



# Congressional Budget Office

September 17, 2015

## How CBO Is Implementing Dynamic Scoring

Presentation to the Society of Government Economists

Keith Hall, Director

For additional information, see Congressional Budget Office, “Dynamic Analysis,” [www.cbo.gov/topics/dynamic-analysis](http://www.cbo.gov/topics/dynamic-analysis).

# The Congressional Budget Process

---

- The Congressional Budget Act specifies that budget authority and outlay amounts are to be allocated to committees by a budget resolution.
- The **budget committees use a scorekeeping system** to assess whether the estimated costs of legislation exceed the amounts in the budget resolution.
- Cost estimates prepared by CBO, sometimes called scores, are used in that system.

# Scoring Legislation at CBO

---

In 2014, CBO completed

- More than 600 formal cost estimates, all of which were posted on [www.cbo.gov](http://www.cbo.gov)
- Between 5,000 and 6,000 informal cost estimates

# Behavioral Responses in Conventional Cost Estimates

---

- Estimates incorporate some effects of changes in policy on people's behavior that would generate budgetary effects.
- By long-standing convention, estimates generally have **not reflected changes in behavior that would affect total output in the economy** (for example, changes affecting the labor supply or private investment).

# Requirements Under the 2016 Budget Resolution

---

To the greatest extent practicable, CBO and JCT shall incorporate the **budgetary effects of changes in macroeconomic variables** resulting from

- Major legislation reported by most committees that has a gross budgetary effect of 0.25% of GDP (excluding macroeconomic feedback) in any year over the next 10 years (an amount equal to about \$45 billion in 2015) or
- Legislation that is designated by one of the Chairmen of the Budget Committees

# Other Provisions Regarding Estimates

---

- Not required for appropriation acts
- Shall include a **qualitative assessment for the subsequent 20-year period** of the budgetary effects (including macroeconomic effects)

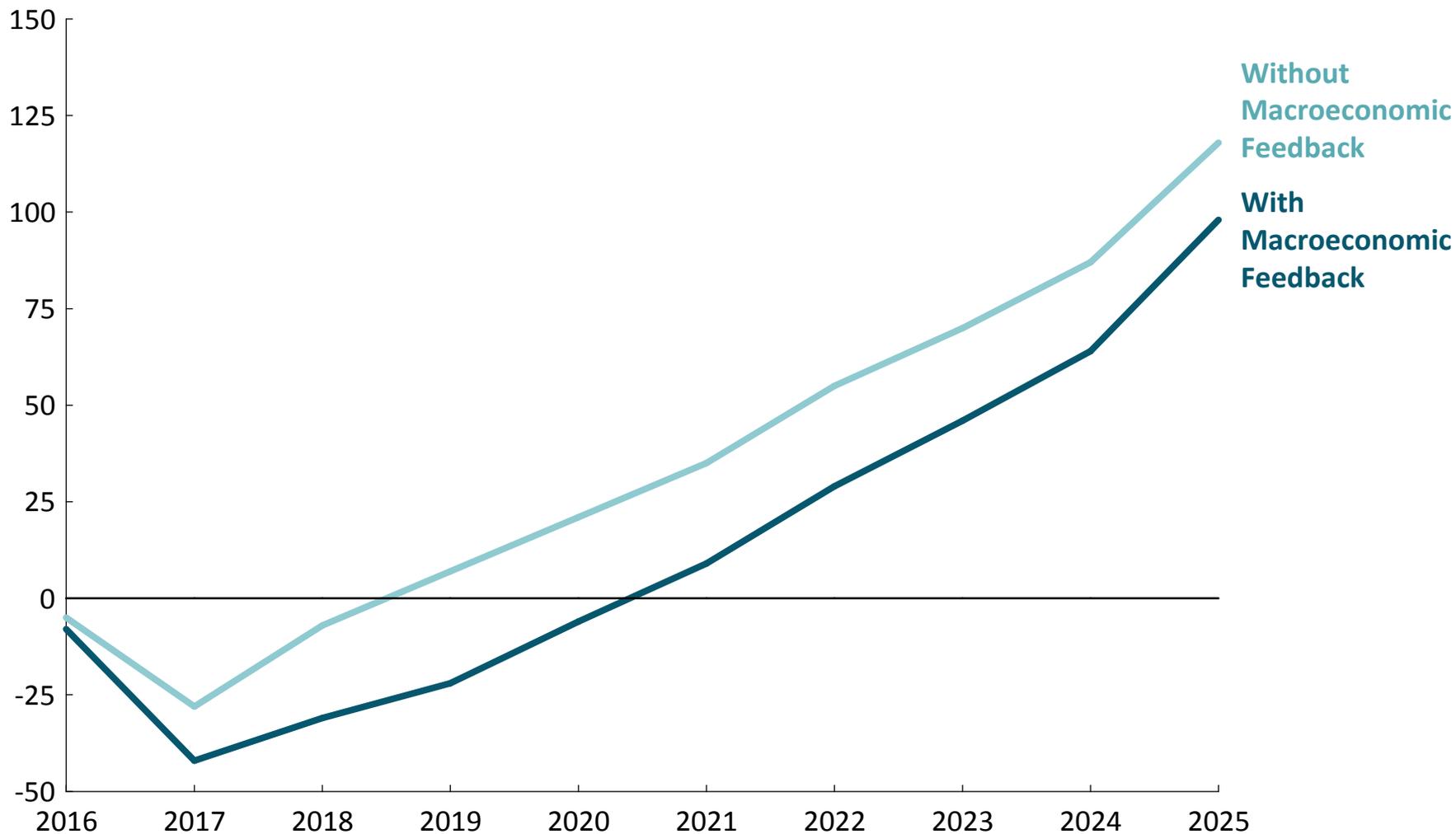
# Previous Dynamic Analysis by CBO

---

- Included in selected recurring reports
  - Analysis of the President’s budget
  - Annual long-term budget outlook
- Recently included in analyses of specific legislation
  - Proposal to repeal the Affordable Care Act
  - Tax Relief Extension Act of 2015 (estimate by the staff of the Joint Committee on Taxation)

# Estimated Effects on Deficits of Repealing the Affordable Care Act

Billions of Dollars, by Fiscal Year



# Short-Term Effects of Fiscal Policies on Output

---

- Reflect effects on the supply of labor, depending on the amount of slack in the labor market
- Reflect direct contributions to aggregate demand from changes in purchases by federal agencies and those who receive federal payments and pay taxes
- Incorporate the change in output for each dollar of direct contribution to demand (the “demand multiplier”), which varies with the response of monetary policy

# The Magnitude of the Demand Multiplier

Likely Monetary Policy Response	Demand Multiplier		
	Time Period of Effect	Range	Central Estimate
Limited	Four quarters	0.5 to 2.5	1.5
Stronger	Four quarters	0.4 to 1.9	1.2
	Eight quarters	0.2 to 0.8	0.5

# Long-Term Effects of Fiscal Policies on Output

---

- Estimated using two models of potential output
  - Solow-type growth model
  - Life-cycle growth model
- Determined by various factors
  - Amount and quality of labor and capital (depends on work, saving, and investment)
  - Productivity of the labor and capital inputs (depends in part on federal investment)
  - Amount of national saving (depends in part on federal borrowing)

# The Role of Expectations About Fiscal Policy: Solow-Type Growth Model

---

- People base their decisions about working and saving primarily on current economic conditions, including government policies.
- Decisions reflect people's **anticipation of future policies in a general way** but not their responses to specific future developments.

# The Role of Expectations About Fiscal Policy: Life-Cycle Growth Model

---

- People make choices about working and saving in response to both current economic conditions and their **explicit expectations of future economic conditions**.
- The model requires **specification of future fiscal policies** that put federal debt on a sustainable path over the long run.
- Forward-looking households would not hold government bonds if they expected that debt as share of GDP would rise without limit.

# Response of the Labor Supply to Changes in Fiscal Policy in the Solow-Type Growth Model

- The overall effect of a policy change on the labor supply can be expressed as an elasticity, which is the percentage change in the labor supply from a 1 percent change in after-tax income.
- CBO's estimates correspond to a total wage elasticity for all earners of 0.19, comprising two effects.

Type of Effect	How Increased After-Tax Income Affects People	Elasticity
Substitution effect	For an additional hour of work, it makes work more valuable relative to other uses of a person's time	0.24
Income effect	From a given amount of work, it allows people to maintain the same standard of living while working fewer hours	-0.05

# Other Key Aspects of the Solow-Type Growth Model

---

- When the deficit goes up by one dollar, private saving is estimated to rise by 43 cents (national saving falls by 57 cents), and net capital inflows rise by 24 cents, ultimately leaving a decline of 33 cents in investment.
- Additional federal investment is estimated to yield half of the typical return on investment completed by the private sector.

# Other Key Aspects of the Life-Cycle Growth Model

---

- Labor supply and private saving are influenced by the current values and future anticipated values of the after-tax rate of return on saving, after-tax wages, and disposable income, among other factors.
- The elasticity with respect to a onetime temporary change in wages (the so-called Frisch elasticity, which is calibrated to be consistent with CBO's estimate of the total wage elasticity) is 0.40, according to CBO's central estimates.
- Because of uncertainty, households hold additional savings as a buffer against potential future drops in income.

# Presentation of Dynamic Analysis in Cost Estimates

---

- Cost estimates that include dynamic analysis have these traits:
  - Show all of the information that traditionally would be included if macroeconomic effects were not incorporated
  - Identify the macroeconomic effects separately
  - Provide information on the uncertainty of the macroeconomic effects
- Presentations will evolve over time as CBO learns what is most useful.