

The Effect of Slower Productivity Growth on the Fiscal Outlook

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NOVEMBER 2017

Effects of Productivity Growth on Government Budgets

Lower productivity growth means less consumption, lower living standards.

I ask how a productivity slowdown affects fiscal outlook for federal and state and local governments.

Without debt, if revenues and spending implicitly “indexed” to GDP, then deficits relative to GDP unchanged when productivity slows.

No policy response needed from fiscal sustainability perspective, although government spending and revenues will decline.

With debt, additional impact on fiscal outlook through effect on interest rates.

Description of Productivity Slowdown Scenario

CBO's baseline assumes productivity gradually increases from the lows observed in recent years.

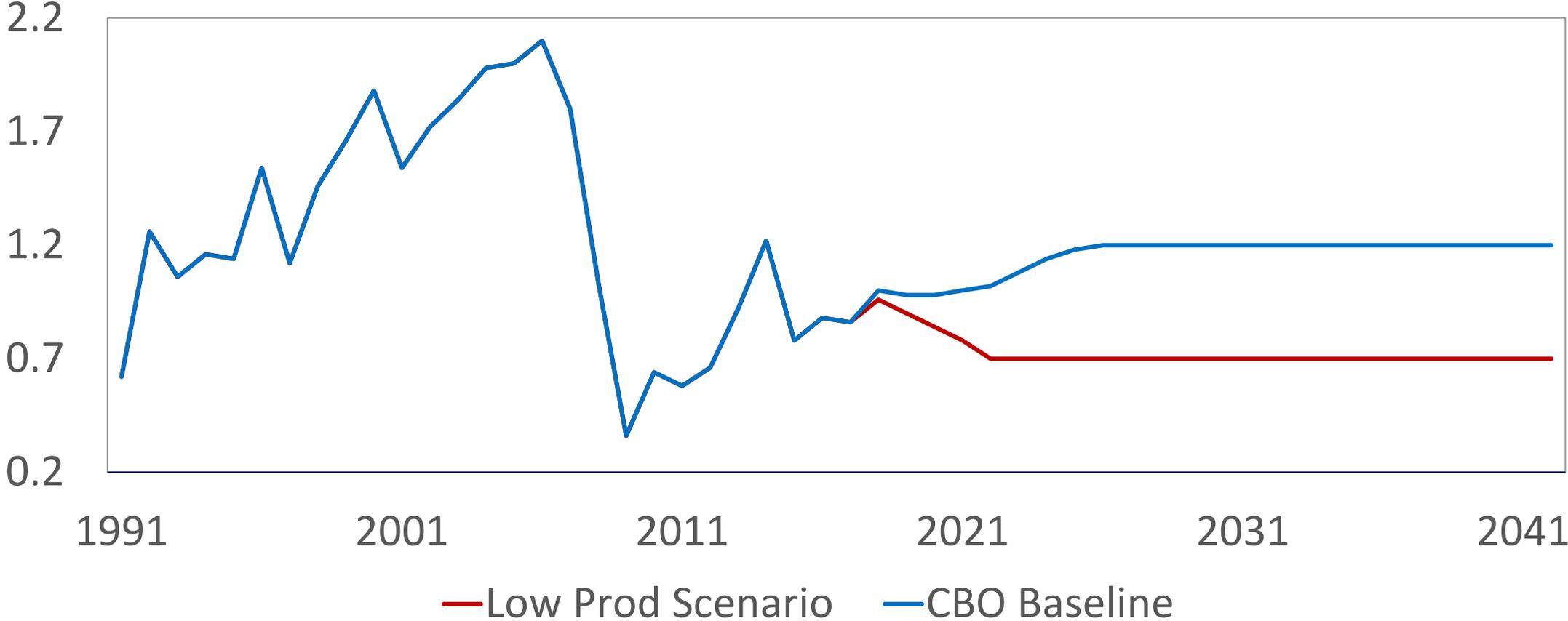
CBO's steady-state value for TFP is 1.2 percent per year, and for economy-wide labor productivity is 1.6 percent for year.

Downside scenario shaves $\frac{1}{2}$ percentage point off TFP, and 0.6 percentage point off labor productivity.

So new steady state is 0.7 percent annual TFP growth, and 1.0 percent labor productivity growth.

Total Factor Productivity: Baseline and Downside Scenarios

5-year moving average



Effect of Productivity Slowdown on Income Distribution

Widening disparity in income in US partly attributable to skill-biased technological change.

A slowdown in productivity could act to reverse that.

Or, slowdown could be the result of more-of-that: productivity growth in industries requiring high-skilled labor reduces labor demand there, increasing employment in low-productivity industries.

I assume that productivity slowdown affects wages across the board.

Important assumption, as income distribution affects government revenues and outlays.

I also assume that inflation rate unaffected by productivity growth.

Effect of Productivity Slowdown on Interest Rates

Strong theoretical reasons to expect productivity growth to affect interest rates.

Exact relationship depends on intertemporal elasticity of consumption.

Some estimates suggest of this elasticity suggest interest rates might move up to 2-for-1 with productivity growth.

Direct empirical evidence (Laubach and Williams, 2015) finds a 1 percentage point reduction in productivity would lower interest rates 1.3 percentage points.

But, Hamilton et al (2005) argue that empirical evidence for relationship is weak.

I analyze three scenarios: (1) no effect (2) int. rates move 1-1 (3) int. rates move 2-1.

Remainder of Presentation

Effects of low productivity on:

Revenues

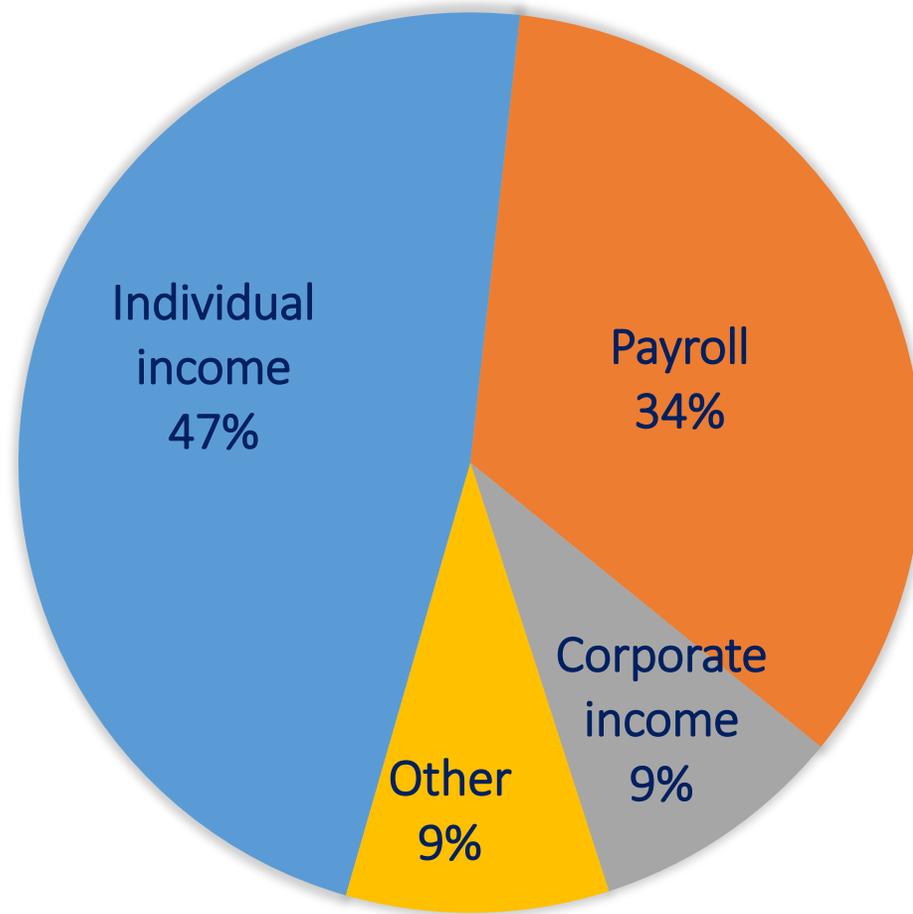
Non-interest spending

Debt Sustainability

First go through Federal, then State and Local sector.

State and Local analysis more speculative – without CBO-type baseline much harder to estimate effects.

Composition of Federal Taxes



Productivity Growth and Federal Taxes

Payroll taxes move roughly one-for-one with productivity growth.

Social Security and Medicare taxes: Mostly flat tax on wages (up to a cap for Social Security, but cap moves with wages.) Some additional taxes on high-income taxpayers but very small.

Corporate and other move mostly with GDP.

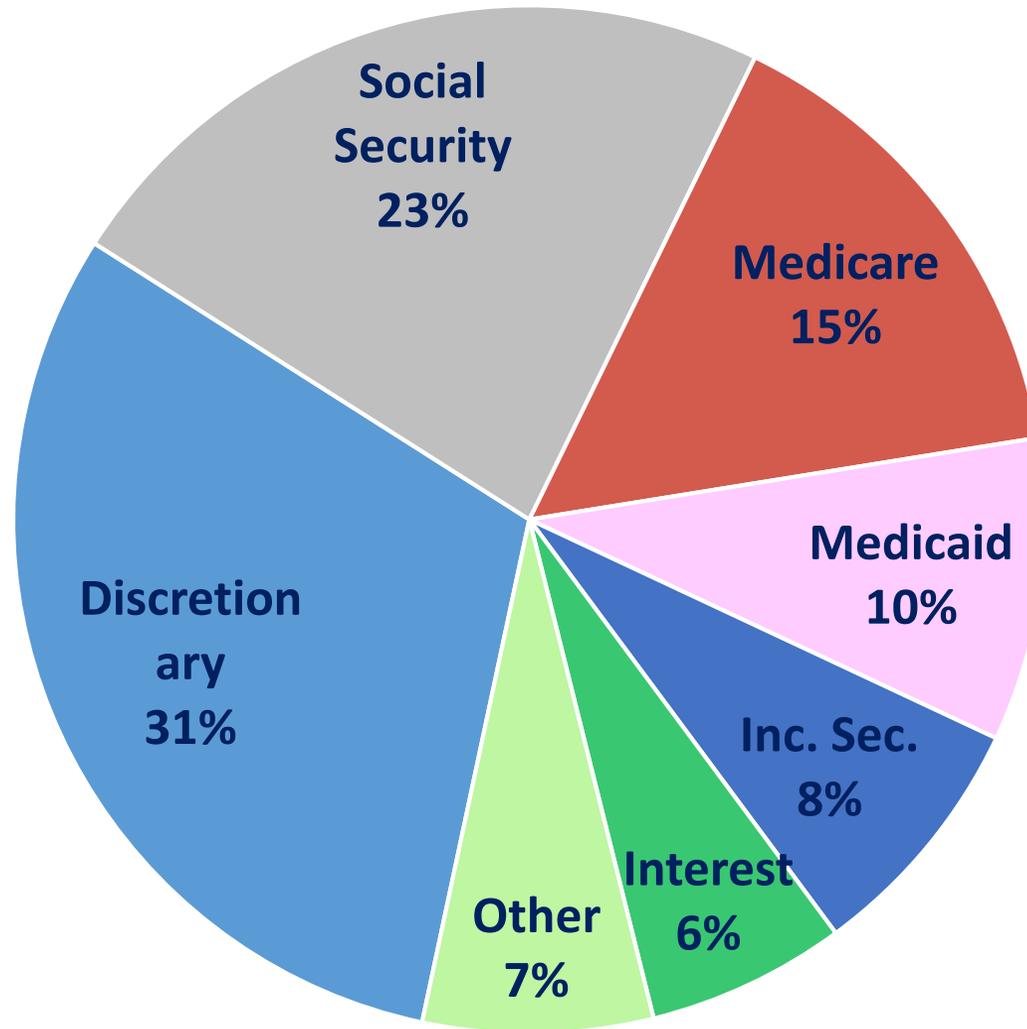
Individual Income taxes: Progressive tax structure + tax brackets indexed for inflation, not real income growth → “Real Bracket Creep”

Slower productivity, less real bracket creep.

I calculate (details in paper) that revenues as a share of GDP are about ½ percent lower in 2042 under low productivity scenario. Actual revenues (in \$) are of course much lower.

Assumption that income distribution invariant to productivity slowdown very important here.

Composition of Federal Outlays



Productivity Growth and Discretionary Spending

Discretionary spending is spending appropriated each year by Congress, rather than determined by program rules.

What is “current law” for discretionary spending? CBO assumes:

- Through 2021, actual nominal level of spending fixed by legislated caps.

- From 2021 – 2027 (end of 10 year window), discretionary budget authority increases with inflation.

- For long-run projections (after 2027), discretionary spending constant share of GDP.

Slowdown in productivity increases discretionary spending share of GDP, because spending over first 10 years remains constant while GDP falls.

Slow productivity scenario increases discretionary spending by 0.2 percent of GDP above CBO baseline, on average, over 25 years.

Productivity Growth and Social Security Outlays

Benefits for new retirees tied to average wages in economy, move with productivity.

Even progressivity of benefits tied to average wages.

Benefits for existing retirees indexed to CPI, not real wages.

==> Slowdown in productivity growth means Social Security share of GDP **increases** (benefits fall with slower productivity, but less than GDP.)

According to Social Security Trustees, a 0.6 percentage point decline in growth of labor productivity **raises** Social Security spending (as share of GDP) by:

- 1/4 percent of GDP, on average, over next 25 years.
- 1/3 percent of GDP, on average, over next 75 years.

Productivity Growth and Medicare

Medicare projections extremely uncertain, reflecting uncertainty over overall health spending.

CBO takes a detailed item-by-item approach for first ten years of projection, then formulaic approach.

First ten years: Payments to most health care providers conditioned on multifactor productivity, so productivity slowdown would lower Medicare spending. Perhaps not 1-for-1 within 10 years, but close.

Years 10-25: Per beneficiary Medicare spending rises with GDP + assumed excess cost growth (difference between per beneficiary Medicare spending and per cap GDP).

⇒ Medicare spending/GDP unaffected by productivity growth.

Productivity Growth and Other Mandatory Spending

Other mandatory spending includes means-tested programs like:

Medicaid, SCHIP, health exchange subsidies, refundable part of EITC, SNAP, SSI.

Together these are 17% of outlays, 3.4% of GDP.

These can be affected by productivity growth through 2 channels:

Changes in eligibility

Changes in value of benefit

Should we assume that poverty (and hence eligibility for means-tested programs) will decline with productivity, and by how much?

Poverty and Productivity Growth

Poverty threshold indexed to inflation, not real income growth.

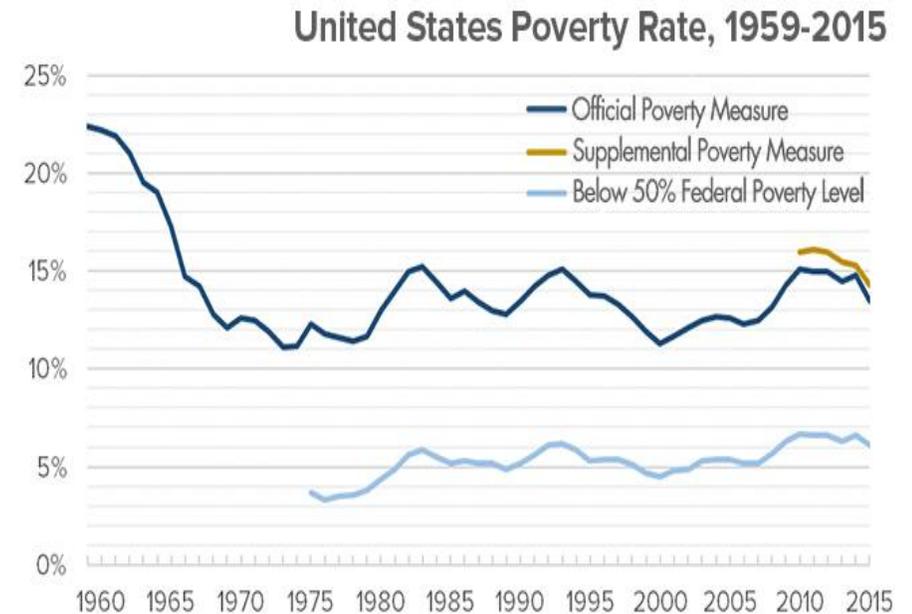
But poverty rate pretty flat despite real income growth.

To a large extent, this reflects lack of real wage growth at lower end of wage distribution.

But I assume productivity slowdown affects all wages.

I use research by Hoynes et al (2006) that shows a 10% increase in real median wage lowers poverty rate about 1 percentage point.

I use this estimate to gauge change in eligibility for means-tested programs.



How do benefit amounts change with productivity?

Medicaid and other health: As above, health spending per beneficiary moves with GDP.

Refundable part of **EITC and Child Tax Credit**: Benefit mostly share of earnings; moves with productivity.

SNAP : Benefit based on cost of a fixed food basket. Benefit won't decline when productivity declines, so increases relative to GDP.

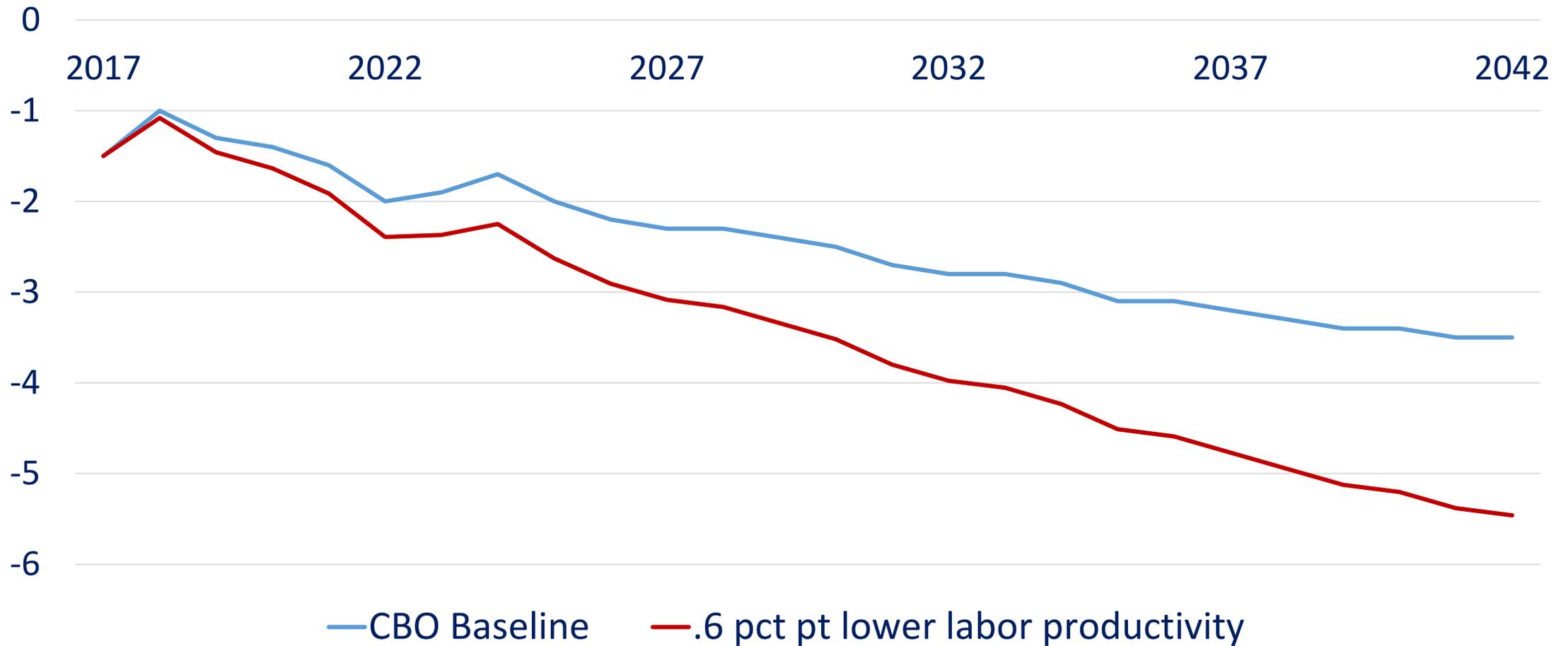
SSI: Benefit amount indexed to inflation; will increase as a share of GDP.

Net effect of productivity slowdown on other mandatory spending, including changes in eligibility and changes in value of benefit: Average increase in outlays of 0.2 percent of GDP over 25 years, relative to CBO baseline.

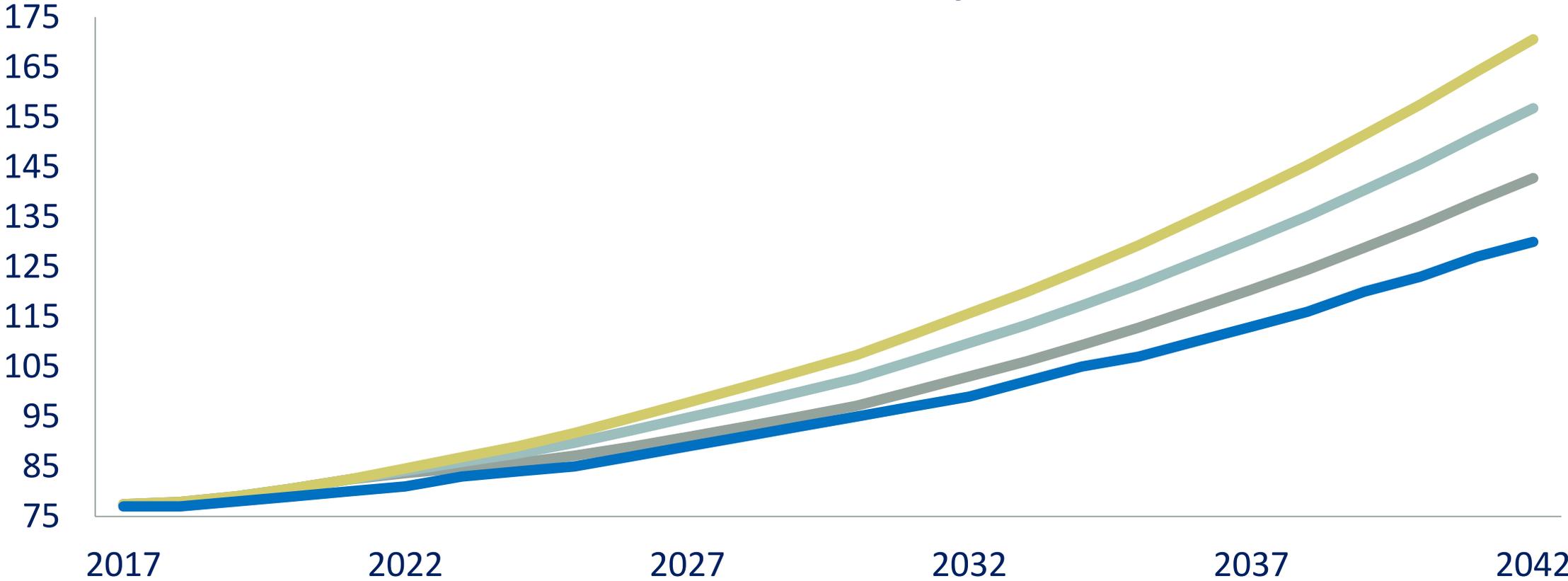
Productivity Slowdown and Federal Primary Deficit

	Share of GDP, 2017	Effect of Slower Productivity Growth relative to CBO Baseline, Share of GDP	
		Average effect over 25 years	Effect in 2042
Discretionary	6.3%	.2%	.4%
Social Security	4.9%	.3%	.6%
Medicare	3.1%	0	0
Other Mandatory	5%	.2%	.4%
Revenues	17.8%	-.2%	-.4%
Primary Deficit	1.5%	1.0%	2.0%

Primary Deficits under Baseline and Slow Productivity Scenario (share of GDP)



Debt to GDP Ratios under Baseline and Low Productivity Scenario



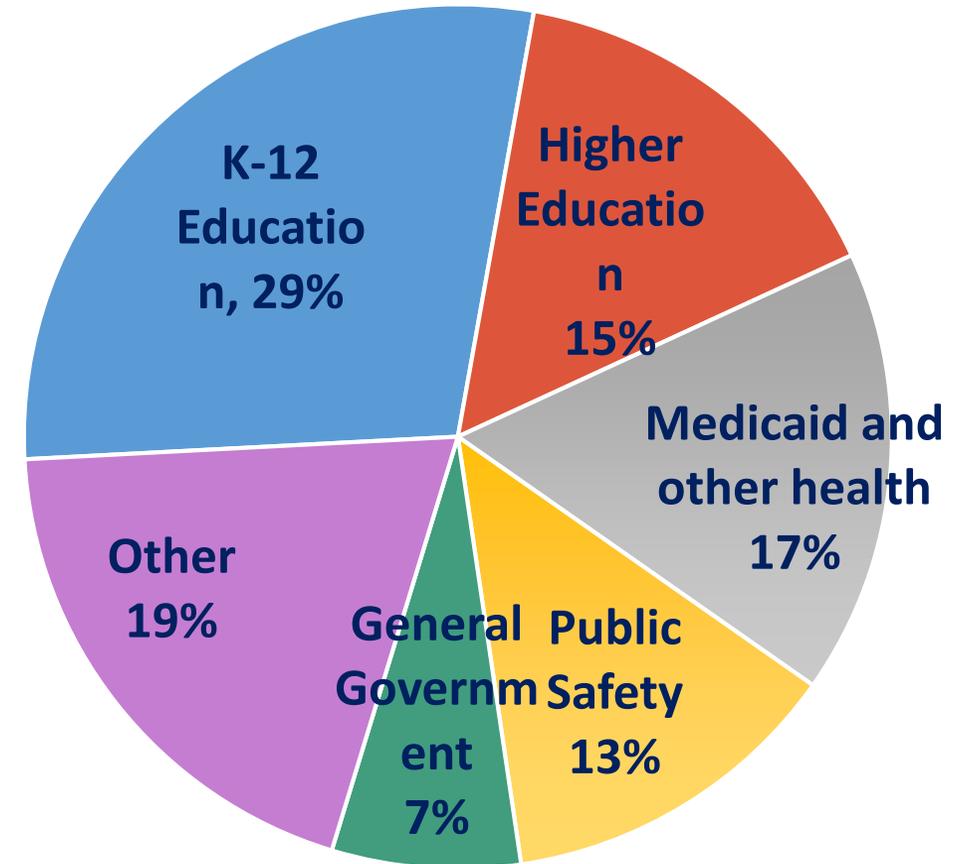
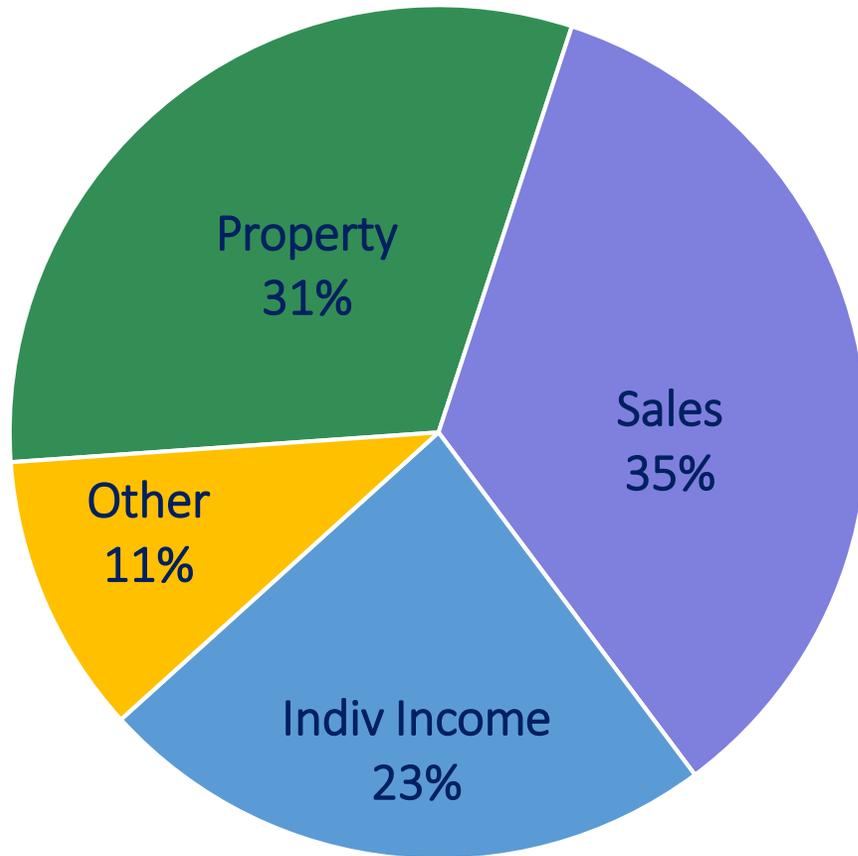
- Interest rates decline 2-1
- Interest rates decline 1-1
- No change in interest rates
- Baseline

Effects of Productivity Slowdown on Federal Debt Relative to GDP, Including Interest Rate Effects

	CBO Baseline	Low Productivity Scenario		
		No interest rate adjustment	Interest rates adjustment is 1-1	Interest rates adjustment is 2-1
Debt to GDP in 2042	130	170	157	143

What about State and Local Sector?

State and Local Own Revenues (left)
and Spending out of Own Funds (right)



Productivity Growth and State and Local Taxes

Individual income taxes: Much less progressive rate structure.

	Federal average tax rate	State and local average tax rate
Bottom quintile	-5%	0%
Top quintile	13%	3%

Almost no real bracket creep in state and local individual income taxes.

Sales taxes: Tax on consumption. Consumption moves with GDP, so sales taxes share of GDP won't change with lower productivity growth.

Property Tax: large source of tax revenue for sector. Value of real asset relative to GDP inversely related to $(r-g)$. If interest rates move 1-1, property tax stable share of GDP. If interest rates move 2-1, property taxes could increase as share of GDP.

Productivity Growth and State and Local Spending

Big ticket items for state and local sector: education, public safety, health.

Much of spending is for employee compensation.

Slowdown in productivity growth will lower wage growth, reducing spending growth one-for-one.

Will that cause lower real spending? Maybe. Depends on whether slowdown in productivity also leads to slower in productivity growth of government workers.

Some believe little productivity growth in that sector—particularly K-12 education—in which case spending can slow without reducing real services.

Small increases in Medicaid spending as share of GDP from increase in eligibility will also have to be addressed.

Slow Productivity Growth and State and Local Pensions

Most state and local employees provided with defined benefit pension (DB) plans.

Benefit depends on final wages, and indexed to inflation only thereafter.

Unlike Social Security, plans have a degree of pre-funding, and have substantial assets.

Slowdown in productivity growth raises pension benefits of current retirees relative to GDP, because indexed to inflation not real income.

Estimate that pension spending increases as a share of GDP by 0.1 percent on average over 25 years.

What about impact of lower interest rates? Two effects: (1) for benefits not yet accrued (2) Effects on assets already accrued

For benefits not yet accrued: lower interest rates raise costs of pre-funding benefits BUT this increases compensation. If s&l governments pay market wages, should be offset by lower cash or other compensation.

Slow Productivity and the State and Local Asset Position

Including pension assets, state and local sector has net financial assets of \$2.9 trillion in 2016, about 15% of GDP.

Low productivity growth, holding rates of return on capital fixed, will increase assets to GDP, improving fiscal position of sector.

To keep assets to GDP same as in counterfactual world without productivity slowdown, spending could increase by about 0.1 percent per year.

But, if interest rates and rate of return fall, this will offset.

If decline 1-1 with productivity, income from assets would decline by about .1 percent of GDP , fully offsetting benefits of slower productivity.

If decline 2-1, low productivity leads to deterioration in asset position.

Bottom line for State and Local Sector

Sector much less affected by productivity growth than federal government.

Both revenues and non-interest spending more likely to move one-for-one with productivity growth.

Effects on asset/GDP opposite to federal government:

Slow productivity growth makes already accumulated assets larger relative to GDP but interest rate declines make sector worse off.

But, with State and Local assets only 15% of GDP, effect on federal government much larger.

Policy Responses to Productivity Slowdown: Two Thoughts

1. Should government change programs so that all revenues and non-interest spending move with GDP?

Lack of indexation not necessarily a “mistake.”

Poverty programs intended to provide a real floor on consumption. Slower gains by others in society shouldn't lower what is the minimum acceptable consumption bundle.

Remember, too, that lack of 1-to-1 correspondence between spending, revenues, and GDP means that fiscal position of government **improves** with productivity growth.

So, baseline outlook would be worse if no real bracket creep, Social Security benefits of current retirees indexed to real wage growth, etc.

2. The government should probably not respond by cutting investment.

Slower productivity growth might mean that returns on government investment are lower too. But not necessarily.

In particular, it is possible that the slowdown in productivity growth is because of inadequate investment in infrastructure, education, and other productive investments.

With low interest rates, these investments might be exactly the right policy response.

And it is important to remember that investment is not just infrastructure or education.

Much recent evidence points to the long-term benefits of investing in low-income families, including providing health care, food stamps, and cash benefits.