Congressional Budget Office

JULY 26, 2018

# Answers to Questions for the Record Following a Hearing Conducted by the House Committee on the Budget on CBO Oversight: Economic Assumptions, Baseline Construction, Cost Estimating, and Scoring

*On February 6, 2018, the House Committee on the Budget convened a hearing at which Mark Hadley, Deputy Director of the Congressional Budget Office, testified about CBO's baseline projections and cost estimates along with Wendy Edelberg, Associate Director for Economic Analysis, and Theresa Gullo, Assistant Director for Budget Analysis.*[1] *After the hearing, Chairman Womack submitted questions for the record. This document provides CBO's answers. It is available at www.cbo.gov/publication/54205.*

## Macroeconomic Analysis

**Question.** Your economic growth forecast has changed dramatically in recent years. In 2012, CBO expected that the economy would grow by an average of 3.0 percent over the 10-year budget window, consistent with the long-term average of annual real GDP growth in the U.S. With every passing year, however, that growth assumption has been ratcheted down. Last year, you predicted that U.S. economic growth would average just 1.9 percent over the next 10 years. Why did your growth assumption fall so rapidly in such a short period of time?

**Answer.** More than half of the difference between CBO's growth projections in 2012 and 2018 reflects differences in business-cycle conditions that existed when the projections were made, and the remainder reflects differences in the growth of potential (maximum sustainable) output.

*Differences in Business Cycles.* In 2012, the American economy was still recovering from the 2007–2009 recession and financial crisis, and there was still substantial room for relatively rapid growth as the economy returned to full employment. Therefore, CBO projected that actual output would grow by about 2.9 percent per year over the following decade (2012 to 2022), more than 0.5 percentage points faster per year than its 2.3 percent projection for potential output. In contrast, in 2018 the economy is very near full employment and there is little scope for recovery-driven expansion. As a consequence, over the coming decade (2018 to 2028) CBO expects actual output to grow at the same rate as potential output.

1. See testimony of Mark Hadley, Deputy Director, Congressional Budget Office, before the House Committee on the Budget, *The Congressional Budget Office's Baseline Projections and Cost Estimates: Process and Principles* (February 6, 2018), www.cbo.gov/publication/53539.

*Differences in the Growth of Potential Output.* CBO's current projection for average annual growth in potential output over the 2018–2028 period—1.9 percent—is more than 0.4 percentage points per year slower than its 2012 projection over the 2012–2022 period. Three reasons account for that difference:

- About a tenth of a percentage point of the change to the potential output growth projection reflects a revision to the projected growth of the potential labor force. That revision, in turn, stems from the agency's reassessment since 2012 of trends in the rates of labor force participation by various groups (such as by younger workers) and from the aging of the population.
- Another tenth of a percentage point is attributable to the agency's revision of its projection of growth of potential total factor productivity, or TFP—the growth of output per combined unit of labor and capital. That revision is a response to the unexpectedly slow growth of actual TFP since about 2005.
- Slower growth of the potential labor force and of potential TFP also implies slower growth of investment and the flow of capital services into production. However, CBO has lowered its projection of investment even more to reflect the fact that the growth of investment has been considerably slower than anticipated since 2012, even taking into account trends in the labor force and in TFP. That lowering of projected investment growth accounts for nearly two-tenths of a percentage point of slower growth in projected output over the coming decade.

**Question.** How have your near-term economic growth assumptions changed since the passage of H.R. 1, the Tax Cuts and Jobs Act? Have you increased your near-term GDP forecast as many other private-sector economic forecasters have?

**Answer.** In CBO's projections, real (inflation-adjusted) growth in gross domestic product (GDP) is boosted by 0.3 percentage points in 2018 and by 0.3 percentage points in 2019 as a result of the 2017 tax act. Smaller positive effects on real GDP growth are projected to continue through 2022, when the peak effect on the *level* of real GDP—an added 1.0 percent—is reached. For other organizations' estimates that CBO examined, the average effect on the *level* of real GDP over the 2018–2022 period ranges from 0.3 percent to 1.3 percent, with a median of 0.6 percent, compared with CBO's estimate of 0.7 percent for that period.[2]

**Question.** What are the key levers inside a macroeconomic analysis that rely on CBO analysts' judgement or assumptions?

**Answer.** Each fiscal policy analysis conducted by CBO differs depending on the details of the policy being analyzed. In the agency's analysis of the 2017 tax act, for example, the major effects on GDP stem partly from increases in investment, on net, and from increases in the supply of labor—both of which tend to boost potential output. In addition, increases in consumption boost actual output in relation to potential output during the first half of the projection period. Those factors, along with the act's effects on federal budget deficits, are projected to affect the rate of inflation and interest rates—and those rates also have important budgetary effects.

2. See Congressional Budget Office, *The Budget and Economic Outlook: 2018–2028* (April 2018), Box B-2, www.cbo.gov/publication/53651.

CBO's analysis of each of those ways in which GDP is affected in its baseline economic projections involves quantitative assessments made by the agency's analysts. CBO described those assessments in supplemental material accompanying this year's edition of *The Budget and Economic Outlook*.[3] Several key estimates involved synthesizing information from previously published research. CBO's reading of that research suggests the following, all else being equal:

- A 1 percent decrease in the user cost of capital—which is the gross before-tax return on investment that provides the required return to investors after covering taxes and depreciation—translates into a 0.7 percent increase in investment;
- A 1 percentage-point decrease in the corporate tax rate translates into an increase of about one-quarter of one percent in investment in the base production that CBO anticipates is most able to move from country to country;
- A 1 percent increase in the after-tax wage rate increases hours worked by an average of 0.27 percent;
- A onetime increase of a dollar in income results in increased consumption of 84 cents, 57 cents, and 30 cents, respectively, for the lower, middle, and upper thirds of the income distribution; and
- The federal borrowing resulting from the act tends to reduce investment by 33 cents for every dollar of increase in the deficit.

In other parts of the analysis, CBO's analysts extrapolated from historical experience. For example, in CBO's estimates, 20 percent of businesses and households expect provisions scheduled to expire in 2026 to actually expire at that time, and 80 percent expect that the expiring provisions will be extended. The agency formulated those estimates to be consistent with the treatment of past expirations of major tax provisions.

**Question.** The Federal government's Bureau of Economic Analysis announced in January that real economic growth in calendar year 2017 was 2.3 percent measured on a year-to-year basis. I mention this because CBO's June 2017 baseline lowered projected growth for last year to 2.2 percent from the January baseline's 2.3 percent. In other words, the most recent June baseline was a bit too pessimistic on growth for last year. As it turned out, CBO's June baseline revised growth for last year in the wrong direction. One-tenth of one percent on the growth rate may not sound like a big difference, but if it persisted over the budget window, the cumulative budget deficit over ten years would be more than $300 billion lower. Why do you think CBO's June baseline turned out to be a bit too low on growth last year and why was it revised in the wrong direction?

**Answer.** CBO revised its estimate of GDP growth in 2017 largely in response to what appeared to be unexpectedly slow growth in real GDP during the first quarter of that year. When CBO prepared its projection in June, the Bureau of Economic Analysis (BEA) had estimated first-quarter growth to be only 0.7 percent; later, it raised its published estimate for that quarter by 0.5 percentage points, to 1.2 percent.

Forecasting economic growth is difficult because it is impossible to accurately predict all of the factors that influence the spending decisions of households, businesses, and governments

3. See Congressional Budget Office, "Key Methods That CBO Used to Estimate the Macroeconomic Effects of the 2017 Tax Act" (supplemental material for *The Budget and Economic Outlook: 2018 to 2028*, April 2018), https://go.usa.gov/xQcZD.

every year. A difference of 0.1 percentage point is quite small by historical standards and had few implications for projected growth in the future. Even after a quarter is over, estimates by BEA of actual growth in GDP in that quarter are often revised by more than 0.1 percentage point.

**Question.** Between CBO's release of its economic forecast, typically in January or February, and its official update in July or August, does CBO ever change its assumptions before the next formal update, and if so, why?

**Answer.** CBO prepares an economic forecast for each edition of *The Budget and Economic Outlook*. In addition to using all of the new economic data and information available, the agency incorporates improvements in its projection methodologies. The resulting forecast generally remains in place until an official update is released. In exceptional circumstances, and in consultation with the budget committees, CBO has published economic forecasts between editions of the *Outlook*. For example, CBO revisited its economic projections shortly after the publication of its January *Outlook* in both 2008 and 2009 in order to reflect rapidly changing economic conditions and to take into account significant changes in fiscal policy.

## CBO's Baseline

**Question.** How many analysts are involved in developing the baseline? What happens in the process if an error is discovered?

**Answer.** The projection process involves the majority of CBO's staff—analysts, managers, and support staff from every division in the agency. For the *Outlook* published in April 2018, 75 analysts worked on spending projections, 14 worked on revenue projections, and 14 worked on economic projections. In addition, more than 20 managers helped develop, review, and check the analyses.

Some of the agency's staff spend most of their time on work related to the baseline in the months leading up to its release; others provide analytical support for the projection models, review the projections, and prepare the *Outlook* and supporting materials for publication. The staff of the Joint Committee on Taxation (JCT) also provides information about recently enacted tax legislation and estimates of the budgetary effects of extending expiring tax provisions.

Projections are carefully reviewed to minimize the chances of an error. For example, new projections are compared with actual spending for the most recently completed fiscal year and with the previous baseline, and the differences are explained in the *Outlook*. When analysts or managers discover an error, they identify the source of the error (for example, numbers that were not transcribed properly), determine how widespread the error is and how many projections or numbers it might affect, and then develop a plan to fix the error, ensure the analysis is correct, and communicate about the error. After the fact and when appropriate, the agency tries to develop procedures to minimize the chances of that particular error's happening again.

**Question.** CBO currently produces 23 separate baseline projections on programs beyond its overall baseline. Why does CBO publish program-specific baselines for major programs, in addition to its comprehensive baseline? How does CBO determine which programs rise to the level of requiring a separate baseline?

**Answer.** CBO produces a single baseline; it is built from the bottom up and includes spending projections for 1,795 budget accounts.[4] As part of its long-standing efforts to be more transparent, CBO has provided additional information about many different programs, including Social Security, Medicare, higher education, and agriculture programs, for more than a decade. That information is found on CBO's website on the main landing page for the baseline report with which it is associated. Those projections are not separate baselines but rather the key inputs that underlie the baseline projections for that program, such as the number of people receiving benefits, the average benefit, or the amount of spending in different parts of the program.

Most of the additional information that CBO posts on its website is provided because Congressional staff have found the information to be useful as they develop legislative proposals related to the different programs. Knowing many of the important inputs to the baseline helps them understand how changes might affect different beneficiaries or benefit amounts. The number of programs for which CBO provides additional information has increased over the years, as Congressional staff have expressed interest and CBO has found ways to provide the information in a useful format.

**Question.** Can this Committee request a separate baseline be constructed for a particular function or program?

**Answer.** CBO already constructs baseline projections for each federal program that are incorporated in the agency's overall baseline projections. When the budget committees or other committees are interested in additional information about the inputs into the baseline projection underlying a particular program, CBO works with them to provide that information in the most useful format.

**Question.** What are the merits of a current-law baseline versus a current-policy baseline?

**Answer.** Different types of baselines can be useful for different purposes. A current-law baseline provides a useful benchmark for assessing the effects of proposed changes in law, but may sometimes yield overall budget projections reflecting policy changes currently set in law that many people think are unlikely to take effect. For example, many observers did not think that the expiration of tax provisions scheduled at the end of 2012 would occur. A current-policy baseline is less useful for identifying the effects of proposed changes in law but can sometimes show overall budget projections that some people view as more realistic. CBO's *Budget and Economic Outlook* in 2012 included an alternative fiscal scenario under which policies that were in effect at the time—including tax provisions that were going to expire—were projected to be extended. However, compared with that benchmark, it appeared costless to extend those policies even though doing so would require major changes in law.

4. For projections of budget authority and outlays at the budget account level, organized by Treasury Identification Number, for each baseline since 2009, see Congressional Budget Office, "Spending Projections, by Budget Account," www.cbo.gov/about/products/budget-economic-data#9. For details about revenue projections, see "Revenue Projections, by Category," www.cbo.gov/about/products/budget-economic-data#7.

**Question.** Why does CBO assume that mandatory spending automatically increases? Does the assumption that these programs continue to increase bias the baseline in favor of higher spending?

**Answer.** When estimating the costs of mandatory spending programs, CBO follows the direction of section 257 of the Balanced Budget and Emergency Deficit Control Act of 1985 (the Deficit Control Act), which established rules for estimating the baseline. That section directs CBO to calculate a baseline using the assumption that laws creating or providing direct spending for mandatory programs operate in a manner specified in those laws for the budget year and each subsequent year. That section also directs CBO to assume that funding for entitlement authority in those programs is adequate to make all payments required by those laws.

In most cases, but not all, those laws cause the program's costs to increase each year. For example, Medicare's costs increase each year in part because the program has more beneficiaries each year, and by law the program makes expenditures for those beneficiaries. Such projections provide a sound basis for assessing the budgetary outlook in coming years if current laws governing spending programs remain unchanged; they also provide a benchmark for assessing the effects of legislative proposals that would change those laws.

If a program with outlays greater than $50 million (the Supplemental Nutrition Assistance Program, for example) is statutorily scheduled to expire during the baseline window, the Deficit Control Act further requires CBO to assume that the program will continue to operate as it would immediately before expiring. (That rule applies automatically to programs established on or before August 5, 1997; CBO consults with the budget committees to determine whether it will apply to programs established thereafter.) CBO identifies such programs in its published baseline so that continuations are readily identifiable.[5] On the one hand, the baseline includes spending for such programs that is not authorized under current law; on the other hand, the overall budget projections are probably more realistic because those programs are usually extended.

**Question.** Who develops the revenue part of the baseline that serves as the benchmark against which cost estimates and budget projections are developed? Does CBO use the same revenue assumptions in developing the baseline as the Joint Committee on Taxation uses when estimating the cost of tax legislation? How are these differences managed?

**Answer.** CBO develops the baseline projection of all federal revenues, including revenues from taxes, by building upon the agency's projections of the economy. For revenues from taxes—as opposed to various fees, fines, royalties, and other nontax revenue—CBO works closely with staff of the Joint Committee on Taxation on how to interpret data from tax returns, how to interpret tax law, and how to model the effects of tax law. This revenue baseline is used by both CBO and JCT as the benchmark for estimates of the budgetary effects of legislation. JCT is responsible for estimating the budgetary effects of changes to tax law, and CBO is responsible for estimating the effects of other changes in law.

Following the enactment of tax legislation, JCT provides CBO with detailed estimates of the budgetary effects of the changes, which CBO uses as the basis to update the revenue baseline. Those changes are reported in an appendix to *The Budget and Economic Outlook* as "legislative changes." After each baseline update is completed, CBO provides details about its

5. See Congressional Budget Office, *The Budget and Economic Outlook: 2018 to 2028* (April 2018), Table 2-3, www.cbo.gov/publication/53651.

projections of the economy and the revenue baseline to JCT to facilitate the incorporation of those changes in JCT's models. This close working relationship between CBO and JCT ensures that the baseline projections and estimates of legislative changes reflect a consistent understanding of the economy and the tax system.

**Question.** Deputy Director Hadley, you stated in your testimony that CBO uses current law to construct its baseline by long-standing convention. Are there alternative approaches that CBO has considered in order to reflect a more accurate benchmark?

**Answer.** Yes, in the course of providing estimates to many requesters, CBO has used alternative approaches so that they can construct their own benchmarks. The accuracy of those benchmarks can only be measured relative to the goals of the requesters, and those goals have differed. CBO's baseline is not simply a convention—it is largely defined by law, and altering that definition would require a change in law.

**Question.** How can CBO do a better job of explaining when baseline rules require the agency to produce cost estimates with seemingly nonsensical results? For example, when statute requires a mandatory program to drop out of the baseline even while it is expected to continue.

**Answer.** The Deficit Control Act established rules for the baseline which sometimes cause surprising results, and CBO strives to provide information to Congressional staff in person and in writing when it appears that surprises might occur. An example of such a potential surprise occurred after the Office of Management and Budget (OMB) determined that Welfare Research Grants (with funding of $15 million) were subject to sequestration in 2013 whereas the larger Temporary Assistance for Needy Families (TANF) program (with funding of $17 billion) was not. As a result, CBO concluded that Welfare Research Grants should be reclassified as a separate program and not classified as part of TANF. That distinction was important for the baseline projections because the Deficit Control Act states that if a mandatory program is scheduled to expire and is expected to have outlays of greater than $50 million in the last year of authorization, it should be assumed to continue in the baseline. Thus, when the Welfare Research Grants account was considered to be a part of TANF, it was assumed to continue in CBO's baseline, along with other funding for TANF; as a separate program, its funding was assumed to cease. If a program is assumed to continue in the baseline, then a cost estimate for its extension reports no net effect on the deficit. If a program is assumed to cease in the baseline, then a cost estimate reports that the deficit would increase if it was extended. When proposals for extensions of TANF and Welfare Research Grants were considered after February 2014, CBO estimated a cost of $15 million for extending the research grants for one year. CBO is aiming to communicate clearly with interested Congressional staff if a similar situation occurs in the future.

## Cost Estimates

**Question.** Sometimes scoring rules lead CBO to produce estimates that do not reflect reality. For instance, in the cost estimate for H.R. 3053, a bill changing the way we deal with nuclear waste, CBO's estimate assumed receipts coming from a fee that has not been collected in years. Why did CBO make this assumption and what was the basis for the actual amount it assumed would be collected?

**Answer.** In preparing baselines and cost estimates, CBO routinely must make predictions about a wide variety of future actions by the Administration, including actions that might occur in the future under current law even if they are not occurring now. If it is uncertain that an action will occur, CBO reduces its estimate of the potential effect of that action by 50 percent. That adjustment is equivalent to predicting that there is a 50 percent chance that an action having the full effect will take place and a 50 percent chance that an action will have no budgetary effect.

In the case of nuclear-waste fees, even though their collection was suspended pursuant to a court order in 2014, collection could be reinstated through administrative action under current law. Thus, CBO's (and OMB's) baselines reflect a 50 percent chance that the fees will be reinstated in the future, resulting in an expected value of about $385 million annually in collections.[6]

**Question.** How feasible would it be for CBO to provide a cost estimate prior to Committee consideration? What resources would be needed to implement this?

**Answer.** CBO sometimes provides estimates, usually informally, before committee markups occur. However, if the Congress were interested in having formal estimates for authorizing bills on a routine basis before full committee markups occurred, the time and resources needed would depend on when in the process those estimates would be required. Producing formal estimates for all introduced bills (there were about 8,700 in 2017) would not be feasible. Producing them after subcommittee markup and before full committee consideration would probably be possible but would require additional resources. (Committees also would have to allow time in their schedules for estimates to be prepared.) Currently, about 65 analysts are devoted to producing cost estimates after full committee markup, but producing estimates before markup would eliminate some of the work that now occurs afterward. Nevertheless, the additional resources that would be required would probably be substantial. CBO would be happy to prepare a detailed estimate if that would be helpful.

CBO's work with the appropriations committees is quite different. The agency routinely provides estimates before markups occur using the committees' dedicated information technology systems for compiling the estimated budgetary effects of their bills.

**Question.** What types of internal controls does CBO use in writing cost estimates? Can you please walk the Committee through the agency's internal review process for an estimate before it is released?

**Answer.** Formal estimates go through extensive review before they are finalized and made public. That review is meant to ensure that the analysis is thorough, consistent, objective, and as accurate as possible.

Analysts, who are experts in their subject areas, must justify their methods and results, and they make their supporting documentation available to managers to review. Those managers include at least one unit chief, one of the Deputy Assistant Directors for Budget Analysis, and the Assistant Director for Budget Analysis. And all formal estimates are reviewed and approved by the Director or Deputy Director. In addition, analysts frequently call upon their colleagues at CBO as well as outside experts to provide information and sometimes to share their own analyses, when they are available, for comparison.

6. See Congressional Budget Office, cost estimate for H.R. 3053, Nuclear Waste Policy Amendments Act of 2017 (October 4, 2017), p. 4, www.cbo.gov/publication/53182.

**Question.** What does CBO do in the instances in which it faces internal disagreements between its analysts regarding the effects of a bill the agency is scoring?

**Answer.** CBO welcomes a wide range of views among its staff and encourages analysts involved in the preparation of a cost estimate to express their opinions and offer suggestions. The agency encourages debate and, within the time available, considers differing viewpoints and approaches to analyzing a problem. During discussions about analyzing legislation, junior analysts, senior analysts, and managers all have a seat at the table, and everyone has an opportunity to participate. The agency endeavors to reach consensus and usually does, but ultimately it is CBO's Director who makes the final decision when there are disagreements that cannot be resolved.

**Question.** Are there additional reviews in place for cost-estimating work done by newer analysts?

**Answer.** New budget analysts are assigned a mentor (a senior analyst) who, along with their unit chief, guides their early work. CBO also has a well-defined training program for budget analysts that, over the course of their first year, addresses the budget process, scorekeeping, the preparation of cost estimates and baseline projections, the analysis of the President's budget, the fundamentals of legal research, and other aspects of CBO's work.

**Question.** Has CBO considered whether to implement any external reviews for cost estimates?

**Answer.** CBO has decided to not send out drafts of estimates for external review largely because of the time constraints involved in producing those estimates. However, analysts routinely consult outside experts when they are researching the potential effects of proposed legislation. Those experts include Congressional staff; staff of affected federal agencies; interested stakeholders, including experts in state governments, interest groups, and industry; and other experts at think tanks or in academia.

**Question.** How do analysts account for directives to a federal agency that CBO believes the agency will carry out anyway when developing a cost estimate?

**Answer.** When a bill directs an agency to undertake an activity that CBO judges is already being undertaken or will be undertaken in the future under current law, CBO estimates that implementing the provision would result in no additional costs.

**Question.** How does CBO account for costs of legislation imposing new activities on federal agencies without increasing the amount that is authorized for the agency?

**Answer.** Some authorizing bills would require an agency to undertake new activities but would not explicitly authorize appropriations for those purposes. In those instances, CBO includes, as a cost of the bill, the budgetary resources (usually discretionary appropriations) that would be necessary to implement the bill's directions—regardless of whether additional appropriations are authorized.

New requirements could influence the amount of new budget authority made available to the agency in the future. But even if future funding for the agency was not increased, the agency would still have to spend appropriated resources on that new activity instead of spending them to carry out other responsibilities. In those instances, the estimate of the resources needed to carry out the new activity would be a measure of the "opportunity cost" of not carrying out other responsibilities.

**Question.** How does CBO's scoring of appropriations acts differ from authorization legislation? How feasible would it be for CBO to provide Congress cost estimates of appropriations bills?

**Answer.** Section 308 of the Congressional Budget Act requires, in part, that CBO assist the House and Senate Budget and Appropriations Committees in carrying out their responsibilities. CBO already produces cost estimates for appropriation bills, but they are different from the written estimates provided for authorization bills. As a bill is being considered by an appropriations committee, CBO provides estimates of budget authority and outlays in a Comparative Statement of Budget Authority report, using the committee's dedicated information technology system for that purpose.

To help the Congress track the effects of appropriation legislation as it moves through the process, CBO frequently presents details of budgetary effects in what the agency calls current status reports, which reflect the latest stage of action for each appropriations subcommittee.[7] Those reports are first provided when an appropriation bill is reported in the House or Senate and updated as the bill progresses through the process. Reports on the current status of discretionary appropriations give the total first-year effects of each reported appropriation bill. CBO is exploring ways to provide other information for appropriation bills in written form and in different ways that would, for example, allow Members to view the data by agency. Detailed account-by-account estimates are available to Members of Congress who request them; CBO is currently developing a plan to make more of the account-level analysis of appropriation bills publicly available in an accessible format.

CBO also regularly publishes, on its website, estimates of the budgetary effects of supplemental and omnibus appropriation bills and continuing resolutions being considered by the Congress. In addition, CBO provides the budget committees "current level" reports, which are published in the Congressional Record and summarize the budgetary effects of all enacted legislation, including appropriation bills.

**Question.** Has CBO rescored enacted legislation to account for any potential differences between its initial estimates and actual projections? Is this something that CBO would consider studying?

**Answer.** CBO's primary focus is on providing the Congress with information about legislation that is currently being considered. However, whenever possible the agency reviews previously enacted legislation in the context of new information or actual results as part of updating baseline projections.

Comparing a CBO cost estimate with actual results is often quite difficult—because the actual costs or savings resulting from enacting legislation are usually a small part of a large budget account or revenue stream and cannot be separately identified. As a result, when spending for a government program turns out to be higher or lower than CBO had expected after a legislative change, it is usually unclear whether the error should be attributed to the previous baseline projection for spending under that program or to CBO's estimate of the effects of the new legislation. Nonetheless, CBO carefully scrutinizes errors in its projections, reviews data on spending patterns for federal programs, and consults with outside experts on those programs in order to improve its estimating methodology.

7. See Congressional Budget Office, "Status of Appropriations," www.cbo.gov/topics/budget/status-appropriations.

When it is possible to separately identify the results of legislation (usually because they appear in separate budget accounts), CBO routinely compares those actual results with its estimates to refine future estimates. For example, CBO has compared its original estimates with actual results for Part D of Medicare (the prescription drug program) and the subsidies for health insurance under the Affordable Care Act.[8]

**Question.** Would you please explain how CBO determines whether legislation requires long-term scoring, in addition to its standard 10-year window cost estimates?

**Answer.** Both the Senate and the House have points of order that can be triggered if the increase in the on-budget deficit (for the Senate) or net mandatory spending (for the House) exceeds a specific dollar amount in any of the four decades after the 10-year budget window. CBO's cost estimates routinely indicate whether or not those thresholds are exceeded. In addition, if legislation would have budgetary effects beyond the first 10 years that differ significantly from what would occur during the first decade, CBO identifies and describes them when that is practicable.

**Question.** CBO has a long-standing convention of cost estimating on a static basis, which can understate the effects of major legislation that would affect the economy significantly. Why does CBO use static scoring, rather than dynamic scoring?

**Answer.** The budget committees and CBO had a long-standing practice of not incorporating macroeconomic effects in cost estimates for legislation, in part because the techniques for doing so were not well developed. That practice was changed, however, by the Concurrent Resolution on the Budget for Fiscal Year 2016. That resolution (S. Con. Res. 11) specified that when the gross budgetary effects of a bill equal or exceed 0.25 percent of GDP in a year (currently about $50 billion), CBO should incorporate budgetary feedback from macroeconomic effects into its cost estimates, if practicable. Although some legislation would have effects that are substantial enough to have discernible macroeconomic consequences (affecting the overall demand for goods and services, labor supply, or private investment, for instance), most bills do not. For that reason, producing dynamic analyses selectively is more feasible given the time and resources it takes to complete them. Dynamic estimates are complicated and time-consuming, so if legislation is moving quickly, it can be difficult to prepare them on a timely basis.

Even when legislation would not have significant macroeconomic effects, CBO's analysts assess the extent to which proposed policies would affect people's behavior in ways that would generate budgetary savings or costs, and those effects are routinely incorporated in the agency's cost estimates and reports. For example, the agency's estimates include changes in the production of various crops that would result from adopting new farm policies, changes in the likelihood that people would take up certain government benefits if policies pertaining to those benefits were altered, and changes in the quantity of health care services that would be provided if Medicare's payment rates to certain providers were adjusted. (Similarly, in its estimates of the budgetary effects of tax legislation, the staff of the Joint Committee on Taxation accounts for behavioral responses to changes in the tax system—for example, changes that would take place in the timing and size of capital gains realizations if the tax rate applicable to capital gains was modified.)

8. See Congressional Budget Office, *Competition and the Cost of Medicare's Prescription Drug Program* (July 2014), Chapter 1, www.cbo.gov/publication/45552, and *CBO's Record of Projecting Subsidies for Health Insurance Under the Affordable Care Act: 2014 to 2016* (December 2017), www.cbo.gov/publication/53094.

**Question.** How has CBO's approach toward dynamic scoring evolved over time?

**Answer.** CBO's ability to analyze the macroeconomic effects of legislation has improved over time, and the circumstances under which such analyses are performed have changed. CBO has long analyzed the impact of legislation on the economy in a number of its products, but in accordance with long-standing Congressional budget procedures, such impacts were generally not addressed in cost estimates for legislation as it was being considered. For example, CBO includes the dynamic effects of enacted legislation in its baseline macroeconomic projections and in its analysis of the President's budget proposals.[9] In its cost estimates, CBO always tries to incorporate the effects that legislation would have on people's behavior—but effects on the economy as a whole are taken into account only in limited circumstances.

In recent years, CBO has explicitly conducted dynamic scoring of major legislation, following the Congress' adoption in May 2015 of S. Con. Res. 11, which required that CBO "shall to the greatest extent practicable, incorporate the budgetary effects of changes in economic output, employment, capital stock, and other macroeconomic variables resulting from such major legislation." Major legislation is defined as either having a gross budgetary effect, before incorporating macroeconomic effects, of 0.25 percent of GDP in any year over the next 10 years, or having been designated as such by the Chairman of either budget committee.[10] The majority of bills, however, do not meet the definition of major legislation and would have negligible, if any, macroeconomic effects.

CBO has conducted its dynamic analyses—including those of the President's budget and for major legislation—using a variety of models over time. In May 2004, for example, CBO used two commercially available macroeconomic models, a textbook growth model, an overlapping-generations model, and a Ramsey model to estimate the possible effects on GDP of a 10 percent cut in income tax rates. Beginning in 2009, CBO published regular estimates of the impact of the American Recovery and Reinvestment Act on the U.S. economy by combining short-term and long-term effects.

In recent years, CBO has continued to estimate the short- and long-term effects of fiscal policy proposals on the economy using a combination of macroeconomic models.[11]

- To assess the short-term effects (driven by changes in overall demand for goods and services), CBO uses empirical evidence about the effects of changes in similar policies and the results generated by commercially available macroeconomic models.

9. For recent publications including those effects, see Congressional Budget Office, *The Budget and Economic Outlook: 2018–2028 (*April 2018), Appendix B, www.cbo.gov/publication/53651, and *A Macroeconomic Analysis of the President's 2017 Budget* (June 2016), www.cbo.gov/publication/51625.

10. For an example of how CBO implemented the requirement, see Congressional Budget Office, letter to the Honorable Mike Enzi regarding the budgetary effects of H.R. 3762, the Restoring Americans' Healthcare Freedom Reconciliation Act, as passed by the Senate on December 3, 2015 (December 11, 2015), www.cbo.gov/publication/51090.

11. For more information, see Congressional Budget Office, *How CBO Analyzes the Effects of Changes in Federal Fiscal Policies on the Economy* (November 2014), www.cbo.gov/publication/49494; Jonathan Huntley, *The Long-Run Effects of Federal Budget Deficits on National Saving and Private Domestic Investment*, Working Paper 2014-02 (Congressional Budget Office, February 2014), www.cbo.gov/publication/45140; and Felix Reichling and Charles Whalen, *Assessing the Short-Term Effects on Output of Changes in Federal Fiscal Policies*, Working Paper 2012-08 (Congressional Budget Office, May 2012), www.cbo.gov/publication/43278.

- To estimate the medium- to long-term effects (deriving from changes in national saving and incentives to work, save, and invest), CBO uses a Solow-type growth model, a life-cycle growth model, and a dynamic-stochastic general equilibrium model.
- For the transitional period between the short term and the long term, CBO uses a weighted average of its estimates of the short-term and long-term effects that assigns increasing weight to the long-term estimates over the course of that period.

CBO has used and continues to use a range of empirical results and economic models, rather than any single result or model, to develop its dynamic estimates. The models and results the agency uses are informed by the findings of a large body of economics literature and are reviewed by outside experts. CBO continually monitors the relevant research literature, and the agency's approach to dynamic scoring evolves as new evidence, findings, and insights emerge from that literature and from its own independent research.

**Question.** CBO provides numerous informal estimates of floor amendments before legislation is considered in the House. Does CBO's standard process for cost estimates differ when providing estimates of floor amendments?

**Answer.** The process for preparing estimates of the effects of floor amendments differs most significantly from the process for preparing cost estimates for legislation reported by committees in two ways: the setting of priorities and the release of estimates. In setting priorities for the preparation of formal estimates after committee markup, CBO works closely with the committee of jurisdiction, the budget and rules committees, and the leadership (particularly the office of Majority Leader McCarthy, who sets floor priorities). Priorities can shift quickly, so staying in touch after markups is challenging but vital. CBO coordinates with the rules and budget committees on a weekly, sometimes daily basis. The estimates are communicated to the majority and minority staff on the relevant committee and are posted on CBO's website.

The release of estimates for floor amendments and for amendments to appropriation bills is quite different, mostly because of the volume of amendments that have to be reviewed and because of the short time frames involved in reviewing amendments. To the extent that CBO has time, given the demand for work on other legislation, it tries to work on amendments according to priorities set by requesters—although it often relies on the budget committees and the committees of jurisdiction to set such priorities. Estimates for amendments are generally not posted on CBO's website, given the volume and time frames involved. As an example, in the two-week period between August 24, 2017, and September 6, 2017, CBO estimated the budgetary effects of, contacted sponsors of, and transmitted to committee staff information about the effects of more than 1,000 amendments to H.R. 3354, the House-passed omnibus appropriation legislation (the Make America Secure and Prosperous Appropriations Act, 2018).

**Question.** How does CBO determine the order of provisions and the weight of assumptions when constructing a cost estimate that includes interactive effects?

**Answer.** Interactions between provisions of a bill are estimated simultaneously and not assigned to specific provisions. The order in which the provisions are considered would matter for such a determination, and there is no mathematical or statistical principle that compels a particular allocation. Therefore, any allocation of the interactive effect would require the requester of the estimate to specify the order in which to consider the provisions.

**Question.** Can you please explain CBO's process for estimating the cost of public-private partnership proposals? What are the factors that CBO assumes contribute to increased spending?

**Answer.** How CBO estimates the budgetary consequences of using public-private partnerships to finance the acquisition of federal assets can best be understood through an example. In the case of energy savings performance contracts (ESPCs), a variety of laws and executive orders require federal agencies to improve the energy efficiency of their facilities and to pursue a range of other energy-related goals. Because the availability of annual appropriations is limited, the Administration encourages federal agencies to use other types of financing—such as ESPCs—to fund investments related to energy efficiency. Under an ESPC, a private party agrees to pay to design, acquire, install, and, in some cases, operate and maintain energy-conservation equipment—such as new windows or lighting—in a federal facility. In return, the federal agency agrees to repay the private party for those services and equipment over time, as well as for the financing costs associated with those investments, on the basis of anticipated and realized reductions in the agency's energy costs.

Given constraints on discretionary appropriations, the use of such contracts may make it easier for agencies to invest in energy efficiency and thus may lead to reductions in agencies' energy costs that might not otherwise occur. However, compared with paying for energy-saving equipment and services up front with appropriated funds, relying on ESPCs to finance those investments results in greater financing costs to the government. In CBO's assessment, the government's financing costs are higher under ESPCs for three reasons: The energy service companies assume some financial risk that would otherwise be borne by the government (and want to be compensated for that risk); those companies face more difficulties raising funds in the markets for capital than the federal government does (which makes the financing more expensive); and even within the capital markets to which those companies have access, they may not be obtaining financing at the lowest possible cost.

Under federal law, agencies are allowed to enter into ESPCs without an appropriation to cover the full cost of the government's legal obligations under those contracts. Under long-standing Congressional budget rules, in the absence of appropriations sufficient to cover the contractually binding costs, such authority is a form of mandatory rather discretionary spending. In contrast, any savings from the investments would accrue to discretionary accounts, and those savings would be subject to future appropriation actions. Also according to those budget rules, effects on mandatory and discretionary spending are considered separately because they are subject to separate types of budget enforcement rules.

The comparison of costs and savings under ESPCs is complicated by the fact that much or all of the spending to acquire the equipment would occur early (within the 10-year budget window) whereas much of the savings would occur later. For purposes of determining budget-related points of order for legislation considered by the House, section 5109 of H. Con. Res. 71, the Concurrent Resolution on the Budget for Fiscal Year 2018, specifies how CBO should prepare cost estimates for ESPCs. Specifically, that resolution requires CBO to estimate the lifetime net cost or savings attributable to projects financed by such contracts and to record that amount as an up-front change in mandatory spending. H. Con. Res. 71 also specifies that, in the House of Representatives, any estimated savings calculated on that basis may not be used as an offset for purposes of budget enforcement. In cost estimates, CBO continues to show the estimated effects under both long-standing budget rules and the directive in the budget resolution.

**Question.** Why does CBO not publish all of the assumptions that its analysts make in estimating the cost of a bill?

**Answer.** Almost all of CBO's cost estimates provide a basis for the estimate that highlights the probable timing of implementation, data sources, key elements of the analysis, and significant sources of uncertainty. That discussion aims to provide readers with a clear understanding of the methodological approach and the key inputs to the estimating process. But given the time constraints that CBO faces in the preparation of 500 to 700 formal cost estimates a year (and many thousands of informal ones) and the many factors that affect some estimates, it is not feasible to describe in writing every detail of every estimate. When time is very short, a written estimate may not be possible, and CBO's cost estimate may consist only of a table or set of tables.

CBO is exploring ways to make more of the supporting documentation for the methods used in preparing cost estimates publicly available. Such documentation could provide information about key variables underlying particular cost estimates—inflation rates, for instance. It also could show detailed results and associated formulas underlying estimates and link published estimates more copiously to supplemental information. However, because the overall demand for CBO's work is high and its resources are constrained, the agency needs to balance requests to explain more about finished analyses with requests for new analyses and with its other responsibilities, such as regularly updating its baseline budget and economic projections.

## Modeling and Data

**Question.** Why does CBO not publish its models?

**Answer.** CBO generally describes the structure and key inputs into models that are used in the preparation of its estimates. The agency has not published computer code related to completed estimates in the past mainly because preparing it for publication would have been a time-consuming additional process that would have taken resources away from producing new estimates.

It is important to note that models do not provide a complete basis for a particular estimate that CBO has published; analysts also use information obtained from experts, data, and research to determine which models or other inputs to use, how to distill the proposed changes in law into inputs to those models, and how to combine the results of the models with other available information to produce a final estimate. Thus, additional explanation beyond publication of a model is necessary to understand the basis of an estimate. Moreover, models constantly evolve, and CBO regularly applies new information and judgment in its use of models. So a model that is useful in documenting a previous CBO estimate may not be so useful—or may, in fact, be misleading—in anticipating a future one.

Nevertheless, to enhance the transparency of its work, CBO plans to increase the public documentation of its modeling efforts by publishing more slide decks, working papers, appendixes, supplemental data, related spreadsheets, and other technical material. For example, CBO will update elements of its long-term budget model and provide technical documentation and computer code explaining the updates. When its updated model of health insurance coverage is completed, the agency will publish conceptual overviews and documentation of all parts of the model, as well as more detailed information—including computer code—about key aspects of the modeling. CBO looks forward to getting feedback on the usefulness of those transparency efforts.

**Question.** Why is there tension between CBO's access to private-sector data and data transparency?

**Answer.** CBO uses some data from the private sector under agreements that prohibit the agency from sharing the information. Those prohibitions keep information confidential because the private-sector entities intend to sell those data to other organizations, because the entities want to prevent their competitors from obtaining the data, or for other reasons.

**Question.** Why is confidentiality a prerequisite to getting agency information?

**Answer.** Confidentiality is not always a prerequisite for obtaining information from government agencies; some of that information is readily available and not confidential. In some instances, CBO negotiates for, and receives, data that are proprietary or protected by the Privacy Act of 1974. The agencies that have such information would not be inclined to share it unless CBO promised to maintain its security and confidentiality.

In addition, CBO needs and receives very useful information from the staff of government agencies about the details of particular programs and about the possible consequences of proposed legislation. But those staff are sometimes reluctant to provide such information, particularly if it does not conform with their agency's official position. So ensuring the confidentiality of such conversations can be critical to CBO's ability to obtain accurate information.

**Question.** How often does CBO verify information provided by the agencies through its own research?

**Answer.** When information provided by government agencies contributes to an estimate, CBO verifies it whenever possible but has not tracked the number of times that verification has occurred.

**Question.** Are there other ways to get the same information that do not require confidentiality?

**Answer.** CBO always strives to get the most up-to-date, comprehensive data it can. For many analyses, the best available data are in the public domain, so CBO can readily use those data and does. But if confidential data would provide a better basis for analysis, CBO tries to obtain that information and must maintain confidentiality or risk losing access to it.

**Question.** Does CBO lack adequate access to key data necessary to produce timely and accurate estimates and projections?

**Answer.** In some instances, there are little or no data that bear on the estimates—such as in the case of a completely new program or dramatic changes to an existing one. In other instances, there is insufficient time to locate, obtain, and process the data, or the government agency involved cannot or will not supply such data.

## Other Issues

**Question.** There has been growing interest for CBO to estimate regulatory costs. Does CBO currently have the necessary resources to establish a regulatory baseline and estimate the regulatory costs of legislation? What resources would be needed for CBO to implement such reforms?

**Answer.** CBO has concluded that creating a regulatory baseline is infeasible, given the many thousands of federal regulations that affect a wide variety of activities throughout the country. As part of that determination, the agency reviewed other countries' experiences and found that no country had constructed a comprehensive regulatory baseline that calculates or tracks the costs of existing regulations.

Analyzing the potential impact of proposed regulations, or of legislation to block them, is more feasible but still challenging. For example, CBO assessed the potential impact of legislation blocking a rule that would have increased the salary threshold below which overtime pay is required.[12]

That assessment serves as a good example of what can be done under the right circumstances. In that instance, CBO was able to provide a good estimate of the savings to the regulated entities and the economic effects of canceling that regulation. But it also serves as a cautionary tale: Producing an original analysis that addressed that question took several months. Moreover, because the focus was on labor markets, CBO already had ready access to relevant data, and CBO's analysts had the skills and training to analyze that question. In other areas, the agency might have considerably less information and knowledge to draw upon.

Furthermore, given the specialized expertise needed to analyze many regulations, it would be hard for CBO to develop enough expertise in all issue areas to complete anything close to what executive branch agencies prepare during the process of developing regulations. (Those agencies have thousands of people who do that kind of analysis and generally have a long time to carry out the analysis.)

**Question.** In fulfilling its scoring duties for Congress, would it be more efficient for CBO if the House and Senate had the same set of budget rules under a budget resolution for purposes of enforcing the budget?

**Answer.** Differences in the chambers' committee jurisdictions and budget enforcement procedures can add to CBO's workload and sometimes present difficulties in comparing the information provided to each chamber. However, CBO strives to provide both the House and the Senate with the information needed to enforce budget rules.

**Question.** Although OMB is responsible for calculating the Statutory PayGo scorecards for PayGo effects of legislation, does CBO similarly track such PayGo effects?

**Answer.** CBO does not explicitly track the amounts required to be entered on the Statutory Pay-As-You-Go (PAYGO) scorecards. However, CBO currently provides certain products that include similar information. In March 2017, CBO published its second edition of a report detailing the effects of authorizing legislation on mandatory spending and revenues

12. See Congressional Budget Office, *The Economic Effects of Canceling Scheduled Changes to Overtime Regulations* (November 2016), www.cbo.gov/publication/51925.

in the previous Congress.[13] That report listed the estimated budgetary effects of every authorizing bill enacted during the 114th Congress over the relevant 10-year period (2015 through 2025 for the first session, and 2016 through 2026 for the second session). The report also contained, where possible, links to the formal written estimates for the legislation. In addition, CBO tracks the amounts that the Senate Budget Committee records on its own PAYGO scorecard, pursuant to Senate rules. Finally, pursuant to section 308(b) of the Congressional Budget Act, CBO assists the budget committees of both chambers by preparing "current level" reports, which summarize the budgetary effects of all enacted legislation. Also, every formal cost estimate prepared by CBO includes an assessment of whether PAYGO procedures apply, and if they do, it provides estimates of the effects on direct spending and revenues.

**Question.** For purposes of scorekeeping, to what extent does CBO interact with OMB?

**Answer.** CBO regularly consults with its OMB counterparts on both technical and theoretical scorekeeping questions and on the implications of actions taken by the Administration. Thus, analysts from each agency are able to hear and understand one another's points of view. CBO sometimes reaches conclusions that differ from OMB's judgments. CBO is always careful to maintain the confidentiality of legislation under consideration when consulting with OMB.

In addition, OMB is required by section 251(a)(7) of the Deficit Control Act to provide estimates of discretionary appropriations within seven calendar days after enactment of any discretionary appropriation and to compare its estimates with CBO's. CBO provides informal, technical feedback to help OMB characterize those differences.

**Question.** How often does CBO assess current scorekeeping guidelines?

**Answer.** The scorekeeping guidelines are laid out in the conference report accompanying the Balanced Budget Act of 1997 and are changed only with the agreement of all the scorekeepers (the budget committee of each chamber, OMB, and CBO). CBO constantly strives to ensure consistency and predictability in how it applies the scorekeeping guidelines in its cost estimates and regularly consults with the budget committees and OMB on areas of ambiguity.

13. See Congressional Budget Office, *Legislation Enacted in the 114th Congress That Affects Mandatory Spending or Revenues* (March 2017), www.cbo.gov/publication/52505.