



# Has monetary policy cared too much about a poor measure of $r^*$ ?

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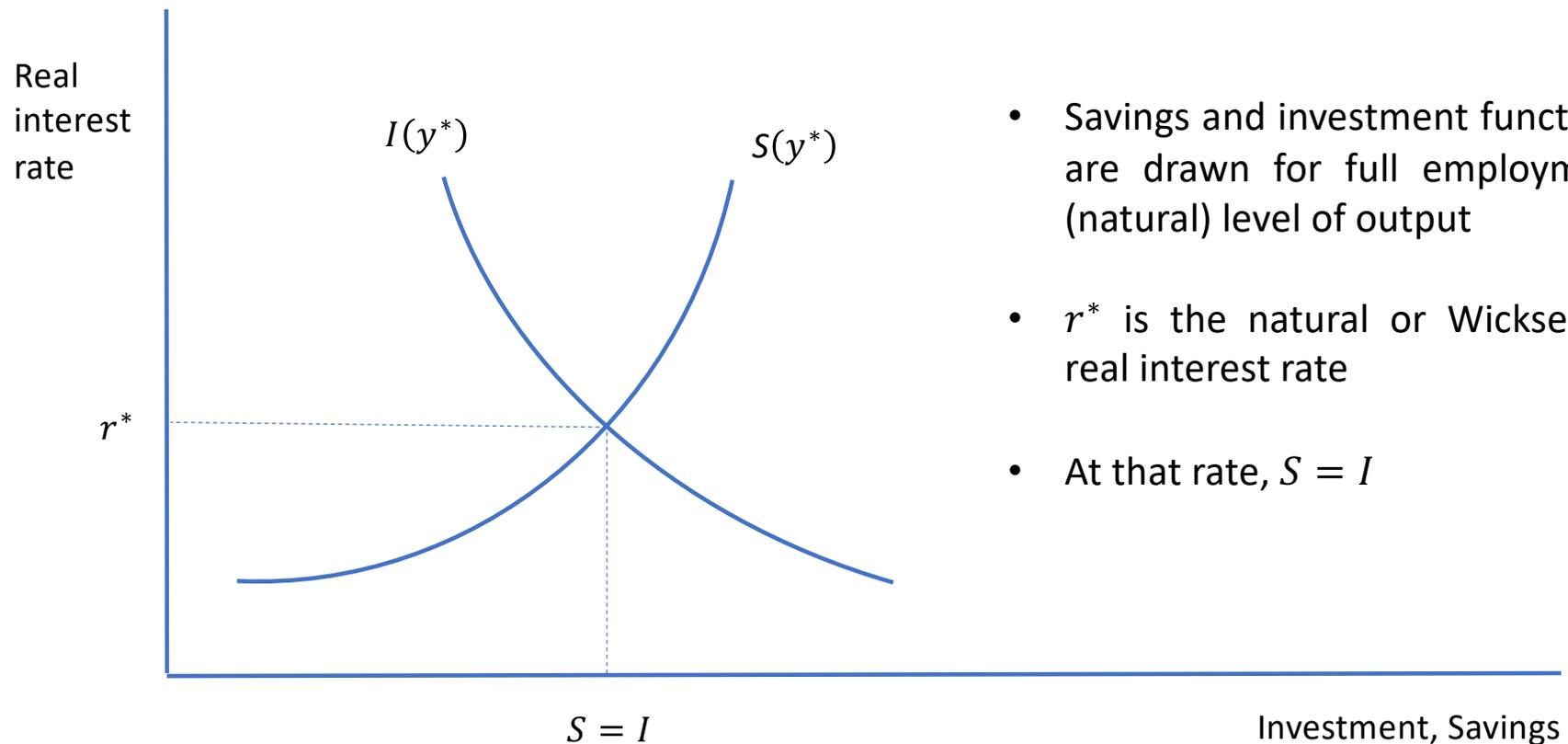
# Introduction and roadmap

- Very thought-provoking paper
- Very nice mixture of simple theory, empirics and policy implications
- (Of the kind we should be teaching at schools of public policy!)
- And the topic could not be more important....
- In the next few minutes I will
  - Set the stage for the paper and its contribution
  - Present a stripped-down version of the theory
  - Think about policy implications
  - Present a few doubts / questions / caveats

# The big issue

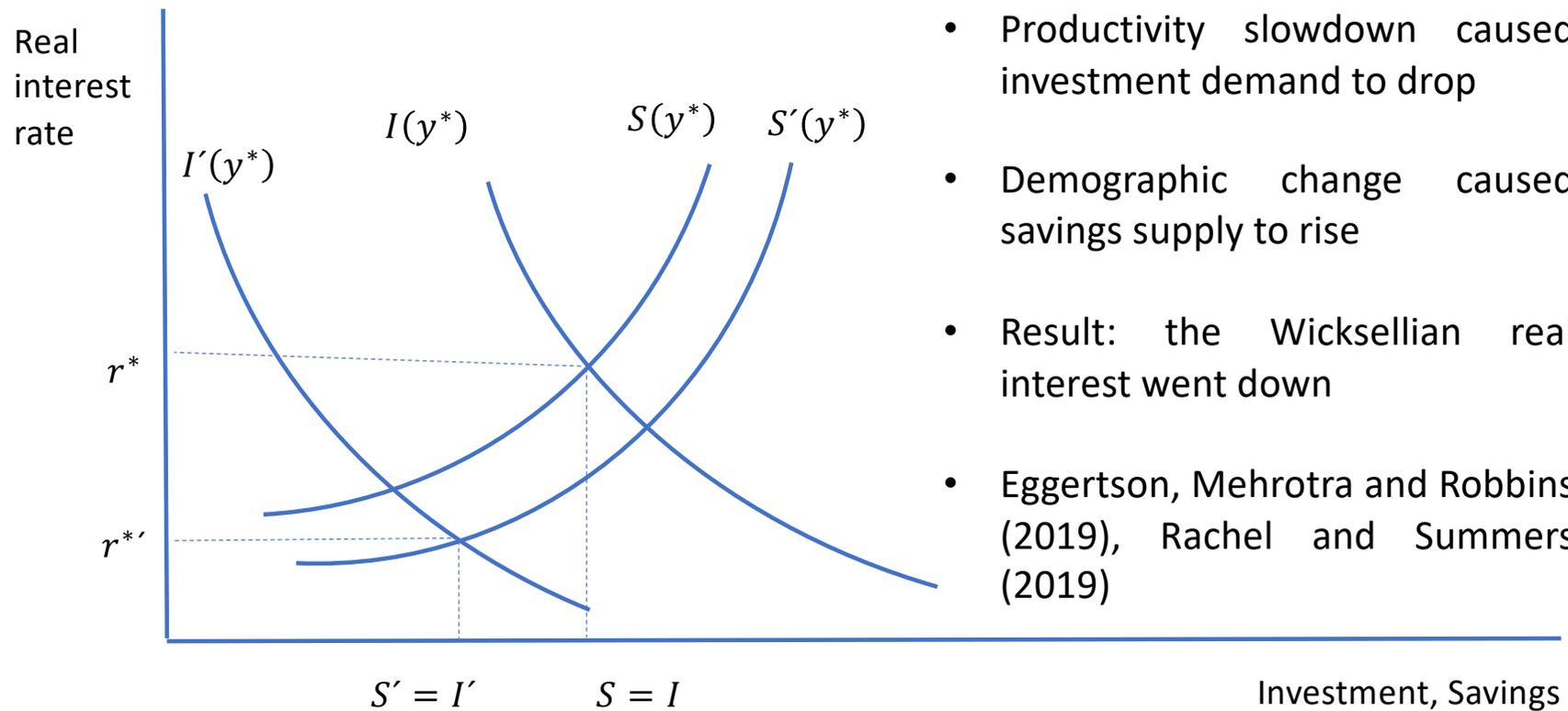
- This is a paper about the Wicksellian, natural or neutral rate of interest
- It is the rate of interest that ensures savings supply is equal to investment demand at full employment
- Less technically, it is the rate at which aggregate demand is neither too *cold* (deflationary) or too *hot* (inflationary)
- Ricardo's paper explores
  - How it is determined
  - How we measure it
  - What impact it has
- He concludes we have been thinking about it the wrong way for a while

# Closed economy: determination of $r^*$



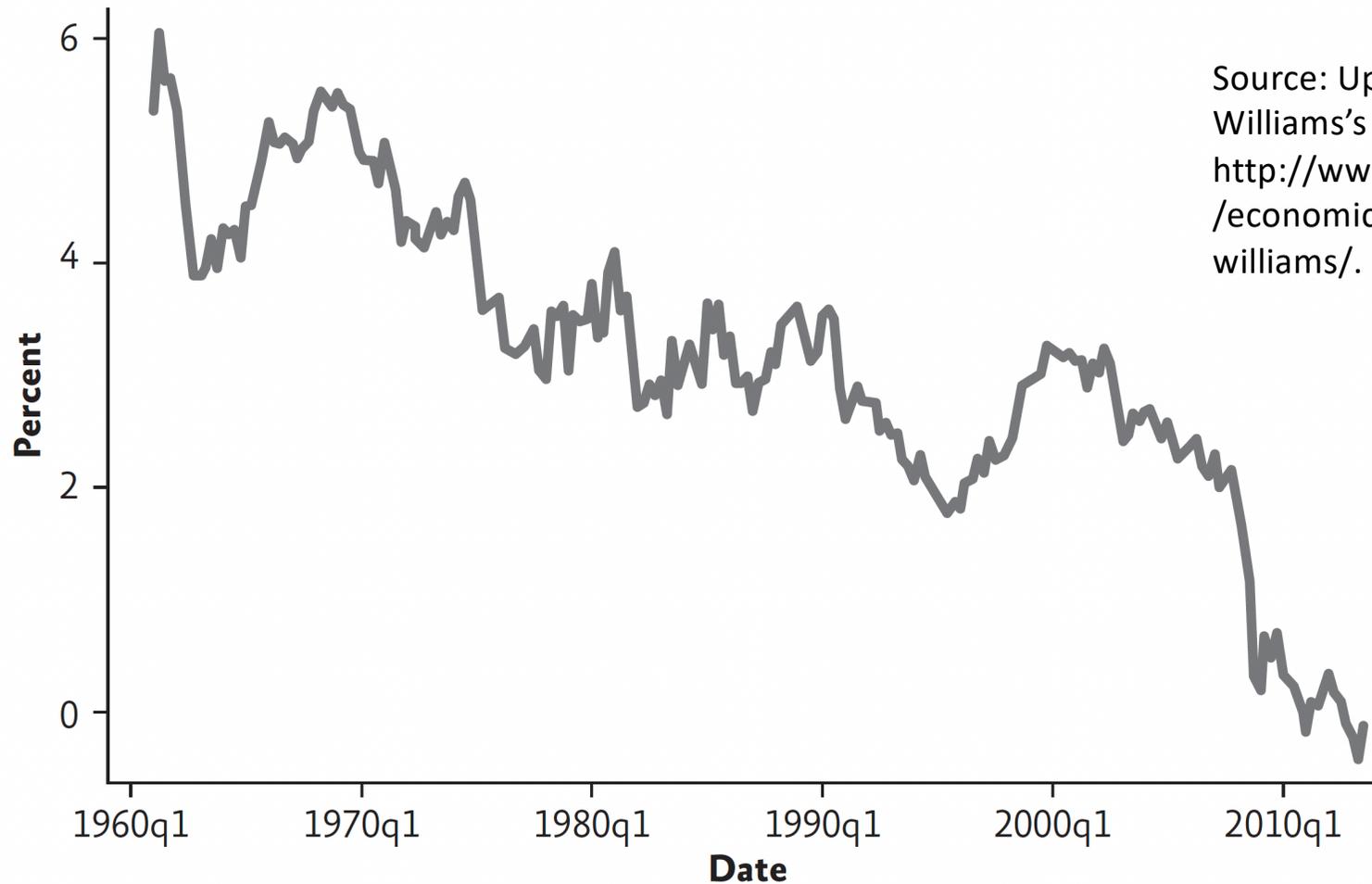
- Savings and investment functions are drawn for full employment (natural) level of output
- $r^*$  is the natural or Wicksellian real interest rate
- At that rate,  $S = I$

# Savings, investment, and the drop in $r^*$



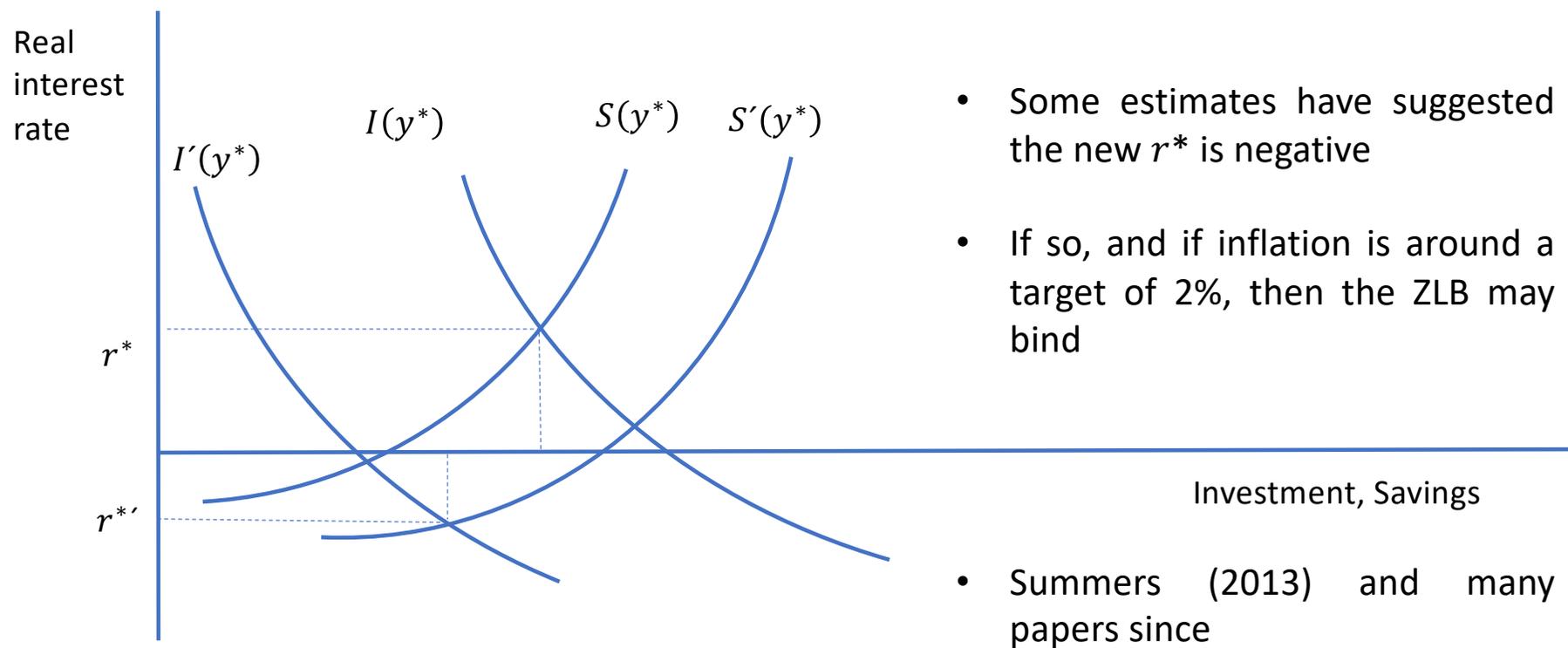


# Drop in $r^*$ : Laubach and Williams method (2003)



Source: Updated estimates from John Williams's home page, <http://www.frbsf.org/economic-research/economists/john-williams/>.

# The drop in $r^*$ , secular stagnation and the ZLB



## Reis (2022): are we looking at the right $r^*$ ?

- In an economy with perfect capital markets, there is only one real interest rate (differences are arbitrated away)
- But in an economy with financial distortions, there can be many
- Or at least two: return on real capital and on government debt
- Most estimates of  $r^*$  use interest rate on government bonds
- But it is the return on real capital that matters for saving and investment decisions
- So the return on real capital should be the input into fiscal and monetary stabilization policies
- Perhaps we have been barking up the wrong tree!

## Stripped down version of Ricardo's model

- Capitalists own share  $\alpha$  of assets and savers own the rest
- Two assets: real capital, with fixed gross real return  $a$  and government debt, with gross real return  $r$
- Discount factor  $\beta$ . For simplicity assume  $\beta^{-1} = a$
- Financial constraint: the amount capitalists pay in interest and amortization to savers can be no larger than a multiple  $\gamma$  of what they earn on capital

## More on stripped-down version of Ricardo's model

- Supply of savings (no-growth Euler equation) is

$$\beta^{-1} = \alpha R + (1 - \alpha)r$$

where  $R$  is the leveraged return from investing in capital

$$R = \frac{ak - rz}{k - z}$$

and  $z$  are loans from savers, which earn the same return as bonds.

- Demand for savings is given by borrowing constraint (that always binds):

$$rz \leq \gamma ak$$

# Equilibrium in stripped-down version of model

- Combining supply and demand yields

$$r^* = \left( \frac{\gamma}{1 - \alpha} \right) a$$

- Note that

$$a - r^* = \left( \frac{1 - \alpha - \gamma}{1 - \alpha} \right) a$$

- So  $r^* < a$  if  $\gamma + \alpha < 1$
- Wedges  $\alpha$  and  $\gamma$  and separate the two rates: financial distortions key!
- Implication of theory:  $r^*$  diverges from  $a$  as  $\alpha$  and  $\gamma$  become smaller

# Implications for monetary policy

- Taylor rule for interest rate setting

$$i = \pi + r^* + \frac{1}{2}(\pi - 2) + \frac{1}{2}(y - y^*)$$

- So, other things equal, if  $r^*$  is lower,  $i$  should also be lower
- Yellen (2015): “Even with core inflation running below the 2 % objective, Taylor’s rule now calls for the federal funds rate to be well above zero if ... the “normal” level of the real federal funds rate is currently close to its historical average. But the prescription offered by the Taylor rule changes significantly if one instead assumes, as I do, that ... the economy’s equilibrium real federal funds rate --that is, the real rate consistent with the economy achieving maximum employment and price stability over the medium term-- is currently quite low by historical standards.”

# Implications for fiscal policy

- An environment of very low or negative interest rates offers fiscal policymakers a bit of a free lunch
- If the rate on bonds is below the growth rate of the economy, permanent increases in expenditure need not require an increase in taxes
- But that free lunch is not unbounded --rather is it proportional to the gap between the return on capital and the return on bonds
- Much like the revenue from money creation
- In that case, people hold an asset (money) because it yields liquidity services even though its return is low (or negative) and this yields revenue
- In Ricardo's account, agents hold government debt because they cannot hold more capital, and this again generates revenue for the government

# Reis (2022): a summary

- Very challenging conclusions
  - The return on capital has been roughly constant in advanced economies
  - It is the return on government bonds that has been dropping
  - But the return on government bonds does not matter for aggregate demand, monetary policy, etc
- If Ricardo is right, then monetary policy over the last 15 years has been one huge, massive misunderstanding!
- And perhaps fiscal policy too, because the free lunch was not as large (infinitely large) as some policy-makers thought!

## First caveat: plausibility

- Over the last decade and a half:
  - Real interest rates of short maturities have been negative in most advanced economies
  - And the balance sheets of the major central banks (Fed, ECB, BoE, BoJ) have grown by a factor of 5 or more!
- If we take Ricardo's conclusions literally, these policies should have triggered hyper-inflation!
- But instead, inflation has been very low or negative in most advanced economies
- Inflation has also been historically low in many emerging economies too
- Is this contrast too striking? Does it detract from the plausibility of the story?
- Ahh, but inflation has risen now! (paper starts by reminding us of that...)
- So what changed? Is it simply that markets took a decade and a half to react?

## Second caveat: this versus other gap stories

- There are other stories out there of an interest rate gap
- Safe asset shortage (Caballero, Farhi and Gourinchas, several papers):
  - Public debt of advanced economies is a safe asset
  - As world GDP is increasingly produced by countries that do not produce safe assets (China among them) this has created a safe asset shortage
  - As a result, the price of safe asset rises and their yield drops
- Risk (Reis 2021, among several others)
  - Workers and households cannot diversify idiosyncratic income risk
  - They hold a government debt (or money) as a buffer against this risk
  - Again, this creates an interest rate wedge
- How to compare the theoretical implications of these contrasting theories? In some of them, the rate on debt matters for savings and investment: safety trap
- How to compare their empirical implications?

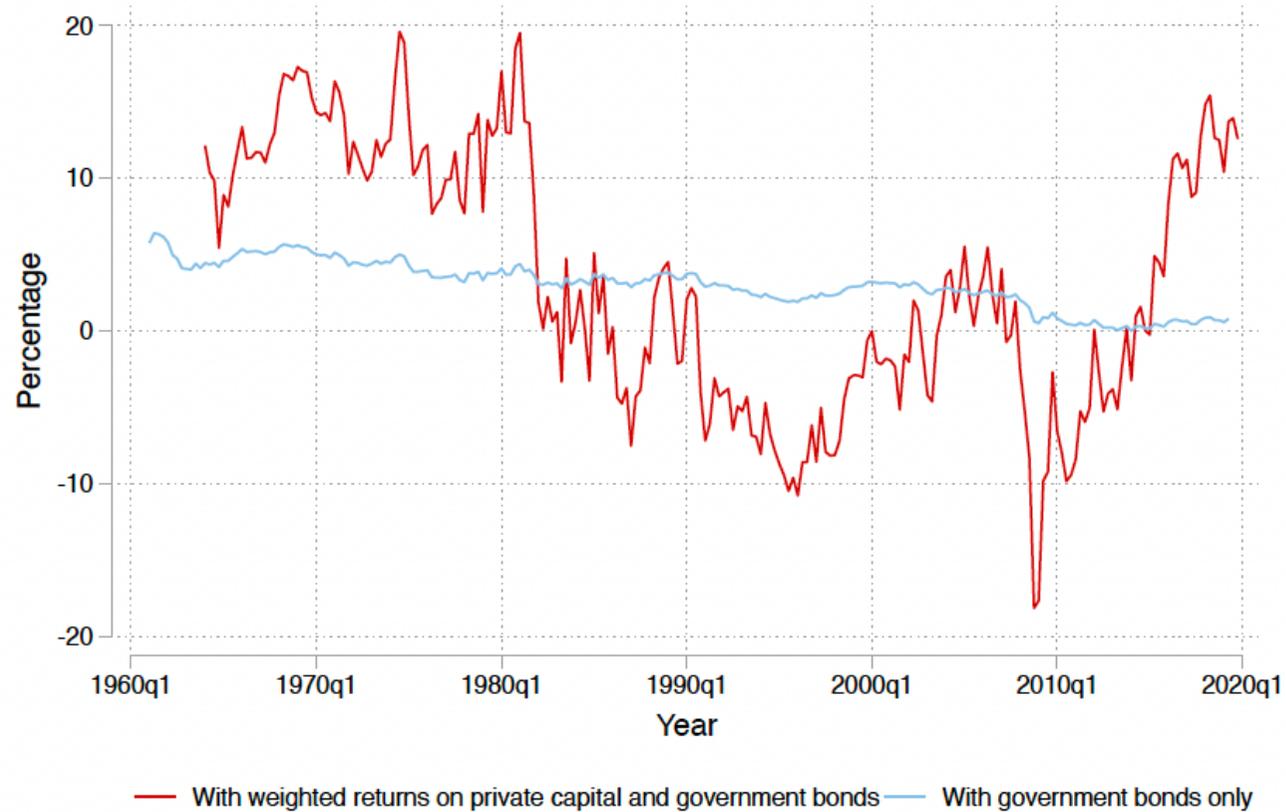
## Third caveat: the role of liquidity

- A main point of the paper is that the rate of return on bonds  $r$  matters for aggregate demand only if it affects  $m$
- But there are models out there in which  $r$  enters directly --for instance, Calvo and Velasco (2022)
- Suppose consumption demand is proportional to available liquidity (as in a liquidity-in advance constraint)
- And suppose also that the market value of government bonds is part of this liquidity (along with money and other liquid assets)
- Then, changes in bond interest rates and bond prices affect liquidity, aggregate demand and output.
- The Euler equation then only pins down the “pure” interest rate, for a given path of consumption and output

## Fourth caveat: direction of travel, persistence

- In the standard story, relevant factors are
  - Demographics, productivity, price of capital goods
  - Which tend to **reduce** the equilibrium rate of return on private capital
  - And are viewed as permanent or, at least, very persistent
- In the Reis (2022) story relevant factors are
  - Labour share, monopoly power and mark-ups
  - Which tend to **increase** the equilibrium rate of return on private capital
  - Should they be viewed as permanent or, at least, very persistent?
  - Note that financial imperfections play little or no role in the empirical part of paper
- If we combine both, which Ricardo does using the Laubach-Williams model, the estimate of the neutral rate of return is very volatile and with no trend
- Not sure how to interpret this, and what it means for policy

# Neutral rate using Laubach-Williams model



# Where do we go from here?

- “Why has inflation risen so much in 2021-22? The increase has been persistent, common across many advanced countries, and accompanied by historically loose monetary policy. This paper explores an hypothesis: central banks allowed inflation to rise because their focus on some estimates of  $r^*$  made them unduly tolerant of rising inflation” (Reis 2022)
- What changed in 2021-22 about  $r^*$  that caused the increase in inflation?
- And was that change permanent or transitory?
- “I believe we will ... go back to low real interest rates. ...With probability 0.9, we’ll return to something like that world. ... If I look at the factors behind the decline in real interest rates since the mid-1980s, none of them seems about to turn around, except perhaps one, which is investment”. (O. Blanchard)
- What predictions does Ricardo’s approach make about this?



Thank you!