforming America's Tax Code," June 6, 2016, http://taxfoundation.org/sites/taxfoundation.org/files/docs/TF_Options_for_Reforming_Americas_Tax_Code.pdf, p.76.) The difference likely reflects in part the temporary extension of bonus depreciation for five years at the end of 2015, when it was previously scheduled to expire. (Thus, if JCT were to re-estimate the macroeconomic effect of making bonus depreciation permanent, it would very likely find an even smaller effect than it did in 2015.) Other factors

By contrast, JCT found in 2015 that making bonus depreciation permanent would generate only enough economic growth to cover less than 5 percent of its cost in the first decade. And in the second and third decades, JCT concluded, the economic effects of the budget deficits arising from the revenue loss would be so uncertain that JCT could not even determine whether macroeconomic effects would raise or lower the cost of making bonus depreciation permanent.[10]

- CBO's macroeconomic analysis of the President's fiscal year 2016 budget shows that the budget's proposed tax increases would raise significant revenues.[11] The Tax Foundation's dynamic estimate produced a wildly different result, claiming that the tax increases would cause so much economic damage that they would *lose* revenues.

  Specifically, the Tax Foundation estimated that the tax proposals would raise revenues by more than $80 billion each year before taking into account macroeconomic effects, but would have such a large negative effects on growth that they would cause a net revenue loss of more than $3 billion in the long run.[12] That is, the Tax Foundation estimated that the proposed tax increases would lose revenue on a dynamic basis.

  By contrast, CBO's estimates show that the budget's tax proposals would raise revenue significantly, including when CBO factored in macroeconomic effects. For example, CBO estimated not only that the budget's revenue proposals would increase revenue by $151 billion in 2025[13] (the final year that the CBO estimate covered) *before* taking macroeconomic

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may also be at play; for example, the Tax Foundation has alluded to changes to its assumptions about how quickly the economy adjusts to tax changes and depreciation regime transitions. See Tax Foundation, "March 2016 Taxes and Growth Model Update," http://taxfoundation.org/article/march-2016-taxes-and-growth-model-update.

[10] Joint Committee on Taxation, "A Report To The Congressional Budget Office Of The Macroeconomic Effects Of H.R. 2510, 'Bonus Depreciation Modified And Made Permanent,' As Ordered To Be Reported By The House Committee On Ways And Means," October 27, 2015, https://www.jct.gov/publications.html?func=startdown&id=4844.

[11] Congressional Budget Office, "A Macroeconomic Analysis of the President's 2016 Budget," August 21, 2015, https://www.cbo.gov/publication/50734.

[12] Stephen J. Entin, "A Dynamic Analysis of President Obama's Tax Initiatives," Tax Foundation, March 3, 2015, http://taxfoundation.org/article/dynamic-analysis-president-obama-s-tax-initiatives. The Tax Foundation has not conducted an analysis of the President's fiscal year 2017 budget. In analyzing the 2016 budget, the Tax Foundation modeled two scenarios with differing assumptions about the corporate rate reform the budget proposed; both generated large revenue increases before counting estimated macroeconomic effects, and revenue losses after counting them.

[13] CBO estimated that in 2025, the budget's immigration reform proposal would raise revenues by an additional $85 billion and the proposed one-time repatriation tax would reduce revenues an additional $7 billion.

Counting macroeconomic effects, the budget's spending and tax proposals (apart from immigration reform) would increase outlays in 2025 by $46 billion and raise revenues by $58 billion, thereby reducing the deficit by $12 billion, CBO estimated. CBO did not specify how much of each of these effects was attributable to the budget's spending proposals. It's implausible, however, that CBO credits the budget's spending proposals for large dynamic revenue increases that mask large dynamic revenue losses caused by the tax proposals. CBO has noted that the budget's proposed investments (such as in higher education) take some time to affect labor force productivity and therefore would have a "limited effect" on productivity during the ten-year budget window and would "probably reduce potential output slightly over the ten-year period" as some people left the labor force to complete school (though they would be more productive when they rejoined it). See Congressional Budget Office, "The Macroeconomic and Budgetary Effects of Federal Investment," June 16, 2016, https://www.cbo.gov/publication/51628. It is therefore not plausible that the budget's spending proposals have large positive revenue effects.

effects into account, but that factoring in the macroeconomic effects would cause the revenue increases and deficit reduction produced by the budget's revenue and spending proposals to *increase*.

- The Tax Foundation estimates that repealing the estate and gift taxes would increase the capital stock (machines, factories, and other buildings, etc.) so much that the resulting additional economic growth would generate the revenue to pay for about 90 percent of the cost of repeal.[14] "[E]liminating these taxes would lower the combined tax rate on savings and investment, encouraging individuals to save rather than consume," the group stated.

  By contrast, CBO estimates that each $1 *increase* in estate and gift tax revenues (as proposed in President Obama's 2017 budget) would increase the pool of national saving available for investment by 5 cents, after accounting for the impact of lower deficits and changes in private saving.[15] Here again, the Tax Foundation model — unlike CBO — fails to account for how deficit increases caused by tax cuts affect national saving.

- The Tax Foundation recently estimated that cutting the corporate tax rate would have unambiguously large and positive growth effects that, in turn, would lower the cost of such tax cuts by more than half. Specifically, it estimated that reducing the corporate tax rate from 35 percent to 15 percent would boost long-term gross domestic product (GDP) by 4.3 percent. The Tax Foundation also estimated that this growth would generate revenues that offset 54 percent of the tax cut's cost.[16]

  Estimates by JCT (and JCT analysts), however, are much more modest and ambiguous. In a 2011 paper, JCT analysts found that a five percentage-point cut in the corporate tax rate could raise GDP over the long run by 0.2 percent.[17] By contrast, the Tax Foundation model finds that a ten percentage-point cut would raise GDP over the long run by 2.3 percent.[18]

CBO's assessment of the budget did not incorporate any macroeconomic effects of the budget's *corporate* tax changes. The Tax Foundation did make estimates of such effects, contending they would *reduce* GDP. See Stephen J. Entin, "A Dynamic Analysis of President Obama's Tax Initiatives," http://taxfoundation.org/article/dynamic-analysis-president-obama-s-tax-initiatives. But this difference cannot fully explain the large gap between the CBO and Tax Foundation estimates of the budget's effect on the economy (and associated revenue feedback). CBO's analysis of the macroeconomic effects of the President's *fiscal year 2017* budget appears to *include* the effects of its corporate tax reform proposals, which are largely the same as the proposals in the fiscal year 2016 budget. And CBO's estimate of the overall macroeconomic effect of the President's 2017 budget over the last five years of the ten-year budget window is similar to its estimate for the 2016 budget, with a central estimate of an *increase* in GNP of 1.8 percent. See Table 3 in Congressional Budget Office, "A Macroeconomic Analysis of the President's 2017 Budget," https://www.cbo.gov/publication/51625.

[14] Tax Foundation, "Options for Reforming America's Tax Code," June 6, 2016, p. 96, http://taxfoundation.org/sites/taxfoundation.org/files/docs/TF_Options_for_Reforming_Americas_Tax_Code.pdf.

[15] CBO, "A Macroeconomic Analysis of the President's 2017 Budget," June 2016, p. 9, https://www.cbo.gov/publication/51625.

[16] Tax Foundation, "Options for Reforming America's Tax Code," June 6, 2016, pp. 69-71, http://taxfoundation.org/sites/taxfoundation.org/files/docs/TF_Options_for_Reforming_Americas_Tax_Code.pdf.

[17] See Table 2 in Nicholas Bull, Tim Dowd, and Pamela Moomau, "Corporate Tax Reform: A Macroeconomic Perspective," *National Tax Journal*, Vol. 64 No. 4, December 2011, http://www.ntanet.org/NTJ/64/4/ntj-v64n04p923-41-corporate-tax-reform-macroeconomic.pdf.

[18] Tax Foundation, "Options for Reforming America's Tax Code," June 6, 2016, pp. 69-71, http://taxfoundation.org/sites/taxfoundation.org/files/docs/TF_Options_for_Reforming_Americas_Tax_Code.pdf.

Also of note, in 2005, JCT found that cutting the corporate tax rate by one-fifth without offsetting the cost would either *reduce* GDP slightly (by less than 0.05 percent) or increase it only modestly (by 0.3 percent), depending on how the Federal Reserve reacted to the policy change.[19] JCT wrote:

> In the long run, however, growth is reduced when there is no offsetting fiscal policy to stem increases in government debt; the buildup of public debt reduces the extent to which the corporate tax rate reduction lowers the cost of capital, thus slowing the buildup of the capital stock. [20]

JCT estimated that in the first several years, dynamic effects would reduce the conventional estimate of the revenue loss from the corporate rate cut by between 13.2 percent and 21 percent. [21] The 13.2 percent estimate assumes that, to prevent unwanted inflation, the Fed would raise interest rates enough to avert any short-term demand stimulus that would otherwise result from the tax cut. The 21 percent estimate assumes the Fed would be "neutral" (i.e., would not change its policy) in response to any such demand stimulus. The Fed's actual response would depend on its assessment of the relative risks of unwanted inflation versus excess unemployment. In any case, these estimates are much smaller than those the Tax Foundation has issued.

Why Does the Tax Foundation Model Produce Extreme Results?

The Tax Foundation's Taxes and Growth Model[22] is similar in some respects to the models that CBO and JCT are most likely to use for dynamic scoring estimates that Congress requests.[23] However, the Tax Foundation model produces much larger economic responses to certain proposed tax-policy changes.

In all these models, the economy's capacity to produce goods and services is determined by the size of the labor force and the size of the physical capital stock. The greater the number of people who want to work, the larger the labor force will be; the more that people want to save, the greater the amount of resources that will be available to finance increases in the physical capital stock via investment. But the Tax Foundation makes very aggressive assumptions about how certain tax changes affect decisions to work, save, and invest and thereby generates outsized estimates of the responses to various tax policy changes.

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[19] See Table 15 in Joint Committee on Taxation, "Macroeconomic Analysis of Various Proposals to Provide $500 Billion in Tax Relief," March 1, 2005, p. 44, https://www.jct.gov/publications.html?func=startdown&id=1189.

[20] *Ibid.*, p.44.

[21] See Table 21 in *ibid.*, p. 50.

[22] Tax Foundation, "Overview of the Tax Foundation's Taxes and Growth Model," http://taxfoundation.org/overview-tax-foundation-s-taxes-and-growth-model and Tax Foundation, "The Tax Foundation Small Comparative Statics Model of the U.S. Economy," http://taxfoundation.org/tax-foundation-small-comparative-statics-model-us-economy.

[23] In CBO's case, the Solow Growth Model (see https://www.cbo.gov/sites/default/files/114th-congress-2015-2016/presentation/50730-dynamicscoringedelberg.pdf) and in JCT's the Macroeconomic Growth Model (MEG) (see https://www.jct.gov/publications.html?func=startdown&id=4807, section III).

First, the Tax Foundation assumes that the change in the number of hours that people seek to work, in response to an increase in their after-tax wages due to a tax cut, is about *50 percent larger* than CBO or JCT assume.[24]

Second and more important, in the CBO and JCT growth models that are most similar to the Tax Foundation model, the effects of changes in tax rates on saving and investment are relatively modest (and unfold slowly over time).[25] In the Tax Foundation model, by contrast, these saving and investment responses are much larger, falling well outside the range CBO and JCT have used.

In the CBO and JCT models, an increase in the after-tax return on saving stimulates a relatively modest increase in the amount of saving available to fund capital investment, consistent with those institutions' reading of the empirical evidence. The Tax Foundation model, by contrast, assumes a much larger flow of saving will be available, resulting in much greater investment.[26] Mainstream economists find this assumption unrealistic (see Box).

CBO and JCT, backed by the empirical evidence, conclude that people's willingness to save more in response to an increase in the after-tax return on saving is constrained by their unwillingness to reduce their current spending too much, no matter how attractive a return they can get on their savings. Thus the increase in funding that is available for investment is constrained by the additional saving people are willing to make. The Tax Foundation model, in contrast, assumes that an unlimited amount of new saving would be available to finance increases in the capital stock even if the rate of return does not increase.[27]

The Tax Foundation also ignores any impact of tax cuts on budget deficits and debt. CBO and JCT, by contrast, recognize that tax cuts not offset by other tax or budget savings increase budget deficits and that the federal borrowing needed to finance the enlarged deficits competes with private borrowers for the available pool of saving. That competition tends to drive up interest rates, encouraging more saving but also discouraging some investment due to the higher cost of funding it.

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[24] The Tax Foundation assumption here is at the upper end of the range that CBO and JCT would consider plausible based on the empirical evidence. Congressional Budget Office, "The Long-Run Effects of Federal Budget Deficits on National Saving and Private Domestic Investment," Working Paper 2014-02, February 28, 2014, https://www.cbo.gov/publication/45140.

[25] CBO and JCT have performed dynamic analyses with a variety of models, but the models referred to here are the ones most in line with empirical estimates of supply-side responses. Jane G. Gravelle, "Dynamic Scoring for Tax Legislation: A Review of Models," Congressional Research Service, January 24, 2014, p. 17, http://graphics8.nytimes.com/packages/pdf/business/20140204_dynamic_scoring_report.pdf.

[26] The Tax Foundation describes its model as an "open-economy model that is driven by changes in the cost of labor and the cost of capital" in which "the long-run real after-tax return to physical capital is virtually constant." That last assumption, the organization states, "implies that capital is highly responsive to its return." See "The Tax Foundation Small Comparative Statics Model of the U.S. Economy," http://taxfoundation.org/tax-foundation-small-comparative-statics-model-us-economy.

[27] Tax cuts that raise the after-tax return on capital encourage firms to invest more, but two things normally limit that expansion. The first is diminishing returns: the after-tax rate of return on new investment falls as the capital stock gets larger to the point where further investment doesn't cover the cost of attracting funds. Second, the cost of attracting funds will rise if people require a higher rate of return to supply those funds or have a fixed savings target. The Tax Foundation model recognizes the first effect but assumes away the second.

Interest-rate increases can be mitigated by foreign savers' willingness to buy U.S. government debt or other U.S. assets, thus expanding the available pool of saving. But the Tax Foundation fails to distinguish between domestic and foreign sources of investment funding. By contrast, CBO assumes — based on its reading of the empirical evidence — that for each $1 increase in the deficit (which reduces government saving and hence U.S. national saving by $1), private saving rises by 43 cents and foreign capital inflows rise by 24 cents. This means that, on average, U.S. investment falls by 33 cents per $1 of added deficit in the CBO model, because there is only enough new saving forthcoming from U.S. and foreign savers to offset 67 cents of the loss in saving from the larger deficit.[28] The resulting reduction in national saving and investment leads to a smaller capital stock (factories, equipment, stores, etc.) and lower productivity, reducing future economic output compared with what it otherwise would be.

The Tax Foundation ignores this; its model assumes *no* such "crowding out" of investment. Rather, it assumes that U.S. and foreign savers will provide *whatever funds are necessary* to finance *any* increase in investment that the model predicts U.S. businesses would like to make and that this will occur without putting any upward pressure on interest rates that would discourage investment.

[28] Congressional Budget Office, "The 2016 Long-Term Budget Outlook," July 2016, p. 66, https://www.cbo.gov/publication/51580. For a review of the empirical literature on which CBO bases these assumptions, see Congressional Budget Office, "The Long-Run Effects of Federal Budget Deficits on National Saving and Private Domestic Investment," Working Paper 2014-02, February 28, 2014, https://www.cbo.gov/publication/45140.

Economists Question Tax Foundation Assumptions

In a 2015 piece for *The New York Times'* "The Upshot," Josh Barro reported that in discussions of the Tax Foundation model "with 10 public finance economists ranging across the ideological spectrum, all … said its estimates of the economic effects of tax cuts were too aggressive."[a] Here are some key excerpts from the Barro article.

> The optimistic results come mostly from assumptions about business investment being wildly responsive to tax policy. . . .
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> This assumption led various economists to invoke the names of small islands.
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> "That's true for the Netherlands Antilles, it's not true for us," said Doug Holtz-Eakin, the former head of the Congressional Budget Office who was John McCain's top economic adviser during his 2008 campaign.
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> "It's a model that might be appropriate for Bermuda," [Boston University professor Laurence] Kotlikoff said.
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> In a very small, very open economy, the Tax Foundation might be right: Cuts in investment taxes would drive a flood of foreign capital, producing a huge percentage increase in investment. But the United States is simply too big for that to work. The U.S. economy also is not perfectly open; for example, we have some restrictions on trade. Therefore, estimates of the amount of investment created by investment tax cuts should be more modest. Economists also criticized the Tax Foundation model for assuming all that new investment would fall into place very rapidly, and for failing to address economic effects from spending cuts or increased borrowing that the tax cuts would require in their first years.

[a] Josh Barro, "Tax Cuts Still Don't Pay for Themselves," *New York Times,* March 17, 2015, http://nyti.ms/1BOMJ1a.

Tax Foundation Estimates Overstate Gains to Americans' Income

The Tax Foundation is vague about how much of the increase in investment that tax cuts generate in its model would be funded by domestic saving and how much by borrowing from abroad. But this distinction is important. In the latter case, the income from such investment goes to the foreigners who financed it, not to U.S. citizens (although U.S. workers may benefit somewhat from the greater productivity that comes from a larger capital stock per worker).[29]

In assessing the economic effects of such policy changes, one must distinguish between Gross Domestic Product and Gross National Product. GDP is the total value of goods and services produced (or, alternatively, of all incomes earned[30]) in a year by labor and capital located in the United States, *regardless of the nationality of the workers or the owners of the capital.* GNP, by contrast, is the total value of goods and services produced (or incomes earned) by *U.S. nationals,* whether located here or abroad. Incomes that foreigners earn from investment in the United States thus count in GDP but not in GNP. As a result, GNP — not GDP — is the right measure to capture the gains *to Americans* from the extra investment that tax policy changes stimulate.

[29] CBO, "The 2016 Long-Term Budget Outlook," July 12, 2016, p. 65-66, https://www.cbo.gov/publication/51580.

[30] GDP or GNP can be measured either by the value of final sales of goods and services or by the value of the incomes earned (wages, profits, interest, etc.) in the production of those goods and services.

CBO made this point in a report last year, explaining:

> Another measure of economic growth is gross national product (GNP). Unlike the more commonly cited GDP, GNP includes the income that U.S. residents earn abroad and excludes the income that foreigners earn in this country. GNP is therefore a better measure of the resources available to U.S. households.[31]

The Tax Foundation's estimates of the macroeconomic impacts of tax cuts, however, typically report only GDP; they implicitly assume that tax revenues are the same regardless of whether the income is earned by U.S. or foreign nationals. As a result, no one can tell how much of the increased economic growth reflected in the Tax Foundation estimates for a given tax cut would benefit foreign investors (and foreign treasuries) rather than Americans. The Tax Foundation figures thus may leave a misleading impression of the impact on U.S. living standards and tax revenues.

In short, the assumptions, and therefore the results, of the Tax Foundation model are not in line with the balance of evidence.

In addition, most evidence doesn't support the concept underlying the Tax Foundation's dynamic scoring estimates that for the U.S. economy, *long-run deficits have no effect on interest rates*.[32]

Indeed, after reviewing the theory and evidence around income tax changes and economic growth, the Brookings Institution's William Gale and Dartmouth College's Andrew Samwick concluded:[33]

> Tax rate cuts may encourage individuals to work, save, and invest, but if the tax cuts are not financed by immediate spending cuts, they will likely also result in an increased federal budget deficit, which in the long-term will reduce national saving and raise interest rates. The net impact on growth [of tax rate cuts that aren't offset] is uncertain, but many estimates suggest it is either *small or negative*. (emphasis added)

Gale and Samwick note with respect to the effects of the 2001 and 2003 tax cuts: "A variety of forms of evidence suggest that the impact on growth of these changes was negligible." Moreover, even a 2006 Bush Treasury Department analysis estimated that making the 2001 and 2003 tax cuts permanent would have a negligible economic impact and could even ultimately hurt growth if the tax cuts costs were not eventually offset.[34]

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[31] Congressional Budget Office, "The 2016 Long-Term Budget Outlook," p. 19, https://www.cbo.gov/publication/51580.

[32] See Congressional Budget Office, "The Long-Run Effects of Federal Budget Deficits on National Saving and Private Domestic Investment," Working Paper 2014-02, February 28, 2014, https://www.cbo.gov/publication/45140.

[33] William G. Gale and Andrew A. Samwick, "Effects of Income Tax Changes in Economic Growth," February 2016, http://www.brookings.edu/~/media/research/files/papers/2014/09/09-effects-income-tax-changes-economic-growth-gale-samwick/09_effects_income_tax_changes_economic_growth_gale_samwick_.pdf.

[34] Office of Tax Analysis, Treasury Department, "A Dynamic Analysis of Permanent Extension of the President's Tax Relief," July 25, 2006, https://www.treasury.gov/resource-center/tax-policy/Documents/Report-Dynamic-Analysis-2006.pdf. For further discussion of the Treasury analysis, see Jason Furman, "Treasury Dynamic Scoring Analysis

Likewise, evidence refutes the idea that U.S. domestic saving or investment will skyrocket in response to tax cuts that favor capital investment.[35] As TPC Director Leonard Burman has noted, the empirical evidence does not imply that capital gains tax cuts are a silver bullet for economic growth. "Cutting capital gains taxes will not turbocharge the economy and raising them would not usher in a depression," Burman has written.[36] Yet the Tax Foundation model is unambiguous in showing large growth effects from capital gains tax cuts.[37]

Nor is there evidence that unfinanced corporate tax cuts would significantly benefit the economy. Although, as noted earlier, the Tax Foundation estimates that cutting the corporate tax rate by 20 percentage points would boost GDP by 4.3 percent in the long run,[38] the research suggests that cutting the corporate rate without offsetting the cost would have much smaller impacts and could actually harm growth over time when accounting for the long-run impact on deficits.

Tax Foundation Model Results Not Useful for Ten-Year Budget Estimates

Compounding the grounds for skepticism regarding Tax Foundation claims on large economic gains from certain tax cuts, the Tax Foundation is often vague about how long it takes the economy to adjust to changes in tax policy. Its model produces only *long-term* equilibrium outcomes that it predicts will result from tax policy changes. The model does not predict the year-to-year changes in the economy and the budget that are required to produce budget estimates for the years ahead as the economy transitions from its path before the tax policy change to the new long-run equilibrium the model predicts. Thus, any ten-year dynamic budget estimate from the Tax Foundation is necessarily an ad hoc estimate of the first ten years of that transition, not a result the model itself produces. As the Tax Foundation notes in a recent report:[39]

> Our model does not predict how long it will take for the full economic effect of tax changes to be felt. However, for most of our dynamic estimates, we assume that it will take 10 years for the U.S. economy to fully adjust as a result of changes in the tax code.

Refutes Claims By supporters of the Tax Cuts," Center on Budget and Policy Priorities, August 24, 2006, http://www.cbpp.org/research/treasury-dynamic-scoring-analysis-refutes-claims-by-supporters-of-the-tax-cuts.

[35] Chuck Marr and Chye-Ching Huang, "Raising Today's Low Capital Gains Tax Rates Could Promote Economic Efficiency and Fairness, While Helping Reduce Deficits," Center on Budget and Policy Priorities, September 19, 2012, http://www.cbpp.org/research/raising-todays-low-capital-gains-tax-rates-could-promote-economic-efficiency-and-fairness.

[36] Len Burman, "Capital Gains Tax Rates and Economic Growth (or not)," *Forbes,* March 15, 2012, http://www.forbes.com/sites/leonardburman/2012/03/15/capital-gains-tax-rates-and-economic-growth-or-not/#775dcc972a42.

[37] Tax Foundation, "Options for Reforming America's Tax Code," June 6, 2016, http://taxfoundation.org/sites/taxfoundation.org/files/docs/TF_Options_for_Reforming_Americas_Tax_Code.pdf.

[38] *Ibid*., p.71.

[39] Tax Foundation, "Options for Reforming America's Tax Code," June 6, 2016, p. 6, http://taxfoundation.org/sites/taxfoundation.org/files/docs/TF_Options_for_Reforming_Americas_Tax_Code.pdf.

Conclusion

The initial Trump tax plan was widely estimated to lose large amounts of revenue and substantially enlarge future deficits and debt. The Trump team says that the revised plan costs substantially less. In addition to including some policy changes that lower the standard cost estimate, the Trump team will cite the estimates they have derived from Tax Foundation work to claim that the plan will produce large "dynamic" effects on economic growth and revenues.

As this analysis documents, the Tax Foundation model generates far larger economic and budgetary effects than the models of the Congressional Budget Office and Congress's Joint Committee on Taxation, and relies on assumptions that are inconsistent with the economic evidence or well outside mainstream economic thinking. All dynamic budget estimates should be approached with caution. That admonition applies with particular force to the highly questionable dynamic estimates that the Tax Foundation model produces.