Can Growth Stabilze Debt? A Fiscal Theory Perspective

by Michaela Elfasbacka-Schmoller and Nigel McClung

Discussion by Min Fang @ University of Florida

New Challenges for Fiscal and Monetary Policy @ University of Miami, Spring 2025

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 $\downarrow$

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

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

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!

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

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 θs are shortcut coef's; Omits expectation signs)

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

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

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

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

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

The FTPL implications: Endogenous fiscal capacity

- Part I: Endogenous growth and public debt sustainability (First 3 Eq's)

The 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 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)

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
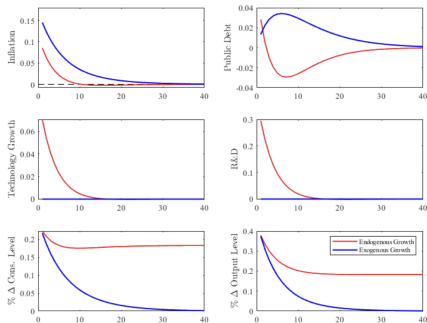

Figure 2: Dynamics: Government Spending Shock

The FTPL implications: Possibility of duo-active policies

- Part II: Monetary-fiscal interaction under endogenous fiscal capacity (+ last 2 Eq's)

- 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 $\hat{r}$

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 $\left(\hat{r} - \hat{g}\right)$ instead of just $\hat{r}$

  - A growth-augmented Taylor Principle (stricter/more hawkish) under passive fiscal policy

- 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

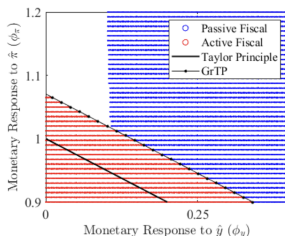 - Violating the GrTP but satisfying TP still achieves local determinacy!

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:

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

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)
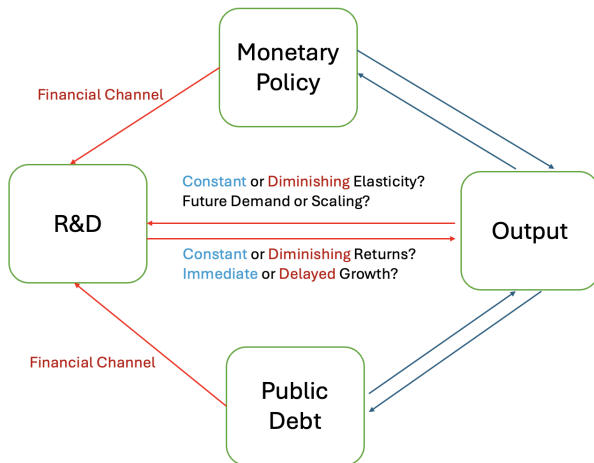
Comment #1: Feedback loop within the endogenous fiscal capacity

- The model features (1) a constant elasticity from demand to R&D

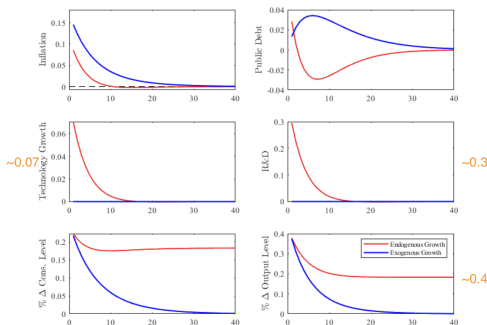- Under very reasonable calibration, we have a huge and persistent growth gain in output

Figure 2: Dynamics: Government Spending Shock

Comment #1: Feedback loop within the endogenous fiscal capacity

- The model features (1) a constant elasticity from demand to R&D

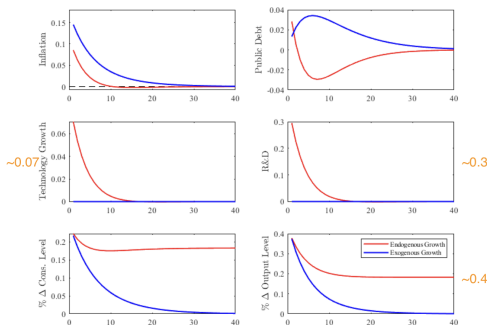- Under very reasonable calibration, we have a huge and persistent growth gain in output

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 ↑ in R&D ⇒ 7% points ↑ in growth

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 ↑ in R&D ⇒ 7% points ↑ in growth

- This is about 40 times higher than the estimates in the literature

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 ↑ in R&D ⇒ 7% points ↑ 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 ↑ of R&D should get <0.17% point ↑ in growth

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 ↑ in R&D ⇒ 7% points ↑ 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 ↑ of R&D should get <0.17% point ↑ 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

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 ↑ in R&D ⇒ 7% points ↑ 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 ↑ of R&D should get <0.17% point ↑ 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

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 ↑ in R&D ⇒ 7% points ↑ 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 ↑ of R&D should get <0.17% point ↑ 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

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 ↑ in R&D ⇒ 7% points ↑ 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 ↑ of R&D should get <0.17% point ↑ 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

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

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:

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!

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!

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:

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!

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!

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

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

References

Bloom, Nicholas et al. (2020). "Are ideas getting harder to find?" In: *American Economic Review* 110.4, pp. 1104–1144.

Comin, Diego (2004). "R&D: A small contribution to productivity growth". In: *Journal of Economic Growth* 9, pp. 391–421.

Ekerdt, Lorenz KF and Kai-Jie Wu (2024). "Self-Selection and the Diminishing Returns of Research". In: *URL: https://drive. google. com/file/d/1qPdzXu6wLclnHE-YX1eLfRQtkUzCVvD2/view.*

Fabrizio, Kira R and Ulya Tsolmon (2014). "An empirical examination of the procyclicality of R&D investment and innovation". In: *Review of Economics and Statistics* 96.4, pp. 662–675.

Huang, Yi, Marco Pagano, and Ugo Panizza (2020). "Local crowding-out in China". In: *The Journal of Finance* 75.6, pp. 2855–2898.

Irmen, Andreas and Johanna Kuehnel (2009). "Productive government expenditure and economic growth". In: *Journal of Economic Surveys* 23.4, pp. 692–733.

📄 Ma, Yueran and Kaspar Zimmermann (2023). *Monetary policy and innovation*. Tech. rep. National Bureau of Economic Research.