Hutchins Center
on Fiscal & Monetary Policy
at BROOKINGS

Federal Budget Policy with an Aging Population and Persistently Low Interest Rates

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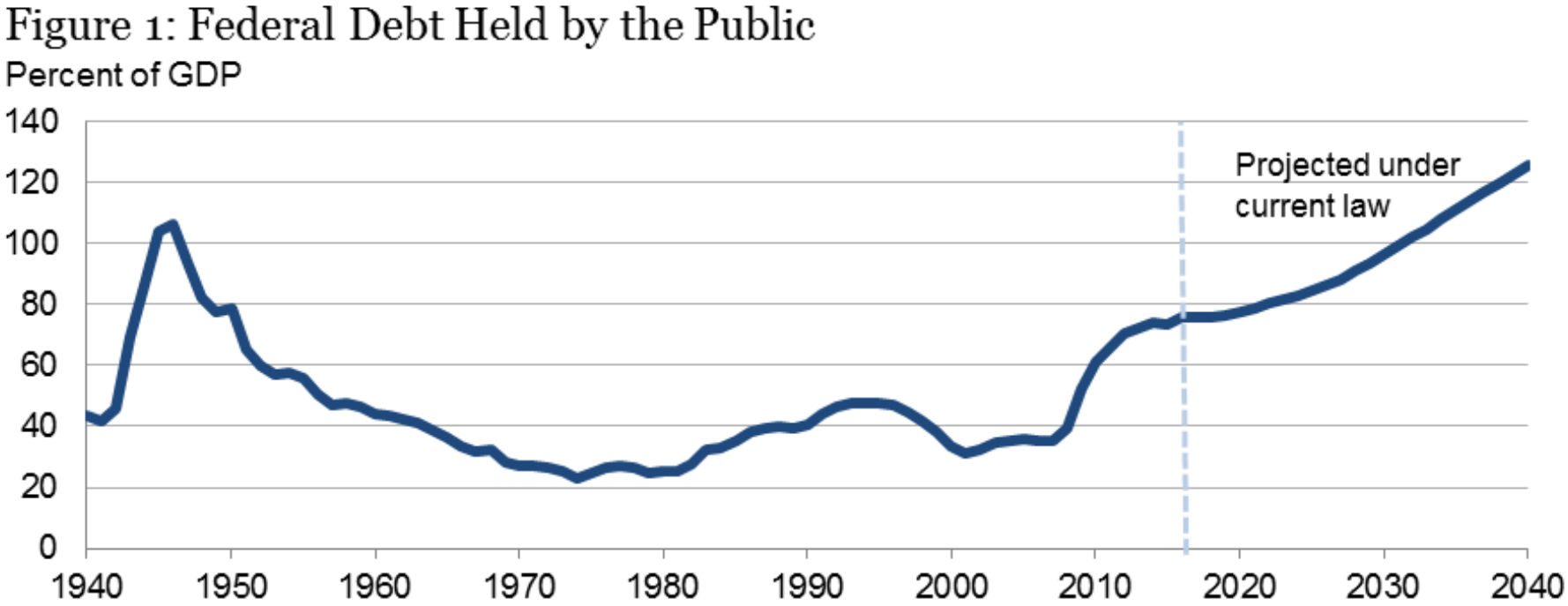
Key considerations

- Recent surge in debt
- Debt/GDP projected to rise indefinitely
- Sharp increase in % of population in retirement
- Very low Treasury borrowing rates

Debt expected to increase indefinitely



Source: CBO; authors' calculations. Note: Projections for 2016 to 2026 from CBO January 2016 Budget and Economic Outlook. From 2026 forward, we assume that revenues and non-interest outlays as a share of GDP rise at the same rate as in the extended baseline in CBO's 2015 Long-Term Budget Outlook (LTBO). We calculate interest outlays and the debt-to-GDP ratio using the interest rates and GDP growth rates from LTBO.

Our goals

- How should budget policy respond to population aging and high level of debt?

- How should it respond to persistently low interest rates?
  - Does response depend on why interest rates have declined?

Conclusions

- Some of our conclusions are consistent with conventional wisdom:
  - Federal budget on unsustainable trajectory , so reduced spending and increased taxes eventually will be needed.
  - Desire to smooth consumption and need for fiscal space argues for making those changes sooner rather than later.

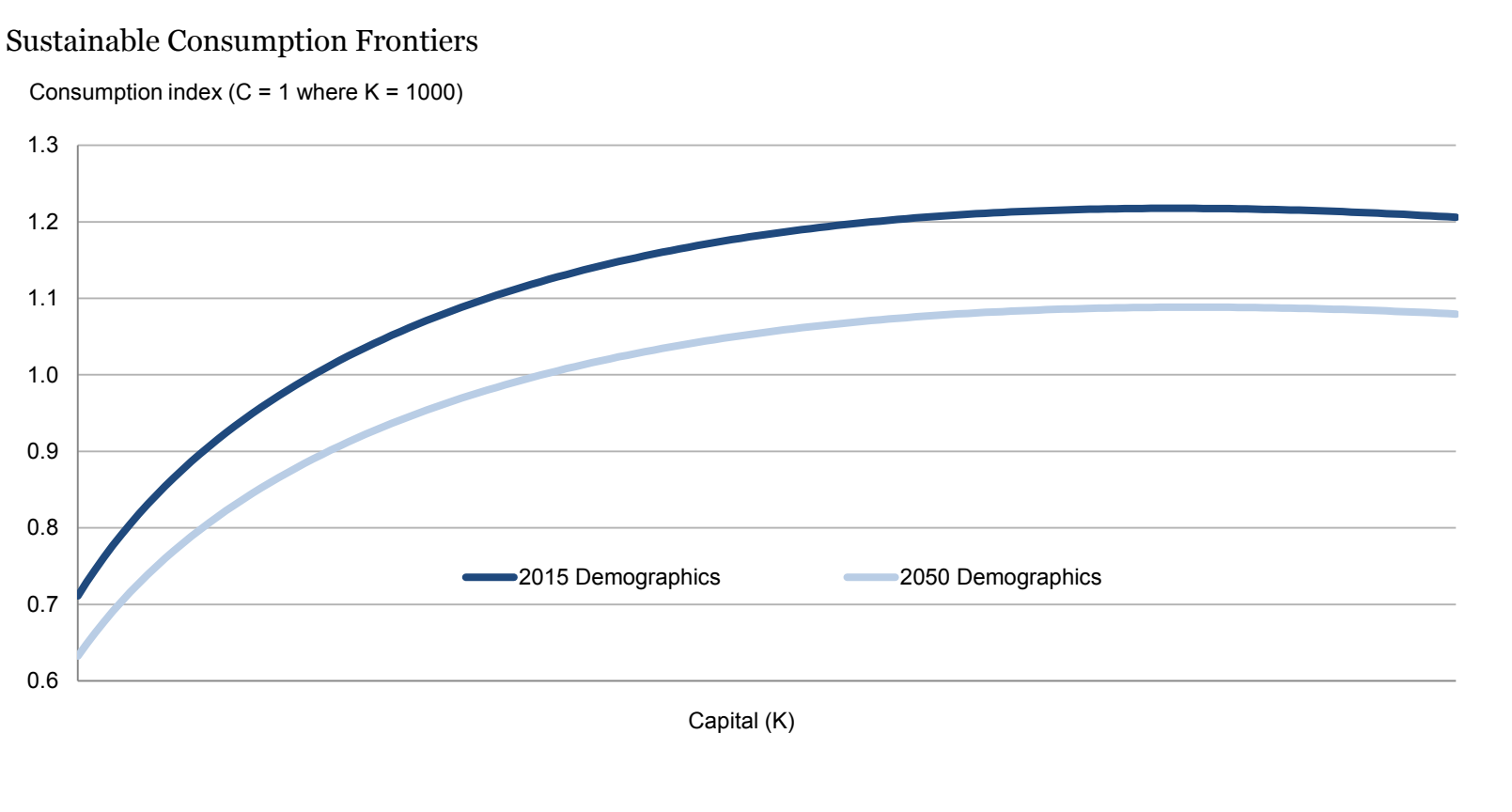
- But persistently low interest rates mean that
  - Changes should be deferred and reduced in size.
  - And, especially, that increasing government investment should be important current priority.

Aging from a macroeconomic perspective

- In 1990, Cutler, Poterba, Sheiner, and Summers (BPEA): optimal response to demographic transition is lower saving
- 2000: Elmendorf and Sheiner revisit: optimal response is still to lower saving
- Same model today: Finally time to increase saving

Closed economy model with a social planner

- Higher dependency ratio because of aging
- At any given level of capital per worker, lower sustainable consumption



Social planner can respond in many ways

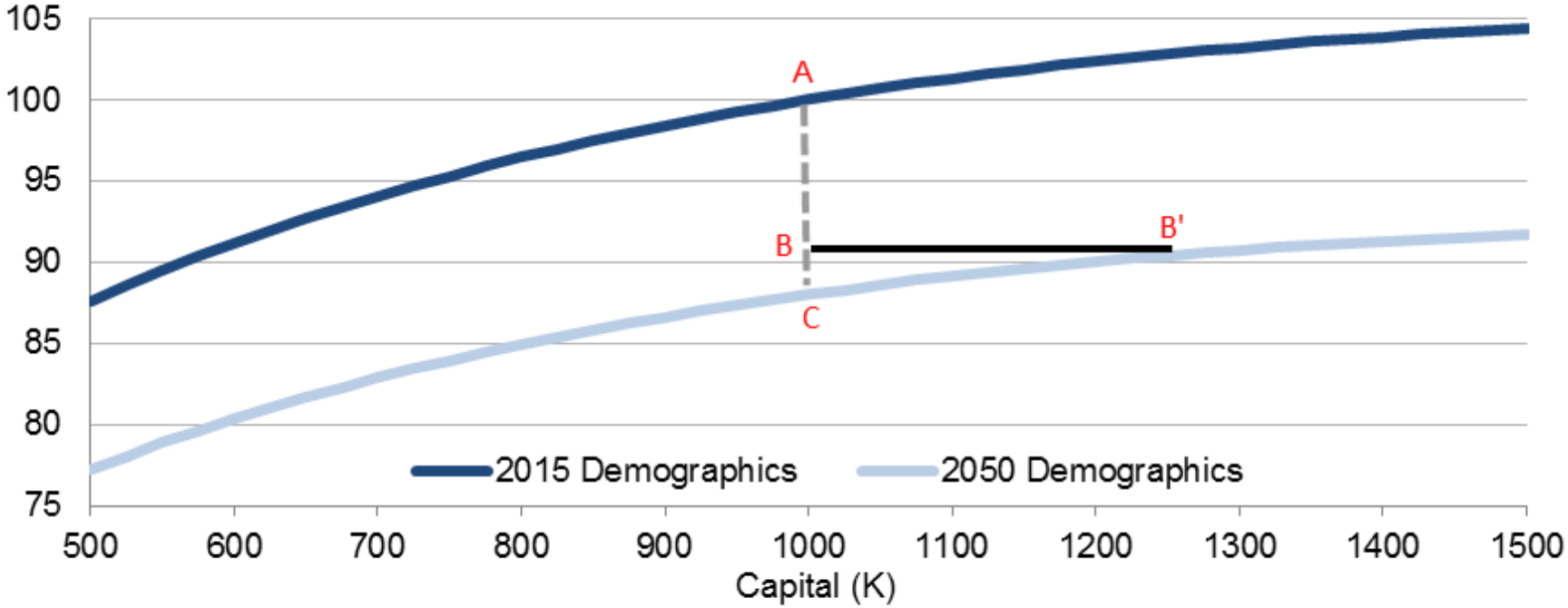
- One response: complete consumption smoothing
  - Reduce consumption today to new steady state
  - Large increase in capital labor ratio
  - Big reduction in return to capital

Social planner can respond in many ways

- Other extreme: no consumption smoothing
  - Don’t allow rate of return to saving to fall
  - Adjust consumption each year so as to maintain capital labor ratio

Two “extreme” responses

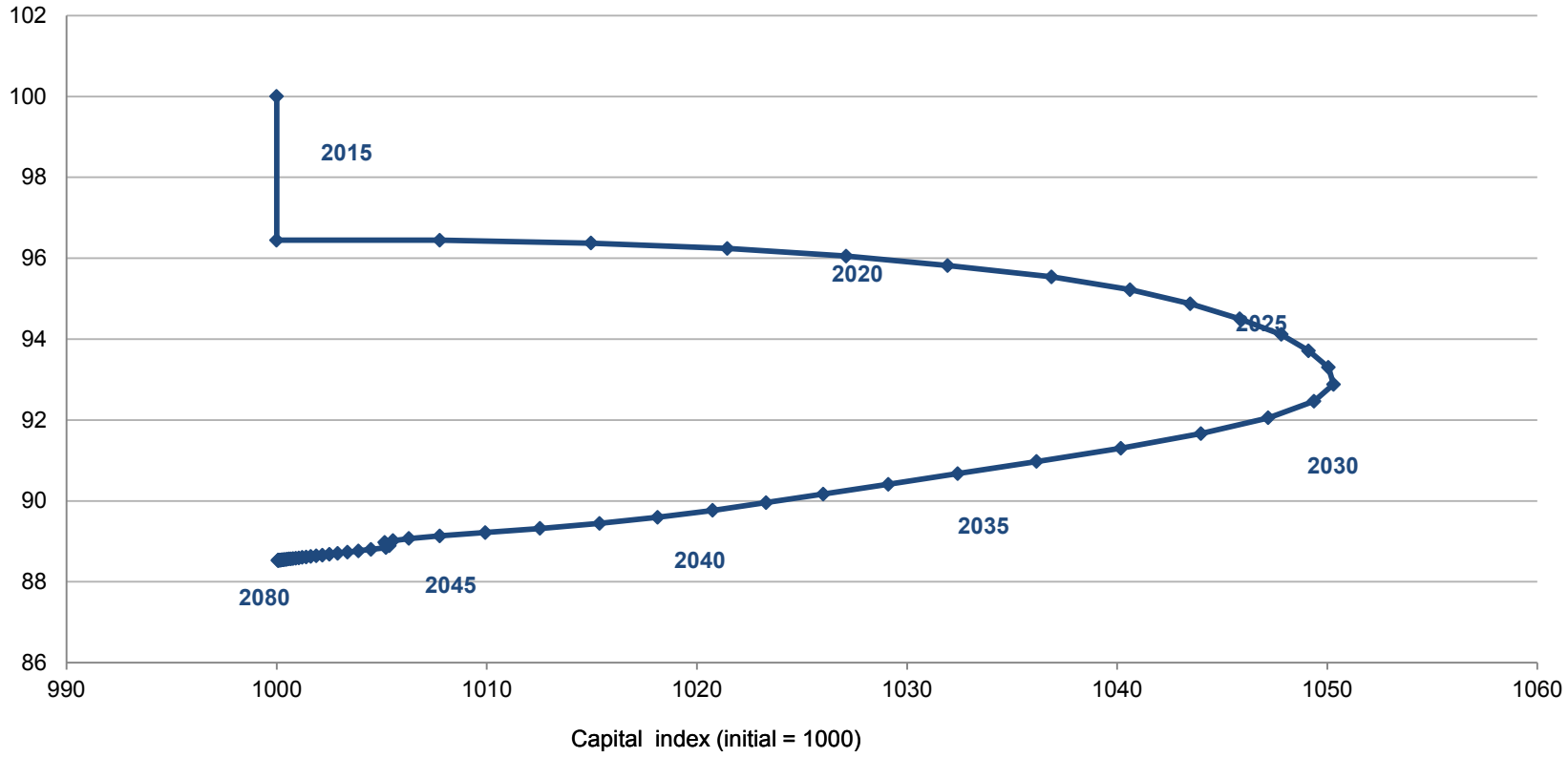
Figure 4: Sustainable Consumption Frontiers



Source: World Bank (demographic inputs); National Transer Accounts (Lee and Mason, 2011) and Census (consumption weights for support ratios); authors' calculations.

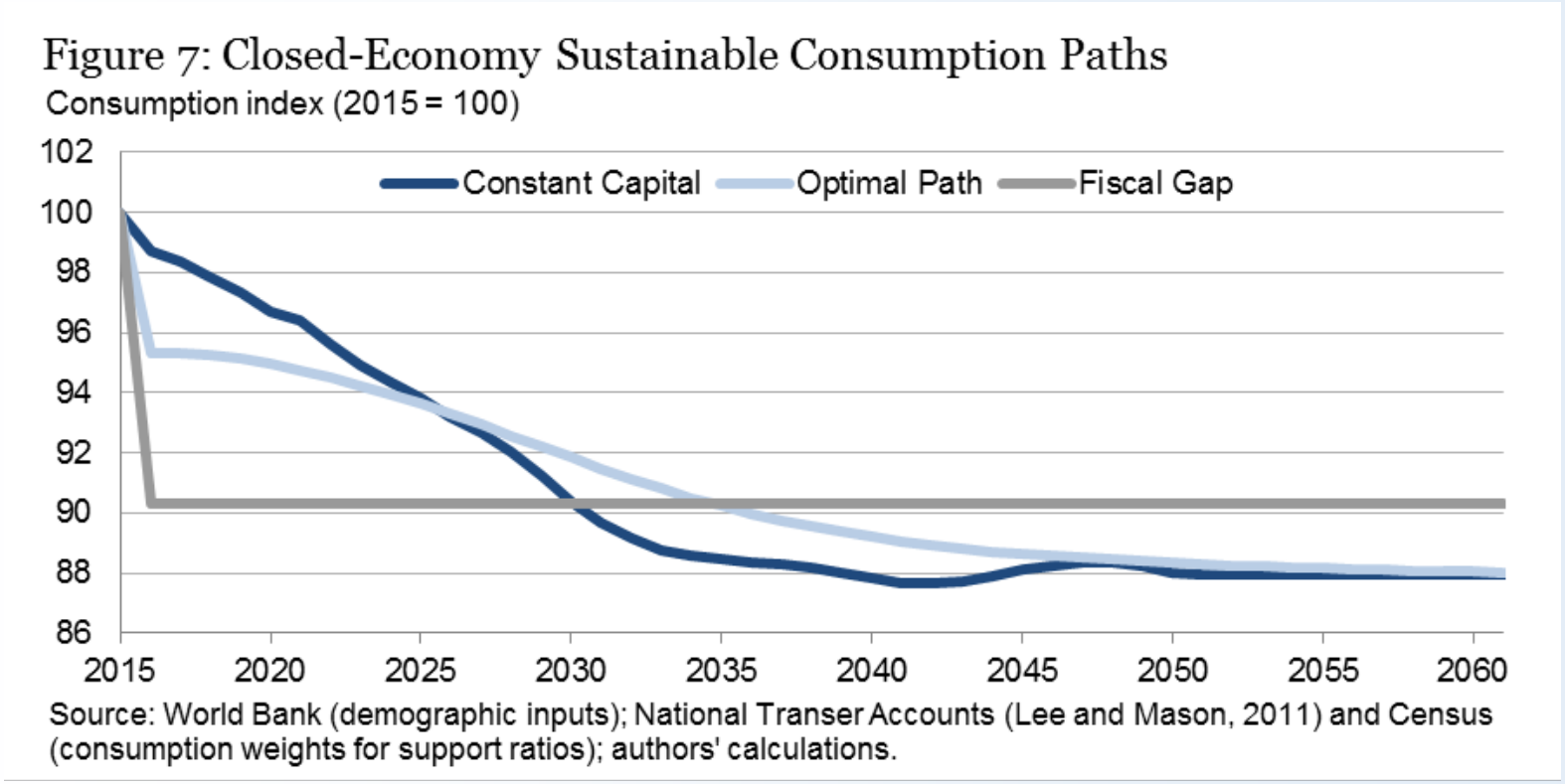
Optimal response

- Social planner considers benefits of consumption smoothing and effects of lower rates of return



Source: Demographic inputs from World Bank, authors' calculations

Optimal consumption in between two extremes



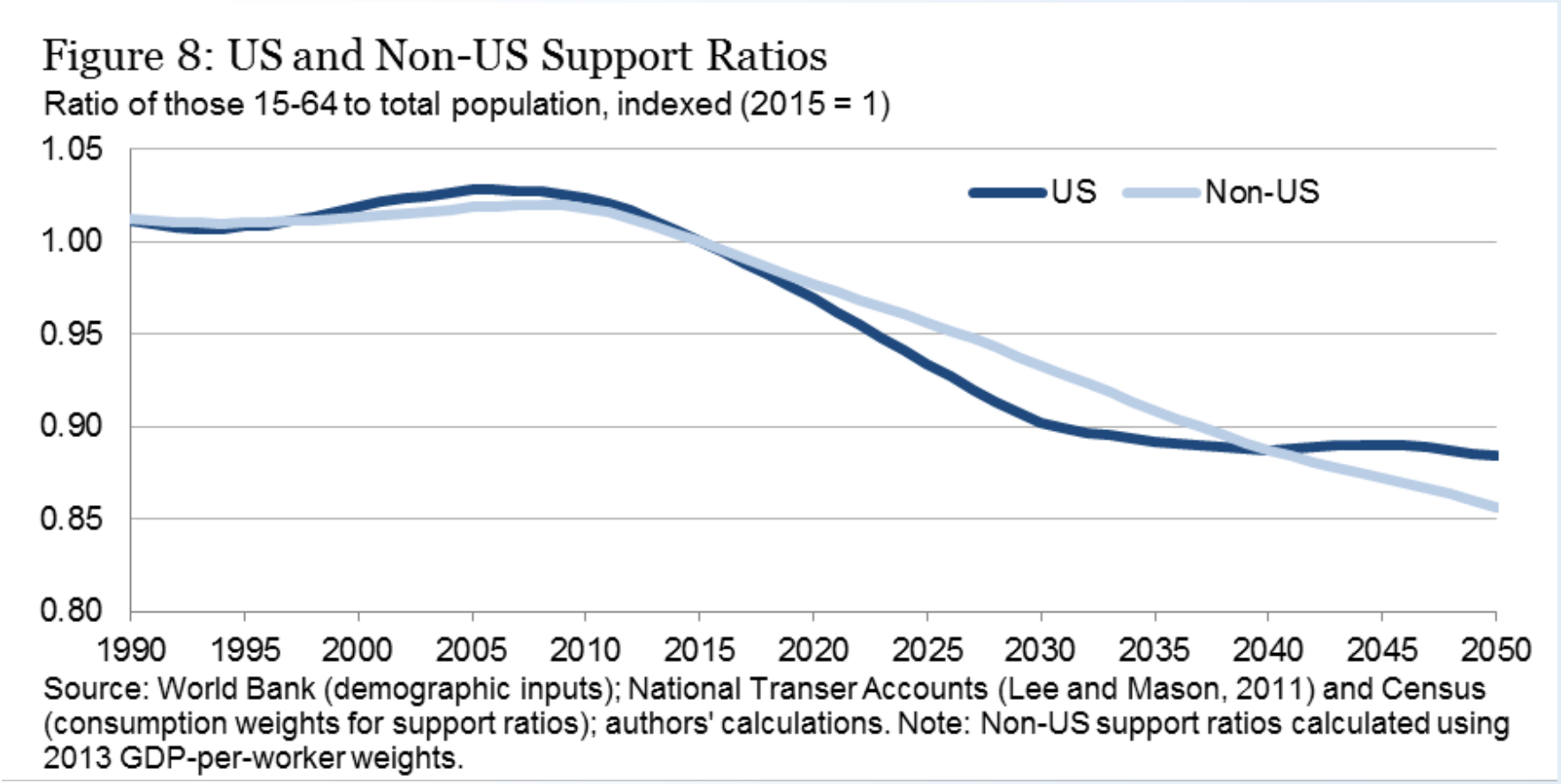
- Even constant capital labor ratio path requires decline in consumption because aging process already underway.

→ Doing nothing (maintaining current consumption) would <u>lower</u> the capital labor ratio.

Open economy considerations

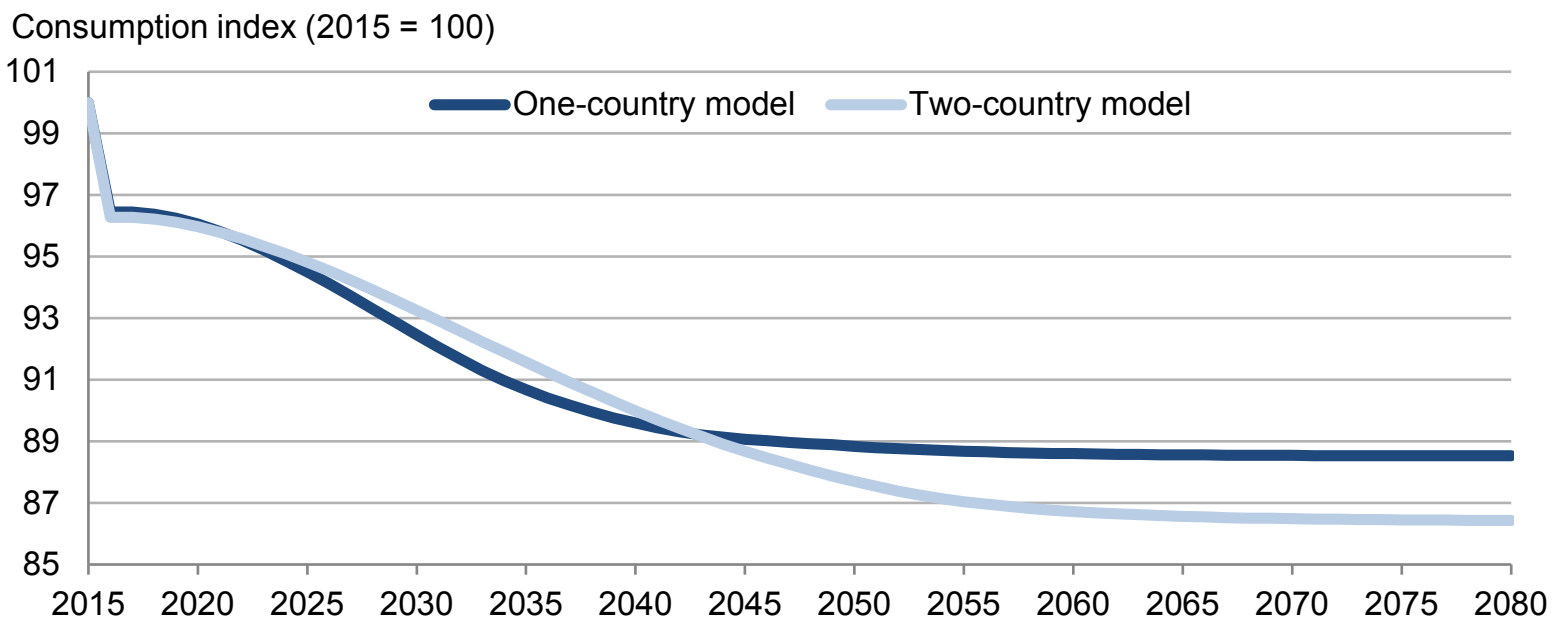
- Small open economy with unchanging interest rates:
  - No effect of consumption on interest rates
  - Choose “fiscal gap” approach
- But world is aging, and we are not a small economy
  - Using the same type of model, but allowing for two countries (US and Rest of World), we get very similar optimal consumption

US and Rest-of-World support ratios (workers/population)



Optimal consumption in closed economy and two-country model

Figure 11: US Optimal Consumption Paths



Source: World Bank (demographic inputs); National Transer Accounts (Lee and Mason, 2011) and Census (consumption weights for support ratios); authors' calculations.

Optimal budget policy

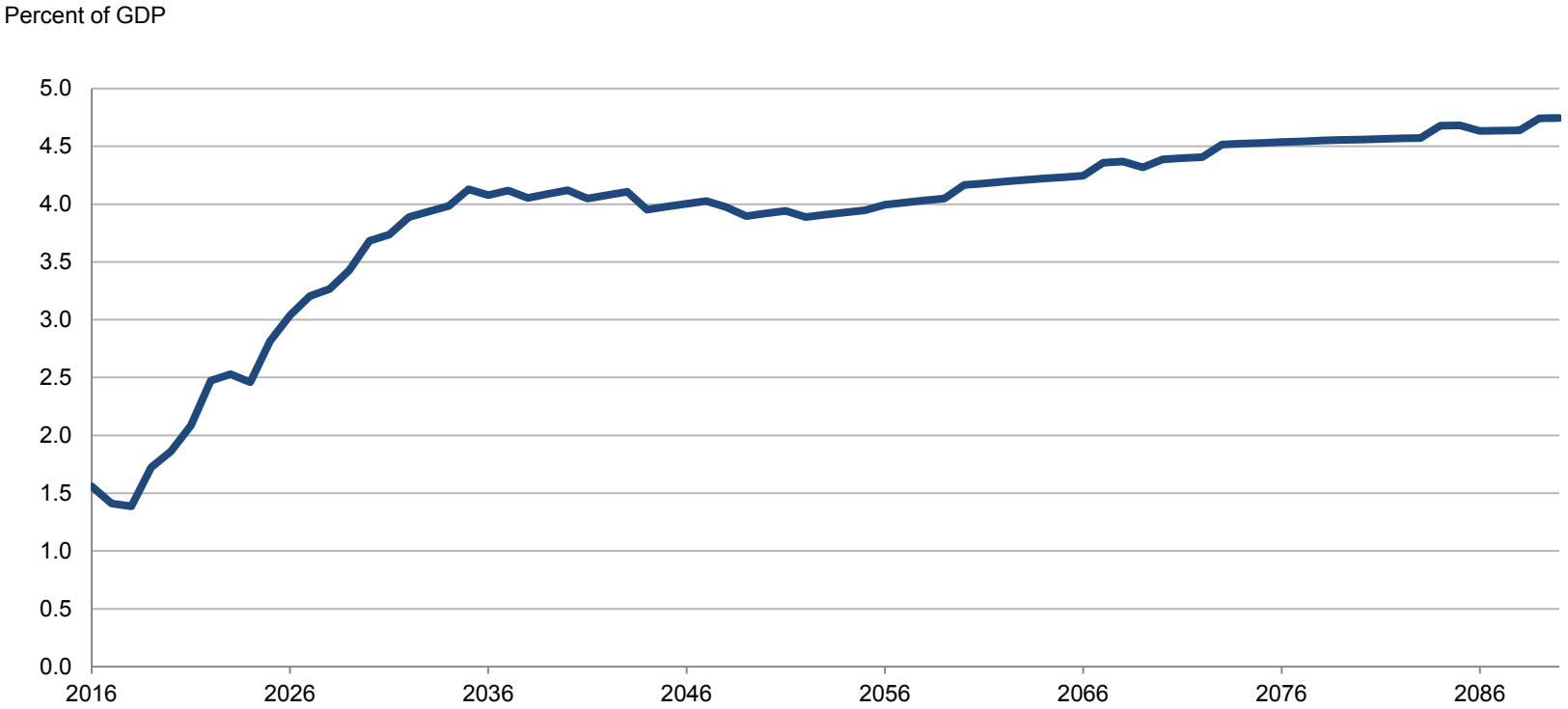
- Aging leads to unsustainable pay-as-you-go entitlement programs.
- Also, much higher debt to GDP ratio now.
- Why care about deficits and debt?
  - Crowding out of investment: high debt leads to lower capital per worker. Logic of consumption model applies.
  - Fiscal Space: High debt could raise borrowing costs if lenders fear default. Not in model.

Projected budget deficits not good measure of costs of aging

- Fiscal outlook driven by assumptions about non-entitlement spending, health costs, and revenues as well
- We look at “aging only” budget projections
- Assume other spending and revenues constant as a share of GDP
- Assume no excess cost growth in health care

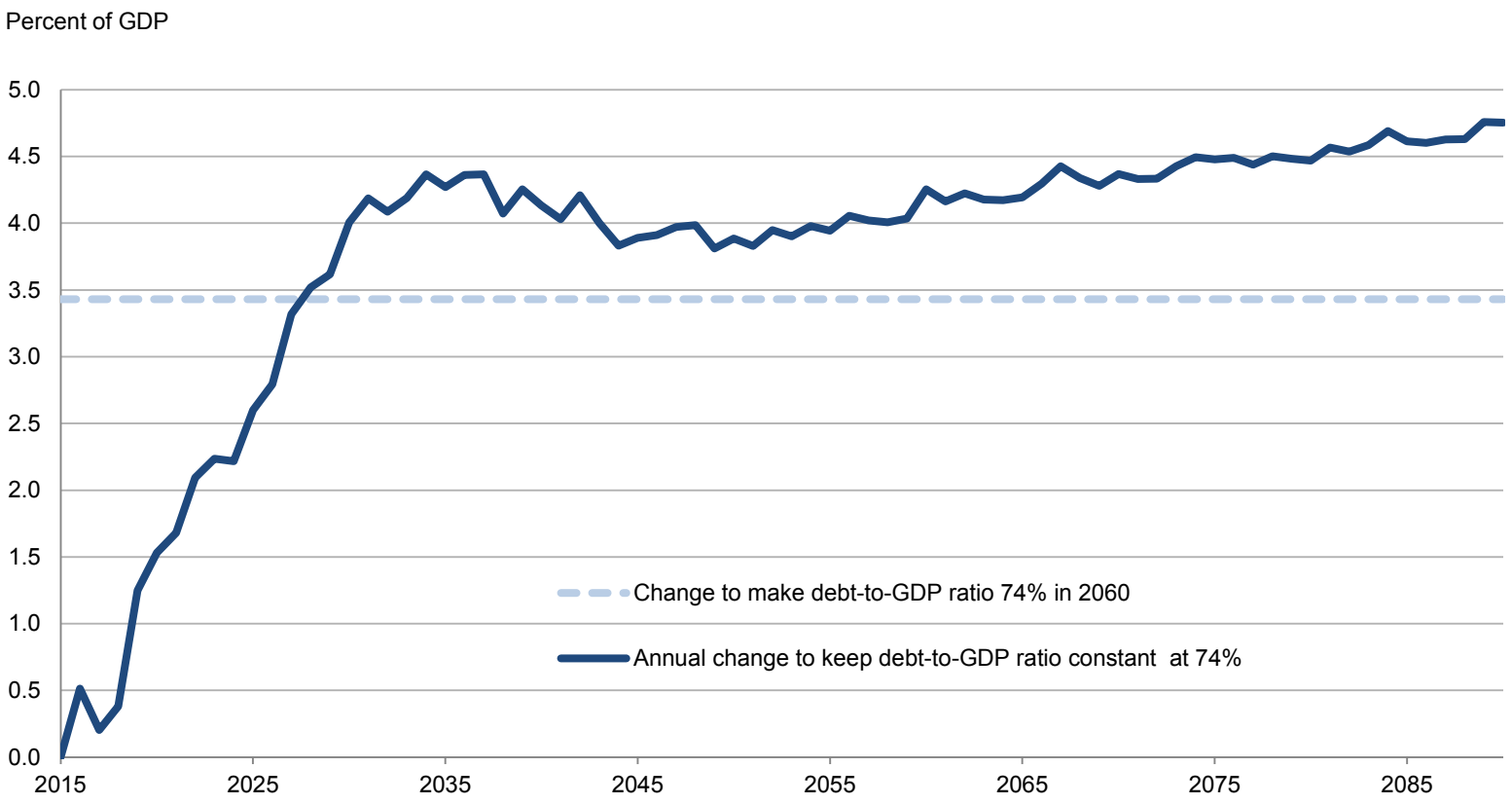
Primary Deficit Projections with Aging

Figure 12: Aging-Only Projection of Primary Deficits



Source: CBO; authors' calculations. Note: Assumes all revenues and spending (other than Social Security and Medicare) remain constant at 2015 levels as shares of GDP.

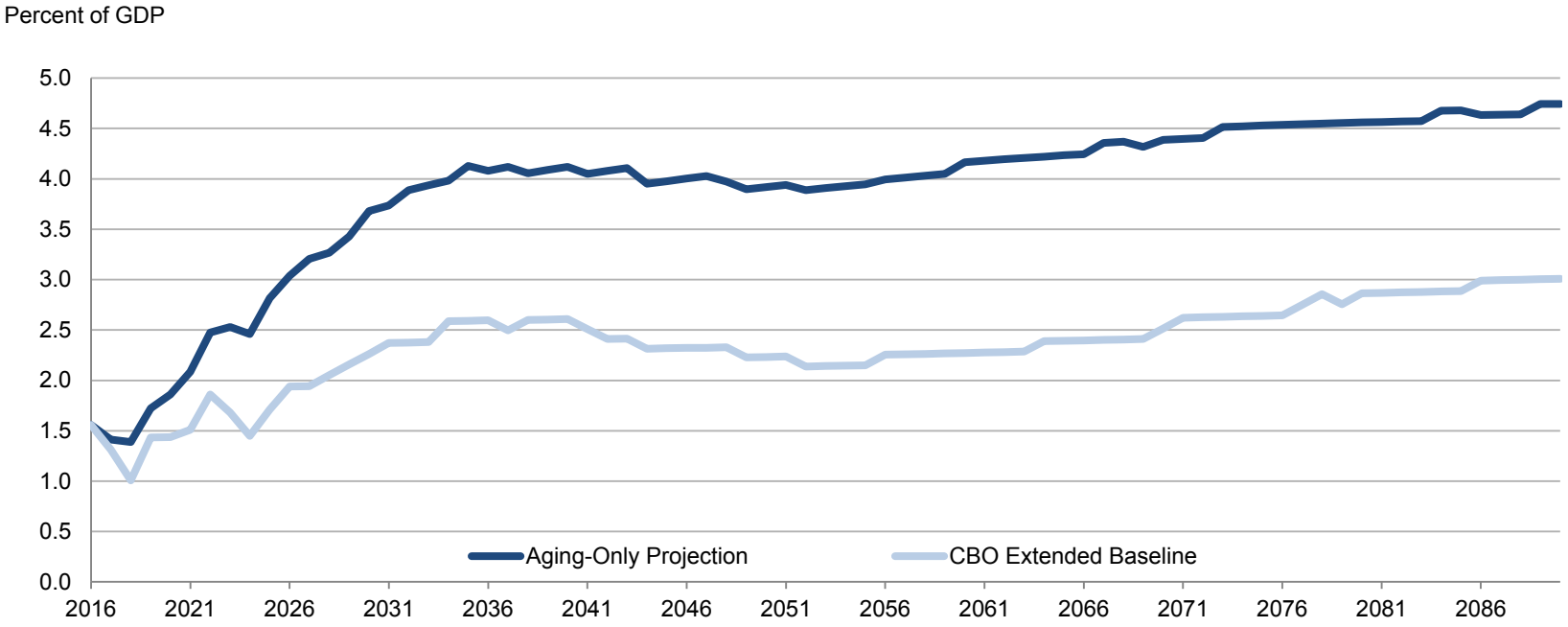
Change in deficits required to:



Source: CBO; authors' calculations.

Aging only deficits much higher than CBO extended baseline projected deficits

Figure 15: Primary Deficits



Source: CBO; authors' calculations. Note that "CBO Extended Baseline" reflects the 2015 Long-Term Budget Outlook projection, updated to reflect CBO's most recent 10-year budget projection, as described in the note to Figure 1.

Aging-only deficits higher than CBO extended baseline projected deficits

- Why? In CBO extended baseline:
  - Real bracket creep boosts revenues.
  - Non-entitlement spending declines.
  - Partially offset by higher health costs in CBO baseline.

- If CBO baseline represents only scoring conventions
  - Projected long-run fiscal imbalance understates fiscal policy challenges.

CBO vs aging-only baseline

- Assuming baseline includes likely policy changes, then:
  - If optimal response to aging is one-time permanent reduction in consumption,
    - Deficit needs to be cut more now
    - Because baseline already assumes significant cuts in later years.
  - If want to simply adjust annually to population aging,
    - Then only small policy changes over next few years and larger changes later.

What to do about our high level of debt?

- If want to smooth consumption completely:
  - Leave debt at current level.
  - Lower spending/increase taxes each year by enough to keep debt to GDP ratio constant.

- If care about return to capital, and if high debt boosts interest costs (or might in future), then
  - Lower consumption by more now in order to reduce debt to GDP ratio.

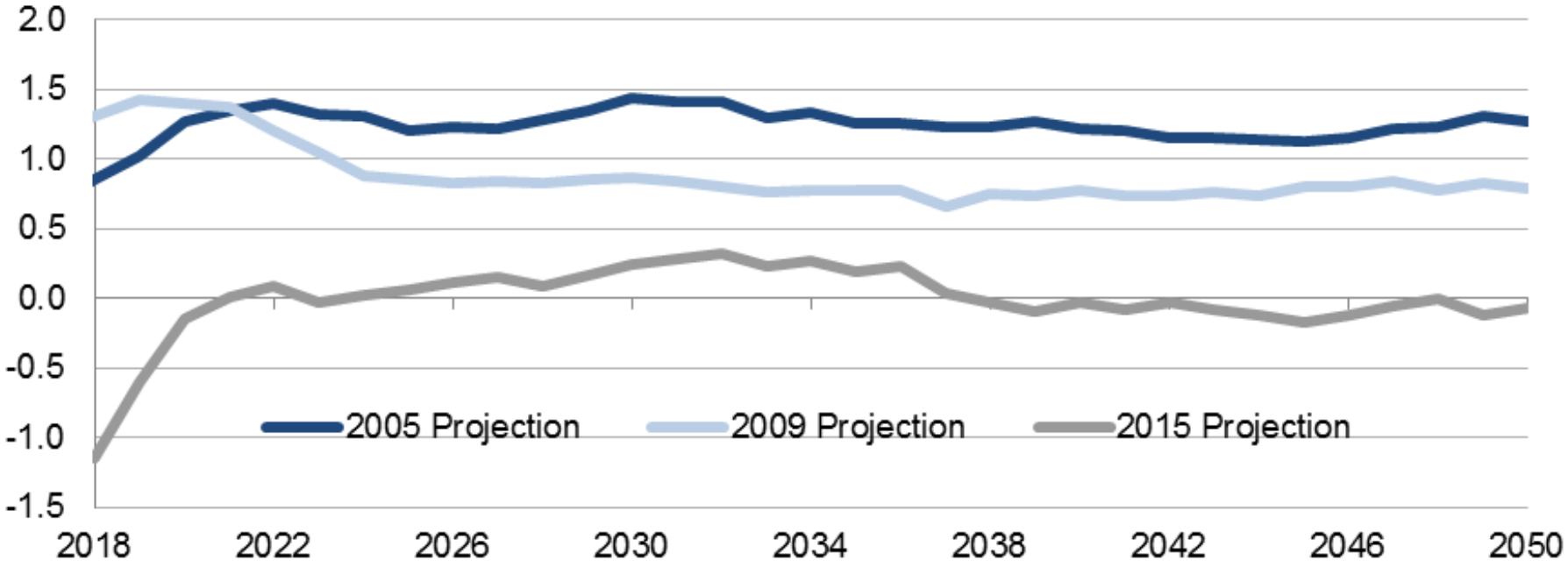
Federal borrowing costs extremely low by historical standards

- Widespread consensus that interest rates *will remain very low* (even as Fed raises the federal funds rates)

CBO has lowered projected interest rates relative to projected GDP growth

Figure 20: Real Interest Rate and Growth Rate Differentials

Three-year moving averages of real 10-Year Treasury rates minus real GDP growth



Source: CBO Long-Term Budget Projections (Dec. 2005, Jun. 2009, Jun. 2015).

Why might Treasury borrowing costs stay very low?

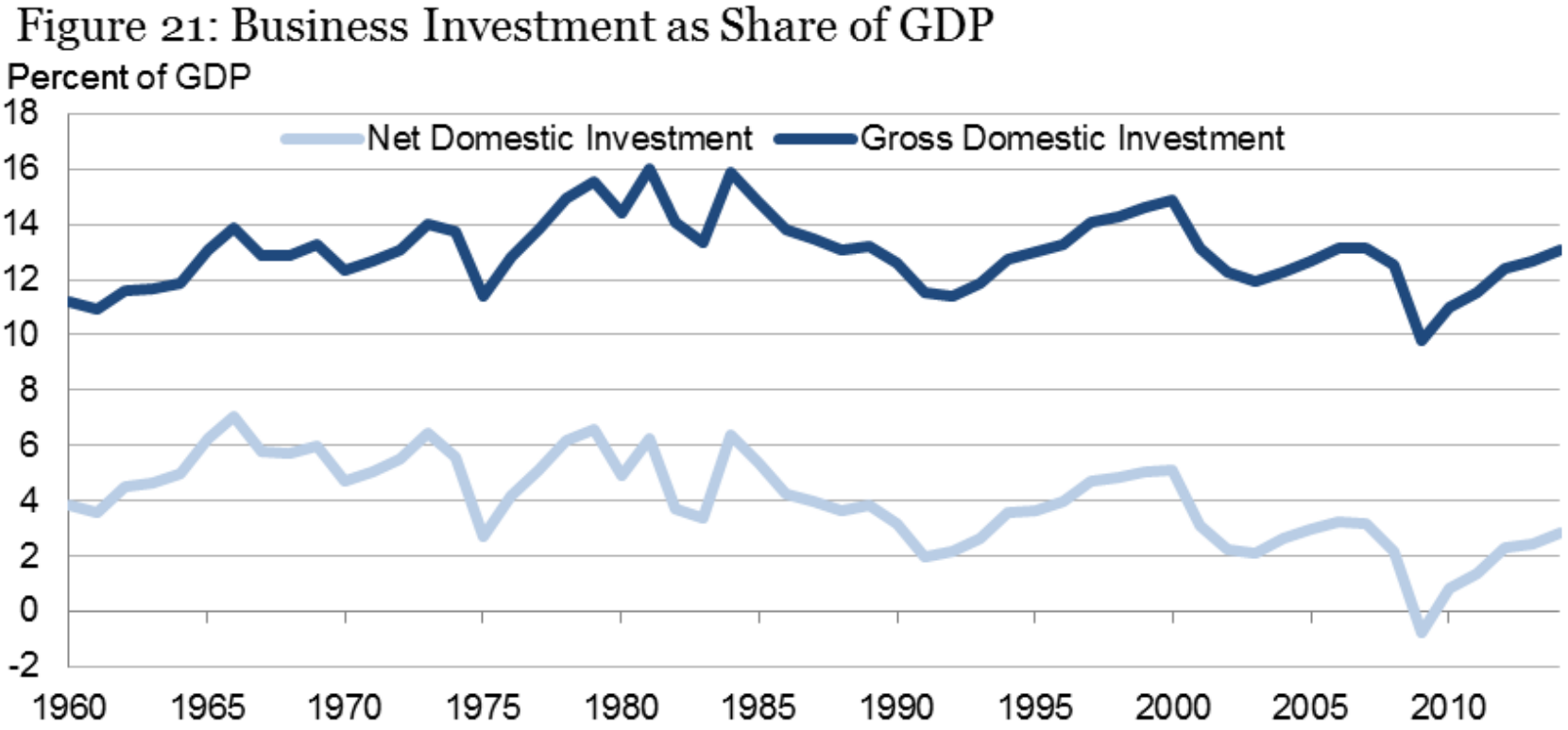
- Hypotheses:
  - Marginal product of capital will be low
  - Risk premium will be high
  - High institutional demand for Treasuries
  - Savings glut with inelastic investment demand

Implications of low borrowing rates for debt policy

- CBO's projection of long-term interest rate now average just below its projection for economic growth.
  - If no primary deficit, debt to GDP would decline on its own.
- Lower interest rates imply lower debt service costs:
  - Change in CBO's interest rate projection has lowered projected debt in 2040 by almost 40 percent of GDP.
- Lower interest rates appear to lower the cost of debt and lower the benefit of reducing it.
- But this may depend on why interest rates are low.

Has the marginal product of capital declined?

No surge in nominal investment



Even though private borrowing costs have also declined

Figure 26: AA Corporate Bond Yields

Source: Bloomberg; Federal Reserve.

Still, some reason to suspect lower marginal product of capital

- Price of investment has been declining

$\Rightarrow$ Real investment has been increasing faster than nominal investment.

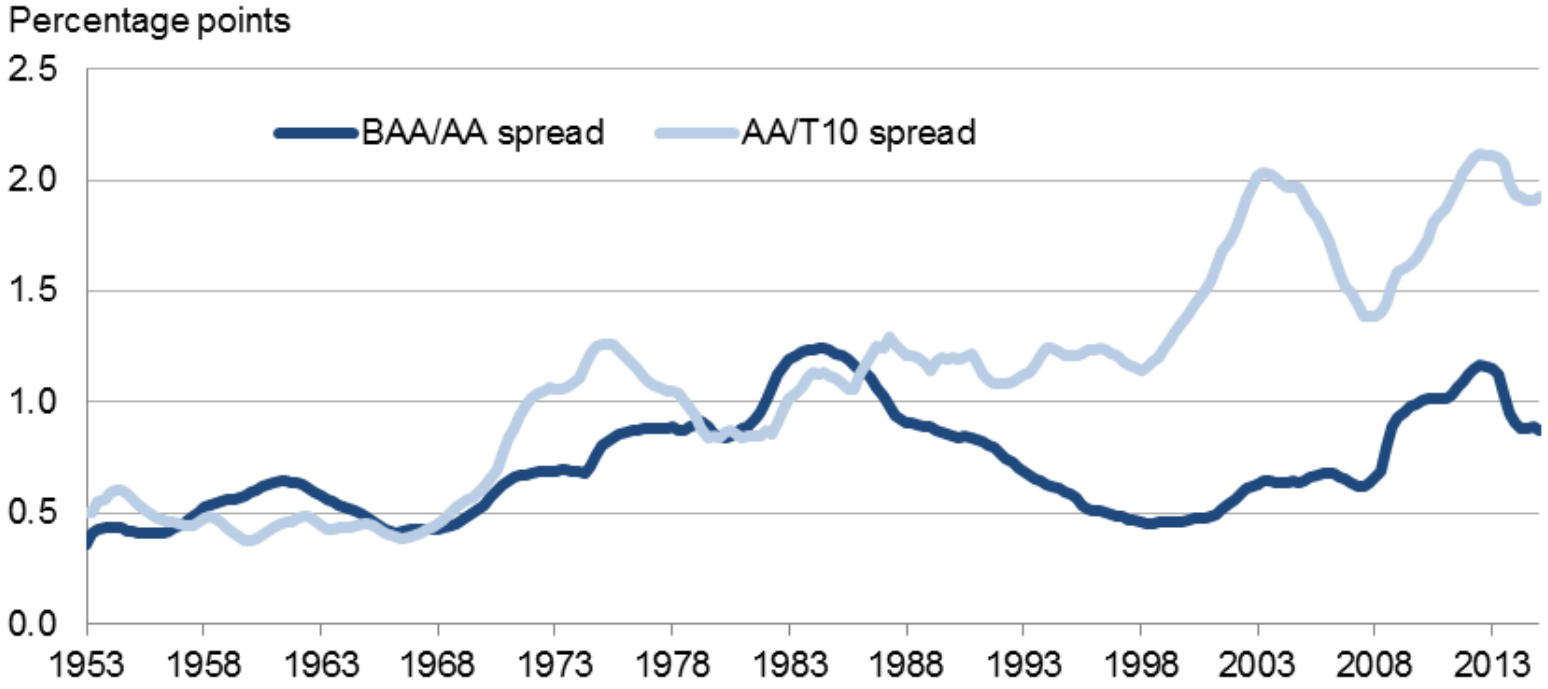
- Stories like “WhatsApp” and other IT businesses that may not require much physical capital.

- Possible that marginal return to capital has been declining and will continue to decline somewhat.

What about risk premium?

- Spreads between corporate bonds of different risks don't show increasing risk premium, on average.
- Spreads between AA bonds and Treasuries up sharply, suggesting increased demand for Treasuries in particular.

Figure 24: BAA to AA and AA to 10-year spreads (5-year MA)



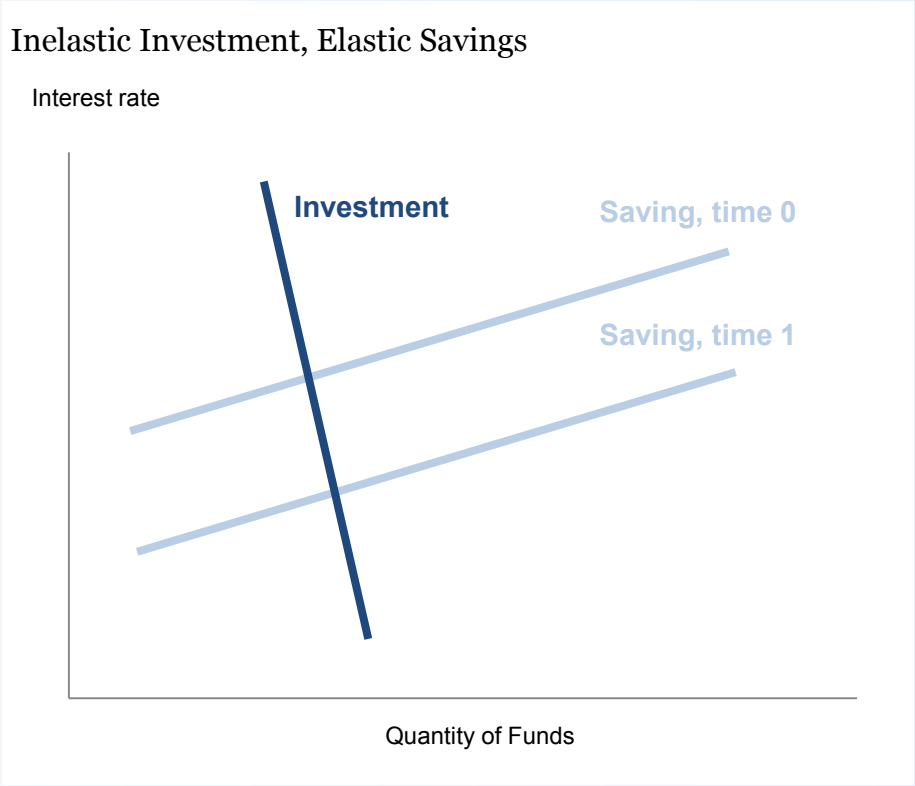
Source: Bloomberg; Federal Reserve.

Global savings glut with inelastic investment demand

- Higher savings due to:
  - Aging populations
  - Increase in inequality
  - End of "Great Moderation"
  - Increase in foreign $ saving following financial crises
- Investment not much affected by interest rates

$\Rightarrow$ Lower interest rates, not much increase in investment

$\Rightarrow$ Business profits high: low borrowing costs, high marginal return to capital



Implications of lower marginal product of capital

- Return to saving has declined.

- If *American* required return on savings has declined (lower rate of time preference or expected growth) ,
  - then government should not “undo” increased savings by borrowing more,
  - and government saving should increase as well.
  - unless capital beyond golden rule. Then increase debt.

Implications of lower marginal product of capital

- But, if *foreign* required return has fallen (e.g. global savings glut), then ambiguous:
  - Lower mpk means price of future consumption has increased. We will want to do less consumption smoothing.
  - If we are net debtor, then foreign investment increases income.
  - Both of these suggest higher consumption now.
  - But, any given level of consumption smoothing requires lower consumption now.

Implications of lower marginal product of capital

- From government budget perspective, benefits of lower debt service more important:
  - Smaller adjustments required even if we wanted to smooth, and we should want to smooth less.

- If rate of return on public investments has not also declined, lower private mpk should induce **more public investment.**

Implications of higher risk premium

- Borrowing costs lower because perceived risks are higher.
- Unless federal government's relative ability to bear risk has increased:
- On a risk-adjusted basis, no change in price of present consumption relative to future consumption.
  - Net debt should not be changed to generate a change in national saving.
- Wedge between return to private financial assets relative to federal borrowing costs is higher. But, higher wedge offset by higher perceived risk of private assets.
  - Government should not borrow to purchase private financial assets or increase investment.

Implications of increased institutional demand for Treasuries

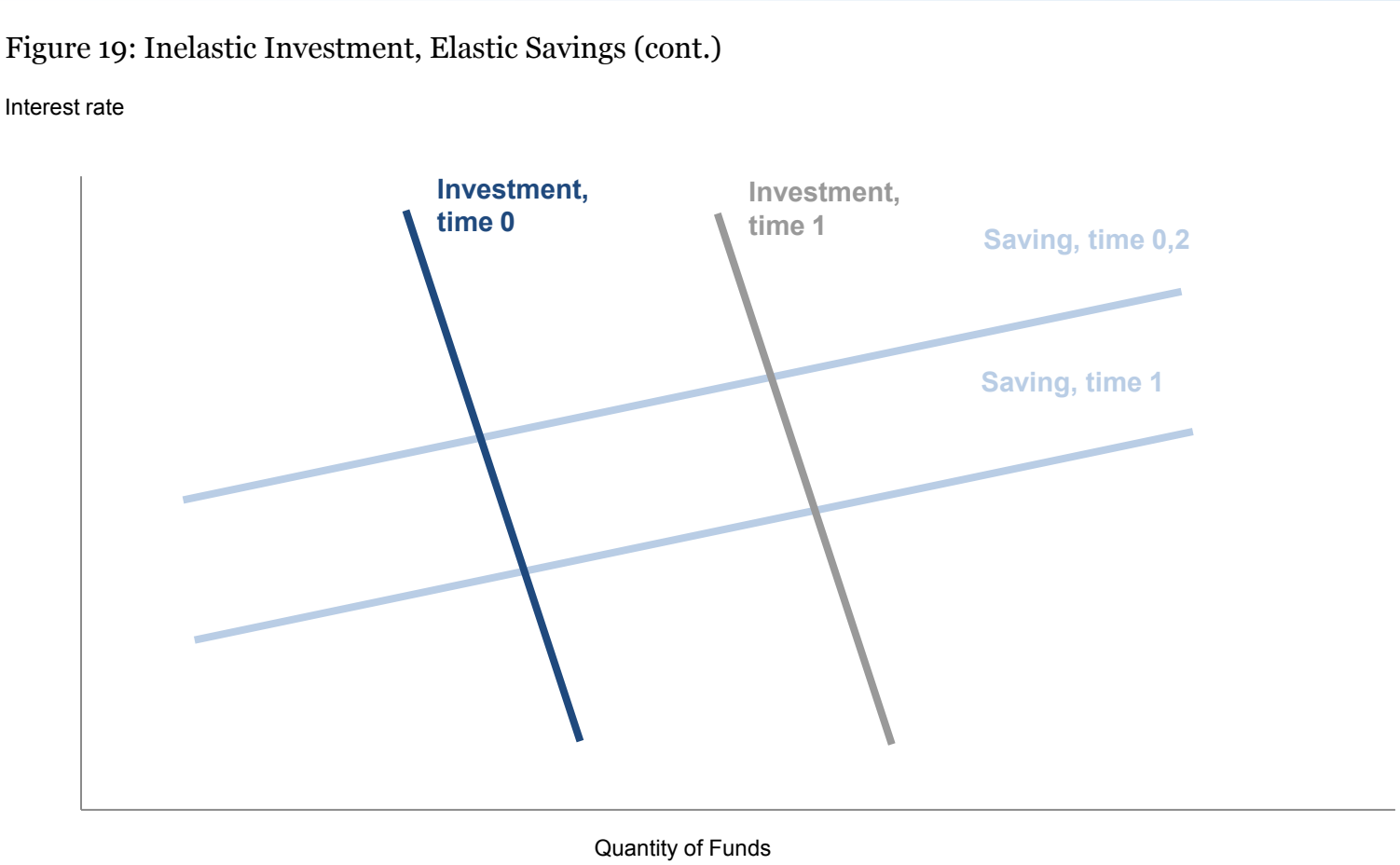
- Increased demand lowers government borrowing rate.
  - Implicit tax on investors who have to hold Treasuries.
- Happy to tax foreigners this way; less happy to tax domestic savers.
  - About ½ of debt now foreign owned.
  - Government should supply additional debt but not enough to eliminate implicit tax.
- Debt should be used to purchase private assets and/or invest in public investment projects.
- Debt should also be used to raise current consumption.

Implications of global savings glut with inelastic investment demand

- Increase in desired saving, but investment demand inelastic.
- Market equilibrated through low interest rates instead of higher savings and investment; mpk little changed.
- Government should increase public investment.
- Because we are net debtor, low interest rate net positive for income (although bad for savers).
- Consumption should also increase.
- Debt should be higher.

Increase in public debt and public investment boost return to saving and increase national investment

Figure 19: Inelastic Investment, Elastic Savings (cont.)



Considering the zero-lower bound

- Persistently low interest rates increase possibility of hitting effective lower bound.

- Unless other measures taken (e.g., raising inflation), this calls for higher debt to boost the level of interest rates.

- In addition, automatic stabilizers should be increased.

Conclusions

- Population aging will eventually require reductions in federal deficits.

- But persistently low interest rates are an important factor to consider. They imply:
  - Increased public investment, smaller and more delayed policy changes, stronger automatic stabilizers.