

# The impact of lower productivity growth on fiscal sustainability: discussion

**PIIE conference on policy implications of  
sustained low productivity growth**

9 November 2017

(revised version, 12/13/2017)

Jeromin Zettelmeyer

# Could fiscal sustainability be threatened by sustained lower productivity growth? The message from Session 1

*Organizing framework:* (Neil Mehrotra's paper, equations 1 - 3):

- Dynamics of debt/GDP: 
$$\tilde{D}_{t+1} = \frac{1+r_t}{1+g_{t+1}} \tilde{D}_t + \frac{1}{1+g_{t+1}} (\tilde{G}_t - \tilde{T}_t)$$
- In steady state: 
$$\tilde{T} - \tilde{G} = (r - g)\tilde{D}$$

where  $\tilde{T}$  is revenues/GDP;  $\tilde{G}$  is non-interest gov. expenditures/GDP;  $\tilde{D}$  is debt/GDP,  $r$  is the real interest rate and  $g$  is the real growth rate.

*Neil's answer:* not really.

- In a closed economy, if  $g$  falls,  $r$  will generally fall by at least as much
- Small open economies benefit from fall in (world)  $r$ .
- Caveat:  $(r - g)$ , currently negative in many countries, could revert.

*Elena's answer:* absolutely!

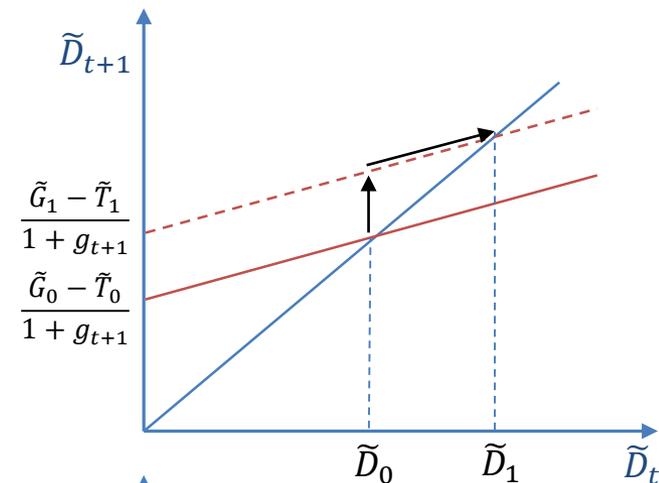
- Lower  $(r - g)$  is not all that matters. Need to worry also about increases in primary deficit  $(\tilde{T} - \tilde{G})$  and contingent debt increases.
  - Such increases are more likely in a low growth, low interest rate environment.
- *Note: this make sense if and only if there is a change of reversion to  $r > g$*

## Aside: $r < g$ implies *any* primary deficit is sustainable

Plot dynamics of debt/GDP: 
$$\tilde{D}_{t+1} = \frac{1+r_t}{1+g_{t+1}} \tilde{D}_t + \frac{1}{1+g_{t+1}} (\tilde{G}_t - \tilde{T}_t)$$

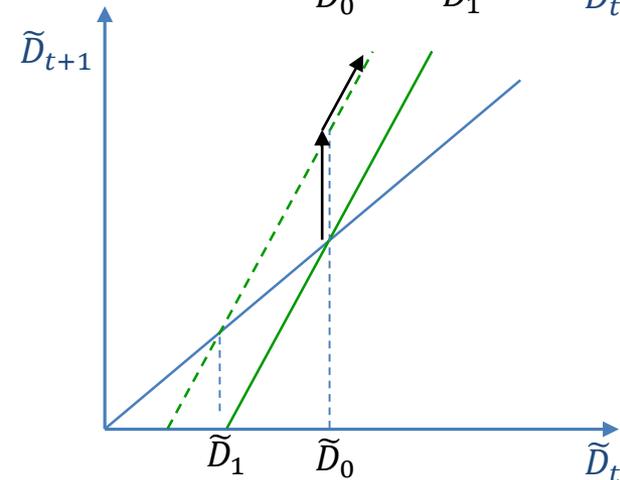
$r < g$  means coefficient  $\frac{1+r_t}{1+g_{t+1}}$  is below one. Steady state  $\tilde{D}_{t+1} = \tilde{D}_t$  is stable.

- Starting from steady state, a higher primary deficit ( $\tilde{G}_t - \tilde{T}_t$ ) will lead to convergence to a new steady state, regardless of the size of the increase.



$r > g$  means coefficient  $\frac{1+r_t}{1+g_{t+1}}$  is above one. Steady state  $\tilde{D}_{t+1} = \tilde{D}_t$  is unstable.

- Starting from steady state, a higher primary deficit ( $\tilde{G}_t - \tilde{T}_t$ ) will lead to exploding debt, a lower one to disappearing debt (and eventually to increasing cash accumulation)



## Why primary deficit and/or contingent debt may rise if productivity growth is persistently lower than currently projected

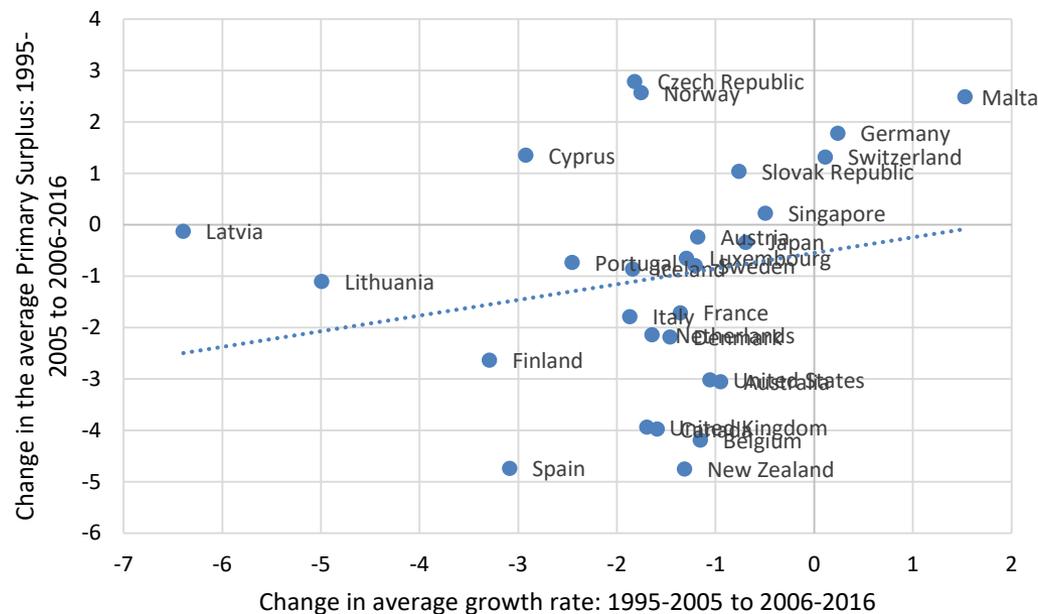
1. Lower taxes, higher spending for mechanical reasons (i.e. *given* current structure of tax system and entitlement spending.
  - E.g. less tax progression (“bracket creep”), higher poverty rates.
2. Sustainability of public pensions may be threatened (?)
3. A need to expand transfers or change parameters of the pension system to deal with social pressures related to lower growth.
4. The intellectual force of Larry Summers:  $r < g$  = time to splurge!

This session: explores 1, 2 and 3 by getting into the nitty-gritty:

- *Börsch-Supan*: international, only pension systems – 2 and 3
- *Sheiner*: U.S., all aspects of public finance – 1, 2 and 3.

But maybe the raw data speaks for itself?

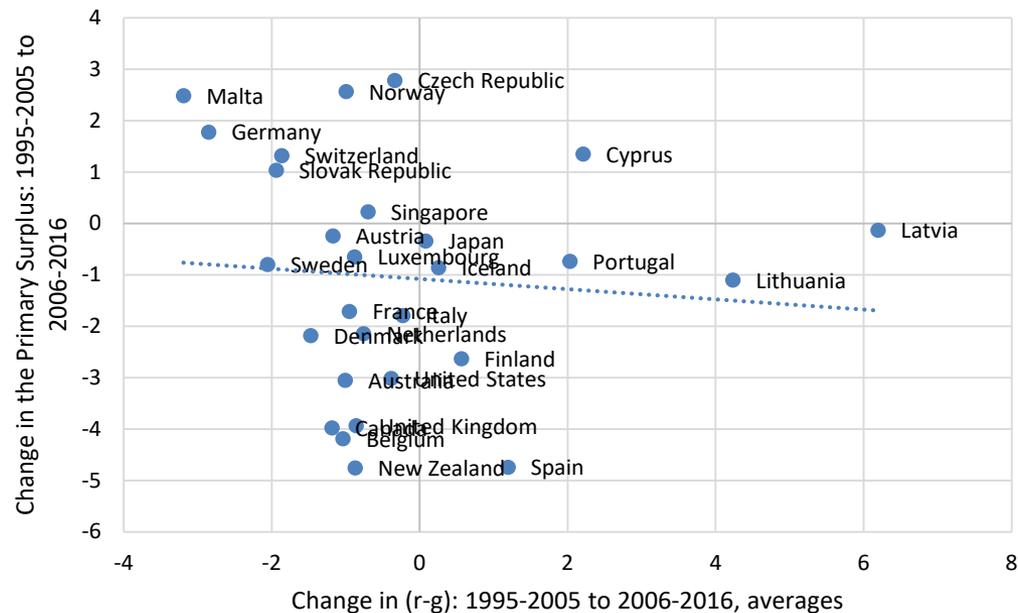
(1) Changes in  $\tilde{\tau} - \tilde{e}$  vs. changes in  $g$



1. Positive correlation, as expected.
2. But not overly steep: 3 point reduction in growth associated with 1.5 point reduction in primary balance
3. Not very tight. Huge differences across country reactions (e.g. UK vs. Latvia).

# Does the raw data speak for itself?

## (2) Changes in $\tilde{\tau} - \tilde{e}$ vs. changes in $r - g$



1. This time, correlation is even negative: lowering of debt servicing costs  $r < g$  not necessarily associated with “splurge”
2. But again, correlation not very tight, and large differences in reactions across countries

## Bottom-up answers from two excellent papers

*Effect through pensions (both U.S. and non-US): sanguine.*

- Productivity slowdown has (virtually) no impact on sustainability of pensions (possible caveat: fully-funded with defined benefits)
  - Intuition: in most systems, pension levels indexed to wage levels (fixed replacement rate). Lower productivity growth → lower wage growth → lower pension growth.
- Even when combined with aging pressures, pension growth will not slow to the point where pensions would fall in real terms.

*Effect through all other U.S. fiscal channels: a bit less sanguine*

- Productivity slowdown will lead to higher U.S. primary deficit, significantly increasing U.S. debt relative to current baseline (by 13-40 percent of GDP after 25 years, depending on interest rates).
- Channels: fixed nominal discretionary spending, higher social spending, bracket creep.
- But: could fix with fiscal adjustment of just 1% of GDP!

## So, should we relax?

*Relative to our (at least my) priors: Yes. But two caveats.*

1. Low interest rates may lead to increased private leverage which at some point will become public (the Rajan/Duggar worry)
2. What if lower productivity growth is a reflection of, or interacts with, increasing inequality?
  - Both Axel and Louise abstract from this point: assume slower earnings growth across all income groups.

## Impact of an inequality-increasing productivity growth slowdown

- Baseline average productivity increase = 1.5%. Slowdown: 0.9%
- Dependency ratio increases by 0.5% (this is true for Germany).
- For illustration, assume PAYG-DC system. Then, dependency ratio increase is fully reflected in lower replacement rate

Imagine two groups: high wage (H, 60%), low wage (L, 40%).

1. Assume slowdown equally affects both groups. Absolute pensions increase by  $0.9\% - 0.5\% = 0.4\%$ . Still positive! (Axel's point).
2. Assume slowdown occurs *because* productivity and wage of the L-group drops to zero ( $0.9\% = 0.6 * 1.5\% + 0.4 * 0\%$ ). Then pension increase of L-group is  $-0.5\%$  p.a.
  - If *level* of pension is low to begin with (because of low wage level and low initial replacement rate, e.g. 48% in Germany) this could create a poverty problem (and a political problem).

## Conclusions

The impact of a sustained slowdown in productivity growth on fiscal sustainability appears to be less dramatic than you might have thought, for three reasons.

1. A lower-than-expected  $g$  likely also implies a lower-than-expected  $r$
2. Pensions and most other government outlays are indexed to wages or GDP.
3. A decline of productivity growth to about 1% is not dramatic enough to create a large poverty problem (old-age or otherwise) forcing a sharp increase in social spending.

### Caveats:

- Inequality enhancing productivity slowdown (could affect point 3)
- Quasi-fiscal liabilities via private sector leverage