

Background

Many developed economies exhibit tell-tale symptoms of secular stagnation: decades-long downward trends in natural interest rates, tepid output growth well below estimates of potential, growing debt-to-GDP ratios, negative real interest rates, and below-target inflation.

Many central banks are now giving serious consideration to raising inflation targets and implementing negative policy rates, both of which would, in theory, stimulate inflation expectations and propel economic activity.

Contribution

We build a flexible and novel experimental environment to test these unconventional policies in an overlapping-generations environment. We explore the effects of raising inflation targets and negative interest rates on expectation formation and real consumption-saving decisions.

Experimental Design

The OLG experimental economy is based on Eggertsson, Mehrotra, Robbins (2019, AEJ Macro) and allows for full-employment, liquidity trap, and secular stagnation equilibria.

Participants play the roles of 3-period lived households for 50 rounds:

- Young: accumulate debt and earn no income (automated)
- Middle-Aged: earn income, pay off debt, consume and save
- Old: consume any remaining saving (automated)

Each period participants form a nowcast and forecast of inflation. Elicited expectations are aggregated and used jointly with the model to determine expected income and prices.

Participants decide what fraction of their expected wealth to spend on consumption. Aggregate demand determines prices and consumption. The central bank sets the policy rate, i_t , and inflation target, Π^* , and faces a binding zero lower bound.

$$1 + i_t = \max\left(1, (1 + i^*) \left(\frac{\Pi_t}{\Pi^*}\right)^{\phi_\pi}\right)$$

Steady State Equilibrium Inflation by Treatment (%)						
Treatment	Description	Phase 1	Phase 2	Phase 3		
1	Baseline	T=10	SS=-24.4	N/A		
2	Higher Target	T=10	SS=-18.8	T=30	LT=16.66	SS=-18.8
3	Negative IR	T=10	SS=-18.8	T=10		
4	Negative IR + Portfolio	T=10	SS=-18.8	T=10		

Figure 1. Theoretical predictions.

- a) Permanent deleveraging shock in Phase 2 b) Raising inflation target in Phase 3 c) Removing the ZLB in Phase 3

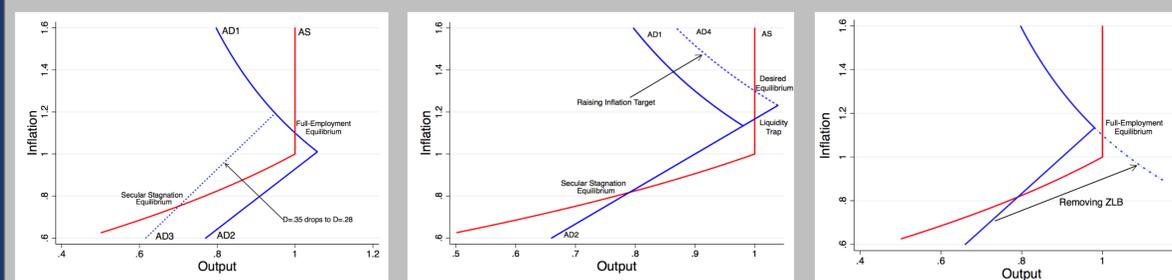


Figure 2. Inflation dynamics. Transition from full employment equilibrium to secular stagnation equilibrium, then back to intended equilibrium.

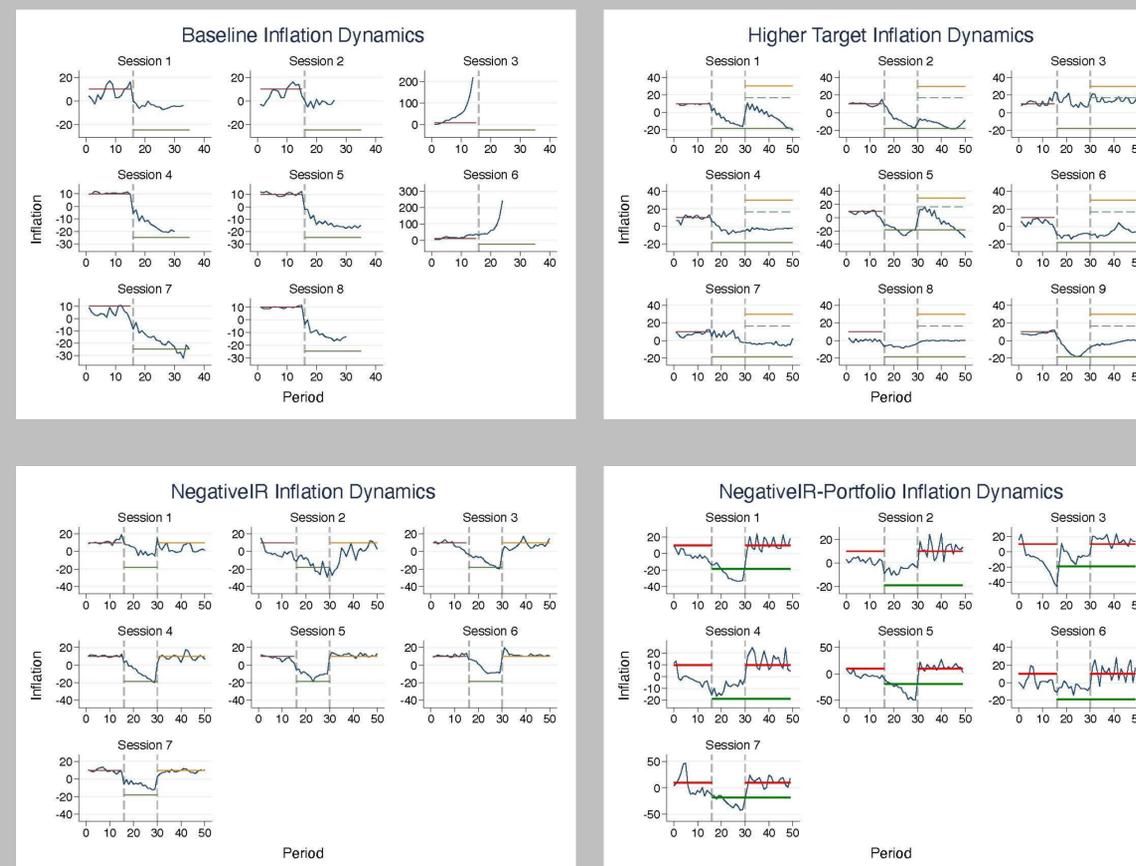
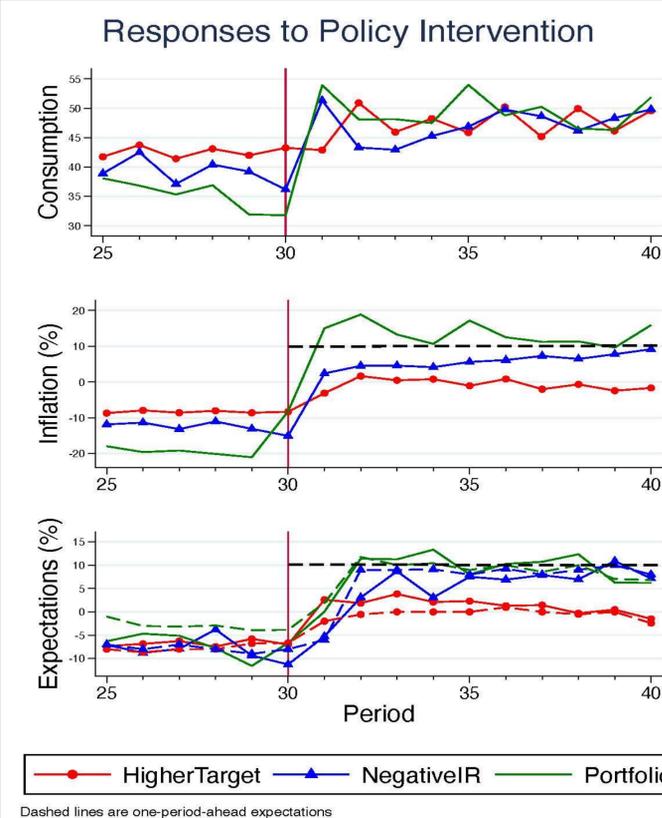


Figure 4. Dynamics around policy intervention.



Expectations slower to adjust than demand

- Expectations backward-looking, extrapolative

Why does increasing the inflation target fail?

- Lack of credibility – participants don't believe the CB can achieve the higher target
- Lack of forward-looking expectations
- Not an optimization problem, consumption optimal given participants' expectations

Why does removing the ZLB work?

- Demand is very sensitive to negative IRs
- Generates significant inflation, which in turn stimulates inflation expectations
- Robust to portfolio decision: participants still willing to hold bonds despite negative IRs