



Congressional Budget Office

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Communicating Uncertainty in Budgetary and Economic Estimates

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CBO views its estimates as representing the middle of the distribution of possible outcomes.

We have worked in the past few years to quantify the uncertainty of more of our analyses. However, there are important limitations currently on our ability to quantify uncertainty and to help legislators make effective use of such quantification.

In What Situations Does CBO Quantify the Uncertainty of its Estimates?

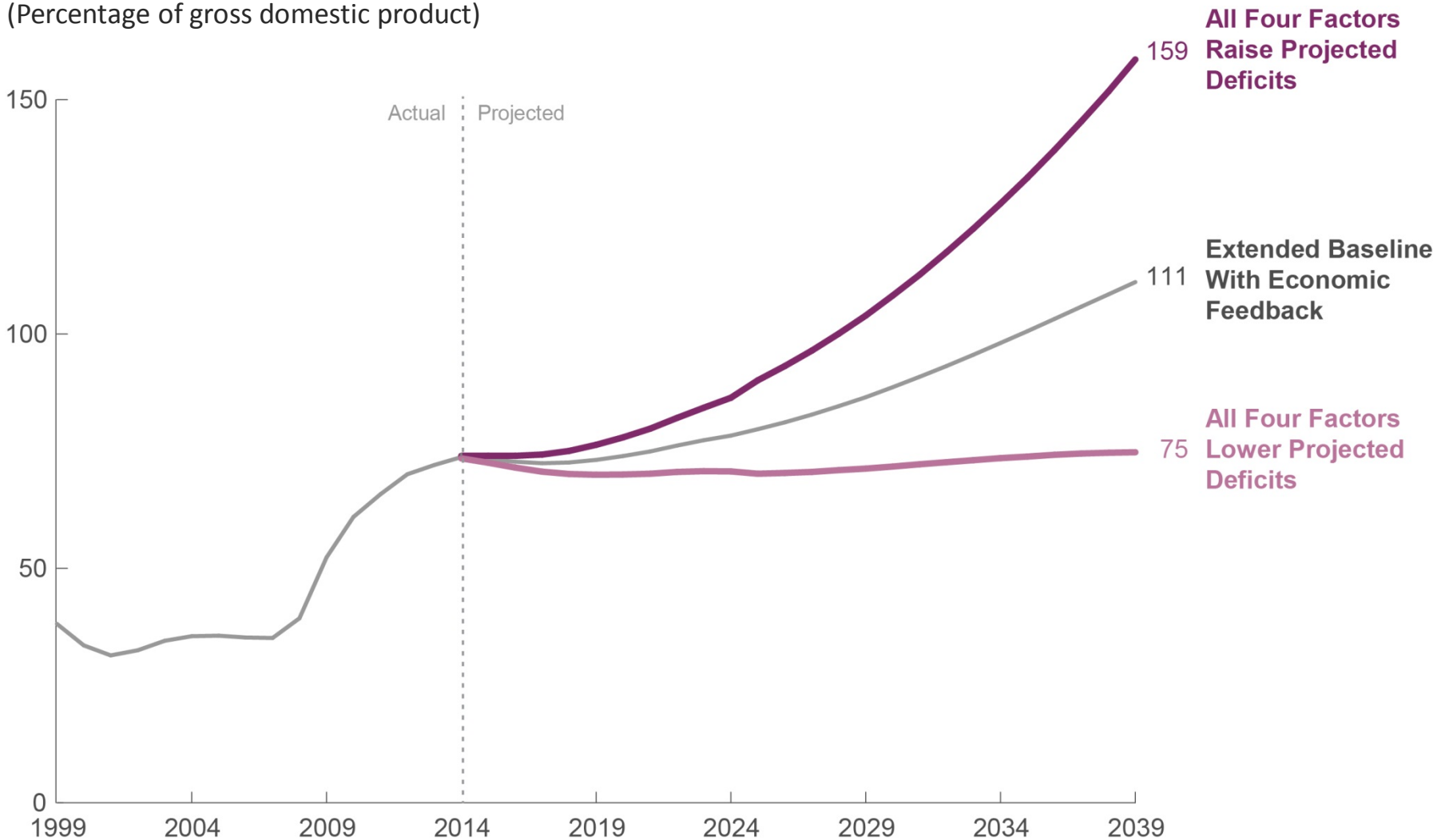
Long-Run Effects on Real GNP of the Fiscal Policies in Various Budget Scenarios

(Percentage difference from level in the extended baseline with economic feedback)

| | 2024 | 2039 |
|---|--------------|----------|
| Extended Alternative Fiscal Scenario | | |
| Central estimate | -0.5 | -5 |
| Range | -0.7 to -0.2 | -8 to -2 |
| Illustrative Scenario With 10-Year Deficit Reduced by \$2 Trillion | | |
| Central estimate | 0.6 | 3 |
| Range | 0.3 to 0.9 | 1 to 4 |
| Illustrative Scenario With 10-Year Deficit Reduced by \$4 Trillion | | |
| Central estimate | 1.1 | 5 |
| Range | 0.6 to 1.7 | 2 to 7 |

Federal Debt Given Different Rates of Mortality Decline, Productivity Growth, Interest, and Growth of Federal Health Care Spending

(Percentage of gross domestic product)



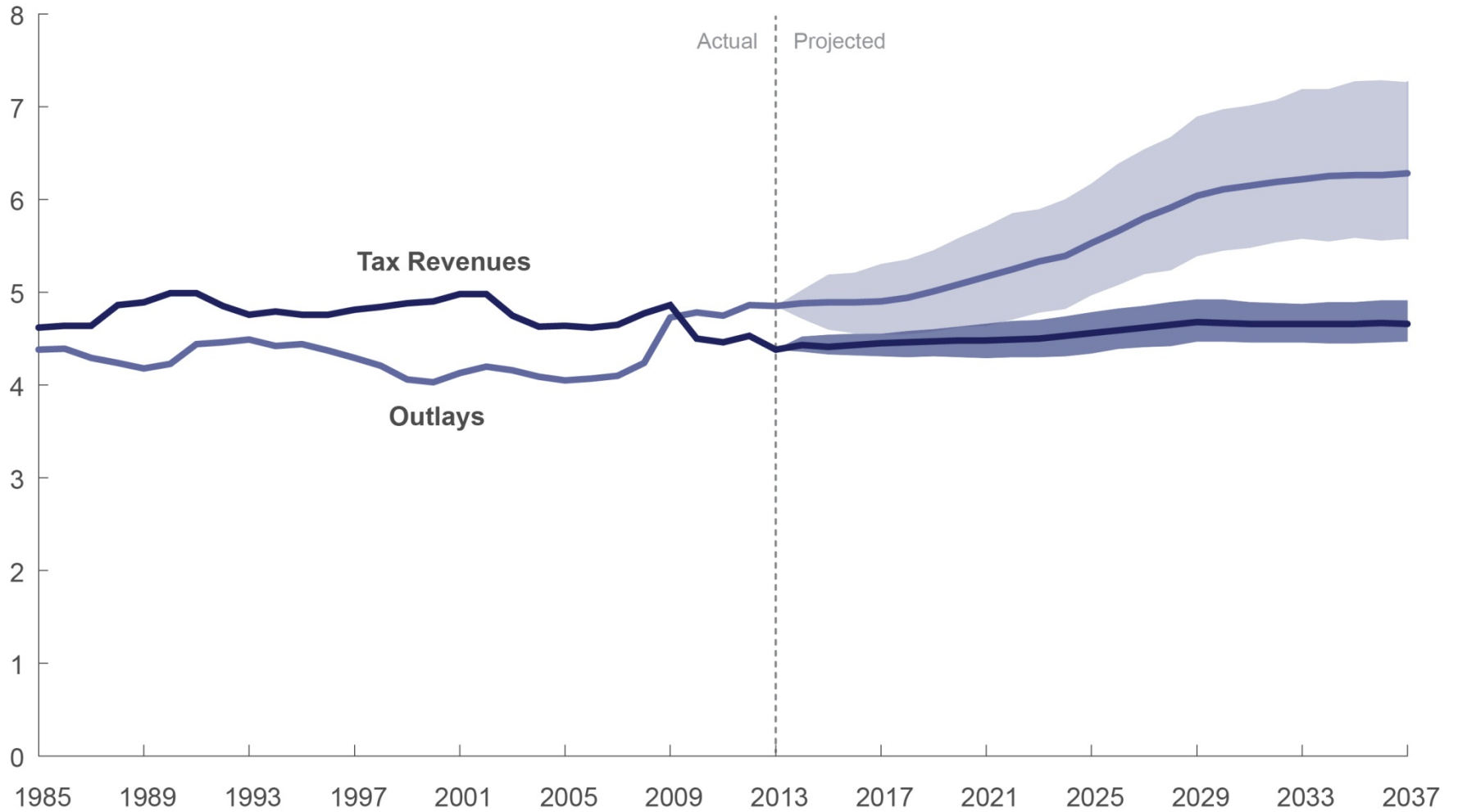
All Four Factors Raise Projected Deficits

Extended Baseline With Economic Feedback

All Four Factors Lower Projected Deficits

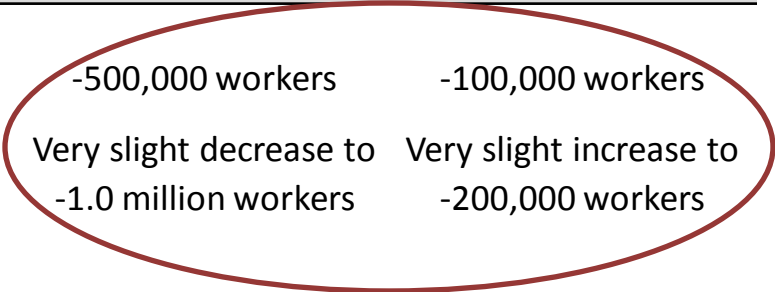
Social Security Tax Revenues and Outlays, With Scheduled Benefits

(Percentage of gross domestic product)



Estimated Effects on Employment, Income, and Poverty of an Increase in the Federal Minimum Wage, Second Half of 2016

| | \$10.10 Option | \$9.00 Option |
|---|---|---|
| Change in Employment | | |
| Central estimate | -500,000 workers | -100,000 workers |
| Likely range | Very slight decrease to -1.0 million workers | Very slight increase to -200,000 workers |
| Number of Workers With Hourly Wages Less Than the Proposed Minimum Whose Earnings Would Increase in an Average Week | 16.5 million | 7.6 million |
| Change in Real Income (2013 dollars, annualized) | | |
| Families whose income is below the poverty threshold | \$5 billion | \$1 billion |
| Families whose income is between one and three times the poverty threshold | \$12 billion | \$3 billion |
| Families whose income is between three and six times the poverty threshold | \$2 billion | \$1 billion |
| Families whose income is six times the poverty threshold or more | -\$17 billion | -\$4 billion |
| Change in the Number of People Below the Poverty Threshold | -900,000 | -300,000 |



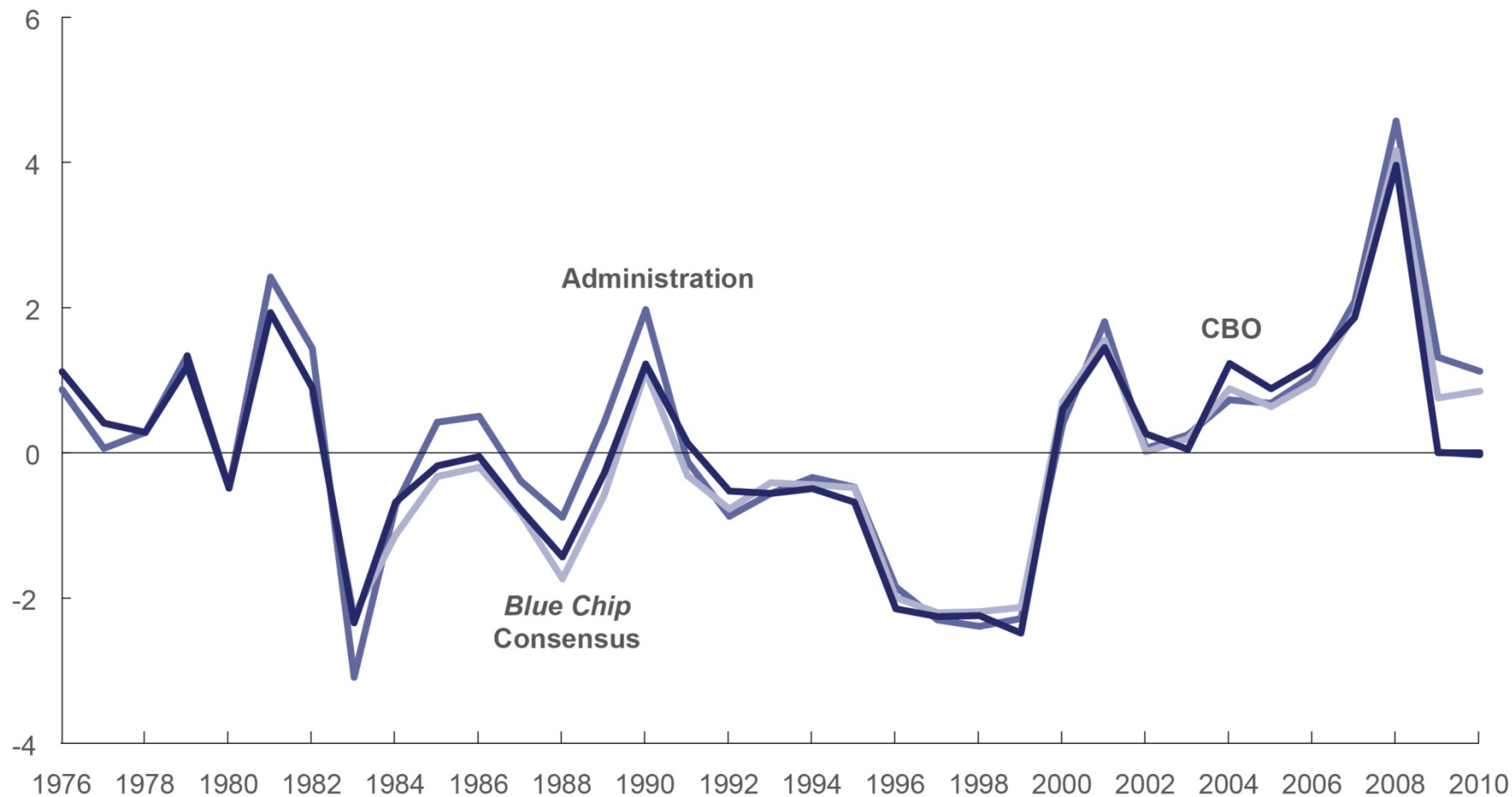
Change in Net Federal Spending for Medicare and in Beneficiaries' Payments Under Illustrative Premium Support Options, Relative to Amounts Under Current Law, 2020

(Percent)

| | Second-Lowest-Bid Option | Average-Bid Option |
|---|--------------------------|--------------------|
| Net Federal Spending for Parts A and B for Affected Beneficiaries | | |
| Central Estimate | -11 | -4 |
| Range | -9 to -14 | -1 to -7 |
| Total Payments by Affected Beneficiaries | | |
| Central Estimate | 11 | -6 |
| Range | -2 to 24 | 0 to -12 |
| Net Federal Spending for Parts A and B for Affected Beneficiaries Plus Total Payments by Affected Beneficiaries | | |
| Central Estimate | -5 | -4 |
| Memorandum: | | |
| Premiums Paid by Affected Beneficiaries | | |
| Central Estimate | 31 | -6 |

Growth in Real Output: Two-Year Forecasts, Forecast Minus Actual

(Percentage points)



Why Are Most of CBO's Estimates Presented Only as Point Values?

The Congressional budget process requires point estimates of the budgetary effects of proposed legislation:

- Budget resolutions.
- Tracking of approved legislation.
- Pay-as-you-go law.
- Parliamentary rules

CBO often lacks a strong analytical basis for constructing ranges of estimates:

- Most of the agency's models and estimating techniques do not readily yield estimates of uncertainty.
- Underlying research generally provides only limited information on uncertainty.

Partly as a result, quantifying uncertainty can take considerable time, which is an additional challenge.

CBO is still developing ways to help legislators make effective use of our quantification of uncertainty:

- Providing ranges sometimes muddies, rather than enhances, general understanding of our analysis because people tend to cite the part of a range they prefer.
- It is often unclear how legislators might respond to the quantification of uncertainty. Further research in this area will be helpful.

In sum, CBO is working hard to quantify the uncertainty of more of its analyses. However, there are important limitations on our current ability to do that and to help legislators make effective use of the information.

Sources

Slide 3: *The Long-Term Budget Outlook* (July 2014), Table 6-2.

Slide 4: *The Long-Term Budget Outlook* (July 2014), Figure 7-5.

Slide 5: *The 2013 Long-Term Projections for Social Security: Additional Information* (December 2013), Exhibit 3.

Slide 6: *The Effects of a Minimum-Wage Increase on Employment and Family Income* (February 2014), Table 1.

Slide 7: *A Premium Support System for Medicare: Analysis of Illustrative Options* (September 2013), Table 2.

Slide 8: *CBO's Economic Forecasting Record: 2013 Update* (January 2013), Figure 5.