
Can Growth Stabilize Debt? A Fiscal Theory Perspective

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Summary

- **Question:** Can (demand-influenced endogenous) growth stabilize fiscal deficits?
 - Yes, because deficits $\uparrow \Rightarrow$ demand $\uparrow \Rightarrow$ R&D $\uparrow \Rightarrow$ output $\uparrow \Rightarrow$ deficits $\downarrow$
- **Approach:** New Keynesian model with endogenous growth and public debt
 - Deficits paid by (1) fiscal surplus, (2) fiscal inflation, and (3) endogenous growth
- **Main findings:** Endogenous growth allows duo-active fiscal and monetary policies
 - Policy implications: Stabilization units should focus on $(r - g)$, not just r
- **This discussion:**
 - The paper is very comprehensive and clear by itself; points are clearly delivered!
 - Review of the key mechanisms
 - Questions about (1) the feedback loop within the endogenous fiscal capacity, (2) the direct financial channels of fiscal and monetary policy on R&D and growth

The essential system of equations

- Cut a few corners and only think about government expenditure shocks $\hat{f}$
- We could have a core system of 5 equations

(Use $+$, $-$, $o(\cdot)$ for lead, lag, omit; All θ s are shortcut coef's; Omits expectation signs)

$$\text{Growth: } \hat{g} = \underbrace{\theta_0 \hat{y} + \theta_1 \hat{y}_+}_{\text{demand induces growth}} + o(\cdot)$$

$$\text{IS curve: } \hat{y} = \hat{y}_+ \underbrace{-\theta_2(\hat{r} - \hat{g})}_{\text{both matters for output}} + \theta_3 \hat{f}$$

$$\text{Debt: } \hat{b} = \underbrace{\theta_4 \hat{b}_-}_{\text{active fiscal policy if } \theta_4 > 1} - \frac{1}{\beta}(\hat{\pi} + \hat{g}_-) + \theta_5 \hat{f} + o(\cdot)$$

$$\text{Taylor rule: } \hat{r} - \hat{g} = \underbrace{\phi_\pi \hat{\pi} + \phi_y \hat{y} + \pi_+ - \hat{g}}_{\text{active monetary policy if some conditions met}}$$

$$\text{Phillips curve: } \hat{\pi} = \beta \pi_+ + \kappa \hat{y} - \theta_6 \hat{f}$$

The FTPL implications: Endogenous fiscal capacity

- Part I: Endogenous growth and public debt sustainability (First 3 Eq's)
 - The two-way feedback loop creates endogenous fiscal capacity for **active fiscal policy**
 - The endogenous growth responses replace fiscal inflation (even generate deflation)
 - Positive f_t shocks generate less inflation and debt but keep positive output gaps longer

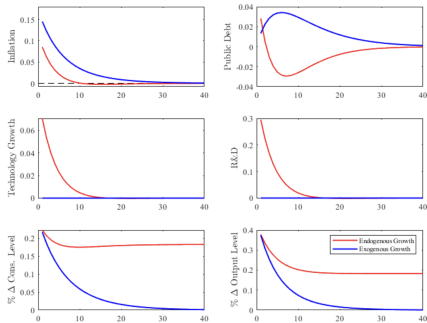


Figure 2: Dynamics: Government Spending Shock

The FTPL implications: Possibility of duo-active policies

- Part II: Monetary-fiscal interaction under endogenous fiscal capacity (+ last 2 Eq's)
 - Stabilization now needs to target on $(\hat{r} - \hat{g})$ instead of just $\hat{r}$
 - A growth-augmented Taylor Principle (stricter/more hawkish) under passive fiscal policy
 - Violating the GrTP but satisfying TP still achieves local determinacy!

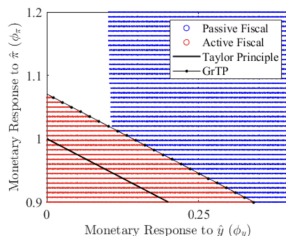


Figure 3: Uniqueness and Existence

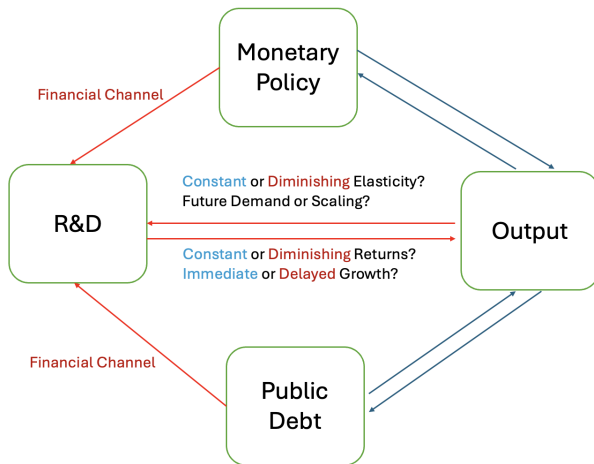
Notes: the blue (red) region is determinacy under passive (active) fiscal policy with endogenous growth. The white area corresponds to indeterminacy under active or passive fiscal policy.

Outline of My Discussion

I do not have much to add to the theory. My focus is on the quantification:

- The feedback loop within the endogenous fiscal capacity:
 1. Would there be diminishing elasticity in the demand-induced R&D responses?
 2. Would there be diminishing returns in output growth induced by R&D inputs?
 3. The time lags from R&D expenses to output growth
- The direct financial channels of fiscal and monetary policy on R&D and growth:
 1. Would monetary easing/tightening directly interact through financial channels of R&D?
 2. Would public debt crowd out private innovation? (with financial frictions)
 3. Does fiscal expense enter innovation? (productive government expenditure)

Outline of My Discussion



Comment #1: Feedback loop within the endogenous fiscal capacity

- The model features (1) a constant elasticity from demand to R&D
- Under very reasonable calibration, we have a huge and persistent growth gain in output

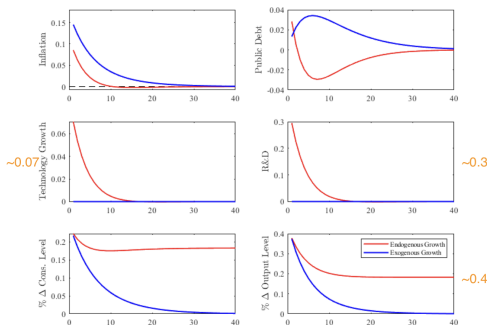


Figure 2: Dynamics: Government Spending Shock

- The R&D elasticity of demand is about 75%, 3 times higher than estimates in literature
 - For instance, (Fabrizio and Tsolmon, 2014) estimates an elasticity of about 20%.

Comment #1: Feedback loop within the endogenous fiscal capacity

- The model features (2) a constant returns to R&D investment transmission to growth
- From the same above IRFs, we know 30% points $\uparrow$ in R&D $\Rightarrow$ 7% points $\uparrow$ in growth
- This is about 40 times higher than the estimates in the literature
 - For instance, (Comin, 2004) shows that R&D contributes <0.5% point in growth
 - That is: 30% points $\uparrow$ of R&D should get <0.17% point $\uparrow$ in growth
 - This could be attributed to "Ideas are hard to find" (Bloom et al., 2020) or "Self-selection and diminishing return to research" (Ekerdt and Wu, 2024)
- The two-way constancy generates strong feedback loops between R&D and demand
- Finally, the model features (3) no lags from R&D to growth
- All these may cause the potential overstatement of debt stabilization through growth
- *Suggestion:* Maybe try functional forms with Diminishing elasticities/return to scales

Comment #2: Direct financial channels of policies on R&D/growth

- The model features (4) the demand channel of R&D and growth
- Fiscal and monetary policy also largely influence the supply (financial) channel of R&D
- For fiscal policy, it can go either way:
 - If deficits crowd out private investment/innovation (Huang, Pagano, and Panizza, 2020), deficits or public debt would narrow the endogenous fiscal capacity of growth!
 - If deficits are partially entering as productive expenditure (Irmen and Kuehnel, 2009), deficits or public debt would enlarge the endogenous fiscal capacity of growth!
- For fiscal policy, it goes in an undesired way:
 - R&D is extremely sensitive to monetary policy (Ma and Zimmermann, 2023), a hawkish monetary tightening to combat inflation would dramatically reduce R&D, which in turn narrows the endogenous fiscal capacity of growth and pushes up inflation!
- *Suggestion:* Interesting to think about them, but probably don't do anything

Conclusion

- This paper is a very exciting addition to the FTPL literature:
 1. Very different focus on the $r > g$ case when no "free lunch" is available
 2. Yet, there is a cheap (self-producing) lunch from **endogenous growth**!
 3. Growth creates endogenous fiscal capacity even under active fiscal policy!
 4. Duo-active fiscal and monetary policies are feasible to achieve!
- The paper seems to have broader implications than just the duo-active policies
 - Additional channels of policy interactions with endogenous growth could be very interesting
- I am Looking forward to seeing it get published very well!

Appendix

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