

Monetary Policy and Financial System During Demographic Change:

Three questions

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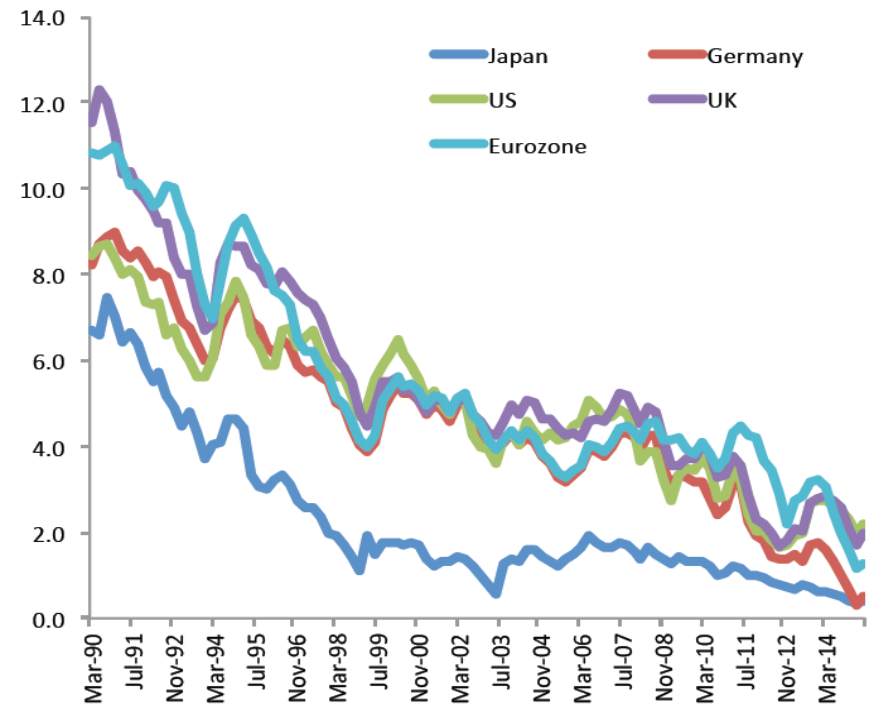
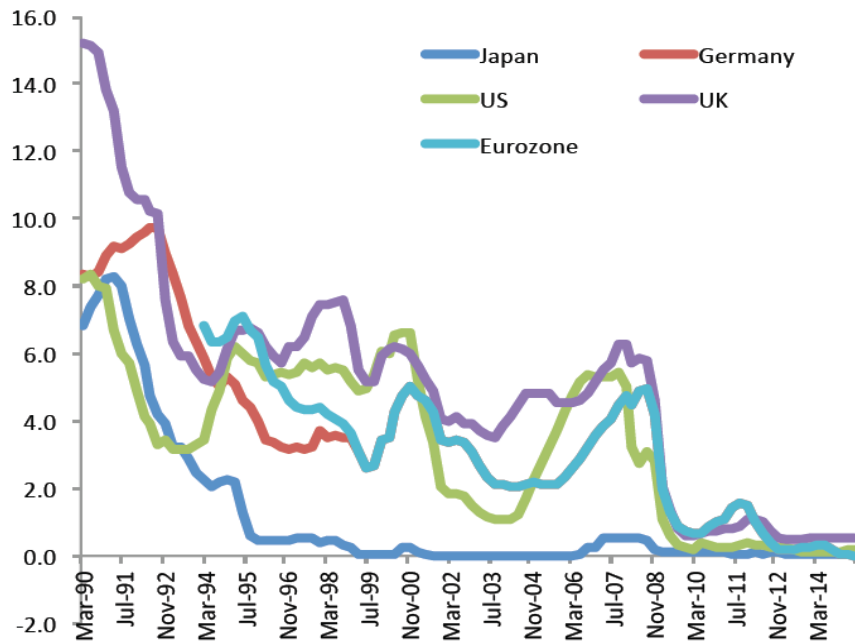
Brown University



BROWN

1. Can demographic change account for worldwide decline in interest rate?
2. What is the impact of aging on GDP per capita?
3. What is the role for monetary and fiscal policy when fall in interest rate driven by demographic change?

1. Can demographic change account for worldwide decline in interest rate?



Quantitative evaluation

Eggertsson, Mehrotra, Robbins (AEJ-macro 2019)

- 80 generation OLG model
- Calibrated to US data
 - mortality rates,
 - income profiles
 - Life expectancy
 - Productivity
 - Public debt
- Bottom-line: Permanently negative rates well possible and consistent with current demographic and productivity configurations
- Calibrate the model to 2015: Can we explain the fall in interest rates? Yes
- What is the role of demographics

Quantitative evaluation

Eggertsson, Mehrotra, Robbins (AEJ-macro 2019)

- Quantitative Result: Can account for a permanently negative real interest rate for “standard” parameter values calibrated to US data.
- Implication: **No reason** to expect “normalization” in real interest rate
- Current FOMC projection is that “long run” is +1% real rate. Paper -1.47%
- Implication: May very well be hitting the ZLB again and again in the future if calibration is reasonable

Quantitative evaluation

Eggertsson, Mehrotra, Robbins (AEJ-macro 2019)

DECOMPOSITION OF FALL IN INTEREST RATES

1970 TO 2015

Forcing variable	Δ in r	% of total Δ	1970	2015
Δ interest rate	-4.02	100%	2.55%	-1.47%
Mortality rate	-1.82	43%	70.7	78.7
Total fertility rate	-1.84	43%	2.8	1.9
Prod. growth	-1.90	44%	2.02%	0.65%
Government debt	+2.11	-49%	42%	118%
Labor share	-0.52	12%	72.4%	66.0%
Price of inv. goods	-0.44	10%	1.3	1.0
Change in debt limit	+0.13	-3%	4.21%	6.33%

Quantitative evaluation

Eggertsson, Mehrotra, Robbins (AEJ-macro 2019)

Table 7: Raising the natural rate of interest to 1%

Forcing variable	2015 Value	Counterfactual value
Total fertility rate	1.88	3.28
Government debt (% of GDP)	118%	215%
Productivity growth	0.65%	2.43%

2. What is the impact of aging on GDP per capita?

Eggertsson, Lancaster, Summers (AER-Insight 2019)

$$\Delta \frac{Y}{N} \% = \Delta \frac{Y}{L} \% + \Delta \frac{L}{N} \%$$

+ , - ?

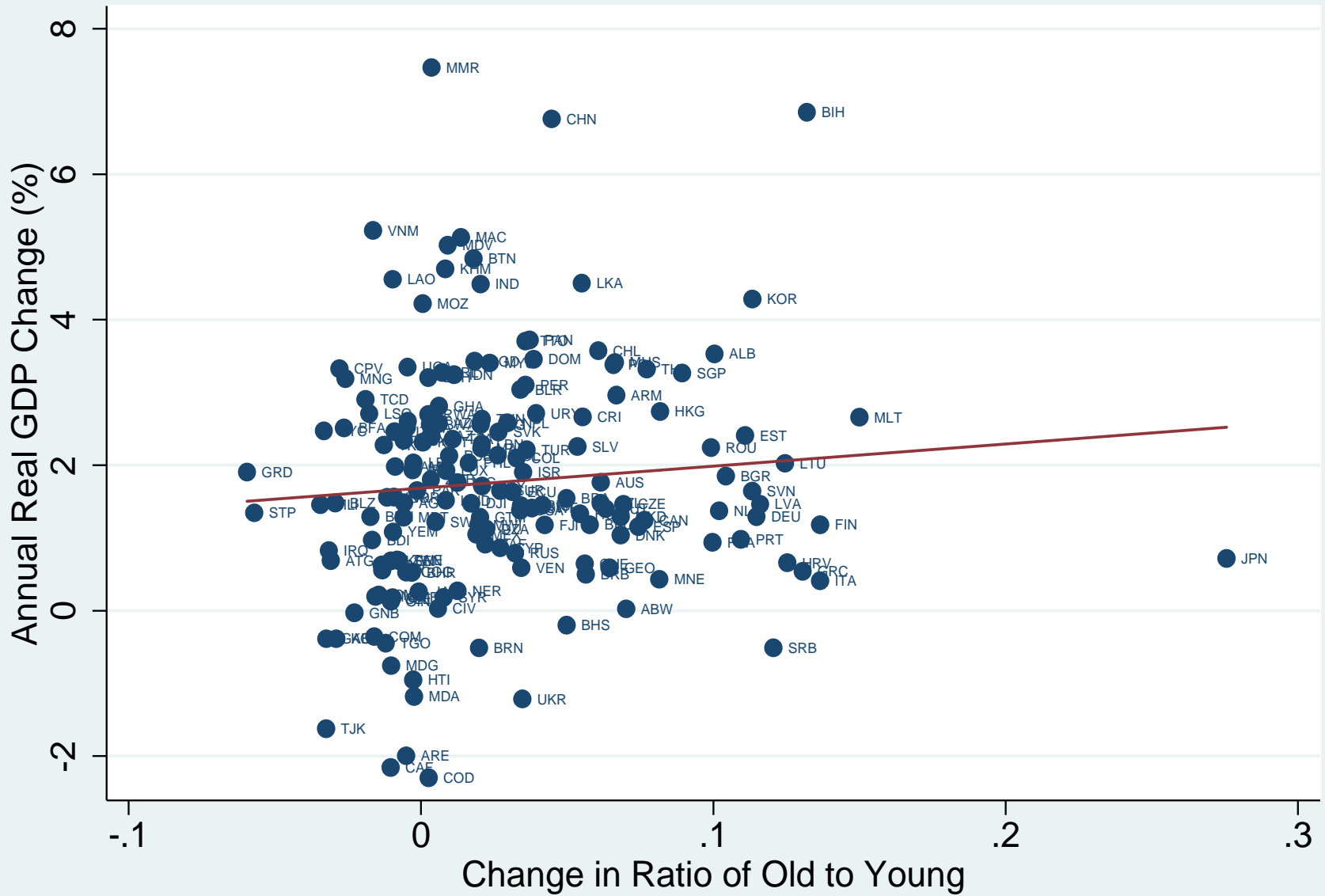
Output per worker

-

Labor force participation

Capital per worker goes up due to fall in r so $\frac{Y}{L}$ ↑

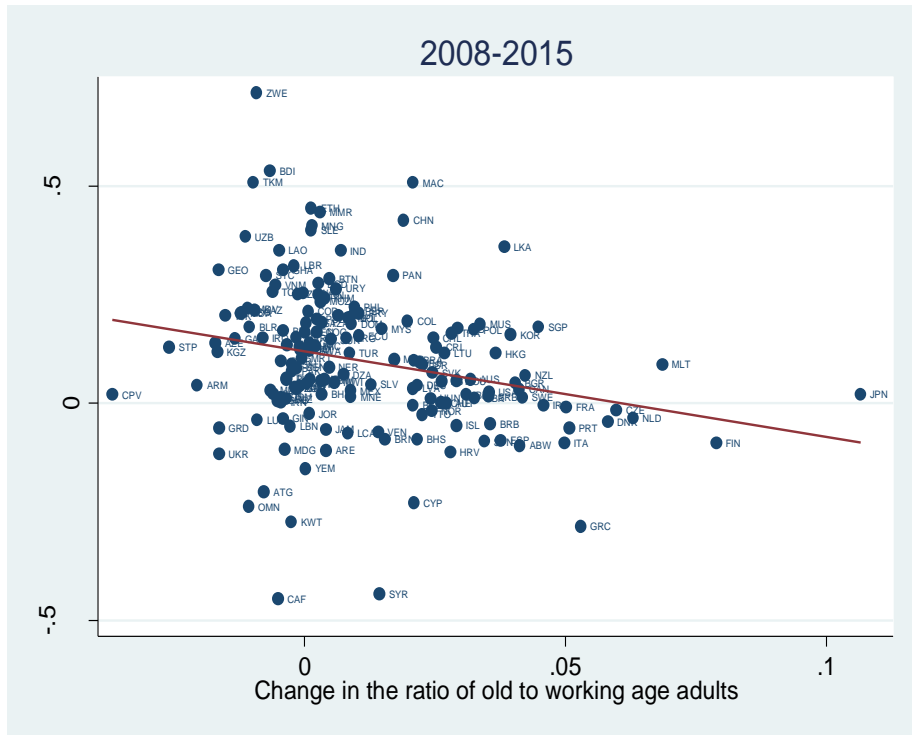
1990-2015



Good news and bad

- ✓ Good news: Aging can actually lead to higher living standard.
- ✓ Bad news: This happens via lower real interest rate which cannot always take place due to ZLB

Relationship break down post 2008 once ZLB become and issue



The reversal in correlation ***is driven by ZLB countries***

What is the impact of aging on GDP per capita?

Eggertsson, Lancaster, Summers (AER-Insight 2019)

- Aging does not have negative effect on output per capital provided interest rate can flexibly adjust to accommodate *capital deepening*.
- If the ZLB prevents this adjustment, aging unambiguously lead to slower growth in GDO per capita– environment of secular stagnation

3. What can monetary and fiscal policy do?

$$0 > r_t^n < r_t$$

Natural or neutral rate

Equilibrium rate

Fiscal Policy

-- more debt?

Unconventional MP

-- unconventional MP

Monetary Policy

$$r_t = i_t - E_t \pi_{t+1}$$

Negative policy rates?

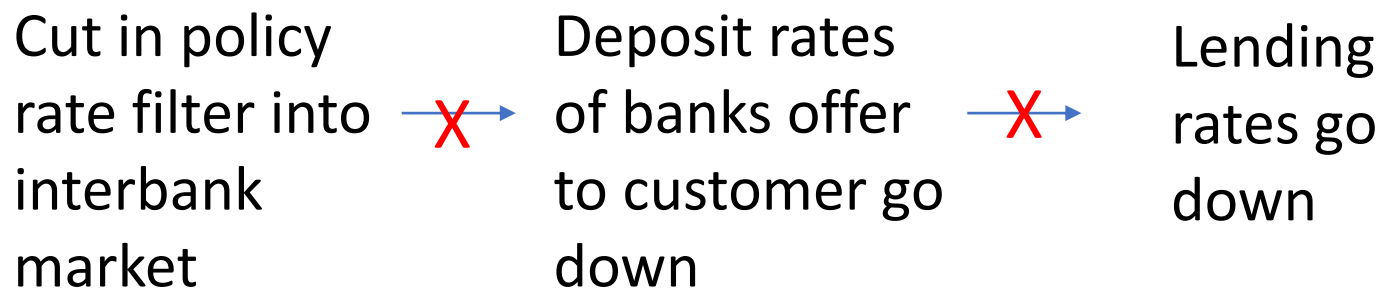
Higher Inflation Target

Fiscal policy and unconventional policy

- We saw very large increase in debt needed in quantitative model
 - More than 200 percent of GDP!!
 - Offsetting effect of expectations of fiscal crisis?
 - ✓ Garga (2018)
- Evidence for the effect of unconventional monetary policy in absence financial crisis mixed at best....

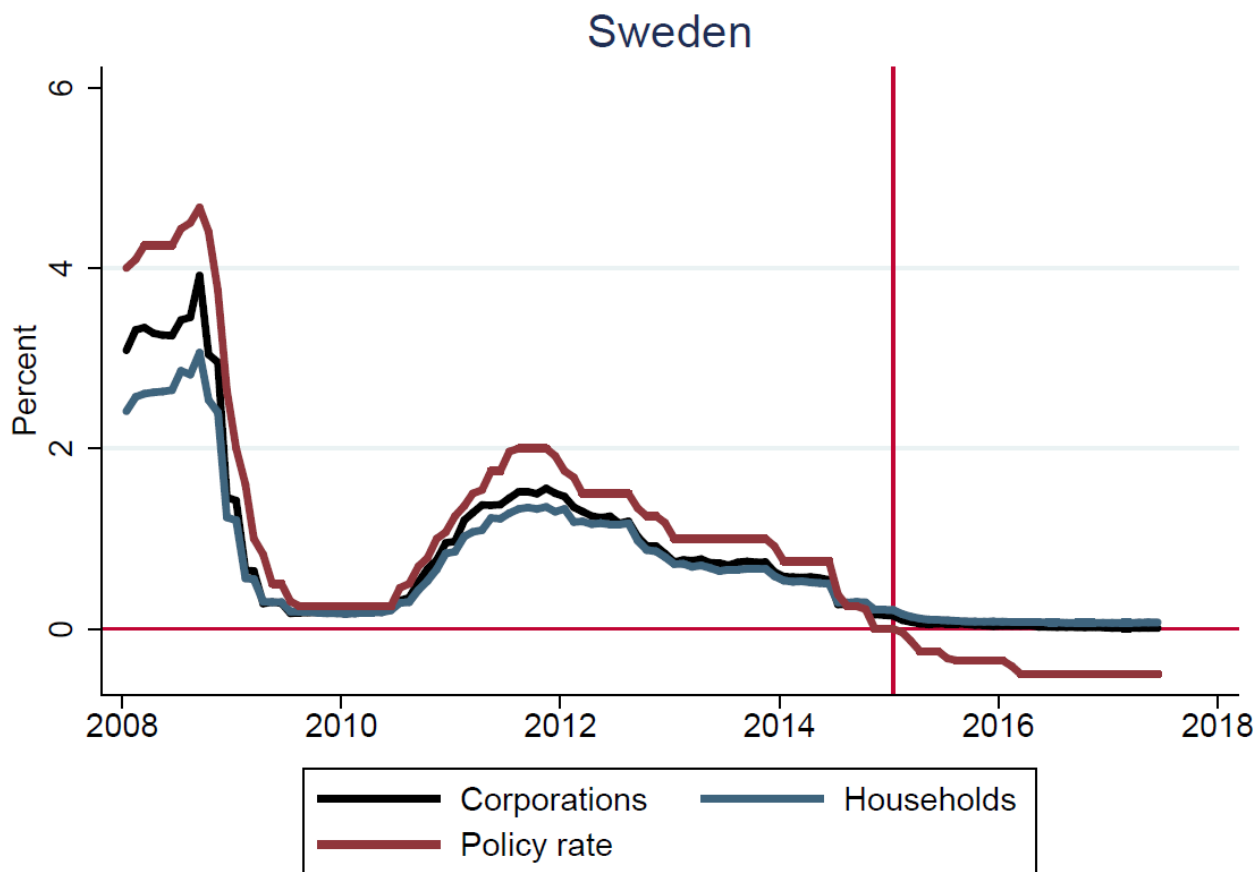
Negative Interest Rates and the Bank Lending Channel

Eggertsson, Juelsrud, Summers and Wold (2019, NBER WP)



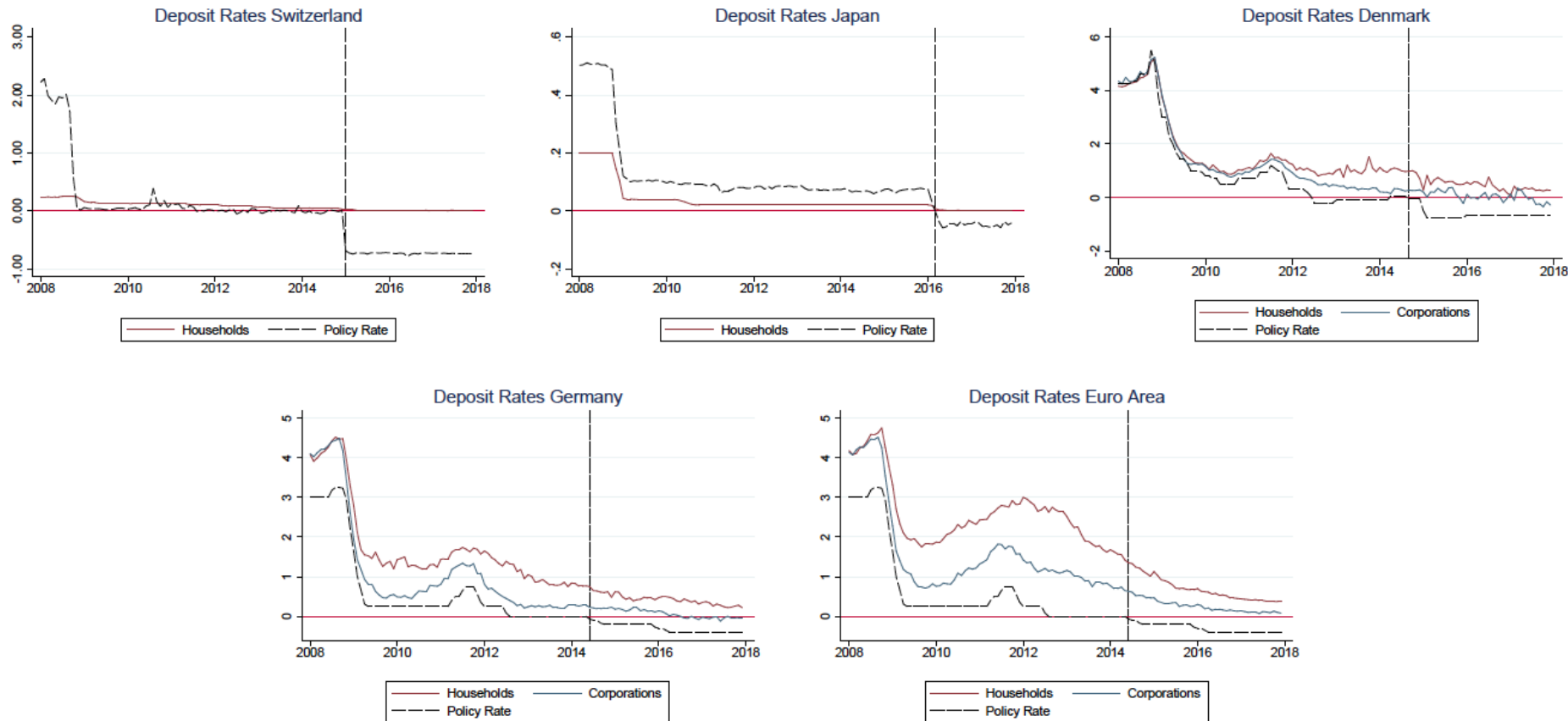
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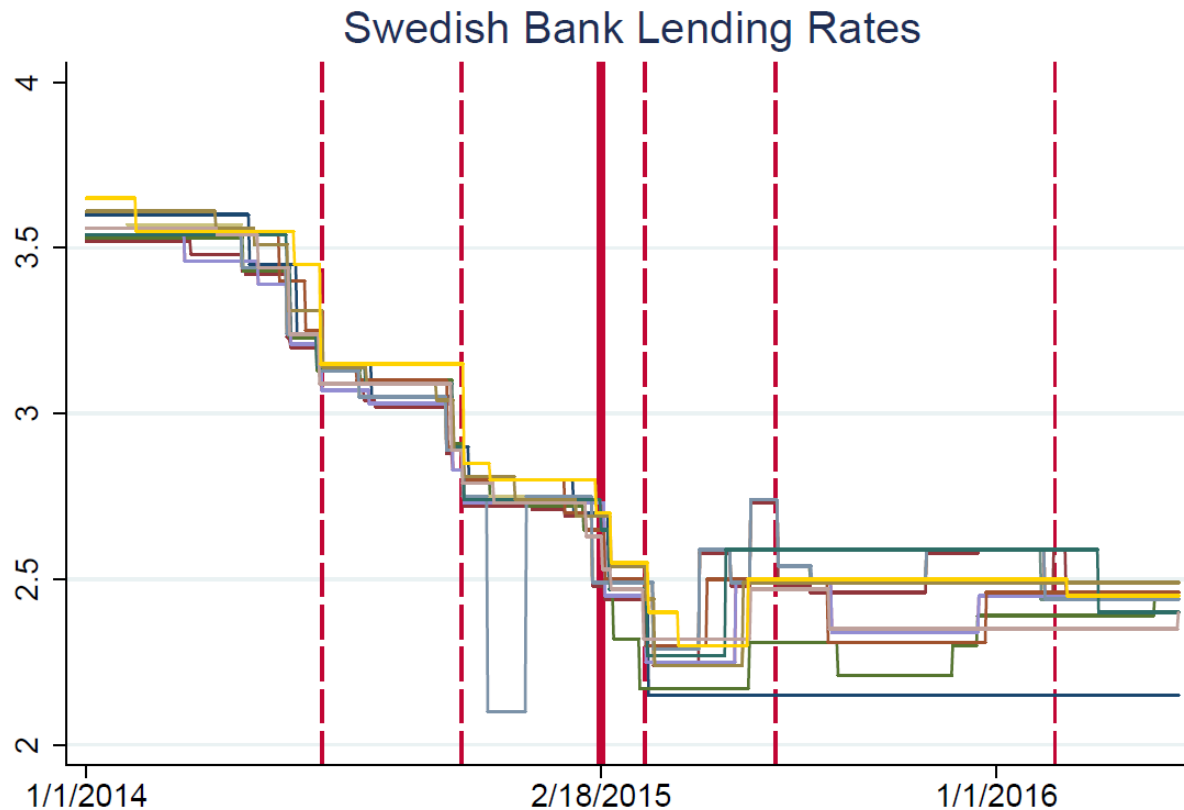
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Deposit rates are bounded by zero!

Negative Interest Rates and the Bank Lending Channel

Eggertsson, Juelsrud, Summers and Wold (2019, NBER WP)



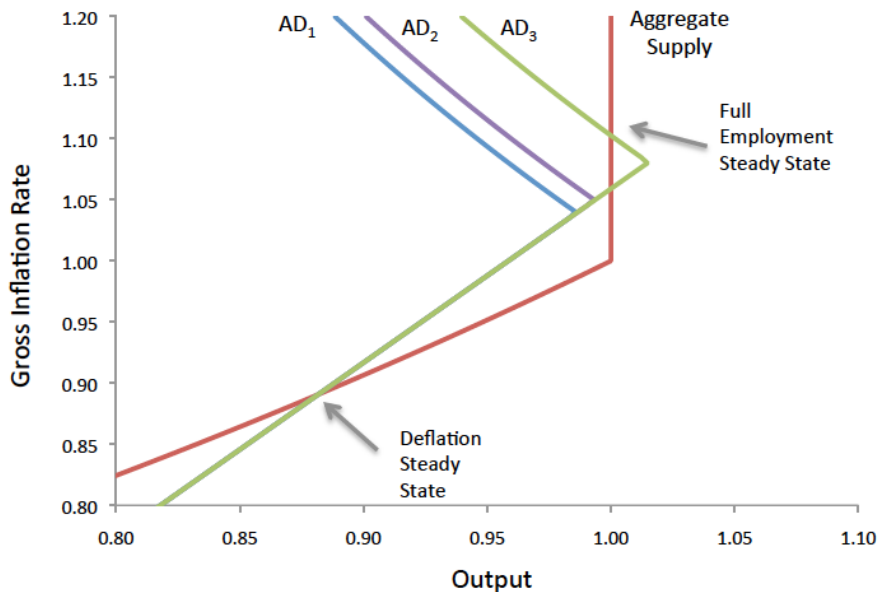
Lending rates ***increased*** rather than decreased as interest rate became very negative!

Higher Inflation Target – forwards guidance

Eggertsson, Mehrotra, Robbins (AEJ-macro 2019)

$$r_t = i_t - E_t \pi_{t+1}$$

RAISING THE INFLATION TARGET



Key new insight of secular stagnation literature:

- Forward guidance about interest rates useless
- Raising inflation target does nothing if not high enough.
- Increasing inflation target only “allows for a new equilibrium” does not guarantee it.

Conclusion

- Persistently low interest rate raise challenges that I think remain unresolved.
- The solution that was proposed at the very beginning of Japan problems in 1990's still seems the right one: Higher inflation.
- Why has no-one experimented with it?
- One issue not touched upon on: Many countries at the ZLB give perverse incentive to trade wars due to negative externality of current account surpluses.