

Lecture 11: Long run fiscal policy

Economics 337

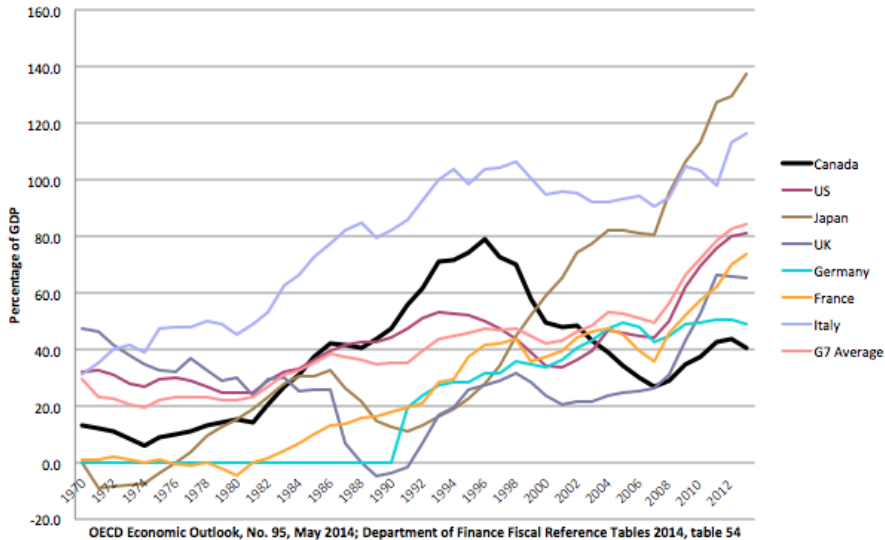
Introduction

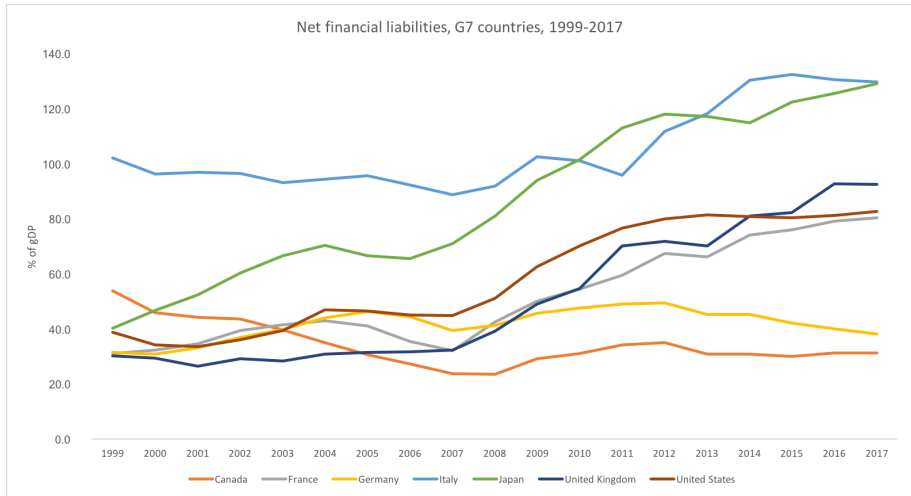
In the last few years, debt issued by western governments has been on the rise.

Issues:

- Is deficit finance an effective form of “fiscal stimulus”? What are impacts on private sector investment, other decisions?
- What are consequences for future tax changes? intergenerational equity?
- How do current changes in government debt relate to *implicit liabilities* of governments: costs of public pensions, other demographically-driven social programs?

General Government Net Financial Liabilities, G-7 countries Percent of GDP





Source: OECD Economic Outlook, 2017

Accounting for long run fiscal policies

How do we measure long run fiscal position of government?

For any stream of payments $T_0, T_1, T_2, T_3, \dots$ over time, *present discounted value* is

$$PDV(T) = T_0 + \frac{T_1}{1+r} + \frac{T_2}{(1+r)^2} + \dots$$

$PDV(T)$ is payment today that is equivalent to T_0, T_1, \dots (Why?)

To analyze long-run fiscal situation of governments, we look not only at current debt outstanding, but the present value of the future stream of government spending and revenues.

Long-run government budget

A government has debt B_t , raises taxes T_{t+1} , spends G_{t+1} , and pays interest rB_t . Transition rule for debt:

$$B_{t+1} - B_t = G_{t+1} - T_{t+1} + rB_t$$

Inverting and solving forward:

$$\begin{aligned} B_t &= \frac{T_{t+1} - G_{t+1}}{1+r} + \frac{B_{t+1}}{1+r} \\ &= \frac{T_{t+1} - G_{t+1}}{1+r} + \frac{T_{t+2} - G_{t+2}}{(1+r)^2} + \frac{B_{t+2}}{(1+r)^2} \\ &= \dots \\ &= \sum_{i=1}^T \frac{T_{t+i} - G_{t+i}}{(1+r)^i} + \frac{B_{t+T+1}}{(1+r)^{T+1}} \end{aligned}$$

In the long run, the budget is in balance if

$$\frac{B_{t+T+1}}{(1+r)^{T+1}} \rightarrow 0 \text{ as } T \rightarrow \infty$$

(Why?)

The *long run fiscal gap* measures the PDV of the permanent increase in taxes/decrease in spending required to achieve long run balance, i.e.

$$GAP_t = B_t - \sum_{i=1}^T \frac{\hat{T}_{t+i} - \hat{G}_{t+i}}{(1+r)^i}$$

for some forecast $\{\hat{G}_{t+i}, \hat{T}_{t+i}\}$ and r .

PDV of future *primary surpluses* $\{T_{t+i} - G_{t+i}\}$ must cover value of outstanding debt today.

Implications

Looking at long-run fiscal gap can give a very different impression than the current deficit $(G_t - T_t) + rB_{t-1}$.

Example: Suppose government announces an increase in your taxes of \$1000 this year, to finance an increase in your Old Age Security of \$4800, 40 years from now.

- If interest rate is 4 per cent, this is irrelevant to you (since $1.04^{40} \approx 4.8$).
- But the reported government budget deficit goes down by \$1000 today.

Accounting for imbalance

How big is the US budget problem? Auerbach and Gale (2017):

- project future revenue and spending assuming no change in policy
- interest and economic growth rates rates at historical averages

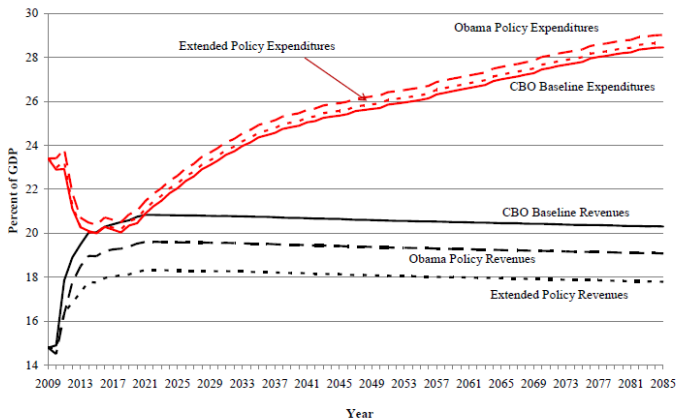
Under this projection, the projected fiscal gap is about \$80 trillion over the next 75 years – compared to a current deficit of \$500 billion.

Define τ as *fiscal gap as a percentage of GDP*: the immediate, permanent increase in taxes needed to close the gap.

- AG (2017) estimate $\tau = .0416$
- If health spending returns to previous high levels, $\tau = .0616$
- Others have estimated τ as high as 15%

Taxes would have to rise 30-90% permanently to fill this gap

Figure 3. Alternative Projections of Revenues and Non-Interest Outlays, 2010-2085



Source: Auerbach and Gale (2010)

How can these estimates range so widely? The gap-to-GDP ratio τ solves

$$\sum_{i=0}^{\infty} \frac{\tau \hat{Y}_{t+i}}{(1+r)^i} = GAP_t$$

If GDP grows at constant rate γ , then $\hat{Y}_{t+i} = (1+\gamma)^i Y_t$.

Solving the infinite series,

$$\tau = \frac{r - \gamma}{1 + r} \frac{GAP_t}{Y_t}$$

So

- τ is “small” if $r - \gamma$ is small.
- But small changes in r, γ can lead to large changes in τ .
- Auerbach and Gale: $r = 0.0517$ and $\gamma = 0.0426$. How much does τ rise if r rises to say 6.1%?

Generational accounting

The long-run gap is fundamentally an intergenerational problem.

Generational accounting asks: How much does each cohort of taxpayers benefit from the pattern of taxes and spending, assuming the fiscal gap is closed by raising everyone's taxes on labour income?

Analysis for the US (Kotlikoff, 2002)

Table: Net tax payment in thousands of 1998 dollars

Age in 1998	Male	Female
80	-56.3	-99.2
60	-5.8	-115.0
40	241.4	37.9
20	318.7	113.7
0	249.7	109.6
future gens	361.8	158.8

To finance current promises to the elderly, the lifetime net tax rate on future generations must rise by about 10% of earnings.

Should we care about deficits?

While the long-run consequences of persistent deficits are therefore potentially dire, **what about deficits in the short and medium run?**


Two standard views:


- Keynesian: Productive resources are unemployed in recessions, and consumers are myopic (fixed savings rates). A temporary increase in the deficit therefore increases aggregate demand, which increases output during recessions.
- Neoclassical: Deficits reduce tax liabilities of current taxpayers, which increases consumption today. If output is fixed, then savings must fall today, and interest rates rise to clear capital markets. So **a permanent increase in government debt “crowds out” private capital accumulation**, which reduces long-run output.

Ricardian equivalence

Both the Keynesian and neoclassical perspectives are based on the idea that people ignore the long run consequences of higher deficits today (albeit in different ways).

If long run budget balances, then **deficits are just deferred taxes** If people see this, how do deficits affect consumption? Consider:

- Government: borrows to cut taxes \$1 today, then raises taxes $\$(1+r)$ next year to retire the bond.
- Taxpayers': \$1 more in disposable income today, \$1 less next year in present value.
- Overall wealth has not changed.
 - ▶ optimal to: 

Ricardian equivalence hypothesis (Robert Barro, 1974): If people care about welfare of their children, then 

The Ricardian hypothesis is a very strong one: fiscal policy just doesn't matter.

But it also rests on strong assumptions:

- People are far-sighted, and they can borrow and lend to offset fiscal policy.
- People care about their children, and they intentionally make positive bequests to them.
- Future taxes only redistribute within family dynasties, not between dynasties with different marginal propensities to consume.

These assumptions imply intergenerational transfers through fiscal policy are offset through private saving – so fiscal policy is irrelevant.

But Ricardian equivalence is a useful way of thinking about long-term fiscal policy.

- Normative aspects: If people *did* think this way, they would recognize that persistent deficits at best have no advantages – they are “borrowing from their children”.
- Positive aspects:
 - ▶ Irrelevance of very temporary tax cuts: When tax cuts are announced to be for a short period like one year, taxpayers do appear to recognize their irrelevance and adjust savings accordingly.
 - ▶ Importance of distortionary taxes: A temporary reduction in income taxes may increase labour supply now, and reduce it later. A temporary decrease in consumption taxes may increase consumption now and reduce it later. Both have stabilization effects.