

**CBO OVERSIGHT: ECONOMIC ASSUMPTIONS, BASE-
LINE CONSTRUCTION, COST ESTIMATING, AND
SCORING**

HEARING
BEFORE THE
COMMITTEE ON THE BUDGET
HOUSE OF REPRESENTATIVES
ONE HUNDRED FIFTEENTH CONGRESS
SECOND SESSION

HEARING HELD IN WASHINGTON, D.C., FEBRUARY 6, 2018

Serial No. 115-8

Printed for the use of the Committee on the Budget



Available on the Internet:
www.govinfo.gov

U.S. GOVERNMENT PUBLISHING OFFICE
WASHINGTON : 2018

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CBO OVERSIGHT: ECONOMIC ASSUMPTIONS, BASELINE CONSTRUCTION, COST ESTI- MATING, AND SCORING

TUESDAY, FEBRUARY 6, 2018

HOUSE OF REPRESENTATIVES,
COMMITTEE ON THE BUDGET,
Washington, D.C.

The Committee met, pursuant to call, at 10:00 a.m., in Room 1334, Longworth House Office Building, Hon. Steve Womack [Chairman of the Committee] presiding.

Present: Representatives Womack, Sanford, Brat, Grothman, Palmer, Renacci, Lewis, Bergman, Smucker, Arrington, Ferguson, Yarmuth, Lee, Lujan Grisham, Jeffries, Wasserman Schultz, Jayapal, Jackson Lee, and Schakowsky.

Chairman WOMACK. Thank you. The hearing will come to order. Welcome to the Committee on the Budget's hearing on the Congressional Budget Office's economic assumptions, baseline construction, cost estimates, and scoring. This is the second of five hearings that the Committee plans to hold this spring on oversight of the Congressional Budget Office.

As we discussed during our first hearing, CBO was created more than 40 years ago as part of the Congressional Budget and Impoundment Act of 1974. Since then, CBO has been a vital congressional support agency that provides nonpartisan budgetary analysis and directly assists the House and Senate Budget Committees.

These hearings with CBO are intended to help us learn more about how the agency carries out its mandate of supporting Congress in the Federal budgeting process and to consider areas in which the agency can improve.

CBO has not undergone a comprehensive review since it was founded. However, the demands on the agency have undoubtedly changed since 1974. So, we are here to make sure the agency has everything it needs to effectively and efficiently fulfill its mission in the 21st century.

Last week, during our hearing with CBO's director, Dr. Keith Hall, we looked more broadly at CBO's organizational and operational structure, including its staffing, assumptions, processes, and work products. In today's hearing and at our next hearing, we are diving deeper to explore the nuts and bolts of how CBO actually crafts the impartial work product Congress relies on to make informed legislative decisions.

Today's discussion will be largely technical in nature, but it will provide the Committee with great insight into CBO's work, with the goal of making that work more useful to Congress.

We will discuss CBO's budget and economic reporting responsibilities, which include providing information on the national economic outlook, as well as cost estimates for proposed legislation.

As our Committee members know well, CBO regularly produces an economic outlook and details long-term budget projections. Based on current laws that affect Federal spending and revenues, CBO's budgetary and economic projections are updated regularly throughout the year and together form a baseline.

Congress intended this baseline to be a neutral benchmark in the budget process, and CBO uses the baseline to project the impact of proposed legislation. CBO's baseline, or "The Budget and Economic Outlook," as it is called in report form, is instrumental to building the budget each fiscal year. This annual report details the expected levels of spending, revenue, surpluses or deficits, and debt over the forthcoming 10-year cycle.

Using CBO's baseline, Committees and members of Congress consider policy options through the lens of whether they increase or decrease spending and revenues. So, it is essential we on the Budget Committee have a firm grasp on this process. As we learn the "how" behind these various work products, I am also interested in exploring CBO's efforts for maintaining an appropriate level of transparency.

Transparency within CBO is critical to ensuring the agency can effectively fulfill its nonpartisan mission to support the work of Congress. At the same time, the Budget Act recognizes there is a delicate balance between CBO's need for access to good private sector data and the appropriate transparency of that data, and in this series of hearings, we look forward to carefully evaluating and understanding this balance.

So, with that in mind, I am pleased to welcome three individuals from the agency who are here today to help improve our understanding of CBO's work. Each one comes with expert knowledge related to CBO's processes for constructing various types of analysis and providing support to Members and congressional staff.

First, we have Mark Hadley, Deputy Director of CBO. Mark is responsible for assisting the CBO director in managing the daily operations of the agency and coordinating between the divisions.

Also joining us is Wendy Edelberg, Associate Director of Economic Analysis. Wendy is here to provide us with her expert insight into how CBO handles its economic forecasting and analysis. And finally, we welcome Teri Gullo, Assistant Director for Budget Analysis. Teri's division is responsible for producing baseline projections, formal cost estimates, and informal support to congressional staff.

Before we hear from our witnesses, I want to stress again that we are not here to invite attacks on an agency so vital to Congress' ability to budget independently. But we are here to see how things are being done and identify potential areas for improvement.

Today, I look forward to hearing from our witnesses and engaging in more productive conversation. And with that, I would like

to yield to the ranking member from the great commonwealth of Kentucky, Mr. Yarmuth, for his opening comments.

[The prepared statement of Chairman Womack follows:]

**Chairman Steve Womack's Opening Statement:
Hearing on CBO'S Economic Assumptions, Baseline Construction, Cost Estimates, and
Scoring**

Washington, February 6, 2018

As prepared for delivery- House Budget Committee Chairman Steve Womack

Good morning, and thank you to everyone for being here as we continue the House Budget Committee's series of oversight hearings on the Congressional Budget Office.

As we discussed during our first hearing, CBO was created more than 40 years ago as part of the Congressional Budget and Impoundment Act of 1974.

Since then, CBO has been a vital, congressional support agency that provides nonpartisan budgetary analysis and directly assists the House and Senate Budget Committees.

These hearings with CBO are intended to help us learn more about how the agency carries out its mandate of supporting Congress in the federal budgeting process and to consider areas in which the agency can improve.

CBO has not undergone a comprehensive review since it was created. However, the demands on the agency have undoubtedly changed since 1974.

So we are here to make sure the agency has everything it needs to effectively and efficiently fulfill its mission in the 21st century.

Last week during our hearing with CBO's director, Dr. Keith Hall, we looked more broadly at CBO's organizational and operational structure, including its staffing, assumptions, processes, and work products.

In today's hearing and at our next hearing, we're diving deeper to explore the "nuts and bolts" of how CBO actually crafts the impartial work-products Congress relies on to make informed legislative decisions.

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As our committee members know well, CBO regularly produces an economic outlook and details long-term budget projections.

Based on current laws that affect federal spending and revenues, CBO's budgetary and economic projections are updated regularly throughout the year and together form a "baseline."

Congress intended this baseline to be a neutral benchmark in the budget process, and CBO uses the baseline to project the impact of proposed legislation.

CBO's baseline, or *The Budget and Economic Outlook* as it is called in report form, is instrumental to building the budget each fiscal year.

This annual report details the expected levels of spending, revenue, surpluses or deficits, and debt over the forthcoming 10 years.

Using CBO's baseline, committees and Members of Congress consider policy options through the lens of whether they increase or decrease spending and revenues.

So it is essential we on the Budget Committee have a firm grasp on this process.

As we learn the "how" behind these various work products, I am also interested in exploring CBO's efforts for maintaining an appropriate level of transparency.

Transparency within CBO is critical to ensuring the agency can effectively fulfill its nonpartisan mission to support the work of Congress.

At the same time, the Budget Act recognizes that there is a delicate balance between CBO's need for access to good private sector data and the appropriate transparency of that data.

And in this series of hearings, we look forward to carefully evaluating and understanding how to strike the right balance.

So with that in mind, I am pleased to welcome three individuals from the agency who are here today to help improve our understanding of CBO's work.

Each one comes with expert knowledge related to CBO's processes for constructing various types of analysis and providing support to Members and congressional staff.

First, we have Mark Hadley, Deputy Director of CBO. Mark is responsible for assisting the CBO Director in managing the daily operations of the agency and coordinating between the divisions.

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And finally, we welcome Teri Gullo, Assistant Director for Budget Analysis. Teri's division is responsible for producing baseline projections, formal cost estimates, and informal support to Congressional staff.

Before we hear from our witnesses, I want to stress again that we are not here to invite attacks on an agency so vital to Congress's ability to budget independently.

But we *are* here to see how things are being done and identify potential areas for improvement.

Today, I look forward to hearing from our witnesses and engaging in more productive conversations.

Mr. YARMUTH. Thank you very much, Mr. Chairman. I would like to join you in welcoming our three CBO witnesses today, Deputy Director Hadley, Associate Director Edelberg, and Associate Director Gullo. Thank you all for coming before the Committee to testify and answer our questions about how the Congressional Budget Office makes economic assumptions, constructs the baseline, and estimates the cost of our legislative proposals.

Last week, Director Hall testified before the Committee, and that discussion touched on all of these subjects in varying degrees of detail. The take away from last week's hearing, at least my takeaway, was pretty clear. CBO has a regimented, well-documented, and consistent process to produce work that is accurate, fair, and nonpartisan.

The budget analysts, policy experts, and economists at CBO have a tremendous amount of experience and are well-respected in their fields of expertise. They certainly could make more money working fewer hours in the private sector, but they choose to serve their country in this very important capacity. I am not suggesting that there is not room for improvement at CBO, or that we all have to agree with every CBO conclusion.

Much of the public policy with which we are dealing is complicated, involving many variables and interactive effects. CBO, rightfully, has to make assumptions and judgments, and we have the right to ask questions to better understand the conclusions they reach. What is not appropriate, as the Chairman mentioned, is to launch ad hominem attacks to undermine the credibility of CBO.

Last year, CBO was subjected to a number of vicious attacks purely for political purposes. These attacks weaken the institution and add to the dysfunction that the American people overwhelmingly reject. Mr. Chairman, I was heartened by the tenor of last week's hearing.

On the whole, and as you encouraged, the questioning was respectful, and members made genuine attempts to better understand how CBO operates. Ideas were explored on ways to make improvement at the agency so that Congress can be better served. I hope that continues with this hearing.

We are holding a series of five oversight hearings on CBO. This is a tremendous amount of time that we are dedicating to one agency. So, Mr. Chairman, I hope that we will be just as diligent in our other responsibilities and find time to hear from other agencies as well.

We have not had our customary annual hearing with the Federal Reserve Board Chairman since 2012. I guess we ought to let him get his feet on the ground past a week or so. We have not had the Treasury Secretary testify since 2013. We have not had the Department of Defense testify since 2013.

We have not heard testimony from the Secretary of Health and Human Services since 2011. I think it would be valuable to hear from these agencies and others as we consider priorities for the 2019 budget. I thank, once again, our witnesses for coming and I look forward to their testimony. So, thank you, Mr. Chairman, and I yield back.

[The prepared statement of Mr. Yarmuth follows:]

**Ranking Member John Yarmuth's Opening Statement:
Hearing on CBO'S Economic Assumptions, Baseline Construction, Cost Estimates,
and Scoring**

Washington, February 6, 2018

As prepared for delivery- House Budget Committee Ranking Member John Yarmuth

I would like to join the Chairman in welcoming our three CBO witnesses today. Deputy Director Hadley, Associate Director Edelberg, and Associate Director Gullo, thank you for coming before the committee to testify and to answer our questions about how the Congressional Budget Office makes economic assumptions, constructs the baseline, and estimates the cost of our legislative proposals.

Last week, Director Hall testified before the Committee and that discussion touched on all of these subjects in varying degrees of detail. The take away from last week's hearing was clear. CBO has a regimented, well-documented, and consistent process to produce work that is accurate, fair, and nonpartisan.

The budget analysts, policy experts and economists at CBO have a tremendous amount of experience and they are well-respected in their fields of expertise. They certainly could make more money working fewer hours in the private sector, but they choose to serve their country in this very important capacity.

I am not suggesting that there isn't room for improvement at CBO, or that we all have to agree with every CBO conclusion. Much of the public policy with which we are dealing is complicated, involving many variables and interactive effects. CBO, rightfully, has to make assumptions and judgments, and we have the right to ask questions to better understand the conclusions they reach.

What is not appropriate is to launch ad hominem attacks to undermine the credibility of CBO. Last year, CBO was subjected to a number of vicious attacks purely for political purposes. These attacks weaken this institution and add to the dysfunction the American people overwhelmingly reject.

Mr. Chairman, I was heartened by the tenor of last week's hearing. On the whole, and as you encouraged, the questioning was respectful and members made genuine attempts to better understand how CBO operates. Ideas were explored on ways to make improvement at the agency so that Congress can be better served. I hope that continues with today's hearing.

We are holding a total of five oversight hearings on CBO. This is a tremendous amount of time that we are dedicating to one agency. Mr. Chairman, I hope that we will be just as diligent in our other responsibilities and find time to hear from other agencies as well. We haven't had our customary annual hearing with the Federal Reserve Board Chairman since 2012. We haven't had the Treasury Secretary testify since 2013. We haven't had the Department of Defense testify since 2013. We haven't heard testimony from the Secretary of Health and Human Services since 2011. It would be valuable to hear from these agencies and others as we consider priorities for the 2019 budget.

I thank our witnesses for coming and I look forward to their testimony.

Chairman WOMACK. Thank you, Mr. Yarmuth. In the interest of time, if any other members have opening statements, I would like to ask unanimous consent that members submit them for the record. Without objection, so ordered.

I would like now to recognize the Deputy Director of the Congressional Budget Office, Mark Hadley. Mr. Hadley, thank you for your time today. The Committee has received your written statement. I will be part of the formal hearing record. We are going to give you 10 minutes, and now the floor is yours. Make sure that mic is on, and talk directly into it, if you would.

**STATEMENT OF MARK HADLEY, DEPUTY DIRECTOR,
CONGRESSIONAL BUDGET OFFICE**

Mr. HADLEY. Chairman Womack, Ranking Member Yarmuth, and members of the Committee, thank you for inviting me and my colleagues here today to talk about CBO's forecast, baseline, cost estimates, and scorekeeping more generally.

The House and Senate Budget Committees are the scorekeepers for the Congress, crafting the budget resolution and enforcing the budgetary rules. CBO prepares its forecast, and baseline, and cost estimates to help the Budget Committees carry out those duties.

Some people think that CBO makes the rules that we follow, but in fact, most of the rules that govern the production of those products are set in statute. Others come from House and Senate rules, budget resolutions, and the conference reports that accompanied major budget legislation. Still others were generated in conjunction with the Budget Committees directly.

Some of the rules require that CBO develop estimates using specified assumptions. When that happens, CBO also provides information from other perspectives and that Budget Committees have found useful. And we would like to hear from you. What information could we add or present differently that would be helpful?

Today, I will describe our projections and cost estimates, what they are, the function that they serve. I will then turn to the rules that govern their content. CBO's baseline projections include estimates of spending, revenues, the deficit, and the public debt. CBO's economic forecast covers the major economic variables, gross domestic product, the unemployment rate, inflation, and interest rates, along with a broad array of other economic measures.

The baseline and the forecast represent CBO's best estimate of the way the budget and the economy would evolve if existing laws generally remained in place. They are developed together to be consistent with each other and cover the entire 10-year period used in the congressional budget process. The Budget Committees typically use CBO's baseline as a starting point for budget resolutions and as a neutral benchmark to assess the budgetary effects of some legislation.

The baseline provides consistency and stability to the budget process. Baselines provide consistency because each estimate is built on a common set of assumptions that helps the Congress consider the relative cost of competing proposals in the same subject and proposals across other subjects, from agriculture to unemployment insurance.

Consistency also helps the Congress ensure that legislation complies with the target set in the budget resolution. Baselines add stability, because they do not change with each new piece of budget or economic information. Instead, that information is included in the next baseline.

Cost estimates describe the budgetary effects attributable to a single piece of legislation. Each cost estimate tells a concise story about a proposal's likely effects on the budget outlays or revenues compared with what would happen under current law; that is, what would happen if the legislation were not adopted. CBO's cost estimates are advisory.

The Budget Committees enforce the budget rules of the Congress, and they are not required to use CBO's estimates. The Congressional Budget Act of 1974 requires that CBO produce cost estimates for every bill reported out of a full Committee, the authorizing Committees. We also prepare estimates when requested at other stages of the legislative process.

The Budget Act directs CBO to give priority to Committees, particularly the House and Senate Budget Committee. Though we try, given our staffing, we are generally not able to satisfy requests for cost estimates that do not come from the Budget Committees, the Committees of jurisdiction over the legislation, or the House or Senate leadership.

Now, to the content of our products; I will start with the rules governing the baseline and then turn to the rules governing our cost estimates. Section 257 of the Balanced Budget and Emergency Deficit Control Act of 1985 defines the baseline and sets out the rules for its construction. For mandatory spending and revenues, the touchstone is that we assume that current laws will remain in place and they will operate as they are set in statute.

So, for example, for individual income taxes, we assume that changes scheduled in law will occur. There are, however, three important differences, or exceptions, under 257, and they come with tradeoffs. Let me take each of them in turn.

First, under section 257, CBO is required to assume that certain taxes and spending programs will continue beyond their expiration date. Those include excise taxes dedicated to a trust fund, such as the Federal gasoline tax. They also include certain payments with current year outlays greater than \$50 million; for example, the Children's Health Insurance Program. This is sometimes referred to as the \$50 million rule.

There are tradeoffs that come with this rule. On the one hand, because expiring programs often are extended, the rule improves the accuracy of baseline projections of the deficit. On the other hand, the rule makes certain extensions of those policies appear costless because the cost of extension is already in the baseline. To help, CBO and the staff of the Joint Committee on Taxation show how baseline projections would change if the provisions that we must assume are extended were instead assumed to expire.

The second exception deals with entitlement authority. CBO is required to assume that entitlement programs, such as Social Security and Medicare, will be fully funded, and thus, all scheduled payments will be made.

For example, CBO must assume that scheduled Social Security benefits would be paid even after the program's trust funds were exhausted and annual payroll tax revenues were inadequate to fund those payments. That rule, too, presents tradeoffs.

On the one hand, a baseline that shows the benefits being paid regardless of the resources in the trust funds, may be more informative about the budgetary challenges facing the nation if policymakers want to maintain Social Security in its present form. On the other hand, it is less informative about the challenges facing the program. In our products, we present both the deficit affect from making all of the benefit payments and the percentage by which benefits would have to be cut if no additional funding were provided.

And finally, the third exception deals with discretionary spending. Section 257 specifies how CBO must construct the baseline for discretionary programs. It requires CBO to use specified inflators to increase the most recent appropriation for each program over time. However, to project total defense and nondefense discretionary spending, we apply the caps that limit the spending for those categories through 2021.

And again, CBO provides alternate paths with its reports. For example, one where inflation for discretionary appropriations is assumed to be zero. That is, it continues at the level in the most recent appropriation.

Turning now to four rules that broadly apply to cost estimates, and four of these may sound familiar to you.

First, CBO must consider the effects across the entire Federal budget. Therefore, cost estimates sometimes include effects on programs other than those specifically addressed in the legislation.

Second, CBO's cost estimates generally do not include the interest costs that would result from increasing the deficit or the interest savings that would result from decreasing the deficit.

Third, CBO reports point estimates of the budgetary effects of legislation because they are necessary for the enforcement of the budgetary rules. But CBO strives to indicate which factors underlying an estimate may be particular uncertain.

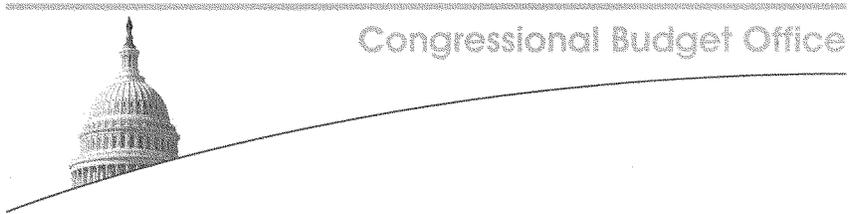
Fourth, for appropriations and authorizations of appropriations the benchmark is current law, but it is not the baseline. As I mentioned, 257 requires that we assume that spending inflate over time, the benchmark for many programs. The starting point is actually zero because there is no appropriation or authorization for future years under current law.

Let me end with two sometimes controversial principles related to a limited group of cost estimates, dynamic scoring, and when a program should be considered Federal for purposes of the budget. CBO always tries to estimate the effects that legislation would have on people's behavior; for example, changes in how many people would enroll in a program. But effects on the economy as a whole are taken into account only when CBO produces a dynamic score for major legislation.

Nevertheless, when CBO prepares its economic projections the agency incorporates the macroeconomic effects of all enacted legislation.

Finally, when Congress considers legislation that would establish a new program or mandate a new activity, CBO must determine whether the associated cashflows would be Federal transactions. For most legislation, that determination is straightforward because the activity would be carried out by a Federal agency. But where the determination is less clear, we look to the guidance found in the 1967 Report of the President's Commission on Budget Concepts. We try very hard to be even-headed, and we look forward to hearing from you what we could do better.

[The prepared statement of Mark Hadley follows:]



Testimony

**The Congressional Budget Office's Baseline
Projections and Cost Estimates: Process and
Principles**

**Mark Hadley
Deputy Director**

**Before the
Committee on the Budget
U.S. House of Representatives**

February 6, 2018

This document is embargoed until it is delivered at 10:00 a.m. (EST) on Tuesday, February 6, 2018. The contents may not be published, transmitted, or otherwise communicated by any print, broadcast, or electronic media before that time.

Chairman Womack, Ranking Member Yarmuth, and Members of the Committee, thank you for the opportunity to discuss the process and principles underlying the preparation of the Congressional Budget Office's baseline projections and cost estimates. Each year, CBO produces projections of the budget and the economy, hundreds of formal cost estimates, and dozens of reports, while providing technical assistance to Congressional staff as they develop thousands of legislative proposals and amendments. CBO provides that information in a variety of ways and at various points in the legislative process.¹

Budget and Economic Projections

CBO regularly publishes projections of budgetary and economic outcomes that are based on the assumption that current laws regarding federal spending and revenues will generally remain in place. Those projections cover the 10-year period used in the Congressional budget process. CBO also publishes annual reports about those projections. The reports usually describe the differences between the current projections and previous ones; compare the economic projections with those of other forecasters; and show the budgetary effects of some alternatives to the fiscal policies underlying CBO's projections. A detailed description of the methods used to project spending and revenues and the rules that govern the creation of those projections is available in *How CBO Prepares Baseline Budget Projections*.² In addition, the process used to create the economic projections, including how CBO ensures consistency between them and the budget projections, is described in *How CBO Produces Its 10-Year Economic Forecast*.³

The budget projections (which are known as the baseline) are a neutral benchmark that the Congress can use in assessing the budgetary effects of legislation. When CBO publishes cost estimates for proposed changes in

law that would affect mandatory spending or revenues, they are based on the budget baseline. The baseline is also used in CBO's analytical reports to assess the effects of possible changes in fiscal policy. The budget committees typically use CBO's baseline as the starting point for budget resolutions; when they consider policy changes that may be incorporated in those resolutions, they often use estimates of the cost of those changes that are relative to the baseline. Finally, the Congress can use the baseline when determining whether new legislation would be subject to rules and procedures related to budget enforcement.

The baseline projections are not intended to be a prediction of budgetary outcomes. Rather, the projections are CBO's best estimates of how the budget would evolve if existing laws did not change. They are updated two or three times per year (typically in the winter, spring, and summer) through a process that involves most of CBO's staff. Once a year, usually in the spring or summer, CBO produces a detailed extended baseline, which focuses on the coming 30 years; the agency also produces an interim extended baseline in the winter. The economic projections are generally updated twice a year (typically in the winter and summer).

Cost Estimates

The Congressional Budget Act of 1974 (often called the Budget Act) requires CBO, to the extent practicable, to prepare cost estimates for legislation that authorizing committees have ordered reported—that is, agreed to send to the full House or Senate for consideration. Over the past decade, the agency has produced such estimates for more than 95 percent of reported bills.

In addition to reported bills, CBO sometimes provides estimates for legislation at other stages of the process, including introduced bills, amendments, other proposals, and legislative acts that have been passed by one or both chambers. Of the total number of estimates produced in the past decade, 13 percent were for such types of legislation. Over the past five years, the total number of estimates published by CBO has steadily increased each year, and in 2017 the agency issued 740 estimates.

Various provisions in the Budget Act—especially in sections 202, 402, and 424—govern how CBO prepares cost estimates. The statutory requirements were designed to ensure that CBO prioritizes estimates for the legislation that is likeliest to receive active consideration by

1. For an overview of CBO and of its products and processes, see Congressional Budget Office, *An Introduction to the Congressional Budget Office* (July 2016), www.cbo.gov/sites/default/files/cbofiles/attachments/2016-IntroToCBO.pdf (316 KB). For more information, see Congressional Budget Office, "Products," www.cbo.gov/about/products.
2. Congressional Budget Office, *How CBO Prepares Baseline Budget Projections* (February 2018), www.cbo.gov/publication/53532.
3. Robert W. Arnold, *How CBO Produces Its 10-Year Economic Forecast*, Working Paper 2018-02 (Congressional Budget Office, February 2018), www.cbo.gov/publication/53537.

the Congress. Individual Members can ask for formal estimates, but the Budget Act directs CBO to give priority to committees, particularly the House and Senate Budget Committees. Given CBO's staffing, it generally is not possible to satisfy requests for formal estimates that do not come from the budget committees, the committees with jurisdiction over a proposed change in law, or the Congressional leadership, but CBO analysts work on individual Members' requests as time permits.

CBO's cost estimates provide information that the Congress can use as it implements rules and procedures to enforce budgetary rules or targets. However, those cost estimates are only advisory. They can—but do not have to—be used in budget enforcement. Moreover, CBO does not enforce budgetary rules; the budget committees do. In keeping with its mandate to provide objective, impartial analyses, CBO never makes recommendations in its cost estimates or other products.

Answers to many of the common questions regarding CBO's process for producing cost estimates are available in *How CBO Prepares Cost Estimates*.⁴ For example, that document discusses the rules that govern what budgetary effects are identified in an estimate.

Each cost estimate tells a concise story about a legislative proposal's likely effects on federal outlays or revenues, compared with what would happen under current law (that is, with what would occur if the proposal was not enacted). For bills that would authorize discretionary activities or programs—those whose funding is controlled by annual appropriation acts—cost estimates typically provide budgetary information for a 5-year period. For bills that would affect mandatory spending or revenues, the period is 10 years. For most tax legislation, CBO uses estimates provided by the staff of the Joint Committee on Taxation (JCT).

In addition to formal, written estimates for bills approved by committees, CBO devotes substantial effort to providing technical assistance, sometimes including preliminary estimates, at other stages of the legislative process—such as when legislation is being developed or when amendments to legislation are being considered. Such technical assistance occurs primarily through staff-to-staff communications, and it takes place very

frequently—for the development of thousands of legislative proposals and amendments each year. In some cases, preliminary estimates are prepared when Members or their staffs are evaluating alternative proposals to accomplish their goals, have not made any specific proposals public, and need the flexibility to modify their proposals before they become public, sometimes in response to CBO's preliminary estimates.

In such situations, CBO recognizes that the confidentiality of its work is critical to committees' deliberations, so it keeps preliminary analysis and estimates confidential as long as the proposals are not made public. In contrast, the formal estimates are posted on CBO's website.

Other Products

In addition to budget projections, economic projections, and cost estimates, CBO publishes dozens of reports each year at the request of the Congress and to provide background information about CBO's analyses. That background information enhances the transparency of the agency's work. The reports include:

- A reestimate of the President's annual budget proposal that is independent of the estimates provided by the Administration;
- A monthly analysis of federal spending and revenues;
- A periodic reference volume examining numerous options for reducing budget deficits; and
- Analytic reports that examine particular federal spending programs, aspects of the tax code, and budgetary and economic challenges.

Principles and Rules That Govern Baseline Projections and Cost Estimates

Most of the principles and rules that govern the formulation of baseline projections and cost estimates are set in law. Others originated in budget resolutions, House or Senate rules, conference reports that accompanied budget legislation, and the 1967 *Report of the President's Commission on Budget Concepts*. In addition, some have been developed by CBO in consultation with the House and Senate Budget Committees; such consultations are necessary to resolve uncertainty about how to implement the rules in particular cases.

4. Congressional Budget Office, *How CBO Prepares Cost Estimates* (February 2018), www.cbo.gov/publication/53519.

For two reasons, the principles and rules governing the construction of the baseline directly affect cost estimates. First, in those estimates, the budgetary effects of provisions that would affect mandatory spending and revenues are measured in relation to the baseline projections. Second, the estimates follow the same underlying principles. For example, if a rule requires CBO to assume in the baseline that an expiring program will be extended, the agency will estimate the cost or savings from a proposed change to the expiring program in relation to a spending path in which the program is extended.

Examples of Principles and Rules That Govern Baseline Projections

The Balanced Budget and Emergency Deficit Control Act, which was enacted in 1985 and amended several times, defines CBO's baseline projections and spells out the rules for making them. CBO generally constructs the baseline for mandatory spending and revenues under the assumption that current laws will remain in place. For example, the agency assumes in the baseline that individual and corporate tax policy follows the changes scheduled under current law. However, there are important exceptions—involving certain excise taxes, expiring programs, entitlement authority, and discretionary spending, for example.

Expiring Taxes and Programs. Under section 257 of the Deficit Control Act, CBO is required to assume that certain taxes and programs will continue beyond their scheduled expiration. Those include excise taxes dedicated to a trust fund, such as the federal gasoline tax. They also include certain programs with current-year outlays greater than \$50 million; that requirement is sometimes called the \$50 million rule. (The 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 new programs established thereafter.) Programs subject to that rule include the Supplemental Nutrition Assistance Program and the Children's Health Insurance Program.

Such provisions have advantages and disadvantages. Consider the \$50 million rule. On the one hand, because expiring programs *are* often extended, the rule improves the accuracy of baseline projections of the deficit. And because the rule is also applied to cost estimates for legislation, the rule often results in a more accurate estimate of the ultimate cost or savings when establishing, expanding, shrinking, or eliminating a program. On

the other hand, the rule makes legislative proposals for new programs that are scheduled to expire appear more costly than policymakers may intend them ultimately to be. In addition, the rule makes certain extensions of programs appear costless: CBO would formally estimate the cost of extending such a program as zero, because the extension is already assumed to occur in the baseline. So to aid policymakers' decisionmaking, CBO and JCT also show how the baseline projections would change if expiring spending or tax provisions were instead assumed to expire.

Full Funding of Entitlements. In addition, under section 257, CBO is required to assume that entitlement programs, including Social Security and Medicare, will be fully funded and thus will be able to make all scheduled payments. For example, CBO must assume that scheduled Social Security benefits would be paid even after the program's trust funds were exhausted and annual payroll tax revenues were inadequate to fund those payments.

That rule too presents trade-offs. On the one hand, a baseline that shows benefits being paid regardless of the resources in the trust funds is less informative about the challenges facing the program. On the other hand, it may be more informative about the budgetary challenges facing the nation if policymakers want to maintain Social Security in its current form, because the shortfall of payroll tax revenues relative to scheduled payments is an important driver of federal debt under CBO's projections over the next decades. A projection that instead assumed that payments were limited to the amounts the funds can pay each year would show a sharp reduction in benefits over time (and a flatter debt trajectory). To show that alternative view of the Social Security program's budgetary challenges, CBO also provides the percentage by which benefits would be cut if no additional funding were provided.⁵

Discretionary Programs. Section 257 of the Deficit Control Act also specifies how CBO must construct the baseline for discretionary programs. It requires CBO to use specified inflators to inflate the most recent discretionary appropriation for each program. However, to project

5. See Congressional Budget Office, *CBO's 2017 Long-Term Projections for Social Security: Additional Information* (October 2017), www.cbo.gov/publication/53245, and *CBO's 2016 Long-Term Projections for Social Security: Additional Information* (December 2016), www.cbo.gov/publication/52298.

total defense and nondefense discretionary spending, CBO is required by the Deficit Control Act to apply the caps in current law that limit funding for those categories through 2021. (The caps do not constrain certain types of funding, such as appropriations for overseas contingency operations, which CBO projects separately, using the specified inflators.) To assist policymakers and analysts who may hold differing views about the most useful benchmark projections for discretionary spending, CBO provides alternative paths in its reports—for example, giving projections in which discretionary appropriations are frozen at the amounts provided in the current fiscal year.

Other Principles and Rules Governing Baseline Projections

Most spending programs are projected on a cash basis. However, in accordance with the Federal Credit Reform Act of 1990, federal loan and loan guarantee programs are recorded in the budget on an accrual basis; they are projected in CBO's baseline in that way as well.⁶ Specific rules also apply to projections of spending for the Federal Pell Grant Program and certain transportation programs because they are treated in unusual ways in the budget.

Examples of Principles and Rules That Govern Cost Estimates

The rules governing cost estimates differ depending on what the legislation affects: mandatory spending or revenues, or discretionary spending. The reason is that when the Congress applies budget enforcement rules, it does not treat mandatory spending and revenues in the same way that it treats discretionary spending. Legislation that would affect mandatory spending or revenues is subject to House and Senate points of order (parliamentary objections that legislation violates a certain rule) as well as to procedures specified in the Statutory Pay-As-You-Go Act of 2010 (often called PAYGO). By contrast, budgetary points of order and PAYGO procedures do not apply to authorizations of new discretionary programs or to legislation that modifies existing discretionary programs or activities, as long as appropriations are not being provided or changed. (For them to be changed, lawmakers must take further action.)

Other principles apply to cost estimates more broadly. For example, CBO publishes point estimates, rather than

only ranges, in its cost estimates, because the Congress needs point estimates to implement various laws and rules. In addition, CBO follows certain guidelines and precedents in determining whether new activities should be considered governmental. And the Congress has directed CBO to incorporate aggregate economic effects in its cost estimates in certain circumstances.

Mandatory Spending and Revenues. A key element in each of CBO's cost estimates is the benchmark against which a legislative proposal's estimated budgetary effects are measured. Generally, that benchmark is the amount of spending or revenues that CBO estimates will occur under current law. In the case of mandatory spending, the benchmark is usually the CBO baseline projection of federal spending that underlies the budget resolution for that year. The 10-year period covering the current year and the next decade is used for estimates involving mandatory spending or revenues because various budget enforcement rules apply to 10-year budgetary effects.

Discretionary Spending. For discretionary programs, the benchmark is also what would happen under current law, but it is not the baseline—because most discretionary programs have no specified authorization after the current year, and lawmakers ordinarily do not provide appropriations beyond the current year. Therefore, estimated costs for authorizing legislation related to those programs are measured in relation to enacted appropriations for the current year and any amounts appropriated or authorized to be appropriated in the future. For example, a bill that would extend the authorization for an existing discretionary program for another year would be shown as having a cost in that year, even if the authorized funding was the same as the current year's appropriation.

A bill could potentially affect discretionary spending even if it did not specifically authorize additional appropriations. If a bill would impose a new requirement on an agency (such as a requirement to prepare a plan or complete a study), complying with it would entail the use of resources. So the requirement might influence the amount of budget authority that the Congress made available to the agency in the future. Even if future funding was not affected, the agency would have to spend appropriated resources on the new activity instead of on other responsibilities. Therefore, in CBO's estimates, the cost of carrying out the requirement would be the amount of resources projected to be used.

6. See Congressional Budget Office, *Cash and Accrual Measures in Federal Budgeting* (January 2018), www.cbo.gov/publication/53461.

Point Estimates. CBO reports point estimates—estimates of specific dollar amounts—of the budgetary effects of legislation because they are necessary for the enforcement of budget rules during Congressional deliberation.⁷ For example, budget resolutions provide committees with allocations of funds expressed as point values, and the budget committees use point values to track the estimated budgetary effects of legislation. Nevertheless, CBO tries to indicate which factors underlying an estimate may be particularly uncertain.

Whether New Activities Are Considered Governmental. When the Congress considers legislation that would establish a new program or mandate a new activity, CBO must decide whether to treat the associated cash flows as federal transactions in its estimates of the bill's budgetary effects. For most legislation, that determination is straightforward because federal agencies would perform any functions required by the bill.

Sometimes, however, the determination is more complicated because the legislative proposal would authorize nonfederal entities to carry out certain activities that might or might not be considered governmental, and the cash flows related to those activities might or might not involve the Treasury. In such instances, to determine whether the new activity should be considered governmental in cost estimates, CBO relies on the recommendations of the *Report of the President's Commission on Budget Concepts* and on past precedent, rather than on a statute. In preparing its cost estimates, CBO generally treats the transactions of nonfederal entities as federal budget transactions if those entities would use the sovereign power of the federal government, would work to achieve a governmental purpose, or would be subject to a significant degree of federal control.⁸

Dynamic Scoring. CBO always tries to incorporate into its cost estimates the effects that legislation would have on people's behavior—for example, changes in how many people would enroll in a program. But effects on the economy as a whole are taken into account only in

the limited circumstances in which CBO produces a "dynamic score."

Although some major legislation can have significant macroeconomic effects (for example, because it affects the labor supply or private investment), most does not. When the gross budgetary effects of a bill would equal or exceed 0.25 percent of gross domestic product (the economy's total output) in any year, the Congress has directed CBO, if practicable, to incorporate into its cost estimates the estimated budgetary feedback of the bill's macroeconomic effects—that is, how the macroeconomic effects would influence the budget. Such a dynamic score also may be requested by the House or Senate Budget Committee for any bill and is prepared if it is practicable for CBO to do so.⁹ Dynamic scores are complicated and often time-consuming, so they are difficult to prepare if legislation is moving quickly. Nonetheless, when CBO prepares the economic projections underlying the baseline, the agency incorporates all of the estimated feedback into the budget of the macroeconomic effects of fiscal policies under current law.

Other Principles and Rules Governing Cost Estimates. CBO must follow many other rules when preparing cost estimates. For example, under long-standing budget enforcement rules, estimates include effects on programs other than those specifically addressed by the proposed legislation. That can occur for many reasons—for instance, if the legislation would affect how many people would be eligible for those other programs. However, CBO's cost estimates do not account for how proposed legislation would change the interest costs paid by the government on federal debt as a result of changes in the amount of debt.

In addition, CBO adheres to a number of principles and rules that govern cost estimates for particular programs. Those include rules for estimating the costs of federal credit programs, a specific guideline for estimating the costs of the Pell grant program, and principles governing the budgetary treatment of certain transportation programs.

CBO's Estimates for Appropriation Bills

CBO does not produce the same kind of written cost estimates for appropriation bills that it produces for

7. Implementation of requirements in the Budget Act, in annual budget resolutions, in the Statutory Pay-As-You-Go Act, and in many parliamentary rules relies on point estimates.

8. See *How CBO Determines Whether to Classify an Activity as Governmental When Estimating Its Budgetary Effects* (June 2017), www.cbo.gov/publication/52803.

9. See Congressional Budget Office, "Dynamic Analysis," www.cbo.gov/topics/dynamic-analysis.

legislation that only authorizes programs and activities. Rather, for annual appropriation bills, CBO provides detailed reports showing account-by-account estimates of the budget authority provided and the resulting outlays, including the estimated budgetary effects of provisions that make changes in mandatory programs (CHIMPs). Separately, CBO provides a tabulation of the budgetary effects of those CHIMPs in each of the next 10 years. In addition, for appropriation bills that are ordered reported, CBO provides an estimate of the outlays resulting over the next 5 years from the budget authority provided in such bills.

For supplemental appropriation bills, CBO provides detailed reports to interested parties in the Congress and routinely publishes tables on its website showing the estimated budget authority and outlays over the next 10 years resulting from such legislation.

The Accuracy of CBO's Baseline Projections and Cost Estimates

In several publications, CBO has reported on the accuracy of its budget and economic projections. It found the following:

- CBO's economic projections have been comparable in quality to those made by the Administration and the Blue Chip consensus (which is an average of about 50 private-sector forecasts published in *Blue Chip Economic Indicators*). When CBO's projections were inaccurate by large margins, the other forecasters' projections tended to have similar errors because all forecasters faced the same challenges.¹⁰
- Since 1984, CBO has tended to overestimate total outlays (after adjustments for legislative changes have been made) for the fiscal year following the year in which the projection has been released. The mean absolute error for total outlays—that is, the average of all errors without regard for whether they were positive or negative—is 2.3 percent.¹¹ The mean absolute error for CBO's sixth-year projections of outlays (that is, those that project outlays for the fifth

fiscal year after the year in which they are released) is 5.9 percent.

- Since 1982, CBO has also tended to overestimate total revenues. The mean absolute error is 5.2 percent in its next-year projections and is 10.4 percent in its sixth-year projections.¹²

Judging the accuracy of CBO's cost estimates for legislation that is ultimately enacted is often much more difficult, generally because the actual costs or savings resulting from enacting the legislation are 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. When it is possible, however, CBO does try to compare actual spending with its cost estimates.

In some cases, the budget records the outcomes that can be attributed to specific pieces of legislation. That is the case for the health care subsidies provided under the Affordable Care Act (ACA), for instance. The estimates produced by CBO and the staff of JCT around the time of that law's enactment proved to be close to the actual amounts for 2014 and 2015 but were much too high for 2016.¹³ In general, other organizations' estimates of health care subsidies produced around the time of the ACA's enactment were much too high for all three years.

Such an analysis is also possible for CBO's estimates of spending under the American Recovery and Reinvestment Act of 2009 (ARRA), which was enacted in response to the severe 2007–2009 recession. Total ARRA spending through fiscal year 2013 was 9 percent higher than CBO originally estimated.¹⁴ Most of the

10. See Congressional Budget Office, *CBO's Economic Forecasting Record: 2017 Update* (October 2017), www.cbo.gov/publication/53090.

11. See Congressional Budget Office, *An Evaluation of CBO's Past Outlay Projections* (November 2017), www.cbo.gov/publication/53328.

12. See Congressional Budget Office, *CBO's Revenue Forecasting Record* (November 2015), www.cbo.gov/publication/50831.

13. See Congressional Budget Office, *CBO's Record of Projecting Subsidies for Health Insurance Under the Affordable Care Act: 2014 to 2016* (December 2017), www.cbo.gov/publication/53094.

14. Congressional Budget Office, *Answers to Questions for the Record Following a Hearing on the Congressional Budget Office's 2015 Appropriation Request Conducted by the Subcommittee on the Legislative Branch, Senate Committee on Appropriations* (May 2014), www.cbo.gov/publication/45389.

underestimate is accounted for by provisions related to unemployment insurance, nutrition assistance, and refundable tax credits; those costs were boosted by the weaker-than-expected economic recovery.

This testimony was prepared by Wendy Edelberg with contributions from Teri Gullo and T. J. McGrath. In keeping with the Congressional Budget Office's mandate to provide objective, impartial analysis, the testimony contains no recommendations.

Keith Hall, Robert Sunshine, and Jeffrey Kling reviewed the testimony, Benjamin Plotinsky edited it, and Jorge Salazar prepared it for publication. An electronic version is available on CBO's website at www.cbo.gov/publication/53539.

Chairman WOMACK. Thank you, Mr. Hadley. Now, let's welcome to the table two additional witnesses. They are Teri Gullo, the Assistant Director for Budget Analysis at the CBO office, and Wendy Edelberg, the Associate Director for economic analysis at the Congressional Budget Office.

TESTIMONY OF WENDY EDELBERG, ASSOCIATE DIRECTOR FOR ECONOMIC ANALYSIS, CONGRESSIONAL BUDGET OFFICE; AND TERI GULLO, ASSISTANT DIRECTOR FOR BUDGET ANALYSIS, CONGRESSIONAL BUDGET OFFICE

Chairman WOMACK. All three of our witnesses will be available to take your questions once they begin.

Let me make an administrative note. It is expected that there will be votes called in a little over an hour and assuming, and I think this practically speaking here, assuming that we are in the middle of this hearing, we will just simply recess at a moment during that first vote series where we can all leave, go do our job in voting on the floor. And then, immediately following the last vote, within a matter of a few minutes, we will come back and reconvene the hearing.

So, at that moment that we break, and we will find a soft spot in the Q-and-A to do it, we will recess subject to the call of the chair, where we will come back and resume the hearing. The ranking member and I have talked before the meeting this morning and being respectful of the time of our fellow members, and I know there are other Committee meetings going on and markups, and there will be a constant ebb and flow of members here at the dais, it is my intent to withhold my questions until my fellow members have had a chance to give their Q-and-A. And Mr. Ranking Member has agreed to do the same.

Mr. YARMUTH. I will do the same.

Chairman WOMACK. So, with that in mind, let's begin our testimony this morning. And I am going to yield the floor to the gentleman from Ohio, Mr. Renacci, for his round of questions. You have 5 minutes, sir.

Mr. RENACCI. Thank you, Mr. Chairman, and thank you for holding this hearing. And I want to thank you, Mr. Hadley and the other witnesses, for your participation. As someone who has spent my entire life in the business world making decisions, and as a certified public accountant, I use to pour through financial information before I made business deals or business transactions.

So, it was always great to see the information get greater transparency and I am glad that we are talking about the CBO because we make all of our decisions. The CBO always seems to be the thing. "Well, let's see what the score is. Let's see what the score is"; and it comes to: we look at your conclusions when many decisions are made—or when people want to complain about the decisions that were made, they use the CBO score. So, I think it is important that we get a better understanding of how you come up with your information.

Deputy Director, my colleague and friend Representative Warren Davidson recently introduced the CBO Show Your Work Act. This legislation would require the CBO to publish the data, models, and processes that are used to score proposals. Would you consider this

to be valuable for Members of Congress? And do you have any concerns with this legislation?

Mr. HADLEY. So, in general, we think that the approach to having more transparency is a great one, and we fully support the general idea of having more transparency. There are many ways to be more transparent, and we want to look at the different options and find the ones that are most effective, most useful to you all, but are also the most cost effective that come with the least cost to taxpayers.

So, what we are trying to do right now is a bunch of different approaches where we look at different things, different ways we can be transparent. And they include additional descriptions. They include technical details about our modeling, and ultimately, also some of the model code itself.

And we want to see what you all find the most useful. I suspect in some cases the thing that would be the most useful is for us to generate some interactive tools that the staff of the members could go and look at how the results would be different under a different set of assumptions. But we want to explore each of those options.

But I also agree with kind of what you alluded to, that there are some concerns that we have about our access to information and just putting up every single model. And as you know, we try to be also careful stewards of the information that we are given. And some of it has to be protected very carefully because it involves details about people and businesses.

Mr. RENACCI. So, you do not fear that general acknowledgment of transparency, how you came up with this information? I do understand some of the things are confidential, the information you get, and you want to protect that. But you do understand that we need to know how you come up with this information? It sounds like you would like to come up and help us better understand how you come up with this information as you do come up with the information.

Mr. HADLEY. Yes, we would, and we would also be happy to come up and talk with you at any time, if that is also helpful. I mean, there are many ways we want to do more. One of the things we tried to do recently was to come and do a presentation to a broad array of congressional staff and that was very successful. We met with over 150 of them and explained how we came up with a group of our estimates and answered questions. Any kind of engagement like that we look forward to.

Mr. RENACCI. I want to switch over now to something that concerns me. It is an issue of national debt and national deficits. In fact, I have introduced bipartisan legislation requiring the Comptroller General come before Congress on an annual basis to provide an overview of our Nation's long-term financial outlook.

Of particular concern to me is the rising cost of interest which will be, by 2027, more than \$750 billion per year. This is more than double what it is today. Even more concerning, an article from the Committee for a Responsible Federal Budget noted that interest rates were 1 percentage point higher annually than what is projected through 2027 by the Congressional Budget Office, the national debt would be \$1.7 trillion higher. Can you please discuss

the process that CBO goes under to determine the 10-year interest rate?

Mr. HADLEY. I can, but I think Dr. Edelberg would be better positioned to do that.

Ms. EDELBERG. We think about that projection somewhat differently in both the near-term and the long-term. I think it is on. Is it on? I have a green light. Can you hear me?

Mr. RENACCI. I can hear it.

Ms. EDELBERG. So, when we think about how to project the 10-year rate as well as short-term interest rate, like 3-month interest rates over the near-term, we pay very close attention to what financial markets seem to be saying. And so, for example, we will look at the Fed Fund futures markets very carefully to think about what the Fed Fund's rate might be over the next several years.

When we think about what interest rates will be over the long-term, we have less outside information to go on. There are fewer private sector forecasters that are thinking about long-term interest rates. And we find that information from financial markets is less useful for telling us what interest rates should be over the next 10 years, or even longer.

So, for that we think more about the various factors that we think should have a strong influence on long-term interest rates. So, as you mentioned Federal borrowing, we think that is one of the most important factors driving interest rates over the next 10 years. So, we think hard about that.

But there are other ones as well. So, deficits, we think, are pushing up interest rates over the next 10 years. A factor that we think is pushing down interest rates, at least over the next 10 years relative to recent decades, is what we think will happen to labor force growth.

So, the fewer workers we have for each machine, the less productive each machine is. And so, we think that that pushes down interest rates over the next 10 years. And so, we have a variety of factors, like productivity growth, labor force growth, the level of savings in the economy, and we think about all of those factors together and that helps us to project what we think interest rates will be over the next 10 years.

Mr. RENACCI. Thank you. I yield back.

Chairman WOMACK. Ms. Lee of California, the floor is yours.

Ms. LEE. Thank you very much. Thank you, Mr. Chairman, and our ranking member for this hearing, and thank our witnesses for being here; very important hearing and presentations from you.

First, I want to ask you about the recent tax bill law now which increases the deficit by approximately \$1.8 trillion, it raises taxes on about 86 million middle-income families, and kicks about 13 million off of their health insurance. It is clear that there is going to be a devastating impact on the budget and the economy, and I know the CBO has taken this into account. So, can you walk us through how these changes are actually built into your baseline?

Mr. HADLEY. I will start and then invite my colleagues to jump in after I give a brief overview. So, the way we think about legislation is, of course, we start with what have been the changes that have occurred in the economy and the budget to date as we are putting together the next economic forecast and the new budget

baseline. It is critically important then that we think about how the tax bill, how H.R. 1 affected both of those, and we look first to the estimates produced by our colleagues at the Joint Committee on Taxation, because they studied that bill in detail.

And then, we are currently in the process of trying to parse out how much of kind of the data that we have seen to date was in anticipation of the tax bill and how much we should consider the tax bill to be layering on top of it. So, we are currently in the process of updating both our economic forecast and our estimates of the budget baseline.

Ms. EDELBERG. That hit a lot of the high points. But I guess I will talk about our work basically in three different large buckets. So, one important thing that we do in using the work that the Joint Committee on Taxation has done is we think about how the tax bill will change incentives to work and invest over the next 10 years.

And there are some short-term effects. There are some medium-term effects. There are some long-term effects. So, we are going carefully through the tax bill to think about how incentives are affected. We also think about how changes to Federal borrowing because of the tax bill will change the amount of net foreign inflows coming into the U.S. So, either foreign investors buying up U.S. debt, changing the amount of U.S. debt that they are going to hold, or U.S. investors holding U.S. debt, instead of foreign assets.

So, we think about how changes to debt and deficits will affect private investment through its effect on how many funds are available for private investment. And then, finally, we think about how the tax bill might change the aggregate demand in the near-term. So, there are, for example, some important changes to disposable income that different households will have because of the tax bill. And so, we think about how those can affect, in particular, near-term growth over the next couple of years.

Ms. LEE. Thank you very much for that. So, you are still in the process of just doing this.

Ms. EDELBERG. We are.

Ms. LEE. The Overseas Contingency Operations, the OCO account—some of us call it a slush fund, which I believe it is—it is a fund that the Pentagon uses for off-budget war funds. How is that treated in the baseline? And OCO funding increases, I think it is \$75 billion for fiscal year 2018. How does that affect the deficit, and do you know if there is a better way and method for reflecting OCO and other emergency spending in the baseline?

Mr. HADLEY. So, again, I will start and one of my colleagues will jump in. In this case, it will be Teri Gullo. So, the way we show OCO spending, it is a form of discretionary spending.

So, when we are producing an estimate of Overseas Contingency Operations spending, it is essentially scored from zero. That is, we estimate the total amount that is affected, or that is provided in a year, as new budget authority. And then, for the baseline, we project that using the specified inflators. Now, unlike the other defense and nondefense discretionary spending, OCO spending is not constrained by the caps on those categories.

Ms. GULLO. But OCO spending is used in calculating the total deficit. So that money is in the baseline and it is used. It is just

that when Congress is judging whether or not you have exceeded the caps, any spending under OCO is not included for those cap calculations. But that money is included when we are doing the overall deficit estimates.

Chairman WOMACK. Thank you, Ms. Lee. Mr. Palmer, from Alabama.

Mr. PALMER. Thank you, Mr. Chairman. Ms. Edelberg, can you discuss in general terms if this will impact an economy growing at three percent versus an economy growing at less than two percent? In other words, how would stronger GDP impact your budget baseline?

Ms. EDELBERG. In general, stronger GDP growth will improve the deficit projections. So stronger GDP is generally associated with greater taxable income, and that will lead to greater revenues, and that will lead to less Federal borrowing. One thing that can be important, though, is thinking about what it is that we believe is going to drive faster GDP growth relative to our baseline.

So, to the degree that it is something that we think has other effects, that can either also reduce Federal borrowing or it can work in the opposite direction. One thing I have in mind, for example, is productivity growth. So, we think that if factors are expected to push GDP growth above our baseline; so, for example, as you say, 3 percent.

If those factors are productivity growth, we would expect interest rates to also be higher than our baseline, and that will increase net interest cost. And because of the high level of debt, even small increases in interest rates relative to our baseline can have notable effects on our projection of net interest cost.

Mr. PALMER. I ask that in context to the Atlanta Federal Reserve projecting that this quarter will have 5.4 percent growth and the prospects that that gives for being three percent or better for the year.

Mr. Hadley, thank you for being here. In our last hearing, Director Hall said that the single biggest problem we have when it comes to the capability of the economy to increase production, and thus improve economic growth and the prospects for it, is the labor supply. Do you agree with that statement, and what types of things can we do to be able to get more people into the workforce?

Mr. HADLEY. I agree with the Director's assessment. I am, unfortunately, unable to make recommendations about different strategies you might pursue to change things.

Mr. PALMER. Well, the CBO put out a report in March of 2015 and reported on the effects of repealing the Affordable Care Act, and I am reading, "The ACA directly imposes higher taxes on labor income, thus, discouraging work." And that, "Repealing the ACA would increase the supply of labor." Does the CBO stand by that?

Mr. HADLEY. Yes, we do.

Mr. PALMER. I think the same report also indicated that repealing the ACA would increase capital stock because, as businesses have fewer workers, there is less incentive to expand, to invest in the capital equipment, things like that for production. But as the labor supply increases in a growing economy, you will have more capital investment. Can you talk a little bit about how that might impact CBO's projections?

Mr. HADLEY. I will turn this over to Wendy, who will do a much better job with the economics than I would.

Mr. PALMER. I would be happy to hear Ms. Edelberg's answer.

Ms. EDELBERG. I think you have it right, that we think that investment in capital, in large part, is driven by what is happening to the labor force. So, firms feel like they need to outfit their workers with a certain amount of capital. And when those workers earn wages, they save part of those wages and that saving becomes funds available for investment. So, for all of those reasons, we project that in the cases when a particular policy would boost labor force growth, what would go hand-in-hand with that is typically an increase in investment.

Mr. PALMER. One of the things I know the CBO is not in a position to estimate, and I do not think really anybody in this room or in this town is able to estimate, is the benefit of unleashing the talent, and intellect, and imagination of people who have been caught in the welfare trap.

We know that there are millions of people, able-bodied adults, who are out of the workforce that are not even counted when we make calculations about employment. And I think the bigger picture here is not only how an increased labor supply impacts capital investment and how it impacts the economy, but also how it unleashes this talent, and intellect, and imagination of people that, if you look at some of the advances, and inventions, and things, it is coming from people who were basically blue-collar that got into the workforce and saw a problem and solved it.

And I really, again, appreciate the work that you guys do, but I really think that this is the key to growing a healthy economy that will really benefit the entire country. Mr. Chairman, I yield back.

Chairman WOMACK. Thank you, Mr. Palmer. Once again, I remind everyone we will have votes. They have moved it up now. They say it will be sometime between 11:05 a.m. and 11:10 a.m. We will find a soft spot in our Q-and-A at that time and recess and come back subject to the call of the chair. Ms. Wasserman Schultz from Florida.

Ms. WASSERMAN SCHULTZ. Thank you, Mr. Chairman. I will note that CBO has endeavored to increase your outreach in hiring of women economists, so, it is good to see two women at the table. In follow-up to Mr. Palmer's question, could you, for example, give us a sense of what effect a sharp decrease in the levels of legal immigration would do to employment levels?

Ms. EDELBERG. Well, as you can imagine, one of the most important factors underlying our labor force projections is population growth. So, if a policy would have a significant impact on population growth, then that would feed in many direct ways to our projections of labor force growth.

Ms. WASSERMAN SCHULTZ. And my understanding is that CBO, in the past, has done analyses of comprehensive immigration reform legislation. Is it accurate to say that comprehensive immigration reform, if it became law, would significantly contribute to employment levels?

Mr. HADLEY. So, the version of comprehensive immigration reform that we considered earlier did increase employment levels

and, therefore, resulted in additional revenues. And that was one of the things that we discussed in that cost estimate.

Ms. WASSERMAN SCHULTZ. Sorry. And thereby, increasing revenues, and thereby, reducing the deficit.

Mr. HADLEY. That is correct, but I should note that it depends in part on the specifics of the policy that you are considering.

Ms. WASSERMAN SCHULTZ. Of course. And I want to stress again, as I did, Mr. Chairman, in the last meeting, that I do not agree with the dynamic scoring approach that CBO currently uses under the leadership of CBO at the moment. But in spite of that, I have tremendous respect for the people who work at CBO, for your expertise, and for your commitment to giving us accurate analysis.

With that said, last year, the House considered an amendment that attempted to cut 89 people from CBO's staff. They justified the cut on the claim that CBO's estimates are inaccurate. Ironically, proponents even used CBO's score of the amendment itself as part of that justification. The criticism was that CBO offered no savings in their score of the amendment itself, even though it seemingly eliminated the salaries of 89 staff.

My understanding, and correct me if I am wrong, is that the actual member author of that amendment incorrectly drafted it, and the text of the amendment did not actually cut CBO's budget. Did the author of that amendment contact CBO for technical assistance in drafting that amendment? Is that assistance that you would offer if a member did reach out to you to ask for technical assistance in drafting? And was there any attempt to contact you to find out why the amendment scored with no savings?

Mr. HADLEY. So, I think it would be helpful to take this question in two parts. So, I will talk first about that amendment, and then, Terri will talk more about the policy and the procedures we typically follow.

Ms. WASSERMAN SCHULTZ. Great.

Mr. HADLEY. So, with respect to that amendment, I cannot speak to the intent of the member other than what was written in the text of the amendment. And the way the amendment was written, it would eliminate positions and transfer the responsibilities for carrying out those actions to the Director's office. And it did not change the topline appropriation for the Congressional Budget Office.

So, we would have had to use other resources. We would have had to use those kinds of topline resources in a different way, which is why our score or estimate of that proposal did not result in savings. But I cannot talk about the specific interactions we had with the member, because requests for technical assistance are confidential.

Ms. GULLO. But I think it is fair to say that that was an amendment to an appropriations bill. And we worked very closely back and forth with various staff on the Appropriations Committee to help them understand how we were looking at the legislation.

We also consulted the parliamentarian's office and ledge counsel on the drafting of the language. So, there was a fair amount of back and forth among congressional staff and CBO to make sure we understood everyone is thinking on what the potential effect of the amendment would be.

Ms. WASSERMAN SCHULTZ. And Mr. Chairman, as a member of the Appropriations Committee representative on the Budget Committee, I appreciate that. Thank you. I yield back the balance of my time.

Chairman WOMACK. Thank you. Let's go to the gentleman from Pennsylvania who is still coming down from soaring with his Super Bowl champion Eagles, Mr. Smucker.

Mr. SMUCKER. Thank you. Thank you, Mr. Chairman. I appreciate you pointing that out. Mr. Hadley, good to see you again.

You have already been asked about the Tax Cuts and Jobs Act and its impact. And I would like to just drill down a little more on how that has impacted your forecast because, from my perspective, my view, and what I have seen in the district that I represent, it has had a tremendous impact already; at least in the short-term, and I believe, a long-term impact.

We have seen, of course, companies like Home Depot, FedEx, Comcast, Starbucks, Fulton Financial in my area who are providing pay raises, bonuses to their employees, specifically because of tax reform. And starting this month, millions of Americans will be going home, or are already starting to go home, with a bigger paycheck because of the Tax Cuts and Jobs Act. So, specifically, what I would like to hear from you is whether the act, the tax reform, has forced any last-minute changes to your upcoming economic forecast?

Mr. HADLEY. So, we typically would finish our forecast generally in early December. And obviously, that was before the tax legislation was enacted; and, so, we did not finish at that time. Instead, we are still working on it. We are trying to trace through all of the ways in which it is going to affect the economy, both in the near-term and over the longer period.

Mr. SMUCKER. How about the Department of Labor report that 200,000 new jobs were created, and wages grew at the fastest pace that we have seen in the past 8 years? Do you foresee that your economic growth rate will be increasing because of that forecast?

Mr. HADLEY. Well we expect to take that information on board as well. Yes, sir. I do not know yet. I cannot speak to exactly where we are going to come out yet because we have not finished.

Mr. SMUCKER. But it will impact it?

Mr. HADLEY. It will be considered as part of that process. Yes, sir.

Mr. SMUCKER. The other thing that I am hearing from businesses in my area, and as a small business owner myself—in fact, it was one of the things I was hoping to accomplish coming to Congress—was to provide regulatory relief to businesses and to American taxpayers. And we have already, in this Congress, made some great strides to save taxpayers as much as \$36 billion by getting rid of at least 860 erroneous regulations.

And to that end, there has been an increasing interest among Members of Congress to ask CBO to begin to estimate regulatory costs in addition to its current duties. Is that something that is possible for CBO to begin to do?

Mr. HADLEY. So, we started to by looking at the experiences that states and other nations have had with trying to estimate the impact of regulatory change. And so, we have done a fair bit of re-

search looking into that. And we would be happy to write a report. I will give you kind of some outline of kind of what we have found so far.

How feasible it is will depend on what you are asking for. So, if it is more information about legislation that would turn back a regulation that the Administration has proposed? Then at that point there is a fair bit of detail about what that regulation would entail, and more can be done.

If it is looking at the point when legislation is first enacted, then there was obviously less information available at that time. And it is somewhat different in other countries because a lot of the legislation originates, particularly in countries with parliaments, the difference between the legislature that creates the program and the executive that carries it out is a little bit different.

Mr. SMUCKER. I am sorry because I am running out of time. So, would that be a function that is different than what you currently do? That would be an added function?

Mr. HADLEY. So, we would be broader. We have done some analysis, like we looked a little more than a year ago at the overtime rule and the effects of repealing it. And in that case, the stars aligned, and we were able to provide an economic analysis of what those effects would be.

But doing burden analysis can be tricky on a case-by-case basis. And so, particularly for environmental regulations, we are not yet well-positioned to address those. I mean, we do not have the chemists and those types of scientists on staff.

Mr. SMUCKER. It would take additional resources, you are saying, in order to provide those kinds of estimates?

Mr. HADLEY. It would take additional resources. Yes, sir.

Mr. SMUCKER. Thank you.

Chairman WOMACK. To the great State of Washington, Ms. Jayapal.

Ms. JAYAPAL. Thank you so much, Mr. Chairman. And I do appreciate very much, going back to my days in investment banking and as a master's in business and running a nonprofit, the ability for us to really understand exactly how you come up with these projections. So, thank you all so much for the work that you do.

One of you said earlier that in looking at the estimates of the tax plan on the baseline that you would at things like incentives to invest, and I think it might have been you, Dr. Edelberg. Can you tell me how you think about that specifically? Do you look at history?

If you look at history, I am struck by the comments from Sarah Sanders at the White House about how she contextualized the Reagan tax cuts. There is a lot of disagreement around those tax cuts. The country was recovering from an economic recession at that time. Reagan also increased taxes three times.

And so, I am just wondering how do you look at and evaluate what is going to happen to the economy and investments in the economy? Do you look at a State like Kansas, that did similar things to what the GOP tax plan included, and in fact, had a hugely detrimental impact on Kansas' economy? And eventually those tax cuts ended up being rolled back by a Republican legisla-

ture. What kinds of things do you look at to come up with those projections?

Ms. EDELBERG. So, there is an extensive economic literature that thinks about how investment responds to changes in rates of return. And it is a complicated literature, because there are lots of different types of investment. There are lots of different ways of measuring what the rate of return is.

So, it is not a literature that comes to a very strong consensus as to what that relationship is. But there is something to go on, and that literature can look at particular episodes, like the ones you have mentioned, but it can also look at broader time series and look at how investment generally speaking in the U.S. economy has fared over decades in response to changes in rates of return.

So, we are taking all of that onboard, and we have put out some of our own papers walking through how we think about how investments respond to incentive. I should say more broadly, we are using much the same machinery that we use when we put together the baseline projection. The pre-policy baseline projection, before the tax bill was passed, has all of these same channels in it, as we had to think about what investment would be before the tax bill passed.

Ms. JAYAPAL. But the impact of the tax bill is going to be enormously substantial, given how much it increases the deficit. And so, the impact of this particular bill, it seems to me, would have sort of a very unusual effect on your baseline, unlike some of the other things that have happened over time; maybe not the ACA because I think that was also substantial.

Ms. EDELBERG. It certainly has a complicated effect. The changes relative to the entire economy are perhaps not as outsized as you have in mind. But we are deep in this analysis and so, I do not want to predispose what the conclusions will be. But I am worried about characterizing it as being so outsized.

Ms. JAYAPAL. Thank you. Just moving to the Affordable Care Act now. Our colleagues on the other side of the aisle have made repeated attempts to, in our view, undermine the Affordable Care Act. And as a result, we are now seeing an uptick in the uninsured rate among U.S. adults since 2016. Can you tell us how the CBO will account for those in the upcoming baseline projections?

Ms. GULLO. So, not dissimilar from Wendy's comments, we are constantly reviewing the data that is currently available. We have information on what the enrollment numbers for 2018 through the marketplaces, and all of that data and State-level reactions to some of the regulatory changes are all things that we are taking into account as we update our baseline this time around. So, all of that will be taken into account to come up with the most recent estimates that we can.

Ms. JAYAPAL. Thank you very much, and I yield back, Mr. Chairman.

Chairman WOMACK. Mr. Lewis of Minnesota.

Mr. LEWIS. Thank you, Mr. Chairman. And thank you, panel, for coming today. Very, very important topic as we get to the best model for economic growth and a rising tide. I have a couple of questions; one on process, and one on theory. Theory dealing with the penchant of some of my friends on the other side of the aisle

of all you have to do is raise taxes, and raise spending, and voila, you get economic growth; sort of a demand-side model. I will get to that in a second.

But first, tell me or describe the difference between the baseline and the cost estimate as a matter of process. So, the baseline assumes current policy going forward, and the cost estimates assume pending legislation or legislation that has been reported. What are the differences we need to know on this Committee between those two? I am a little confused there.

Mr. HADLEY. Sure, I would be happy to discuss that. So, the key difference between the two of them is really how we think about discretionary spending. So, for discretionary spending in the baseline, it is inflated, as if future discretionary appropriations will be provided. And the reason for that is we need some estimate of discretionary spending to have a realistic 10-year view of the debt in order to do debt calculations.

But for cost estimates, whether it is for an appropriations bill or an authorizing bill that authorizes future appropriations, the estimates are done relative to current law. So, for most cases, that means starting from zero and then looking at the amount added by the provision.

Mr. LEWIS. But if you are in the middle of pending legislation to the Tax Cuts and Jobs Act, and we are doing a baseline and we are doing a cost estimate, what is the difference there?

Mr. HADLEY. Well, so we do our cost estimates relative to the baseline, and it is usually the baseline that was adopted as part of the budget resolution that Congress then determines when we switch to a new baseline.

Mr. LEWIS. Okay. So, we do a baseline with a resolution. Then you take pending legislation or reported legislation and apply that to the baseline. Correct?

Mr. HADLEY. Correct. And not all baselines get picked up by budget resolutions.

Mr. LEWIS. Okay. Got you. Thank you. I noticed when you are doing your forecasting models and your macroeconomic model, it is purely an aggregate demand exercise; consumer spending, business investment, residential investment, government spending, net exports.

We all had that in economics. You could have used wages, plus interest, plus rent, plus profits. Either one, it is a totally demand side. So, naturally, if we are going down that road, the best way to increase GDP and growth would be to raise consumer spending, which is vastly overstated when you consider business-to-business purchases.

But raise government spending. Well, you just put in the multiplier, and boom, you got an increase in GDP. And the problem, of course, with this demand-side emphasis is the first rule of economics and that is opportunity cost.

If you increase government spending, where does it come from? There is no such thing as a free lunch. Milton Friedman was right. And so how much are you relying on this old Gaussian aggregate demand model, and how much are you relying on the changes in behavior from a supply-side model that encourages work, savings,

and investment, which of course will create demand without having to prime the pump?

Ms. EDELBERG. Okay. So, you are absolutely right that we think about the components of GDP and how the Bureau of Economic Analysis thinks about the different sectors that aggregate up to GDP. And we have to keep track of those over the full 10 years.

And you are absolutely right that one can think of both GDP and GDI. But setting those aside, I think what anchors our projection over the full 10 years is our estimate of potential output. So, we try to measure something that cannot be observed, which is the maximum output that our economy can produce without creating undesirable inflationary pressures. And so, we have an estimate of potential output—

Mr. LEWIS. Okay, let me interrupt.

Ms. EDELBERG.—in any year over the projection period.

Mr. LEWIS. Thank you for that. But I come from the school that growth is actually anti-inflationary; and I know there is a bias on the bond market. I know there is a bias in some economic circles that if you have got increases in growth, oh my goodness, you are going to get bottlenecks. It has got to be inflationary. Then interest rates have got to go up, and the Fed dutifully starts to raise rates.

The fact is, we have had experiments in the 1920s, in the 1960s, in the 1980s where growth actually decreased inflation. Inflation went down in the 1980s after those tax cuts. Because the same amount of dollars chasing more goods and services is anti-inflationary. I do not hear you talking about that.

Ms. EDELBERG. So, I cannot speak to those episodes in particular, but any policy, for example, or any other factor that improves the economy's potential output will have those sorts of deflationary pressures that you are talking about. That is embedded in our models for sure.

Mr. LEWIS. Not necessarily inflationary.

Ms. EDELBERG. No, it will have deflationary pressures.

Mr. LEWIS. Exactly, okay.

Ms. EDELBERG. If you boost the economy's potential, you will—and that is all you have done—you will produce deflationary pressures.

Mr. LEWIS. My time is up, thank you very much.

Chairman WOMACK. Thank you, Mr. Lewis. The first vote has been called, but I am going to yield now to the gentleman from New York, Mr. Jeffries, for his round of questions. And then we will take a break and a recess subject to the call of the chair. Mr. Jeffries.

Mr. JEFFRIES. Thank you, distinguished Chairman for yielding, and the witnesses for your presence and service to the country. Let me simply point out that when Ronald Reagan cut taxes for millionaires and billionaires in the 1980s, it did not lead to significant economic growth. It exploded the deficit.

And when George Bush cut taxes for millionaires and billionaires in 2001 and 2003, it did not lead to explosive economic growth. We got the worst economic crisis since the Great Depression.

And when the Republican Governor and Republican Legislature in Kansas decreased taxes for millionaires and billionaires in that State, it did not lead to massive economic growth. It led to over-

crowded classrooms, crumbling infrastructure, and prison riots—so much so that Republicans rolled back their so-called tax cut.

This notion of trickle-down economics has been widely discredited over, and over, and over again. Now Ms. Edelberg, the notion of consumer spending as a result of increased consumer demand leading to an increase in GDP is a relatively sound economic theory and policy, is that right?

Ms. EDELBERG. Yes, sir.

Mr. JEFFRIES. And is it fair to say that if you have a context where 83 percent of the benefits of a tax bill go to the wealthiest 1 percent in the country, that would not necessarily lead to the same type of consumer spending increase as if the benefits were more equitably distributed?

Ms. EDELBERG. So, we generally think that what we call the marginal propensity to consume is generally lower for higher income households.

Mr. JEFFRIES. So, is it fair to say that an increase of \$1.50 in a weekly paycheck would not necessarily lead to some dramatic increase in consumer spending?

Ms. EDELBERG. I think what you have in mind is thinking about what the marginal propensity to consume is for perhaps a lower income household. And in that circumstance, we generally think that those marginal propensities to consume are higher because those households have a greater probability of being constrained, of being liquidity constrained.

Mr. JEFFRIES. Right. So, the greater the increase in the weekly paycheck the greater the increase in consumer spending and therefore, perhaps, the greater the increase in GDP. Is that right?

Ms. EDELBERG. Generally speaking yes, in the short-term.

Mr. JEFFRIES. Okay. Yeah, and I am making reference to the fact that the Speaker—who I do respect, who used to be the chairperson of this Committee—touted an increase of a \$1.50 in a paycheck as if that was some significant accomplishment to be celebrated. I found that to be astonishing.

Now the CBO, Mr. Hadley, was created in 1974 to give Congress direct access to expertise, is that right?

Mr. HADLEY. Yes, Congressman, that is correct.

Mr. JEFFRIES. And prior to that period of time when Congress needed information on economic estimates, it would get it from the executive branch, is that right?

Mr. HADLEY. That is correct.

Mr. JEFFRIES. And I think the theory in creating the CBO was that if you got information from the executive branch, it did not carry the objectivity that a separate and coequal branch of government as embedded in Article I of the United States Constitution should receive, is that right?

Mr. HADLEY. That is correct.

Mr. JEFFRIES. And, you know, over that 40-year period, I think there has been nine different directors. Fair to say that CBO has consistently provided high-quality information to Congress that is objective and free of partisan political taint?

Mr. HADLEY. We have done our best.

Mr. JEFFRIES. Okay. And the CBO appoints staff based on their qualifications to do their jobs without deference to political party ideology, is that right?

Mr. HADLEY. That is correct.

Mr. JEFFRIES. And so, I find, you know, the attacks on the CBO somewhat astonishing. But I guess if you put it in the context of what is happening in this country, maybe or not. We have folks in this town who attack the free press, attack the FBI, attack the Department of Justice, attack the article III Federal judiciary, labeling folks so-called judges, attack the national security apparatus.

I am hopeful that these constant attacks on institutions important to our democracy will cease. And certainly, that we here in the United States Congress should not attack the work that the CBO has consistently done, as I would point out now, under the leadership of a Republican-appointed Director in terms of both the Speaker and the Senate majority leader. I yield back.

Chairman WOMACK. I thank the gentleman from New York. Ladies and gentlemen, the votes have been called. We are in the first few minutes of that vote series. I would remind our members this hearing will continue within just a few minutes following the call of the final vote of the series. This hearing is recessed and is subject to the call of the chair.

[Recess.]

Chairman WOMACK. The hearing will come to order. And once again, thank you for your patience to our witnesses as we did our duty and voted. Before we took the recess, Mr. Jeffries of New York was the last questioner. So, in that case we are going to move back to the other side of the table and the gentleman from Georgia. Mr. Ferguson, the witnesses are yours.

Mr. FERGUSON. Thank you, Mr. Chairman, and thank each of you for being here. Last week with Dr. Hall, I asked him some questions about the accuracy of the scoring. And he said that within 6 years, it got to 3 percent of what CBO does. It goes back and looks the numbers and says, "Okay, 6 years out we are at 3 percent."

The challenge that I had with that is that we are being asked to make decisions on a 10-year window, and yet we only score a 6-year window, okay. So, the first question is why is that? Why do not we look at the 10-year window—and just, you know, whoever wants to answer this one. And if you could, be brief because I have got a bucket of questions to ask on that.

Ms. GULLO. So, Congressman, I think you are referring to our recent outlay accuracy report where we looked at the budget year, which was basically a year and a half after the estimate. And then we looked at the 6th year. The reason we did not go out 10 years was because we were looking at data that went all the way back to the early 1990s. And when we were only doing 5-year estimates, in order for us to do a complete look over a 10-year period we did not have enough observations.

Mr. FERGUSON. And yet we are asked to make decisions on a 10-year with absolutely no certainty of what years 6, 7, 8, 9, and 10 are going to look at.

Ms. GULLO. Well, but what I can tell you is we did take a look at those observations we had from year 6 through 10. And our con-

clusion was that the error rates were roughly in line with what that 6th year error was.

Mr. FERGUSON. So, I think it is important if I am going to be asked to vote on a policy that is going to have a 10-year window on it, I want to know what those accuracy numbers are in years 7, 8, 9, and 10. Otherwise, I might as well cut the lights out and throw darts at the window.

So, I think it is really, really important because the question has been asked, or the discussion has been had, for you all to look at 15- and 20-year windows. And that is not a realistic ask if we cannot even determine if year 10 is accurate as it should be.

So that is going to be something I am going to focus on is accuracy in that 10-year window so that we know—and I think we just need to be honest about that and say in year 2 we are at 98 percent accuracy. By year 6 it goes to 97. And at year 10, you are going to be making a decision on something that has an accuracy of 80 percent. Whatever that number comes out to be, okay. I think that is important to do that.

So, Ms. Gullo, I am going to ask this question too. When you are looking at this, the budgeting process, does the CBO take into account Congress's inability to pass appropriations bills on time and the constant environment of C.R.s that we have been in? What does our inability to do the work here have on the scoring?

Ms. GULLO. So, when we score continuing resolutions, our normal practice is to what we call "annualize" them. So, even if there is a 1-month C.R., we provide the score to the Congress on an annualized basis. So, that provides you with information on what it would look like for the whole year if you appropriate it at that level.

Mr. FERGUSON. Let me ask it a different way then.

Ms. GULLO. Okay.

Mr. FERGUSON. When you are doing your 10-year projections, okay, when we ask you to score something when we bring forward the 2019 budget, and you are going to give a 10-year estimate on that to see if it comes into balance, will you take into account in that the fact that we may or may not get an appropriations bill done? Not how you score the C.R. that we are inevitably apparently going to do. But how does that play into it, or is it just something that you cannot account for?

Mr. HADLEY. Well so, when we put together our estimates and the baseline, we start first with what were the actuals in prior years. And in many prior years, most prior years, we have continuing resolutions. And so, some of the agency behavior that you would expect to occur under a C.R., like delaying when they make major procurements, that is already baked into the data.

And so, in our projections going forward that include using those spend out rates of budget authority, it already captures those historical experiences.

Mr. FERGUSON. Would it be more helpful if we refined our budget process to ensure that we had authorizations and appropriations done in the allotted time in a given year? Would it give you more certainty in your scoring?

Mr. HADLEY. It would give agencies more certainty in how they plan their behavior. And then as we gained experience with that—

Mr. FERGUSON. That's a long way of saying "yes."

Mr. HADLEY. Yes.

Mr. FERGUSON. Okay. Thank you. That is just all I needed from you. Mr. Chairman, with that I will yield back.

Chairman WOMACK. I thank the gentleman from Georgia. Let's go next to the gentlelady from Illinois. Ms. Schakowsky, the floor is yours.

Ms. SCHAKOWSKY. Thank you, Mr. Chairman. Ms. Gullo—am I saying that right?

Ms. GULLO. Yes.

Ms. SCHAKOWSKY. Okay. Do the CBO and Joint Committee on Taxation base their cost estimates on how a bill is written, or do they try to assume the future legislation that might follow if a bill is passed?

Ms. GULLO. So, Congresswoman, if I understand your question, CBO in scoring a piece of legislation looks at the legislative language and how we think that legislative language will be implemented.

Ms. SCHAKOWSKY. So, a bill's score would not include the future cost, for example, of extending provisions that expire after a few years. Is that correct?

Ms. GULLO. Well I think it depends on the program. We do have this \$50 million rule that requires us to assume for certain programs, and for certain excise taxes that are part of trust funds, that those do extend in the baseline even after their expiration date. So, it depends on the program.

Ms. SCHAKOWSKY. Well let me ask you about the tax bill. Are you the one that worked on the tax bill?

Ms. GULLO. Among the three of us we will get you the answer.

Ms. SCHAKOWSKY. Okay, good. So, the Republican tax bill that passed in December had an estimated cost of \$1.5 trillion. Which I understand does not include interest on—

Ms. GULLO. That is right. That is right.

Ms. SCHAKOWSKY. But it includes several sunset provisions that Republicans actually have suggested would be extended. So, is the cost of extending those expiring tax cuts in the \$1.5 trillion CBO JCT cost estimate for the bill?

Mr. HADLEY. No, as a general matter they are not because the legislation had the tax rates returning to a higher level. And we reflect that in both the cost estimates, and we consider that as we are putting together our forecast and baseline based on current law now that the bill has been enacted.

Ms. SCHAKOWSKY. So, you are making the assumption that the individual tax rates will go back to what they were, that they are not permanent.

Mr. HADLEY. That is correct.

Ms. SCHAKOWSKY. Okay. It seems to me though, since it has been suggested that they may be continued, that one explanation is that the Republicans gamed the scoring roles to make it look like their tax bill is actually cheaper in terms of debt than it was intended to be. Another is that they are willing to let the taxes go up on over

half of middle class families in a few years, while making sure that the big corporations and super wealthy get the permanent tax cuts.

I have another question. The Republicans have argued that the tax bill will pay for itself once we take into account the economic effects of the legislation. Last week, the CBO moved up its projection for when the Federal Government will hit the debt limit by several weeks at, "After incorporating the anticipated effects of recent tax legislation." So, whomever of you, how did passage of the tax bill effect the CBO projection for the debt limit?

Ms. EDELBERG. The main reason why we moved up our anticipated date, our best guess of when we think we would reach the debt limit, is because the IRS published new withholding tables that we think will lead to a lower estimate of tax revenues coming in between now and then.

Ms. SCHAKOWSKY. Thank you. As far as the debt limit is concerned, is it fair to say that the economic effects of the tax bill are not currently projected to offset the decrease in revenue the bill caused? And is that what you are saying, that there will be less revenue that will come in?

Ms. EDELBERG. I think it is important to think separately about some of the near-term effects of the tax bill—like the withholding tables that the IRS might be putting out and how those will affect tax revenues as they come in over the next several weeks—relative to what we think the overall effect that the tax bill will have on revenues, you know, including its macroeconomics effects.

One estimate of that broader estimate is the Joint Committee on Taxation's estimate of the macroeconomic effects of the tax bill as it was passed out of Conference, and that suggested that revenues would be higher after incorporating the macroeconomic effects relative to just a conventional estimate, but not by enough to fully offset the deficit effects.

Ms. SCHAKOWSKY. Thank you. I yield back.

Chairman WOMACK. Gentleman from South Carolina, Mr. Sanford.

Mr. SANFORD. I thank the chair. I guess my question to each one of you all would be, are we walking our way toward the most predictable financial crisis in the history of man, and are you abetting in that process? And here is what I mean by that and let me throw out a caveat.

Trying to guess anything 10 years out is amazingly complex deliberation, you know. It becomes at best a well-reasoned educated guess and nothing more than that. I mean, it is awfully, awfully tough to go 10 years out and project. So, you have my empathy on that front.

But I looked at some of the numbers that are built into the baseline, and in some ways, they could be argued to be optimistic. So, what we see in terms of budget forecast in terms of projected deficits and accompanying debt in many ways may be the optimistic case because Murphy's Law always exists, bad things happen. Wars come about, a lot of things might come about that we cannot build into a model.

But I do look to the things that are built into the models. So, on mandatory spending, as I read it, it funds entitlement authority basically regards to the trust fund amount. And I think that that is

a somewhat optimistic projection because we can end up with a real squeeze based on some of the fund balances. It presumes that caps still exist, at least in my reading of the baseline, though I think a political reality is they are about to disappear.

I do not see a recession built into the front end of the 10-year model. It assumes an averaging, but if that recession were to come near-term—and we are now in the third longest economic recovery in American history—that would again dampen down the numbers.

The interest rate numbers to me seemed a little bit optimistic. When I look at the average between 1990 and 2007 at 5.8; we are at 4.4. I think that one could argue that that might be a little bit optimistic. I look at the labor productivity, which is just really complex given the aging of America.

And the numbers I see in terms of projected downdraft on both fertility rate and on overall growth of the population. In other words, people that live longer, but we are having fewer people come in. That puts a real squeeze in terms of our entitlement programs. But nonetheless, labor productivity as I see it stays about the same as it did for the 30 years previous. Which I think could be argued to be a little bit optimistic.

I look at some of the—what were these numbers, my eyesight is getting so bad—well interest rates, I was going to go back to those. If we were to go back to the numbers that we saw over the last 30 years on interest rates, there would be a \$4 trillion delta as I read it in terms of future debt amount.

So, I will not belabor the point. But as I look at this, I see some numbers that could be argued to be a little bit optimistic. Give me your thoughts on that, and a little bit of maybe foreboding or forewarning with regard to some of the economic realities we might have to contend with as a Congress if these numbers do not pan out.

Mr. HADLEY. Sure, we would be happy to. So, the first thing I would note is that, you know, we produce the baseline and forecast under the rules that we are required to use. But we also supply information, if you would use alternative assumptions. And the deficit and debt paths would be higher if those alternative assumptions were used. But I want to note that even under the baseline assumptions, we are on an unsustainable path for deficits and debt.

Mr. SANFORD. So, which one of the alternative assumptions scares you the most?

Mr. HADLEY. Well so, one of the things that concerns me is mostly about productivity. And if productivity does not return to historical levels, depending on which window you look at, then that is pretty troubling. And that is—

Mr. SANFORD. Well can we go to more than troubling? Maybe, like, completely, wildly optimistic? I mean, we had globalization occur over the last 30 years. We had the internet which has just, I mean, radically changed sourcing and a whole host of things in terms of the way that people are able to interface with machinery, and equipment, and technology. I mean we have had some rather amazing developments, and we now have a substantially aging population.

So, I mean, I look at some of these productivity numbers and, yeah, we could hit them if we get everybody in Sun City in my dis-

trict in South Carolina to go back to work. I do not think they are going to do it, but I think that there are some optimistic forecasts that I would love to dig in deeper but I am out of time. Thank you, Mr. Chairman.

Chairman WOMACK. Always enjoy listening to the gentleman from South Carolina. Gentelady from Texas, Ms. Jackson Lee.

Ms. JACKSON LEE. Let me thank the Chairman and the Ranking Member for these hearings. And let me say to Mr. Hadley, I am going to ask a potpourri of questions, some I hope that will just get a “yes” or “no.” But you are aware of the tax cut—some of us have called it a tax scam—of the last year. You are aware of the projected \$1.4 trillion in deficit that will occur?

Mr. HADLEY. Yes.

Ms. JACKSON LEE. And it has come to my attention that we might be in a posture next year to borrow close to \$1 trillion. Would you combine those two elements as to the impact on your economic forecast and how you would counsel Congress as asked?

Mr. HADLEY. So, we are going to certainly take on board the effects of the tax bill, that is what the thing that is, but—

Ms. JACKSON LEE. Say it again, I am sorry.

Mr. HADLEY. We are working hard to take on board all of the effects of the tax bill as we produce the new economic baseline and forecast. And I would note that also includes taking on the debt effects of those provisions. And so, we will show higher levels of debt and also the interest rate effects that would occur. And so, interest rate changes on a higher debt will also be different, and usually larger.

Ms. JACKSON LEE. And a higher debt, you do not view that as a positive impact on working Americans overall having to bear a high amount of debt?

Ms. EDELBERG. All else equal, no. It is a negative effect, particularly over long periods of time.

Ms. JACKSON LEE. And as we well know, let me quickly do this, we have had some movement in the market Friday, et cetera. And the concept may be what is good for Wall Street is not good for Main Street. How do you view that movement in the market being speculated to be a response to higher wages, of which the tax cut was to advocate for that? How do you see that market impact when people are getting higher wages and then they get hit from the back end? Because if they have any kind of savings or 401K, it impacts them when the market responds to them getting higher wages.

Ms. EDELBERG. So, we are certainly paying very close attention to what is happening to the markets in the past week or so. I should say it is never a good idea to pay too close attention to particular movements on particular days. The market can be pretty volatile. That said, these have been big movements and we will think hard about them as we put together the economic projection. It would not be good professional practice, though, for me to try to guess why the exactly the markets have moved.

Ms. JACKSON LEE. And I appreciate it. Let me go to my other line of questioning. I would say that a trillion-dollar tax cut has not been the Christmas tree full of gifts that everybody has speculated.

In fact, I think it will be very detrimental, and we will see that as you go forward on your forecast.

But let me give you the story of a teacher in Texas who was 38-years old—and I say was—married with children, and died of flu just a few days ago. And one of the reasons why she died of flu is because she thought the Tamiflu purchase, or the purchase of Tamiflu—or maybe let me just say that she did not purchase Tamiflu because it was too expensive.

Let me go back to the Affordable Care Act and the present Administration's destruction and tempting to destroy and undermine the Affordable Care Act. And we see there is evidence of an uptick in the amount of uninsured rate among U.S. adults. And of course, they are bragging about ending the mandate.

In what ways is the legislation not being implemented as intended? Because you had a construct of what you perceive the Affordable Care Act would do. And we saw over the last couple of years a huge surge, really, of those enrolling in the Affordable Care Act. If you would give that, and then what are some of the intervening events at the Federal or State level, like the Supreme Court decision—2012 decision—which put us going forward, that the CBO could not have anticipated?

Ms. GULLO. You are absolutely right that the Supreme Court, the intervening Supreme Court decision, really did change how we looked at the costs of the Affordable Care Act relative to what we had originally estimated. There also were delays in imposing some of the penalties on large employers that we had anticipated that did not end up coming to pass.

And there also were extensions of hardship exemptions for people to not have to pay the penalties. So, there were a host of things in the implementation of the law that we had not anticipated when we originally did the estimate. And that certainly changes what we now think the effects of the ACA are.

Ms. JACKSON LEE. So, people wound up losing their lives because you were not able to implement it as it was constructed. We had a good bill, and it was destroyed. But we are still fighting to insure people. Were you going to answer, Mr. Hadley? No.

Mr. HADLEY. Not necessarily.

Ms. JACKSON LEE. With that, Mr. Chairman, I thank you and I yield back.

Chairman WOMACK. Thank you. Gentleman from Virginia, Mr. Brat.

Mr. BRAT. Thank you, Mr. Chairman. Lot of discussion about labor force contributing to wage inflation, labor force issues related to immigration, et cetera. I just googled right now it is true that, you know, large GDP I guess is good. But most people care about GDP per capita in terms of their welfare, et cetera.

And so, while bringing labor into the country certainly does increase the size of the total pie GDP, in the growth models going back to Solow who won the Nobel Prize for growth, and then Mankiw at Harvard who followed it up. In your view, GDP growth I do not think depends on labor force size. To my recollection in the Solow model, and in Mankiw, and the growth literature coming out of Harvard and Nobel Prize, GDP growth rates depend on produc-

tivity and human capital accumulation. Is that true to the best of your knowledge?

Ms. EDELBERG. I think what you are getting at is that growth in GDP per capita is a function of labor productivity, which includes human capital. That is right.

Mr. BRAT. Right. Right. Right. So, growth rates depend on labor productivity and human capital, et cetera. And so, that is the key. People say well, if you have more folks coming into the country that is good for GDP. That is true, but it is not necessarily true that it is good for GDP per capita.

And if you look at the highest GDP per capita countries—I just googled it—Luxemburg is largest in the world, \$101,000 GDP per capita. It does not have a huge population. So, how did they do that? Probably through good productivity growth and good human capital. Would you make that assumption?

Ms. EDELBERG. I suspect that that is true.

Mr. BRAT. Suspect it, right. Good. Thank you. I hate to get too much out on speculating but is it true that the stock market plunge was basically, right, debt has been with us, right. We have \$21 trillion in debt; interest rates are going to go up at some time. Is it probably likely the major cause of the market unrest was wage rate inflation? Was that, do you think, the primary inflation worry that came about that will increase interest rates?

Ms. EDELBERG. I certainly saw news articles attributing the decline to that. But I know nothing more than what those news articles are saying.

Mr. BRAT. Right. And so, I mean, that would be my assumption. That was the new piece, right. If you anticipate GDP growth in the next quarter of 5 percent plus, like the Fed is now forecasting, that is a wakeup call to something, right. So, we need to all sort that out.

So those same news articles and the financial markets all refer to tight labor markets. I am not so sure about that, right. Labor markets are tight if you look at just the technical definition where the unemployment rate is low.

But Paul Ryan, Speaker of the House, wants to bring 25 million people who have left the labor force altogether, right. Frustrated workers could not find jobs after the financial crisis. What is your commentary on how tight the labor markets can be if we have 25 million able-bodied folks on the welfare rolls or discouraged workers that we can bring back in the labor force? Might that help wage rate pressure somewhat?

Ms. EDELBERG. I think the channel that you are talking about would have an effect on wage pressure. I think there are two main measures that are useful for looking at and thinking about slack in the labor market. One is the unemployment rate. And as you talked about it is quite low, and we think lower than its natural rate.

Another useful measure is looking at labor force participation. And there we actually do see a little bit of slack. We think that participation is slightly lower than where we might think it should be, given you know, when labor markets settle down. But that said, our estimate of labor force participation rates and our so-called potential labor force participation rates reflect long downward trends

in the participation of prime-age men. So, these are not really new forces at work.

Mr. BRAT. Right.

Ms. EDELBERG. And we do have to grapple with what will happen to those trends over the projection period, and to be sure if policies or something else reverse those trends that would matter.

Mr. BRAT. Right. Yeah, and I did not mean to suggest that there is anything new there, right. The workforce participation rate is terrible, wage rates have been roughly flat for 30 years. A lot of that has to do with our human capital development in K to 12, et cetera.

And I will just close, finally, that is 25 million people I am talking to. If productivity growth is the number one driver of GDP growth, what is the productivity growth currently of those 25 million people out of the labor force, right? That is Y over L , right? So, output per worker or output per hour. If they are not working and not in the labor force, what is their productivity?

Ms. EDELBERG. I see where you are going. And yes, I mean, the measured productivity would be zero.

Mr. BRAT. Right. The measured productivity would be zero. And so, it seems to me if you put those 25 million people back in the labor force using their God-given gifts and talents, et cetera, that would be a good thing for our economy. I got 12 seconds, thank you all very much for coming today. Thank you, Chairman.

Chairman WOMACK. You did not have 12; you used an extra 12. Just want to make sure that we got the numbers correct.

Mr. BRAT. Fair, judge. That is fair.

Chairman WOMACK. Mr. Grothman of Wisconsin.

Mr. GROTHMAN. Okay. We will see if I can get three quick questions in. Yesterday in *The Wall Street Journal*, there was an article commenting that soon may be very costly programs in which the government gives credit and, particularly, they mentioned the student loan program.

Right now, you use estimates based on the Federal Credit Reform Act, but you have talked about using other ways to estimate the cost of these programs. Can you comment on what would happen if you made changes or suggested changes?

Mr. HADLEY. Right. So, we are required to use the estimates under the Federal Credit Reform Act. And what we are capturing there is an accrual measure of the cost of loans and loan guarantees that the government makes. And we also provide estimates on a fair value basis where we take into account another factor.

So, I think it helps to talk about the ways that those estimates are the same and the ways that they are different. So, in the context of the way we do credit reform estimates is we are looking at a set of cash flows and those expectations about what is going to happen in terms of defaults, and recoveries, and fees that are paid.

We use exactly that same set of cash flows and those same expectations and probabilities when we put together a fair value estimate, but we include one other element. And so, this is a reason why we talk about fair value estimates as being more comprehensive than credit reform.

That other element is that the likelihood of default is correlated with bad states of the economy. And if you are in the private sec-

tor, you demand compensation for the cost of that risk. And so, that fair value estimate takes on board the government's cost of bearing that risk.

Mr. GROTHMAN. Okay. I will give you a couple of other questions kind of coming back to what Congressman Brat said. We plan on doing some sort of—or, I would hope we would do some sort of welfare reform. There are many programs out there, virtually all of them—low-income housing, SNAP—that kind of discourage you from working.

If we did something to cut the amount that is going out on these programs, in your estimates would you take into account that now people are going to be more likely to work? So not only would you have less going out for these programs, you would have higher income tax coming in. Do you think that is something that you would do? And if not, why not?

Ms. EDELBERG. I think we would incorporate two effects from the kinds of policies that you are describing. One would be an income effect. Generally speaking, we estimate that if you take income away from people they are, at least in the medium-term, up into the medium-term they are more inclined to work. So, if you lower their income they will work harder. That is one effect.

And if you change their marginal tax rates, if you change how much for each additional, let's say, hour of work what their wage will be and if you change the tax code in a way that changes their marginal tax rates, we would also incorporate that effect. But those changes on marginal tax rates can be quite complicated by taking programs in and out of the whole suite of programs that people have access to.

Mr. GROTHMAN. Okay. There was a question that one of my colleagues on the other side of the aisle asked. And there was a premise in it that I just questioned. In these tax cuts, obviously some people will have more immediate money. I always think the long-term benefit is the Laffer benefit and that people work harder, invest differently.

But in her question, she wanted you to estimate if you cut taxes how much people would save and how much they would spend. I had always felt in the long-term, it was good for an economy if people saved money. But I am going to ask you. Is it good or bad if people save money? Is the economy stronger if we save nothing and spend every dime I get in my paycheck, or is it better for the economy if I save 20 percent of my paycheck?

Ms. EDELBERG. Well now, it matters what you want to measure. So, if you are measuring GDP, then the more saving we have available for private investment and the greater your productivity growth and the greater your GDP is, that is definitely one effect, but that is not necessarily what households care about. What households really care about is consumption and other things that give them, you know, give them satisfaction.

Mr. GROTHMAN. I completely disagree with you. I feel better when I got more money in my bank account, I do not care if I spend money. But you would know what the average person thinks. I will give you one more final quick question, just so we clarify this. As far as determining GDP, if we hire more people in this building,

I do not know that it would necessarily make us wealthier as a society. But does that cause the GDP to go up?

Ms. EDELBERG. So, one of the components of GDP is government spending and investment. So, by that accounting, yes.

Mr. GROTHMAN. Okay, thank you much. And thank you for letting me go over by 15 seconds.

Chairman WOMACK. Mr. Bergman.

Mr. BERGMAN. Thank you, Mr. Chairman. Thanks to all of you for being here today. Did I hear you right, Ms. Edelberg, when you said if you lower someone's wages they will work harder?

Ms. EDELBERG. If you lower someone's income, they will work harder. So, if you take income away from someone having nothing to do with the wage that they earn for a particular hour of work—if you take \$1,000 out of somebody's pocket—the economic literature suggests that because they feel poorer, the ultimate effect will be that they will want to work more. In a sense to replace that lost income. That is a separate effect from the wage.

Mr. BERGMAN. Okay. That is all right, I do not want to waste my time. That is just I think my mother is rolling over in her grave right now with that. She was Depression-era farm girl from Minnesota, and my dad was from the Upper Peninsula Michigan. I respectfully disagree from the human factor side, which leads me to my next question.

When you develop your models, tell me about the human factors. You have got to remember I am a career pilot, both in the military and commercial. And every time there is an accident or an incident, we go into the human factor's side. So, tell me about the human factors that CBO uses when you come up with your model.

Mr. HADLEY. Human factor that we start with is our own track record, right. We look at how we did compared to what actually happened, and that is the starting point.

Mr. BERGMAN. When you look at what you did exactly as what happens, that is kind of reviewing your game films. Do you not only look at, but do you assess the why or what potentially changed in the game, if you will, that caused a different outcome than you had anticipated?

Mr. HADLEY. Yes. We try to break out, to the extent we can, how much of that was caused by something that was kind of anticipated to happen. So—

Mr. BERGMAN. Like for the public consumption. Is the average American who is listening to, "The CBO scores this and the CBO scores that," is it information in the public domain that they can see how well you scored, you know, the last time? Is that set up in such a way that all of our citizens can see how you did on the last game?

Mr. HADLEY. So, we have three reports that each go over how we did for outlays, how we did for revenues, and how we did for the forecast. Those are up on our website. And we are looking for ways to show more of this kind of play-by-play for—

Mr. BERGMAN. Would you say the average, to get back with Mr. Grothman, talks about as far as saving as we try to help folks understand the importance of having money in their bank account for a rainy day, or wherever that savings are. Do you think those are

pretty simple decisions for a lot of folks who pretty much add up two and two and get four?

Is your report laid out in such a way that that person who maybe, you know, needs to understand more that, you know, how the CBO did in their scoring? They can look at the football score, baseball score, and they could see, you know, the points—pretty simple math.

Mr. HADLEY. We have tried to make it so, but we also welcome suggestions for make it better.

Mr. BERGMAN. Okay. I am going to change because I have only got—I almost said an hour and 45 minutes. No, I know it is a minute 40. Do you think that Congress would benefit from focusing on smaller, more incremental policy items at a time? Or is, you know, is CBO's modeling better suited for a big picture, large-scale legislative packages?

In other words, can we play, you know, three yards in a cloud of dust continually as we advance our policies and our laws forward? How is CBO's modeling set up to evaluate the differences in game plans for us legislatively?

Mr. HADLEY. So, I cannot make recommendations. But I can observe that it is easier for us to estimate small incremental changes than it is if there is a substantial portion of the economy that is being affected all at the same time.

Mr. BERGMAN. Thank you. And in the interest of saving, I yield back.

Chairman WOMACK. Thank you, Mr. Bergman. Mr. Arrington from Texas.

Mr. ARRINGTON. Thank you, Mr. Chairman. And panelists, appreciate your time. Going back to the line of questioning and discussion, Ms. Edelberg, on when you take income away from somebody that they work harder. That is a dynamic that is sort of economic theory, or something, maybe you have experienced it in your own life. What happens when the government replaces that income, what happens to that dynamic?

Ms. EDELBERG. Well so, we estimate that that effect is basically symmetric so that if you boost somebody's income—having nothing to do again with the wage that they earn on a particular hour of work—but if you boost somebody's income, we estimate that that depresses their labor supply.

Mr. ARRINGTON. Okay. So, in other words if you supplement, assist with outside income, in this case my question has to do with Federal income, people do not work harder they actually work less. Or, they do not work more, they work less. Is that what you are trying to say?

Ms. EDELBERG. That is correct. Let me make two caveats. I do not want to overstate this effect, it is rather small in the economic literature. But nonetheless, it is there. And the other thing is that it is probably something like a medium-term effect. And I say that because obviously incomes have dramatically changed, for example, in the U.S. over time. And we have not seen anything like the kinds of effects that then you would expect on labor supply—

Mr. ARRINGTON. Let me just cut—

Ms. EDELBERG.—in keeping with those changes.

Mr. ARRINGTON. Thank you. And I appreciate the elaboration, and it is an interesting point. But the debt, incalculable debt in most Americans' minds, unsustainable deficit spending. We are getting to the point where we are going to have a trillion-dollar deficit some predict soon.

Interest payments in the next 10 years or less will be greater than what we spend on national defense. That is scary to me, and to most Americans. What are the long-term economic effects of that level of debt and deficit spending, as an economist?

Ms. EDELBERG. In general, we think that an increase in a dollar of borrowing by the Federal Government crowds out approximately 33 cents of private investment for various reasons. So, that is an effect that is in our models and is important.

One thing that I want to say, though, is that it is not really just about the level, it is also about the trajectory. So, it does not just matter what the level of debt is today or in year 10, it is what financial markets and households think that trajectory is going to look like over time.

Mr. ARRINGTON. So, in Greece for example, before the sovereign debt crisis, were the CBOs or the CBO-like government agencies predicting a crisis?

Ms. EDELBERG. Oh, I have no idea.

Mr. ARRINGTON. Has anybody followed that? I mean, it is a recent sovereign debt crisis, and—

Ms. EDELBERG. Those were dramatic changes that were happening quite quickly. So, I—

Mr. ARRINGTON. What would happen—

Ms. EDELBERG.—think those are as likely to have been predicted as the financial crisis, for example.

Mr. ARRINGTON. So, what would happen if we went into a Greece-like debt crisis on the economy?

Ms. EDELBERG. I think this gets back to that it is not just the level of the debt that matters, but it is also the trajectory insofar as once financial markets think that the level of debt is going to rise without bound credibly, the day those expectations change is the day you have a problem. I think.

Mr. ARRINGTON. Is it measurable the profound adverse effects on the economy if the United States were to enter into a sovereign debt crisis?

Ms. EDELBERG. Not particularly, no. I can for sure tell you the sign.

Mr. ARRINGTON. You do not think it is profoundly adverse in its effects.

Ms. EDELBERG. No, I am sorry. It is whether or not I can measure it.

Mr. ARRINGTON. Can you predict it?

Ms. EDELBERG. I know it is bad, and I know it is negative.

Mr. ARRINGTON. Okay. Why do not you all consider Administration policy and sort of the high-probability legislation in your baselining? I understand it may be statutory. And if it is, then would you consider expanding from that? Would that help your reliability and prediction if we were to expand that?

Ms. GULLO. So, we do take account of administrative actions that we know are final. And we incorporate those in our baseline. As a

matter of fact, any Federal regulation that is a proposed regulation we fold into the baseline at a 50/50 probability that it will get enacted, and 50 percent chance that it will not.

So, we are continuously watching what is happening in the administration. And whenever there is a final rule, we do fold the effects of that into the baseline. If we are not close to updating a baseline for the purposes of doing cost estimates, we also take account when doing that cost estimate of the regulations that have been finalized since the last time we updated the baseline.

Mr. ARRINGTON. Mr. Chairman, my time has expired.

Chairman WOMACK. Thank you, Mr. Arrington. And appreciate my ranking member's patience. But I also appreciate the fact that he is willing to defer his questions to the end so that members who have to come and go because of other commitments are given an opportunity quickly to make their concerns known and ask their questions. So, with that I am going to yield to the ranking member, Mr. Yarmuth.

Mr. YARMUTH. Thank you very much, Mr. Chairman. Once again, thanks to all the witnesses for spending your morning with us. We have enjoyed it very much. I want to follow up on the notion that if you take income away from someone they tend to work harder, and if you give them more they tend to work less.

Would the same theory apply to taxes? That if you lower someone's taxes and thereby give them more income, would they tend to work less? And if you tax them more and took income away from them, would they tend to work harder?

Ms. EDELBERG. I think it is useful to think about differences in effects on average tax rates versus marginal tax rates. So, if I increase someone's marginal tax rate—or let me do the flipside. If I decrease someone's marginal tax rate that means for each additional, let's say, hour that they work, they keep more of their wage because the marginal tax rate is lower. We think that boosts labor supply.

But if we do not change that marginal effect and instead we just change their average tax rate, that is in a sense like just taking, you know, taking money in or out of their bank account. That we do think if you take money out of somebody's bank account they will work more. If you put money in their bank account, they will work less.

Mr. YARMUTH. Makes sense to me. So, I want to go more to get in the modeling on taxation. And it seems to me that when you are looking at a comprehensive bill like the one Congress just enacted, there is some incredibly complex interrelationships there. And I look at the corporate side, and we theoretically reduced taxes by \$1.3 trillion or so over 10 years, corporate taxes. But there is a wide range of things corporations can do with the money they theoretically save.

So, they could hire new people, or pay people more, or give them bonuses. They could automate and eliminate jobs, as apparently Kimberly-Clark is doing. They are going to eliminate 5,000 jobs, and they said that they are using the tax break to facilitate that reduction in staffing. They could pay dividends; they could buy back their stock, or they could do combinations of those.

So, Walmart is giving, as reports say, roughly \$300 million worth of bonuses to employees and buying back \$4 billion worth of stock. So, I am curious as to what kind of model could possibly anticipate all the different permutations of things that they might do. And then when you translate that to the individual's side, we know if you get more money you can pay off debt, you can spend it, or you can save it basically.

And all of those things have different impacts in terms of the cost to the Treasury. And so, I guess my question is when the cost projections are done for something like the tax bill, are the impacts broken out by let's say—just theoretically throwing up a number—that 20 percent of all the corporate tax savings are going to be used to buy back stock. Do the models break out those kinds of impacts by decisions that are made?

Ms. EDELBERG. Those are the sorts of estimates that we have to keep in mind. As you say, it is a very complicated bill and there is a lot going on. And those are just the sorts of issues that we have to think through. The amount of money being repatriated, that is a big slug of money. And it is important for us to keep track of where it goes, and that can affect things for sure in the near-term.

But generally speaking, we can simplify our lives by putting things into two different buckets. There is one bucket where we think about what is happening, for example, to retained earnings, what is happening to corporate profits. And once we get a handle on that, and I should say the Joint Committee on Taxation has done a lot of work and, you know, we are using the very, very good work that they have done. Once we see what is happening to corporate profits, then we can trace that money through the economy and think of how that affects things, particularly over the next few years.

The other bucket is what is happening to corporations' after-tax rates of return. And so, a lot of the complicated affects you are talking about that come out of the tax bill can actually be narrowed down to that one affect. And we can see at the end of the day, given all of these changes that the tax bill is going to cause, what is the effect on the after-tax rate of return? And then, once we know that, we can turn to a relatively deep literature on what do corporations do when their after-tax rate of return changes.

Mr. YARMUTH. Okay. Because it seems to me that one of the things that we would be responsible for is following the impact of these different tax policies and see whether they actually turned out the way it was anticipated.

Ms. EDELBERG. As will not surprise you, that is extraordinarily difficult because—well I mean even now looking at changes in, you know, as corporations announce that they are going to make some particular change, they may ascribe that to the tax bill. But, of course it is impossible to know for sure whether or not that really is a change being made in response to the tax bill, or they would have done that anyway.

Mr. YARMUTH. Right.

Ms. EDELBERG. Magnify that times, you know, exponentially as we look over the next 10 years and try to tease out what the effects

were from the changes from the tax bill versus other policies. And that is, of course, why there is an economics profession.

Mr. YARMUTH. Right. Well on occasion, as with this tax bill, Congress passes major legislation that greatly impacts the economy. I think obviously the Affordable Care Act was an example of that. And I also think of the GI Bill passed after World War II that was largely accredited with building the middle class. And I think the statistics are that there was eventually a 7-to-1 positive return to the Treasury based on the investment in that program.

So, if similar spending plans were passed today, are CBO's current models able to predict or account for that kind of economic impact?

Ms. EDELBERG. Well so, I think the short answer is yes. One of the main effects of the GI Bill, for example, was improving access or decreasing the cost to higher education for veterans. Changes to Federal investment in education is one of the effects that we are explicitly set up to model.

So, there are three kinds of Federal investment that we think ultimately boost the productivity growth of the economy. It is Federal spending on infrastructure, Federal spending on education, and R&D. So, we are well equipped to do that kind of analysis.

Mr. YARMUTH. Okay, even though a large percentage it seems to me—and I know it was true in the GI Bill—a large percentage of the positive economic impact is realized outside the budget window.

Ms. EDELBERG. That is quite true. And so, that would be a case where we would want to report longer term estimates in a broad sense.

Mr. YARMUTH. Got you. Real quickly, one of the proposals that we are going to be dealing with in the next day or so is apparently to raise the defense budget by \$80 billion a year. Obviously, there is a simulative effect by building weapons and so forth, but how do you model basically—since we probably do not know exactly how that \$80 billion is going to be spent—how do you model defense spending? What are kind of the considerations there, in this minute or so you have left?

Ms. EDELBERG. Want to talk about discretionary defense?

Ms. GULLO. Well so, from a spending point of view, most defense spending is discretionary. So, we take the current year's appropriation and inflate that into the out-years. It then gets adjusted an aggregate down to the cap levels, so that gives us a total amount of spending presumably. And then that would feed into the economic effects.

Ms. EDELBERG. To the economic projections

Mr. YARMUTH. So, in that you are not doing dynamic scoring on defense spending, I guess.

Ms. EDELBERG. So, the entire economic baseline is in a sense dynamically scored because it is incorporating all of the economic effects of fiscal policies under current law. We rely heavily on history to tell us how defense spending seems to support overall economic growth. We have no particular insight on that other than what history tells us.

Mr. YARMUTH. All right, thank you Mr. Chairman. I yield back.

Chairman WOMACK. I thank the ranking member. Mr. Arrington, it is impressive that besides the chair and the ranking member,

you are the only member remaining and I give you, I would be more than happy to yield the gentleman a couple of extra minutes if he would like to have any other follow up questions for the panel.

Mr. ARRINGTON. Thank you, Mr. Chairman.

Chairman WOMACK. And the same goes for any other member that might walk in here in the next few minutes.

Mr. ARRINGTON. I hope my constituents back in West Texas know that we are staying late and doing the work of the people. But this is important, obviously. We got to get this right. I want to be clear with you all. I do not need to be an economist and the American people do not need to have the economic analysis ability and education and expertise to know that this national debt is awful, horrible and that our spending spree is out of control. And we do need transparency, reliability, validity, accuracy, all the things that you guys do so that we can do our job. But unless you can give us a little pill that we can all take that will give us a boost in our political courage, I do not know that you can help us with this.

I think this has to be the United States Congress saying, enough is enough. It stops now and we are going to safeguard our children's future. So, I am usually pretty irritated with the panel, but I am actually irritated with now an institution that I belong. And I just pray I can have a positive influence towards that end because I think the national debt is, I think, the greatest threat to the future of this country.

Regulatory costs are—if you all already covered that, my apologies. But can you calculate those? Should you calculate those? What do you need from us to have that—those sort of costs implications and estimations when legislation is being considered?

Ms. GULLO. So, if you are talking—if you are speaking of the cost to the Federal Government of imposing new regulations or backing off on regulations, that is something we attempt to incorporate in both cost estimates that might have an effect and in the baseline.

There then also is the larger component of the effect of deregulation or additional regulation on the economy. Which would not be picked up in a cost estimate, but would be picked up in our forecast.

Ms. EDELBERG. So, we are for sure thinking about, for example, how changes in the regulatory environment that we have seen, let's say over the past year, what effect those have already had on the economy and how we want to think about those effecting the economic projection, for example.

Mr. ARRINGTON. Yeah, I think it is very important and the Chairman has been very generous. So, I do not want to take advantage of that. So, Mr. Chairman, thank you again for the extra time and I yield back.

Chairman WOMACK. I thank the gentleman from Texas. And I have got a few questions before we conclude today. Teri, it has been brought up a couple of times in our hearing today about member involvement, consultation with CBO between members. Whether they are budget Committee members or members from the Congress at large. Is this something that the CBO people encourage to happen and how so? How is the best way to engage in a member to CBO dialogue?

Ms. GULLO. Yes, Congressman, we welcome interactions with congressional staff and members. It always makes me sad when I have somebody say, I could not make heads or tails of your cost estimate. We work really hard to be clear. Granted we are talking about some pretty difficult arching concepts. But, to the extent that we are not being clear, and a member has questions, or staff have questions, we urge you to contact us.

We are here to work with you and for you. And if our work is not clear to you then we have more work to do. And it is always our intention to provide you with the information you need to do your jobs. And that, you know, goes across—I mean, our resources are limited. So, we focus our resources on working with the budget Committees, the appropriations Committees, and the authorizing Committees. Our ability to help individual members is much more limited just because of our resource constraints.

But we urge you to call us, ask us for briefings, ask us to walk you through cost estimates. There was a staffer on the Senate Budget Committee who used to send back to me line item edits to cost estimates where he thought they were not clear enough. But we met with him. We had him come over to CBO. Walk us through why he was not—why he felt that cost estimate was not giving him the information he needed. And as a result of that meeting, we changed how we showed the costs of transportation estimates.

So those sorts of interactions do yield differences. We are listening. We do want to be as clear as we can. And if we are not being, you know, we encourage you to call us.

Chairman WOMACK. Thank you, Ms. Edelberg. It has been said many times in this hearing, and in recent hearings that CBO, by its very nature, has to make decisions based on primarily two criteria, facts, which statute would be a fact and then assumptions. Things that CBO would suggest have—are going to happen. Just assume they are going to happen. Maybe because they always have or maybe there is a political reason why you make an assumption that something is going to continue.

One that was brought up earlier in this hearing was OCO, the Overseas Contingency Account and the question was about how you forecast OCO, the overseas piece, that is off the base defense bill.

I can think of another, and that would be how we forecast disaster funding. And there—I am sure there are many others that I am not thinking about right now. But, how do you go about putting actual dollar amounts against these assumptions so that you can accurately predict the budgetary impact?

Ms. EDELBERG. So, the one thing I will say before turning it over to my colleagues, who may have more to say on this is that when the particular rules that you are alluding to, whether it is with OCO or disaster funding, we think are telling one possible story that might affect the budget baseline and the economy. But there are actually, there would be alternative assumptions that one could make that would lead you down a different path. We try very hard to present both of those alternatives or a handful of alternatives when we present the data. And we present our projections knowing that those assumptions can actually matter how someone sees the budget.

Ms. GULLO. For in the same way with OCO, there are rules, there are score keeping guidelines about what we can count and not count for the purposes of counting against the caps or what can be used as an offset to some other program. But the fact is for things like OCO, program integrity, any of the effects legislation has on those things, we fully account for in the baseline.

But then there are then scorekeeping rules that might limit how those savings or costs might get accounted for. But that is not to say that for the purposes of developing our bottom line deficit estimates those kinds of things are accounted for in the baseline.

Chairman WOMACK. My colleague from Texas talked a lot about the debt, as well he should. It is a major concern. One of my big concerns has always been interest rate risk. The fact that as you heat up an economy there is an expectation there is going to be a situation involved where the net effect will be impacted by the amount of interest we are paying on our debt. There, I suppose, there is another impact on interest rates.

Another interest rate risk and that would be the potential for the credit agencies to take a look at the credit of the United States of America and to down grade it which we all know would immediately make the borrowing a bit higher for our country.

In your analytical jobs, is there a way to be able to predict, at some point in time—the last time there was a down grade it was about the Congress's inability to resolve itself to fixing it. Is there a more quantitative measure that can predict the potential for a down grade and its corresponding impact?

Ms. EDELBERG. So, we have no quantitative measures of the risk of a measure of a downgrade. That is a—we have written about the risks of a fiscal kind—

Chairman WOMACK. But you agree with me that that would impact the borrowing of this country? The cost?

Ms. EDELBERG. I do. I think that there is a way to think about this as an incremental problem that can affect interest rates and, you know, the cost of Federal borrowing and a far less incremental problem where you would see more of a seismic change. I think on the incremental side, we think about inflation risks and right now we think that inflation expectations are pretty well anchored at 2 percent. It looks like financial market participants are pretty satisfied that monetary policy and other factors in the economy will be able to keep inflation at around 2 percent.

You might think that if the budgetary pressures got big enough that inflation expectations, for example, might become unanchored and that would lead to, you know, higher inflation expectations, higher inflation, and thus higher interest rates. That is something we are keeping close tabs on, but we do not see those risks right now. That would be an incremental effect on interest rates.

A far more seismic effect on interest rates is, as I said, the day that financial market participants credibly expect that debt to GDP will rise without bound to, you know, unprecedented, you know, levels. The day that happens, I suspect that you will—that history will not be a very good guide and you will see, you know, something like what we wrote about on the fiscal crisis.

Chairman WOMACK. Are we on that trajectory?

Ms. EDELBERG. I do not think that there is any suggestion in financial markets that there is a lot of concern about that. We think about it, we write about it. But I do not see those pressures in financial markets right now.

Mr. HADLEY. But that is in the near term. So, in the long term—so we are already at historically high levels of debt. And deficits are very large and so they are going to keep adding to the debt and at some point, there will be a problem. There will be a reckoning if we do not change our ways.

Chairman WOMACK. In my last minute, Mr. Deputy Director, I will direct this to you. It is not unprecedented that Federal bureaucracy sometimes allow personal bias to enter into their decisions. I will not go into those; my time will not permit me to. Convince me and our panel that the — we are all human beings. We all have certain ideas and ideology. What steps do you take to ensure that the information you give back to the Congress is free of anyone's personal bias?

Mr. HADLEY. We work very hard at that, Mr. Chairman. The first thing is, we start with our hiring procedures. We work very hard to hire people who are able to do objective work and able to be perceived as doing objective work. And then they go through vigorous training where we train them to present just the facts and to consider all sides of an issue.

One of the things that we have cost analysts do is talk to the Committees who are offered legislation and say, okay, who do you think we should have talked to? And then you talk to people on the other side. It is not that we necessarily take on board all that we are told. We evaluate it. We do it independently. But we want to consider the full range of viewpoints.

We then construct the estimate and we have then a rigorous review process. And that process in different ways, depending on the products involved, not only the people within CBO, managers, like ourselves, but also reaching out to people on the outside for their perspectives on our work. Because what we are trying to represent to the Congress is not just what CBO says about a topic, but in general the middle of where the economics profession is.

So, in some sense we are trying to represent the entire range of viewpoints and it gets difficult, because we are asked to produce a single point estimate. But even where we do that, we try to provide the sources of uncertainty around that and the differing viewpoints on a particular issue.

And I think one example of how we try to show just how, you know, not biased we are, we follow the rules that we are laid out, that are laid out for us in statute. But, we also provide information to the Congress from other perspectives so they can get a full view of what is going on with a particular estimate or with a particular piece of legislation.

Chairman WOMACK. I appreciate that and I apologize for going over just a bit. Mr. Hadley, Ms. Gullo, Ms. Edelberg, thank you for appearing before us today.

I want to advise the membership of our Committee to submit written questions to be answered later in writing. Those questions and your answers will be made part of the formal hearing record. Any members who wish to submit questions or any extraneous ma-

terial may do so within 7 days. Again, our thanks and with that.
This Committee stands adjourned.

[Whereupon, at 12:59 p.m., the Committee was adjourned.]

House Budget Committee***CBO Oversight: Economic Assumptions, Baseline Construction, Cost Estimating, and Scoring***
Questions for the Record

1. 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?
2. 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?
3. What are the key levers inside a macroeconomic analysis that rely on CBO analysts' judgement or assumptions?
4. 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?

5. 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?
6. How many analysts are involved in developing the baseline? What happens in the process if an error is discovered?
7. 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?

8. Can this Committee request a separate baseline be constructed for a particular function or program?
9. What are the merits of a current-law baseline versus a current-policy baseline?
10. 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?
11. 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?
12. 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?
13. How feasible would it be for CBO to provide a cost estimate prior to Committee consideration? What resources would be needed to implement this?
14. 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?
15. 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?
16. Are there additional reviews in place for cost estimating work done by newer analysts?
17. How do analysts account for directives to a Federal agency that CBO believes the agency will carry out anyway when developing a cost estimate?
18. How does CBO account for costs of legislation imposing new activities on Federal agencies without increasing the amount that is authorized for the agency?
19. 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?

20. Has CBO considered whether to implement any external reviews for cost estimates?
21. How does CBO's scoring of appropriations acts differ from authorization legislation?
22. How feasible would it be for CBO to provide Congress cost estimates of appropriations bills?
23. 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?
24. 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?
25. 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?
26. Although OMB is responsible for calculating the Statutory PayGo scorecards for PayGo effects of legislation, does CBO similarly track such PayGo effects?
27. For purposes of scorekeeping, to what extent does CBO interact with OMB?
28. How often does CBO assess current scorekeeping guidelines?
29. Would you please explain how CBO determines whether legislation requires long-term scoring, in addition to its standard 10-year window cost estimates?
30. How has CBO's approach toward dynamic scoring evolved over time?
31. Why is there tension between CBO's access to private sector data and data transparency?
32. Why does CBO not publish its models?
33. Why does CBO not publish all of the assumptions that its analysts make in estimating the cost of a bill?
34. Why is confidentiality a prerequisite to getting agency information?
35. How often does CBO verify information provided by the agencies through its own research?

36. Are there other ways to get the same information that do not require confidentiality?
37. 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?
38. 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.
39. 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?
40. How does CBO determine the order of provisions and the weight of assumptions when constructing a cost estimate that includes interactive effects?
41. Does CBO lack adequate access to key data necessary to produce timely and accurate estimates and projections?
42. 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?



**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.