

Stagnation Traps

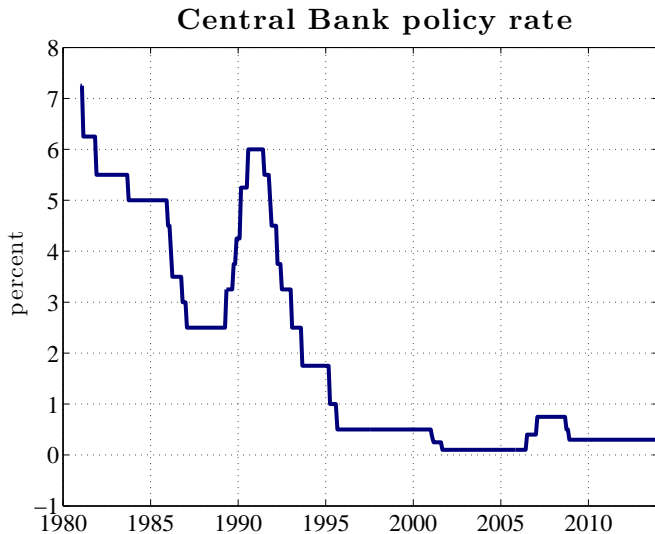
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RESEARCH QUESTION AND MOTIVATION

Can insufficient aggregate demand lead to economic stagnation?

- Research question goes back to Great Depression
- Recent renewed interest due to:
 - ▶ Two decades-long slump affecting Japan since early 1990s
 - ▶ Slow recoveries from 2008 financial crisis in US and Euro Area
- All these episodes featured:
 - ▶ Long-lasting liquidity traps ($i = 0$)
 - ▶ High unemployment
 - ▶ Slowdowns in growth

DISCOUNT RATE - JAPAN (1980-2014)



UNEMPLOYMENT - JAPAN (1980-2014)



REAL GDP/HOUR WORKED - JAPAN (1980-2014)



Table 1: Japan, United States and Euro area - before/during trap

	Japan		United States		Euro area	
	1981- 1990	1991- 2014	1998- 2007	2008- 2014	1999- 2007	2008- 2014
Policy rate	4.34	0.86	3.68	0.35	2.91	1.15
Unemployment rate	2.50	4.02	4.90	7.88	8.67	10.37
Growth GDP/hours	4.13	1.63	2.23	1.18	1.20	0.76

Note: All the values are expressed in percentage points. Data from IMF International Financial Statistics and OECD.

THIS PAPER

Keynesian growth framework: standard endogenous growth model (Aghion and Howitt, 1992) augmented with nominal rigidities

- Weak aggregate demand might generate unemployment
- Growth driven by investment by profit-maximizing firms

Key results

- Pessimistic expectations can generate **stagnation traps**
- Countercyclical subsidy to investment leads the economy out of stagnation

MODEL - SUPPLY SIDE

Firms produce and invest in R&D/innovation

- Market size effect \rightarrow higher aggregate demand leads to higher profits and higher investment in innovation and productivity growth

$$g = f(L), \quad f'(L) > 0 \quad (\text{GG})$$

Nominal wage rigidities

- One unit labor endowment \rightarrow full employment $L = 1$
- Nominal wage rigidities \rightarrow unemployment possible ($L < 1$)

MODEL - DEMAND SIDE

- Households' demand for consumption and borrowing increasing in growth

$$R = h(g), \quad h'(g) > 0 \quad (\text{Euler})$$

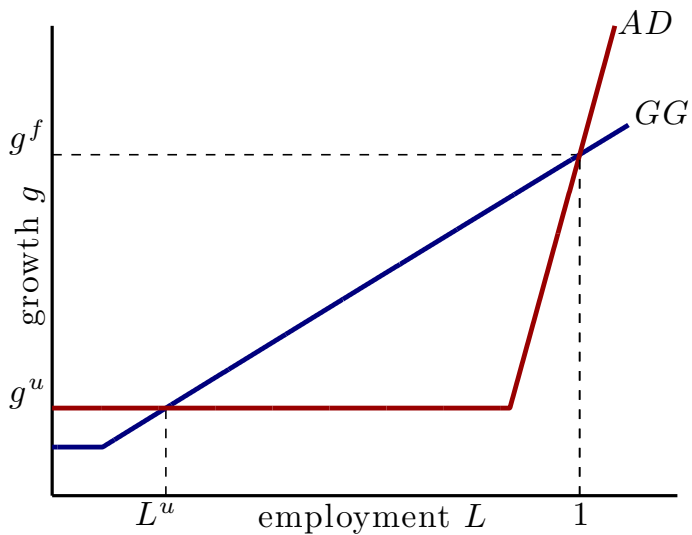
- Central bank sets R to stabilize output around full employment subject to zlb

$$R = \max \{ \bar{R}\Psi(L), 1 \}, \quad \Psi'(L) > 0 \quad (\text{MP})$$

- Aggregate demand equation: Euler + MP

$$h(g) = \max \{ \bar{R}\Psi(L), 1 \} \quad (\text{AD})$$

TWO STEADY STATES



THE ROLE OF CONFIDENCE SHOCKS

- Equilibrium is determined by expectations and sunspots
 - ▶ Suppose agents expect that growth will be low
 - ▶ Low expectations of future income imply low aggregate demand
 - ▶ Due to zero lower bound, central bank is not able to lower the interest rate enough to sustain full employment
 - ▶ Firms' profits are low, weak investment in innovation
 - ▶ Expectations of weak growth are verified
- Pessimistic expectations can give rise to long lasting stagnation traps

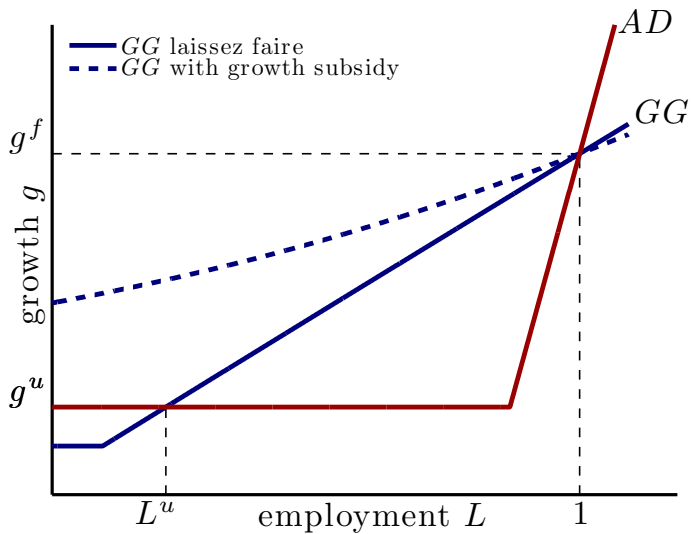
POLICY IMPLICATIONS

- Stagnation traps are possible even when monetary policy is run optimally if central bank lacks commitment
- Consider a countercyclical subsidy to innovation

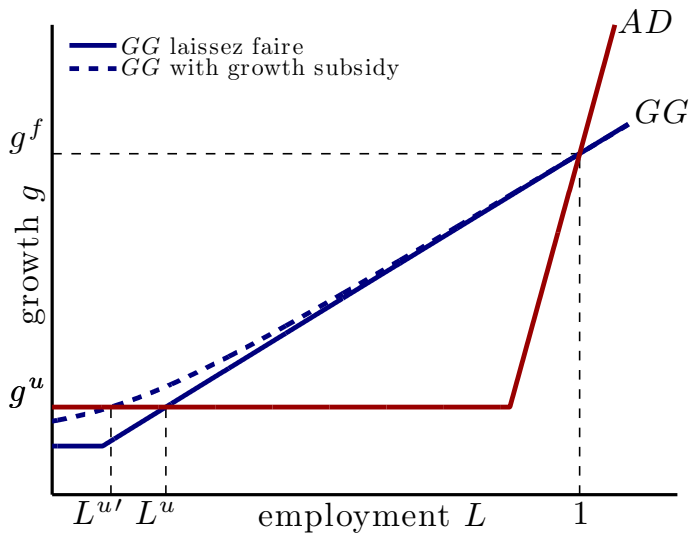
$$g = f(L) + s(g), \quad s'(g) < 0 \quad (\text{GG})$$

- If subsidy is strong enough stagnation traps are ruled out

COUNTERCYCLICAL SUBSIDY TO INNOVATION



SMALL SUBSIDY TO INNOVATION



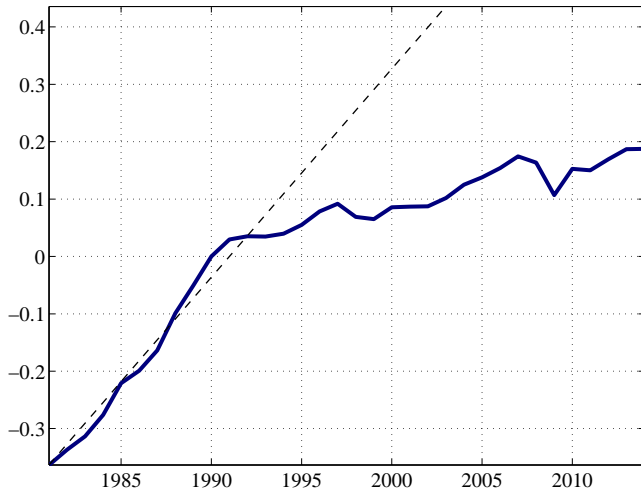
CONCLUSIONS

- We develop a **Keynesian growth** model in which endogenous growth interacts with the possibility of slumps driven by weak aggregate demand
- Inverse of Say's law: lack of demand creates lack of supply
- Pessimistic expectations can generate **stagnation traps**
- Aggressive supply-side policies stimulate demand and drive economy out of stagnation

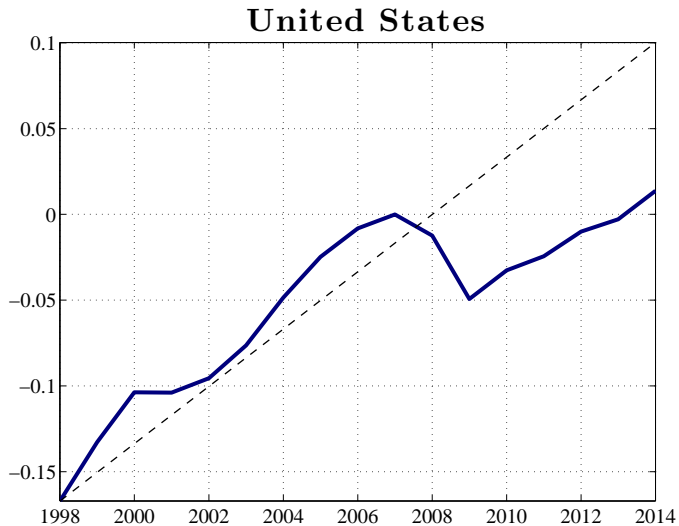
THANK YOU!

REAL GDP (LOG) - JAPAN (1980-2014)

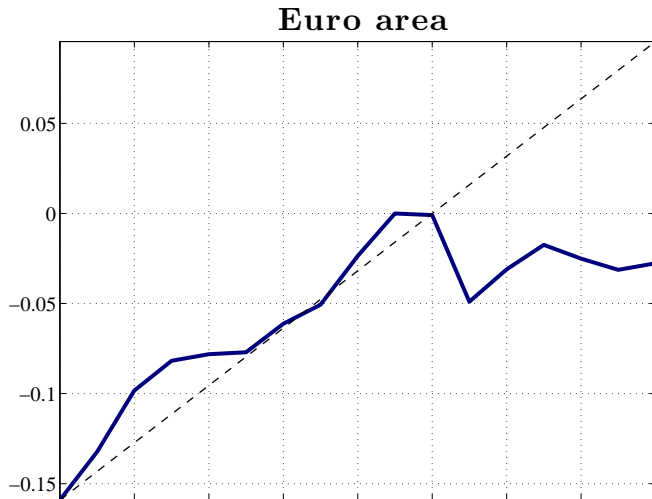
Japan



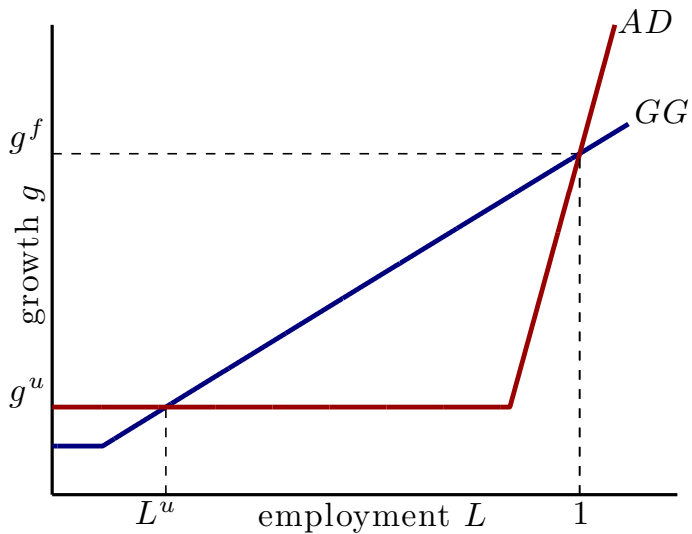
REAL GDP - US (1998-2014)



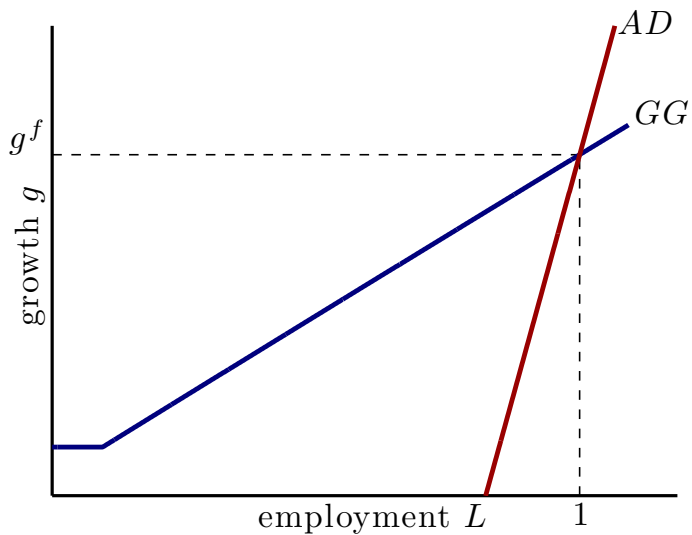
REAL GDP - EURO AREA (1998-2014)



BASELINE MODEL



NO ZERO LOWER BOUND



EXOGENOUS PRODUCTIVITY GROWTH

