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

Douglas Elmendorf and Louise Sheiner
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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

**Figure 1: Federal Debt Held by the Public**

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

Sustainable Consumption Frontiers

Consumption index ($C = 1$ where $K = 1000$)
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
Consumption index (C = 100 where K = 1000)

Source: World Bank (demographic inputs); National Transfer 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 lower the capital labor ratio.

Figure 7: Closed-Economy Sustainable Consumption Paths

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

Figure 8: US and Non-US Support Ratios
Ratio of those 15-64 to total population, indexed (2015 = 1)

Source: World Bank (demographic inputs); National Transfer Accounts (Lee and Mason, 2011) and Census (consumption weights for support ratios); authors' calculations. Note: Non-US support ratios calculated using 2013 GDP-per-worker weights.
Optimal consumption in closed economy and two-country model

Figure 11: US Optimal Consumption Paths
Consumption index (2015 = 100)

Source: World Bank (demographic inputs); National Transfer 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:

- Change to make debt-to-GDP ratio 74% in 2060
- Annual change to keep debt-to-GDP ratio constant at 74%

Source: CBO; authors’ calculations.
Aging only deficits much higher than CBO extended baseline projected 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

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

Figure 21: Business Investment as Share of GDP

Source: BEA via Fred.
Even though private borrowing costs have also declined

Figure 26: AA Corporate Bond Yields
Percentage points

Source: Bloomberg; Federal Reserve.
Still, some reason to suspect lower marginal product of capital

• Price of investment has been declining

⇒ 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)

Percentage points

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

⇒ Lower interest rates, not much increase in investment

⇒ 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.