Lower-for-longer under Endogenous Technology Growth

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OUTLINE

- **Main objectives:**
  - ▶ Study monetary policy strategies for a low r^* environment in a DSGE model with endogenous technology mechanism
 - ▶ Evaluate their performance in inflation and output stabilization (short- and long-run) at the ELB

- **Research questions:**
  1. How large are the true ZLB-induced costs when accounting for the long-run output losses through hysteresis effects in TFP?
  2. What are the benefits of targeting the long-run output gap?
  3. How do lower-for-longer monetary policy strategies perform under endogenous technology growth?

Model framework

- Medium-scale DGSE model with endogenous technology mechanism (based on Moran and Queralto (2018, JME))

- Endogenous TFP dynamics: R&D and technology adoption

- Otherwise standard DSGE model features (Christiano et al. (2005); Smets and Wouters (2007))
  - Calvo price and wage rigidities
  - Nominal interest rates subject to the ZLB constraint

- Monetary policy strategies:
  - Standard Taylor rules
  - Hysteresis-augmented Taylor rule
  - Price level targeting
  - Average inflation targeting
  - Temporary price level targeting

ZLB-INDUCED LOSSES MORE SEVERE THAN COMMONLY ASSESSED UNDER ENDOGENOUS TFP DYNAMICS
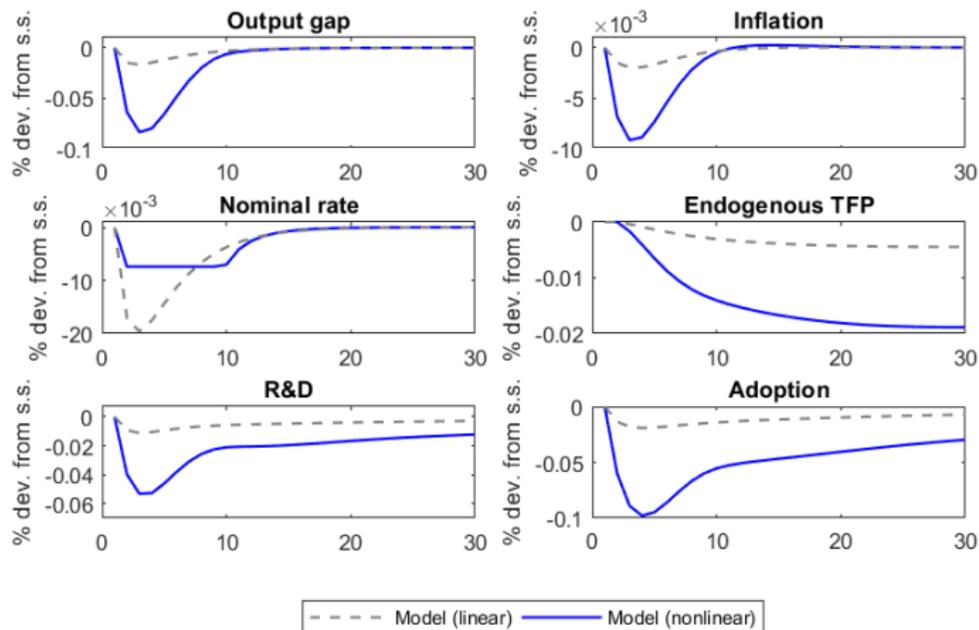
Hysteresis-augmented Taylor rule

- Premature tightening under standard Taylor rules
- Lower-for-longer feature supports inflation and closure of output gap
- Targeting the technology gap prevents long-run output losses
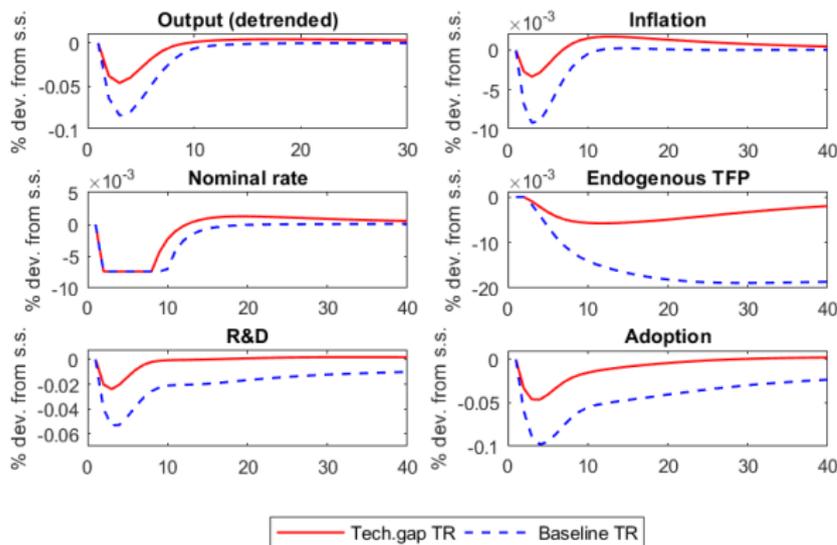
Variants of price level targeting

- Inflation shortfall made up in full by subsequent overshooting
- Substantial reduction of long-term output losses
- Temporary PLT: preserves benefits of PLT at the ELB
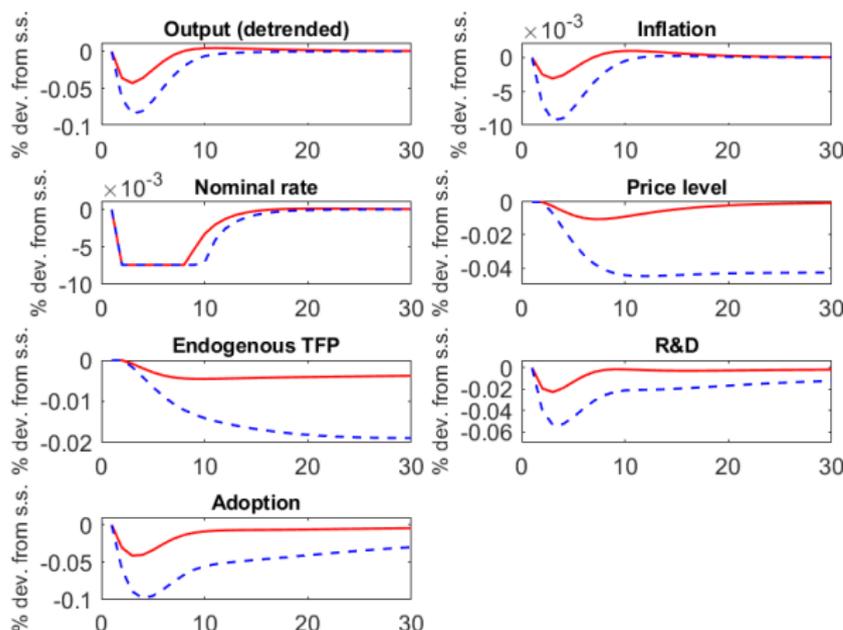
Average inflation targeting

- Restricts accumulation of inflation shortfall to averaging horizon
- Beneficial effect on inflation and the short-run output gap
- Longer averaging windows associated with reduced long-run output losses
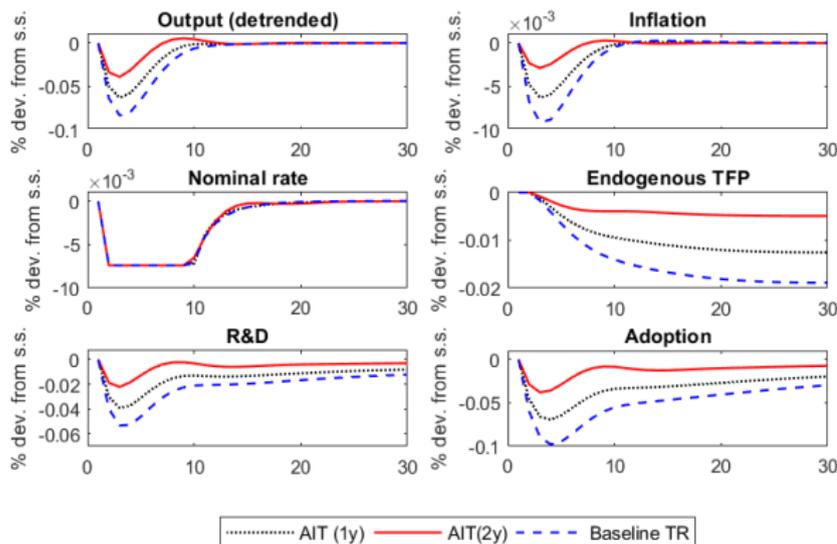
Response to an inflationary liquidity demand shock

- Price level targeting and average inflation targeting limit the permanent increases in the technology gap
- Temporary PLT: technology stock permanently above initial steady state
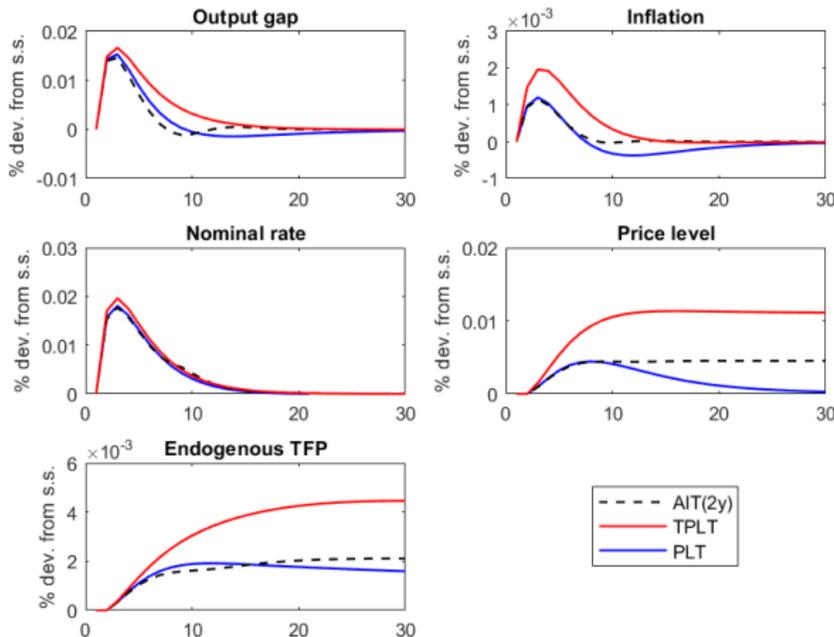
CONCLUSIONS

- Money non-neutrality: monetary policy can affect the long-term growth path

- ELB-induced losses more detrimental than commonly assessed owed to hysteresis effects in total factor productivity

- Premature tightening under standard Taylor rules with permanent output losses

- Lower-for-longer strategies support alignment of inflation with target and alleviate long-term output losses at the ELB
  - Hysteresis-augmented TR: full closure of the long-run output gap
  - Variants of PLT and AIT: significantly reduced long-term losses relatively to standard Taylor rule