superior organization and management). These responses are at the heart of pro-growth tax policies.

Demand-side growth (or contraction) reflects business cycle fluctuations and the extent to which existing labor supply, capital, and technical prowess are utilized. These are also key factors of economic growth.

As noted above, there will be a need to settle on a single dynamic score. In light of the need for growth of both types to be incorporated into the analysis, it will require adding business-cycle considerations to growth-style modeling approaches. The ultimate size, direction, and character of demand-side effects of fiscal policy changes depend as well upon the assumed path of monetary policy. In a manner similar to offsetting budget policies, it would be necessary to make assumptions regarding the response of monetary policy to the legislative changes.

CONCLUSION

Advocates and detractors of dynamic scoring need to stop hyperventilating. Dynamic scoring is a sensible thing to do in situations where the policy changes are large enough for the Congress to care about the growth implications—tax reform, Social Security reform, immigration reform, etc.—and it can be done in a systematic and professional fashion. The adoption of dynamic scoring presents challenges, but those challenges are surmountable, and its incorporation in the budget process will present policymakers with better, albeit imperfect, information.

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DYNAMIC SCORING

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While conventional cost estimates for legislation include some behavioral effects, they keep overall output fixed. Dynamic scoring incorporates the feedback effects...
of output in the cost estimate. If output increases, so do revenues, which can offset the cost of tax cuts or spending increases. Dynamic scoring has been discussed for years but, until now, it had not been made official.

Since 2003 the Joint Committee on Taxation (JCT) has provided advisory (not incorporated in official cost estimates) macroeconomic analysis on most major tax legislation pursuant to a House rule. This analysis has included a range of output and revenue feedback estimates based on different models and assumptions. The 2015 rule change in the House, included in the budget resolution that was agreed to by both Houses, requires the incorporation of these effects into a single, official point estimate for major tax and mandatory spending changes (but not appropriations). Under the budget resolution, the Senate continues with a conventional score, but a dynamic score is required as an advisory supplement.

These changes are important because they require the JCT to choose a specific macroeconomic effect for major tax legislation and the Congressional Budget Office (CBO) to provide a similar point estimate for mandatory spending. That is, both will have to choose a single set of effects among many potential models and assumptions.

For the first time, these dynamic estimates are the official scores in the House, but that aspect of the change may not be important. Conventional estimates remain official in the Senate, and it is in the Senate that scores matter for legislation. Unlike the House, the Senate cannot set aside a budget point of order (e.g. if legislation violates revenue targets) with a simple majority; it requires 60 votes. Were dynamic scores to become the official estimates in the Senate, dynamic scoring would have direct consequences for legislative outcomes.

THE DYNAMIC SCORING DEBATE IN CONGRESS

The debate about including the effects on the aggregate level of economic output in estimates of cost and spending measures moved to a new level after Republicans gained control of the Congress in 1994. One of the first actions of the new Congress was to hold joint hearings on dynamic scoring before the House and Senate Budget Committees (Joint Hearing, 1995).

The 1995 hearing included, among its panelists, the current and former chairs of the Federal Reserve Board and the current and former directors of the Congressional Budget Office.

A theme that ran through several of the statements was a concern for budget discipline and the threat that overly optimistic projections might pose to it. Following the deficit increases of the 1980s, in no small part due to the 1981 tax cut (the debt rose from 25 percent of GDP in 1980 to 48 percent by the time of the hearing), and the painful steps taken to address it, many of these panelists believed that strict budget rules were necessary to contain the debt. That 1981 tax cut, which contributed so heavily to the debt, was peddled, in part, on the claim that a tax cut would pay for itself.

These panelists differentiated between analysis and baking the dynamic effects into official score-keeping estimates, which they feared would be subjected to political pressure. As Henry Aaron observed: "The desirability of keeping supply side responses out of revenue and expenditure estimation in no way prevents Members of Congress and the public from considering claims regarding these responses when deciding whether a measure is desirable or not. It is vital to distinguish debate, where all evidence should be considered, from revenue estimation, where rules should govern that narrow the potential for abuse and manipulation." (Joint Hearing, 1995, p. 151).

Subsequent to these hearings, the JCT, responsible for revenue estimates, commenced their study of macroeconomic effects by convening a panel of nine modelers.
to estimate the effect of fundamental tax reform (JCT, 1997). In 2003, both the CBO and JCT released their first macroeconomic estimates, the CBO of the president’s budget (CBO, 2003) and the JCT of the 2003 tax cut pursuant to a new House rule requiring macroeconomic analysis of major tax proposals (JCT, 2003). These estimates, of an advisory nature and providing a range of results, have continued over the intervening years, although in some cases legislation was adopted so rapidly that analysis was not possible.

The new rule and the budget resolution requiring point estimates for major legislation is an important change, largely because it will require a point estimate on tax legislation and extend this requirement to mandatory spending. Excluded from the macroeconomic estimation requirements in the budget resolution are appropriated spending as well as programs that do not affect spending or revenues but have consequences for the economy, such as immigration policy and the minimum wage.

THE CONSEQUENCES OF INCORPORATING DYNAMIC SCORING INTO BUDGET SCORES

What is currently missed by not including dynamic effects in scoring, as opposed to advisory analysis? Dynamic scoring forces the JCT and CBO to make a judgment about economic effects when there is, based on past analysis, a broad range of estimates and assumptions. If their choices tend toward small effects, as some sets of assumptions suggest, they will dissatisfy the supporters of tax cuts, now in the majority in Congress. If the estimates are large, their credibility may be undermined with those who suspected all along that political pressure would lead to inflated growth effects.

Both agencies apparently responded to pressures or requirements to provide dynamic estimates by using a variety of assumptions that showed a significant range of effects, both in their initial 2003 estimates, and in those following. These estimates were a good addition to understanding the economic effects of tax and spending changes, for two reasons. First, they demonstrated the uncertainties in estimating output effects. Second, they produced a range of estimates, but never ones that suggested tax cuts paid for themselves, as some politicians and interest groups claimed. Prior to that time the claims about the economic effects of tax changes, particularly the supply-side effects, were primarily from advocates of lower taxes.

The new rules will institutionalize dynamic scoring for mandatory spending but not appropriations. Mandatory spending is more likely to produce contractionary supply-side effects, because transfers in general produce income effects and, if phased out by income, imposes implicit marginal tax effects that generally cause a decrease in labor participation or hours. Some appropriations, such as spending on infrastructure, would more likely have expansionary supply-side effects. This selective inclusion might create a bias against appropriated spending.

In any case, it is clear that the issue of dynamic scoring is and has been largely about taxes. The interest in 1995 was in part due to a desire for the new majority to enact its “Contract with America” provisions in the face of tight budget constraints. The interest today is about the desire to enact a tax reform that steeply cuts rates.

The concern about budget discipline expressed in the 1995 hearings is still valid for several reasons. These concerns exist outside of the more basic concern about uncertainty and lack of consensus discussed in the next section.

First, feedback effects may be in large part driven by demand-side effects rather than the supply-side effects that initially spurred the dynamic scoring discussion. In the JCT’s first dynamic analysis, for the 2003 tax cuts, the feedback effect (share of revenue loss recovered through growth effects) in their general model was 27.5 percent in the first five years and 23.4 percent in the second five years when
cyclical effects were allowed but only 9.8 percent and 3.6 percent when they are not allowed. These effects were also dominant, or at least quite important (depending on the provision), in a series of JCT simulations of individual and corporate tax cuts in 2005 (JCT, 2005). Thus, much depends on the degree to which the JCT incorporates demand effects, whose magnitude depends in part on assumptions about the extent, if any, to which the Federal Reserve offsets fiscal stimulus through monetary policy.

Demand-side stimulus only increases output temporarily, because the economy would return to its full employment levels absent the stimulus. If these demand effects are incorporated, transitory effects on output on the economy, which fade quickly, will be a dominant force in reducing the apparent cost of tax and spending changes that permanently add to the deficit. They will be added to the list of ways Congress avoids its own budget discipline rules, such as adopting provisions that provide for transitory gains in the budget horizon because they are temporary, phased in, or shift revenues from the future into the present.

While the demand-side effects appear only in the short run, the crowding out effects of tax cuts—government borrowing to finance the tax cut, which displaces private investment and reduces output—are negligible in the short run but grow over time. Of course, some supply-side effects (such as effects on saving) occur with a delay but evidence indicates that these effects, and indeed all supply-side effects, are ultimately swamped by crowding out (JCT, 2006a). While longer-run effects will be included, they will barely affect the official cost estimates in the budget horizon.

A second consequence is that, with tax reform that is designed to be revenue-neutral or budget rules that fix revenue targets, the inclusion of feedback effects in official scores, even permanent supply-side effects, assigns all of the revenue benefits of growth to cutting taxes. If a stand-alone corporate reform were predicted to produce growth effects (for example, by attracting capital from abroad), the procedure would automatically assign any growth effects to cutting corporate taxes further if a revenue-neutral proposal were under consideration. Yet, it is reasonable to expect that gains from growth might be considered for a variety of uses: different tax cuts, spending increases, or reductions in the debt.

Another way that budget games can be played with dynamic scoring is to package policies with positive growth effects in large enough vehicles that they will be scored, while enacting those with negative effects in small packages that fall below the threshold.

**DOES ENOUGH OF A CONSENSUS EXIST TO MAKE MACROECONOMIC ANALYSIS CREDIBLE?**

The JCT sometimes has to make ordinary revenue estimates in the face of considerable uncertainty. In cases such as the domestic international sales corporation legislation in 1971 or the repatriation holiday enacted in 2004, there was virtually no guidance. And their estimates in both cases turned out to be quite off the mark. Also, they include controversial behavioral effects (such as capital gains realization responses) in some estimates. But these are the exceptions. Most elements of tax changes, such as changes in rates, exemptions, deductions, exclusions, and depreciation appear in tax return data or other data sources. These estimates are relatively precise. Similarly while some changes in mandatory spending programs can be quite uncertain (for example, the costs of the Affordable Care Act), changes in existing programs, such as Medicare, have a wealth of data on which to rest.

Macroeconomic analysis, however, has produced significant variation as shown by the JCT estimates both for simple tax cuts and complicated tax reforms (see JCT, 2006 and JCT, 2014). The sources of this variation depend on whether
straightforward and simple tax cuts (such as cutting individual rates) or more complex reforms are being modeled, and whether proposals lose or gain revenue, or are revenue neutral. These sources of variation depend on the following: (1) whether estimates reflect short-run demand effects and crowding out effects, along with supply-side effects; (2) the types of models used in supply-side estimation; and (3) the magnitude of behavioral responses. Complicating all three effects is the greater difficulty of estimating effects in an open economy.

All of the JCT estimates of major tax changes have shown wide variation. In addition to the 2003 cut discussed above, the 2005 simulation showed a range of revenue feedback effects in the budget horizon (10 years) from 5.8 to 23 percent for an individual rate cut (JCT, 2005). This simulation and a subsequent discussion (JCT, 2006a) also show that in the long run (defined as about 30 years) all tax cuts produce reductions in output in the model that permits crowding out. The JCT’s simulation of revenue-neutral (or roughly revenue-neutral) tax reform with base broadening also showed a range of effects: 0.1 to 1.2 percent of GDP for a 2006 estimate (JCT, 2006b) and 0.1 to 1.6 percent for the tax reform proposal of former Ways and Means Chairman Dave Camp (JCT, 2014). The CBO’s estimates of the President’s budget have also produced a range of effects, with their first ones (CBO, 2003) ranging from −0.6 to 1.4 percent of GDP.

Estimates with and without demand-side effects have been included in advisory studies, but there is no hint of the JCT’s or CBO’s views of them. In the 1995 hearings four of the eight economists testifying directly counseled against including cyclical effects (Henry Aaron, Martin Feldstein, Alan Greenspan, and Norman Ture) and three (Michael Boskin, Robert Reischauer, and Paul Volcker) suggested that including these effects would be problematic or should be of negligible importance.

If cyclical effects are included, they bring with them their own uncertainties. Fiscal multipliers are uncertain, becoming weaker in an open economy with mobile capital (where borrowing from abroad to finance the debt increases the price of the dollar and reduces net exports) and depending on how close the economy is to full employment. CBO Director Doug Elmendorf, testifying before the Senate Budget Committee in 2011, reported ranges of fiscal multipliers, with the highest typically four to six times the lowest (Elmendorf, 2011). In addition to uncertain magnitudes of multipliers, a major uncertainty is whether the Federal Reserve would offset any fiscal policy.

Crowding out of investment through deficits, relatively unimportant in the short run, but eventually becoming the dominant effect, is also uncertain, in part because of an open economy. The greater the amount of debt financed from abroad, the smaller the effect of government borrowing on interest rates and investment.

Even if the results are confined to supply-side effects, these effects also vary and the reasons for variation include the types of models and the behavioral responses explicitly or implicitly in them. The JCT’s current models provide a good illustration and are similar to the models most recently used by the CBO (CBO, 2014).

For recent estimates, the JCT used two models. One was a macroeconomic growth model (MEG) with labor supply depending on the marginal and average wage. These responses are small, consistent with empirical evidence. Savings responses are generated by consumption which is substituted over time based on rates of return assuming myopic expectations (similar to the OLG model described below but excluding labor). This consumption feature is not in the CBO growth model. These supply responses interact with production functions to determine output and other variables. This model can also capture cyclical effects and crowding out.

The second model is an overlapping generations (OLG) intertemporal model. Intertemporal models do not contain direct labor supply responses. They are motivated
by a desire to link microeconomic-based decisions to macroeconomic outcomes and trends and also to estimate welfare effects of tax and spending changes. Individual choice is based on a utility function in which rational individuals choose leisure or consumption over a lifetime with perfect foresight. Behavioral responses flow from this utility function. They are more rigid and less transparent than a growth model that includes a direct labor supply function. They cannot account for institutional constraints such as a 40-hour work week. Both the JCT’s and CBO’s labor substitution response is higher in their OLG model than in their simpler growth models. Because of their structure, they also depend on effects that have not been estimated empirically, such as labor supply response to the interest rate or substitution elasticities across far apart periods.

The JCT and CBO have also used another form of intertemporal model in the past, one characterized by a single infinitely-lived investor. The JCT has indicated an intention of continuing to use it. This model is simpler to construct but perhaps even less realistic as a reflection of individual behavior than the OLG model.

Because intertemporal models must be solved initially for an infinite horizon they cannot address crowding out, and for any policy that loses revenue, they must be accompanied by some other policy (such as changes in spending or transfers). The results depend on that choice. In addition, unlike MEG, the OLG model does not distinguish between suppliers of labor and capital. Closing the OLG model with transfers eliminates the income effects of tax cuts that decrease labor supply.

The JCT models have an open economy segment, which was only recently added to their OLG model. In general, the open economy aspects of both models are highly simplified. The innovation in the OLG model was inappropriate as it assumed output effects from the shifting of the ownership of intangibles. Intangible assets, once developed, may be costlessly used anywhere and it does not matter who actually owns the patent and who pays royalties. Shifting ownership does not affect productivity.

The Tax Foundation (McBride, 2014) made a similar point: “…Diamond and Zodrow find that U.S. workers and ordinary capital would be more productive under Camp’s plan due to patents and other intangibles sited in the United States rather than in the foreign subsidiaries of U.S. multinational companies. It is unclear how Apple workers or Apple machines, for example, would be significantly more productive if Apple patents were sited in the United States. Are the patents somehow inaccessible currently by the U.S. parent company?”

In the recent simulation of the Camp proposal, the MEG estimates were projected to increase GDP by 0.1 to 0.3 percent without cyclical effects and 0.4 to 0.6 percent with cyclical effects. The OLG model estimated an increase of 1.5 to 1.6 percent. About 40 percent of this OLG effect was from the shifting of intangibles (based on the percentage increases in labor and capital and their expected output shares). The remainder was from a much higher labor supply response whose cause one can only speculate about, but which may have reflected the lack of income effects for suppliers of labor in the OLG model.

Even the small estimates from the MEG model may overstate the output effects from the Camp proposal and from the JCT’s earlier tax reform study because they did not take into account the effect of some individual base broadening provisions that can affect marginal effective rates (such as disallowing itemized deductions for state and local income taxes).

The growth models, especially intertemporal models, used for tax analysis are probably not particularly suited to the CBO’s requirement to estimate the effect of mandatory spending. In this case, the labor supply response of the typical targets
of transfers (lower income families and the elderly) is likely to be the principal supply-side effect.

**PITFALLS AND RECOMMENDATIONS**

The JCT and CBO face some challenges in choosing among effects, models, and elasticities. The analysis in this discussion suggests some choices they might consider.

First, exclude cyclical effects.

Second, do not include input from intertemporal models, which cannot address a tax change in isolation and are an unrealistic representation of behavior. If they are to be used, calibrate them so that they match the income and substitution elasticities for labor in the empirical data and in simplified growth models. Charles Ballard, the discussant for intertemporal models in the 1997 symposium (JCT, 1997, p. 160), noted that the time endowment is a free parameter that can be used to accomplish this task.

Third, provide a more complete model of international capital flows, excluding the intangible capital effect in the JCT’s 2014 tax reform analysis. Such a model should be able to capture the basic effects of corporate effective tax rate changes, including the flow of capital from the noncorporate sectors of both the United States and the rest of the world, the effects of imperfect product substitution, and the possibility that rate reductions could decrease capital in the United States by increasing the cost of more mobile debt finance. Gravelle and Smetters (2006), who constructed such a model, have found quite small effects on the economy even with large portfolio elasticities and no consideration of debt. Until such a model can be constructed, consider continuing with a closed economy assumption, at least for purposes of supply-side effects, or use a modest portfolio elasticity.

Fourth, for changes that broaden the base, include the effect of individual changes, such as the disallowance of state and local tax rates, and charitable deductions that alter the share of labor income taxed at the margin.

Fifth, make models transparent by providing all of the information needed for outside experts to understand what assumptions were used and what drives the results, including any weights assigned to different effects, models, and elasticities.

If all of these recommendations are followed, however, it is likely that the macroeconomic effects would be negligible.

**DISCLAIMER**

These views do not reflect the views of the Congressional Research Service.

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I want to thank Dr. Gravelle for her contribution to this Point/Counterpoint and her public service at the Congressional Research Service more generally. Nevertheless, I disagree with much of her analysis. The first point is the notion that dynamic scoring introduces the prospect for “gaming” the budget—and the related notion that the desire to game the budget will place pressure on the Joint Committee on Taxation (JCT) and Congressional Budget Office (CBO) to inflate their estimates.

Budget gimmicks are nothing new. A recent example is the Patient Protection and Affordable Care Act (ACA). As passed, the ACA front-loaded revenues and backloaded spending to make the 10-year score in the budget window acceptable. It

RESPONSE TO GRAVELLE

Douglas Holtz-Eakin

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