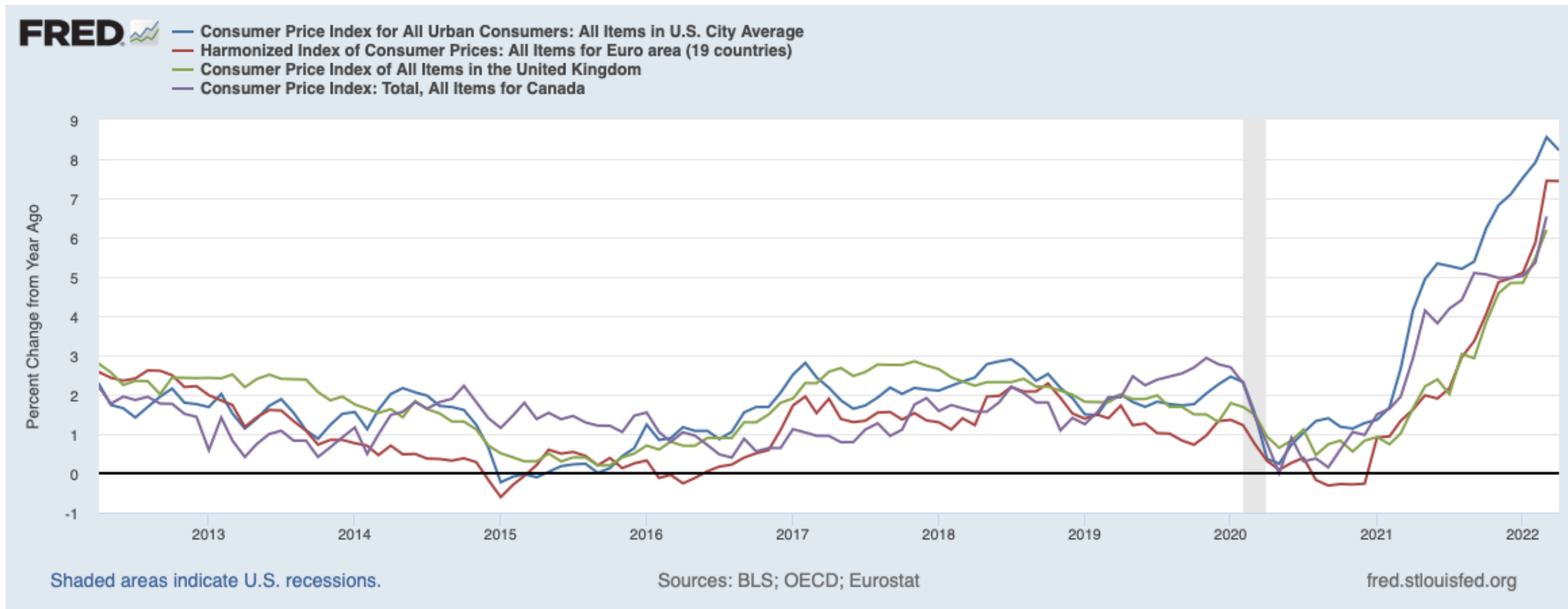


# HAS POLICY CARED TOO MUCH ABOUT A POOR MEASURE OF $R^*$ ?

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LSE

*27<sup>th</sup> of May, 2022  
Asian Monetary Policy Forum  
Singapore*

# Why is inflation out of control in the West?



Focus on low  $r^*$ , natural or neutral real interest rate

- investment=savings and output is at potential
- long-run steady state

Why it has mattered?

- monetary policy focus on deflation, insufficient demand at ZLB, commit to be irresponsible
- fiscal policy allow for more public borrowing, focus on aggregate demand

August 27, 2020

## *New Economic Challenges and the Fed's Monetary Policy Review*

Chair Jerome H. Powell

At "Navigating the Decade Ahead: Implications for Monetary Policy," an economic policy symposium sponsored by the Federal Reserve Bank of Kansas City, Jackson Hole, Wyoming (via webcast)

*"...fall in the equilibrium real interest rate, or "r-star" ...". Powell (2020)*

*"structural developments have lowered the equilibrium real rate of interest" ECB (2021)*

# Explore an hypothesis

- Observation: all measures of declining  $r^*$  are based on government bond yields

*Why would we expect that to be the relevant market for investment=savings?*

*Rather, standard growth model would say to look at private capital stock.*

- Measurement: of  $m^*$ , the returns to private investment

*From demand for capital: average product of capital is constant or slightly rising*

*From supply of capital: growth rate of adjusted consumption implies unchanged*

- What does a rising  $m^*-r^*$  imply for fiscal and monetary policy?

*Data is consistent with rise in deficits and higher debt revenues.*

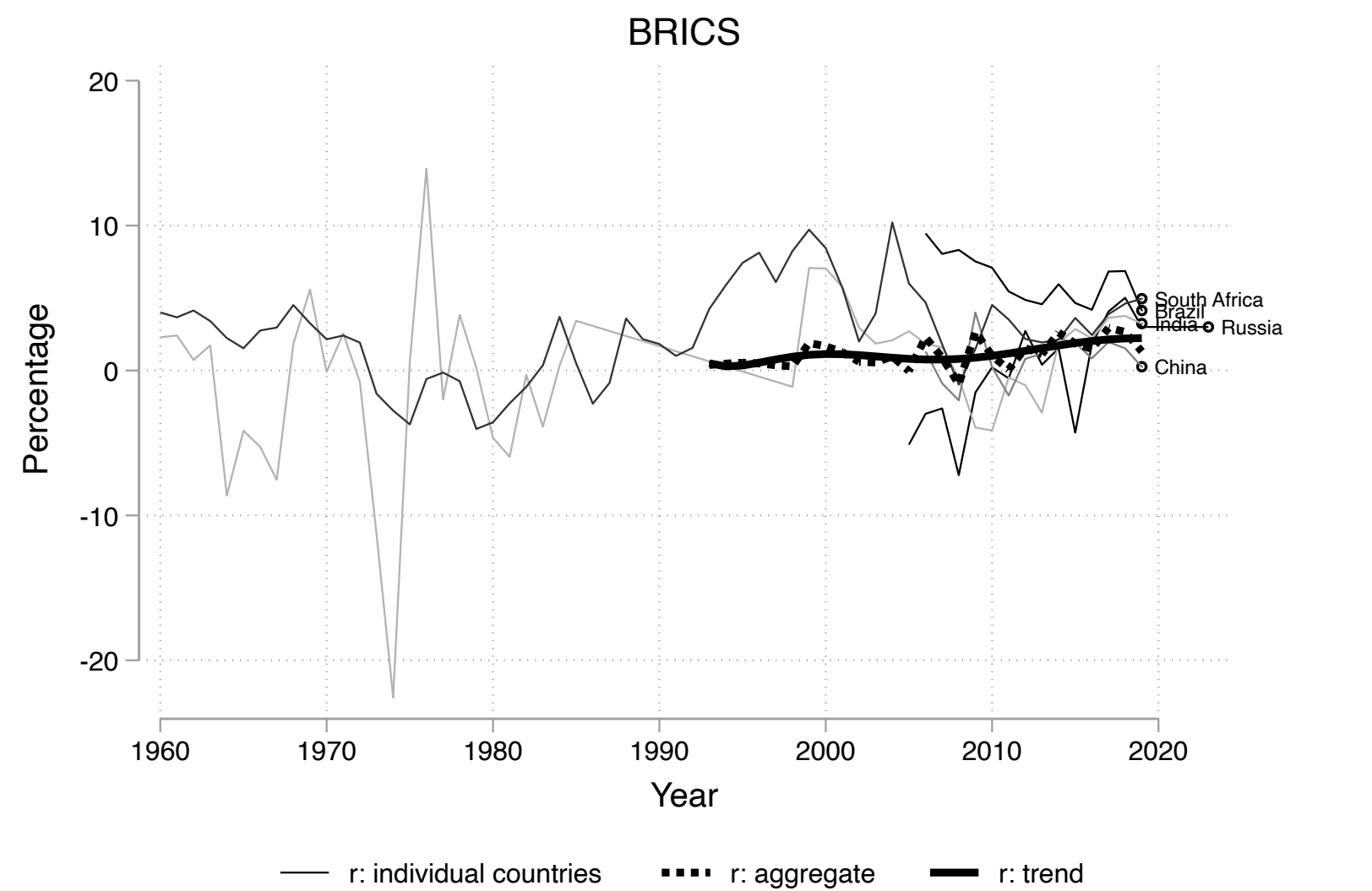
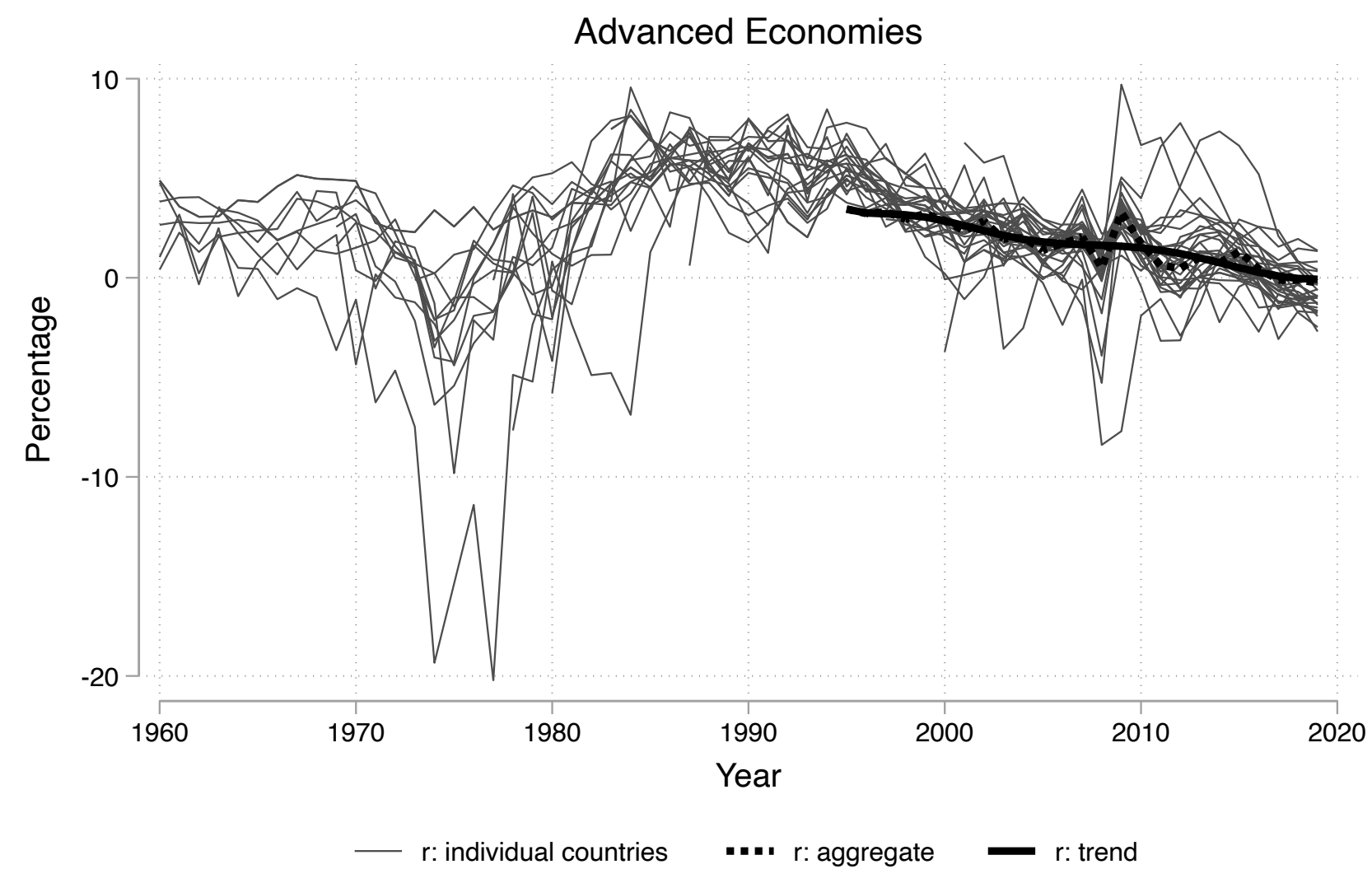
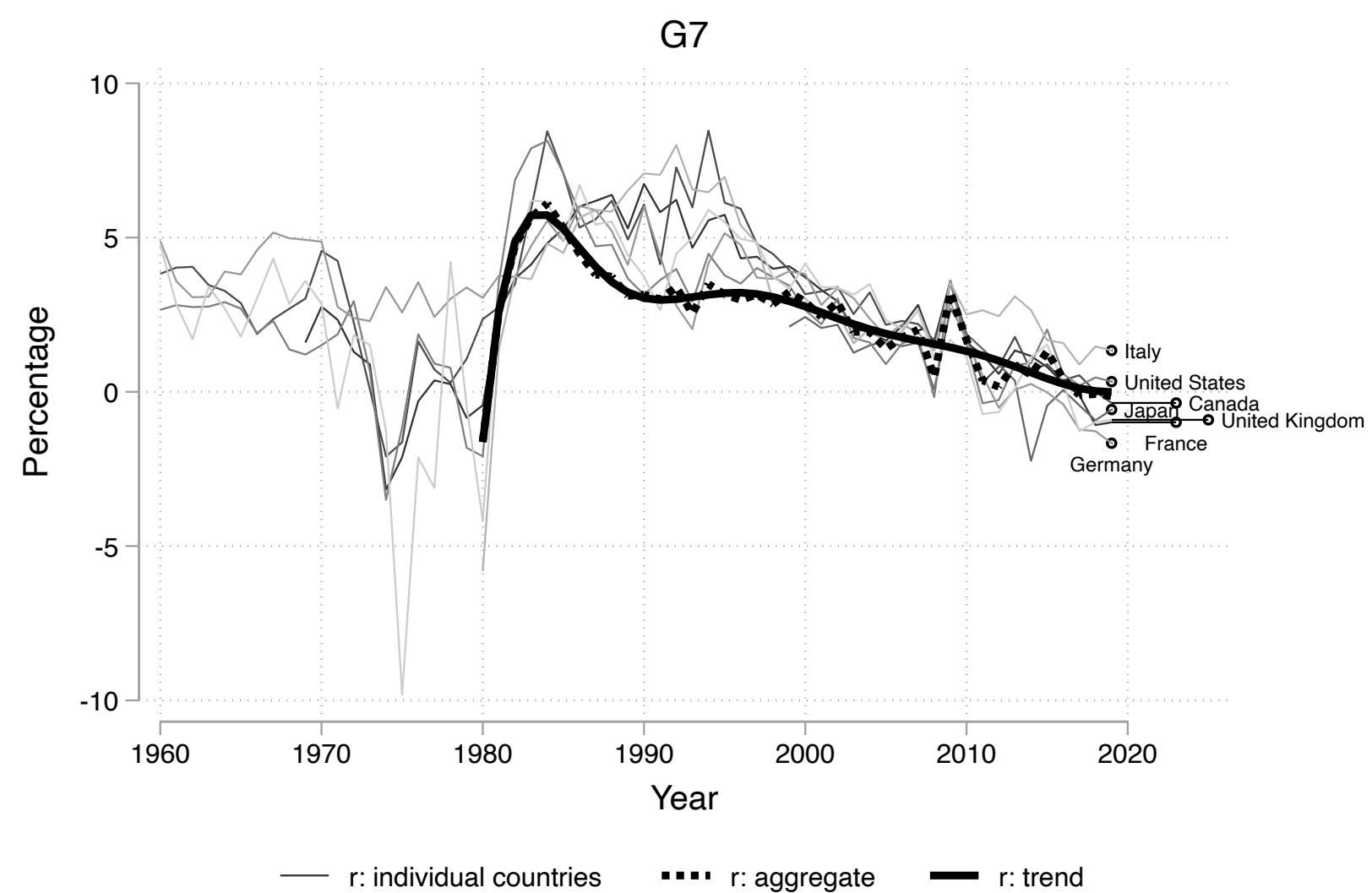
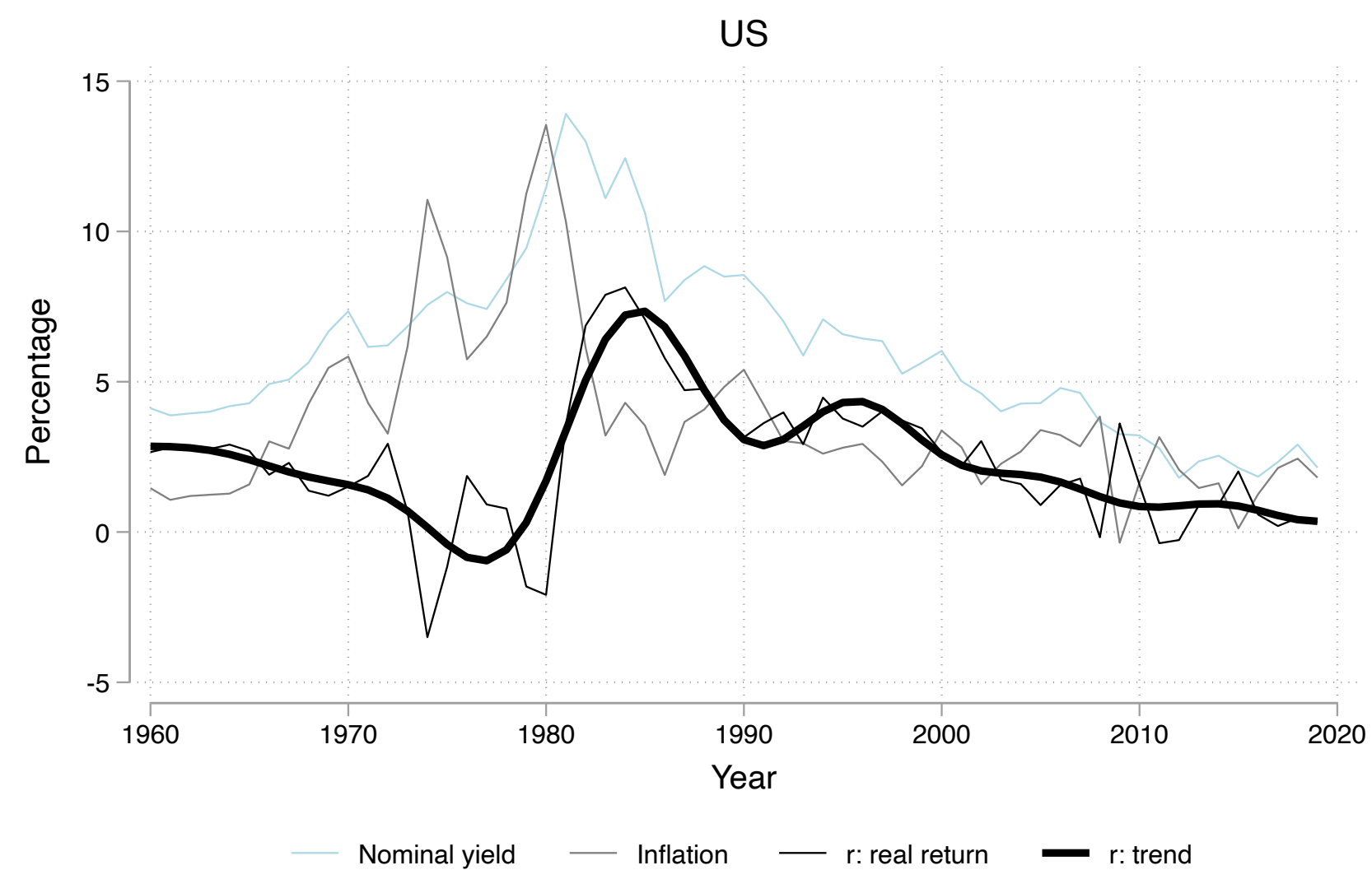
*In long-run,  $r^*$  only matters through  $m^*$*

*Benefits from aggregate demand policies, or higher inflation at ZLB, are lower*

*Benefits from aggregate supply policies, allocation of capital, are higher*

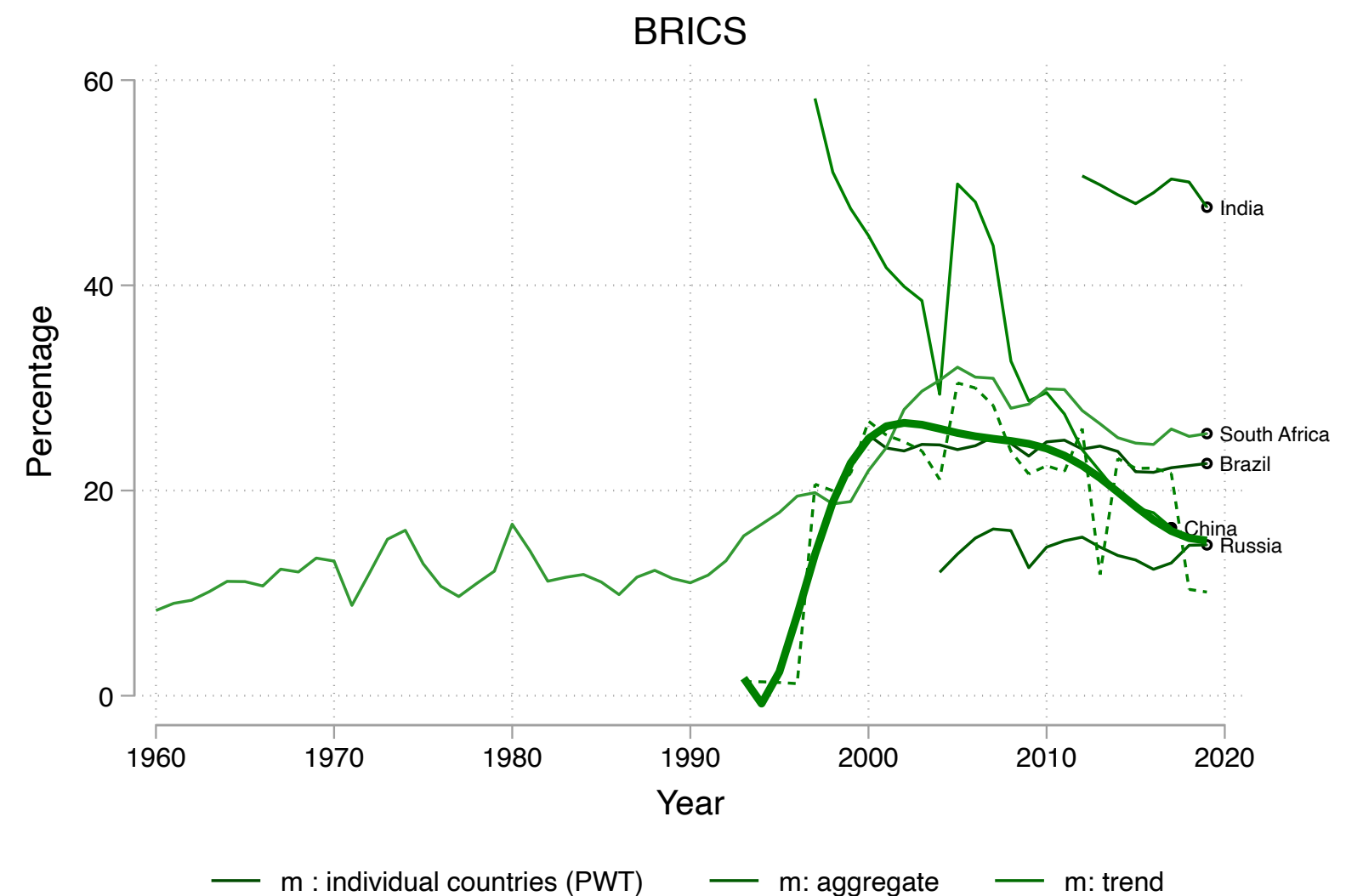
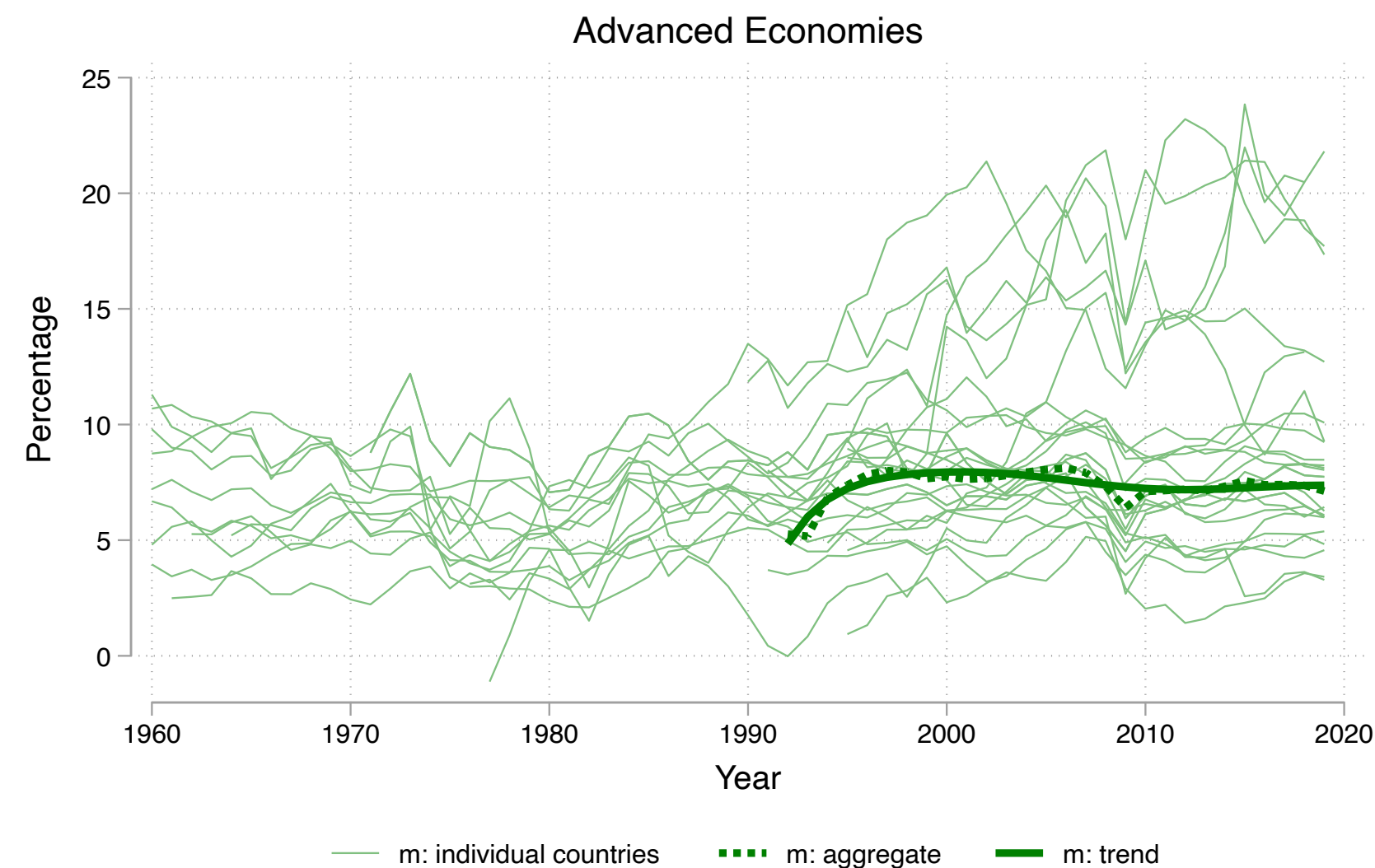
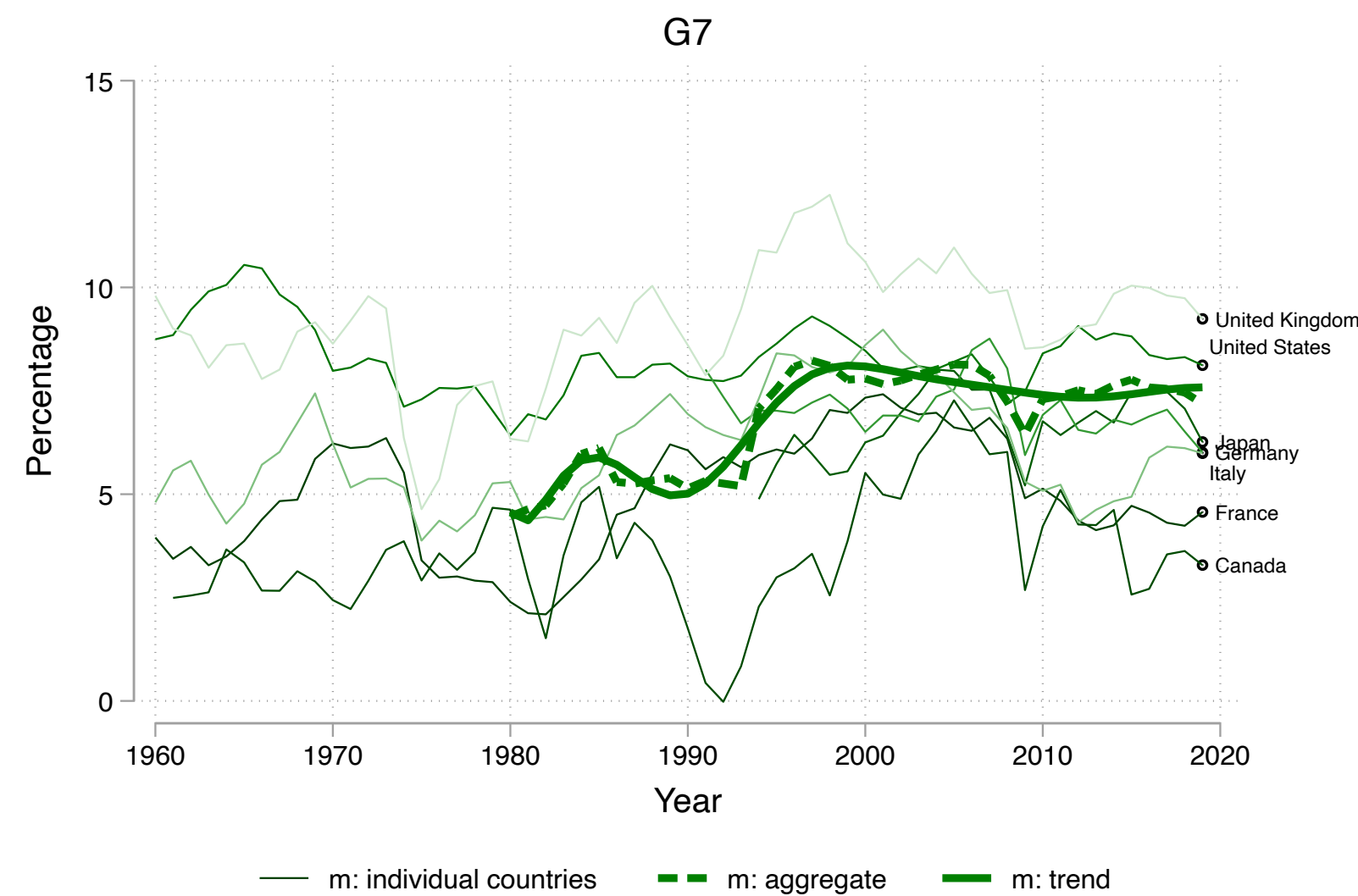
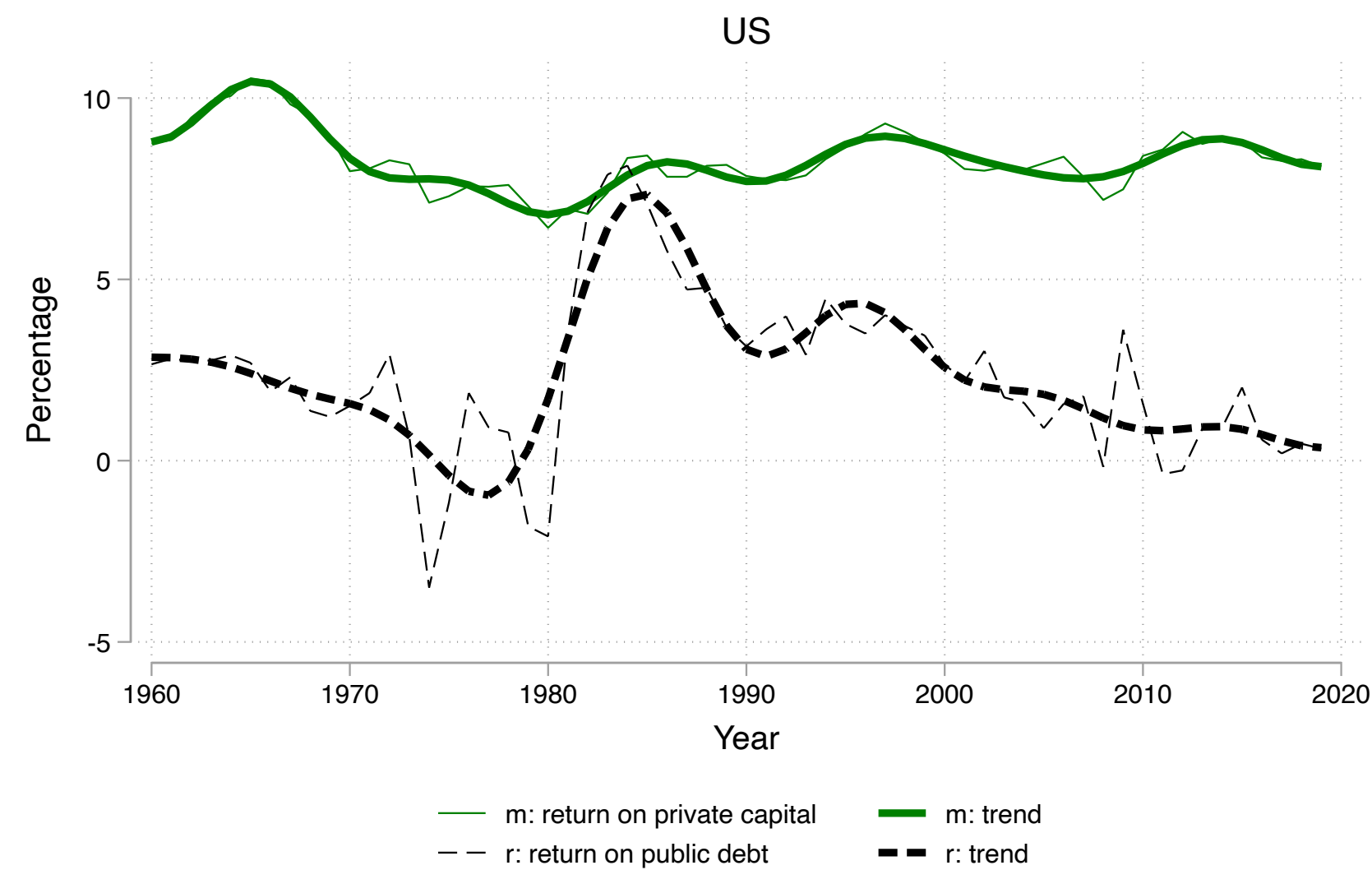
Measurement:  $r^*$ , demand for capital and  
 $m^*$ , supply of capital and  $m^*$

# Long literature shows robust decline



- But this matches private return to savings only if efficient capital markets
- It is safe counterpart to it only if no arbitrage
- Looking at other financial returns—equity, bonds, VC—hopeless by Modigliani-Miller

# Measuring returns to private capital: demand



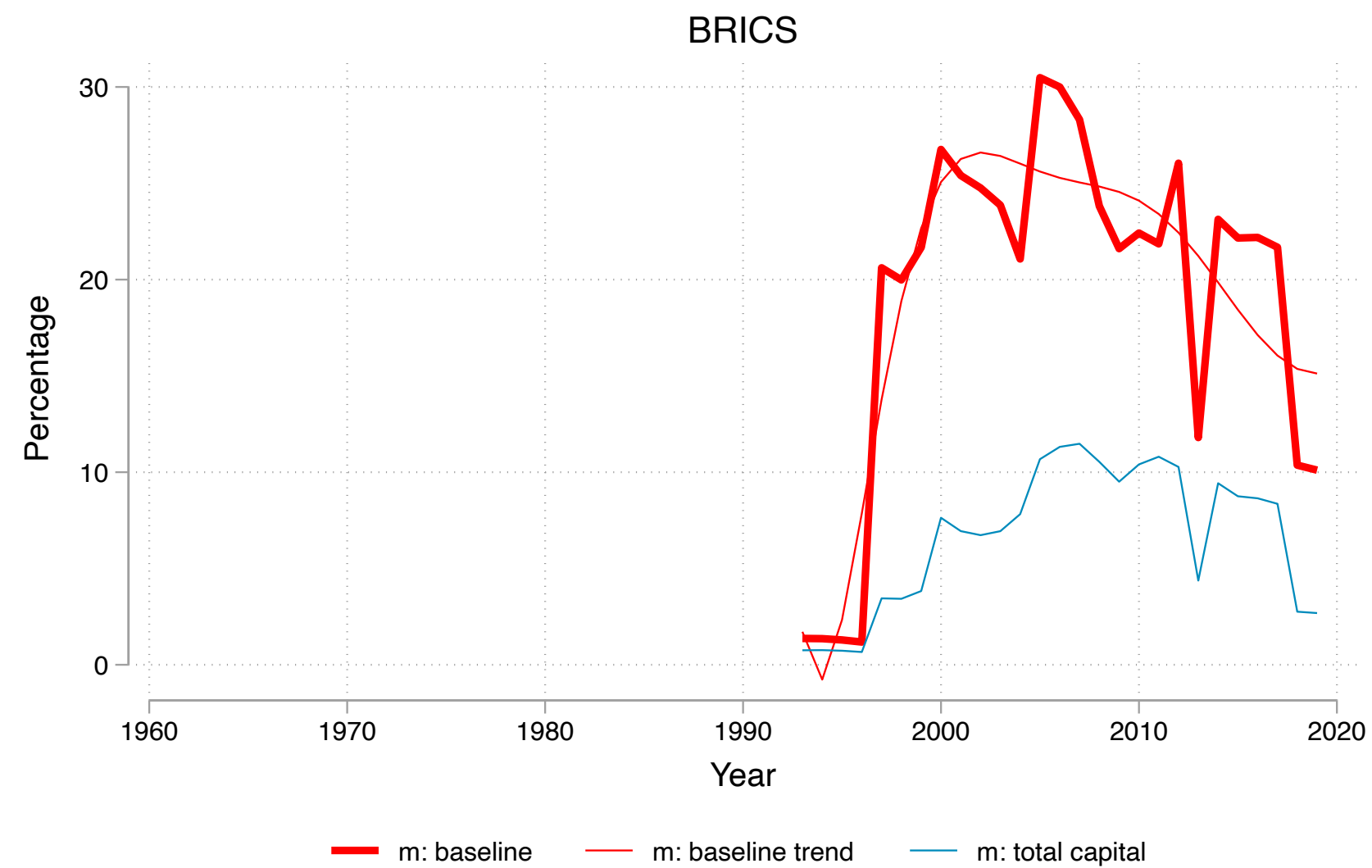
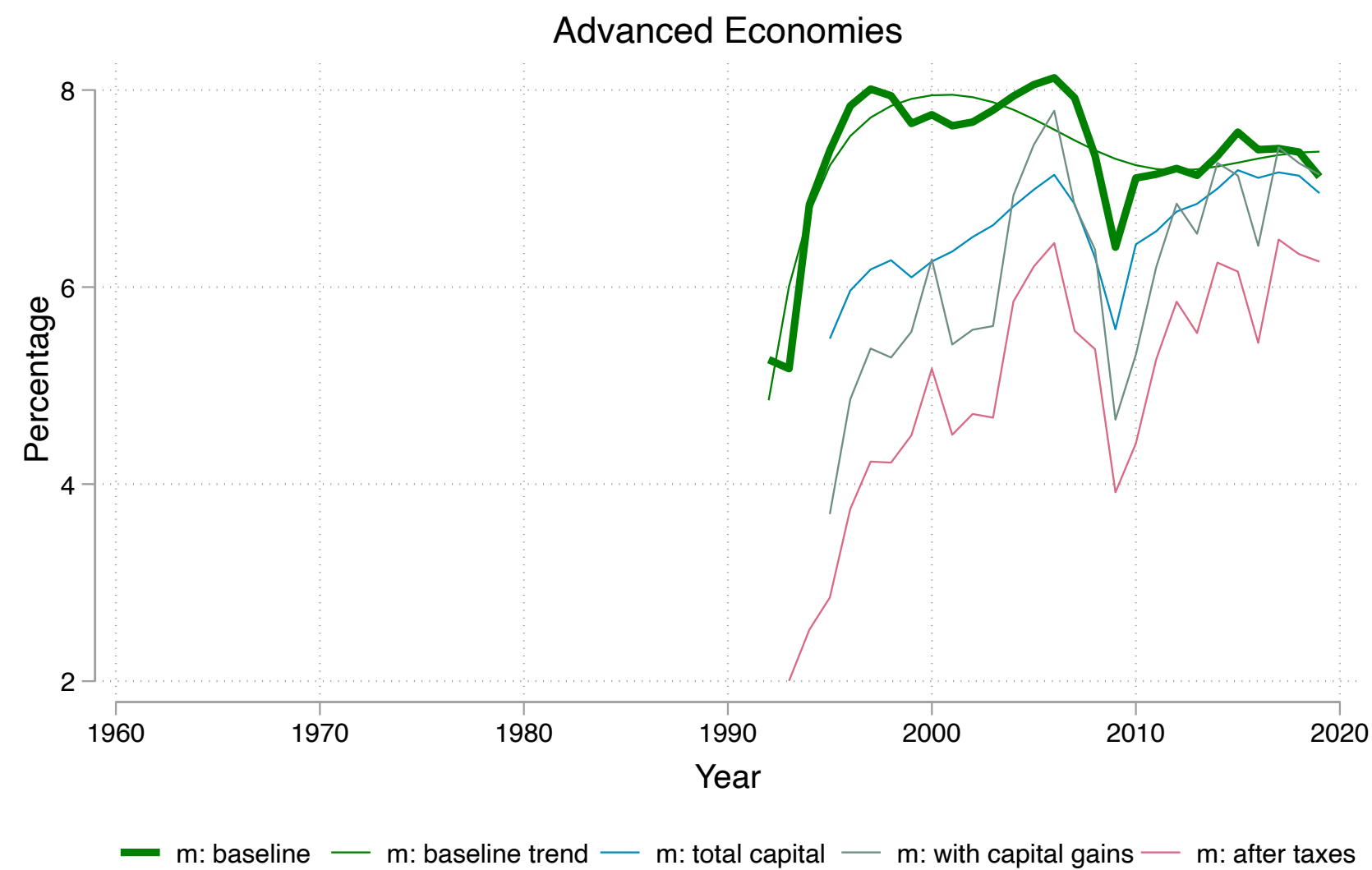
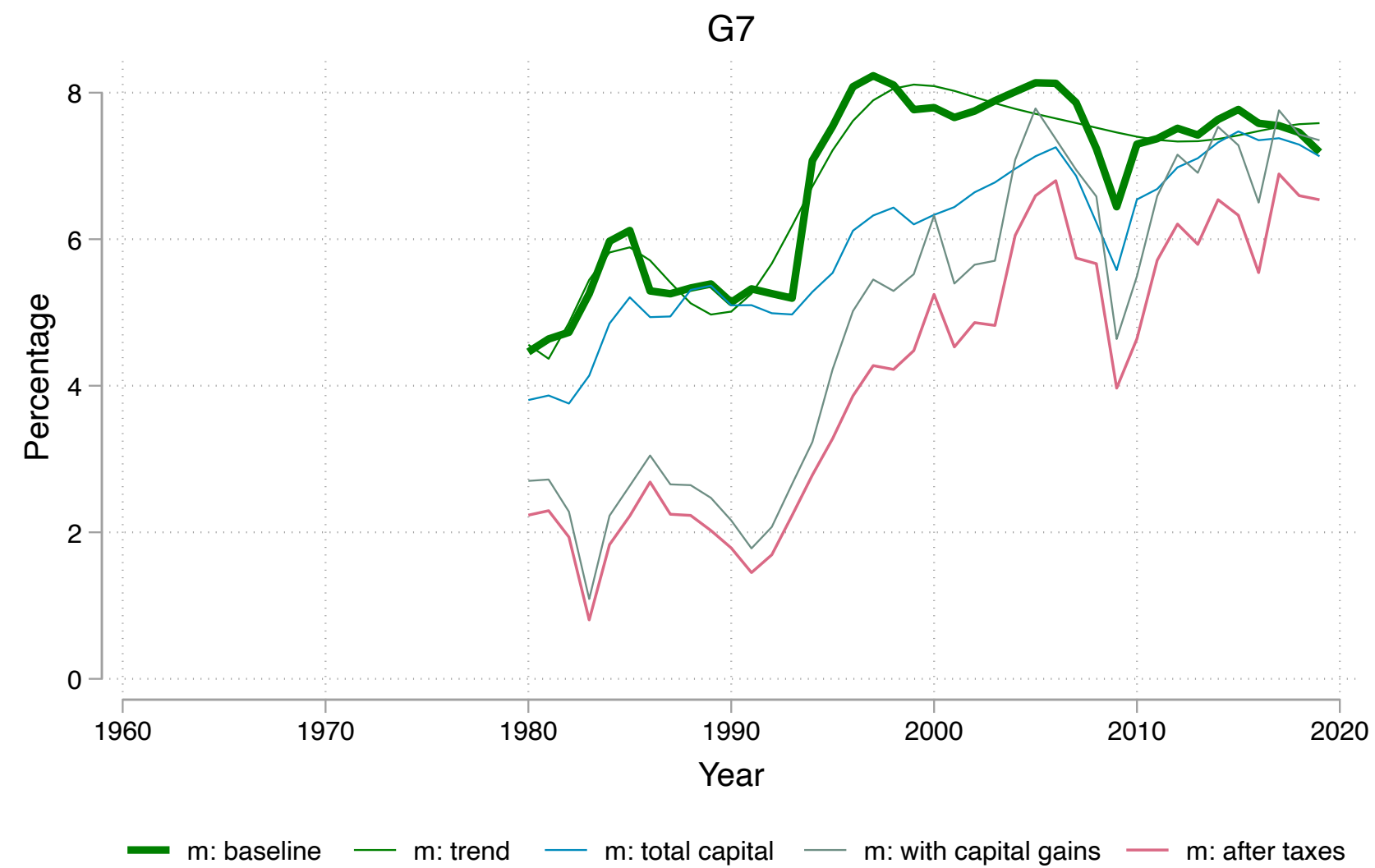
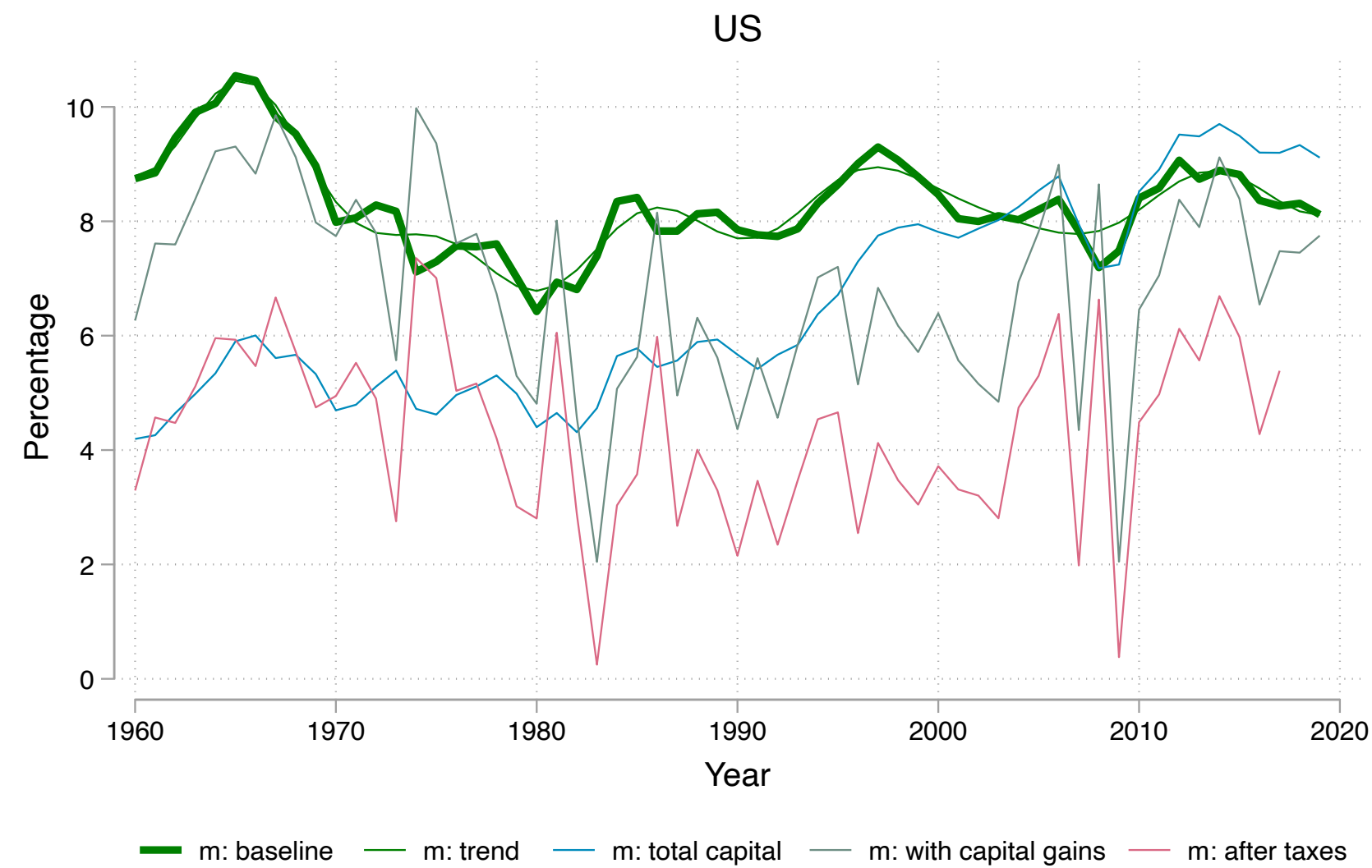
## Profits / CapitalStock

- Numerator: operating surplus net of depreciation adjust for self-employment

- Denominator: private capital stock

- Pattern: constant

# Alternative estimates: if anything rising

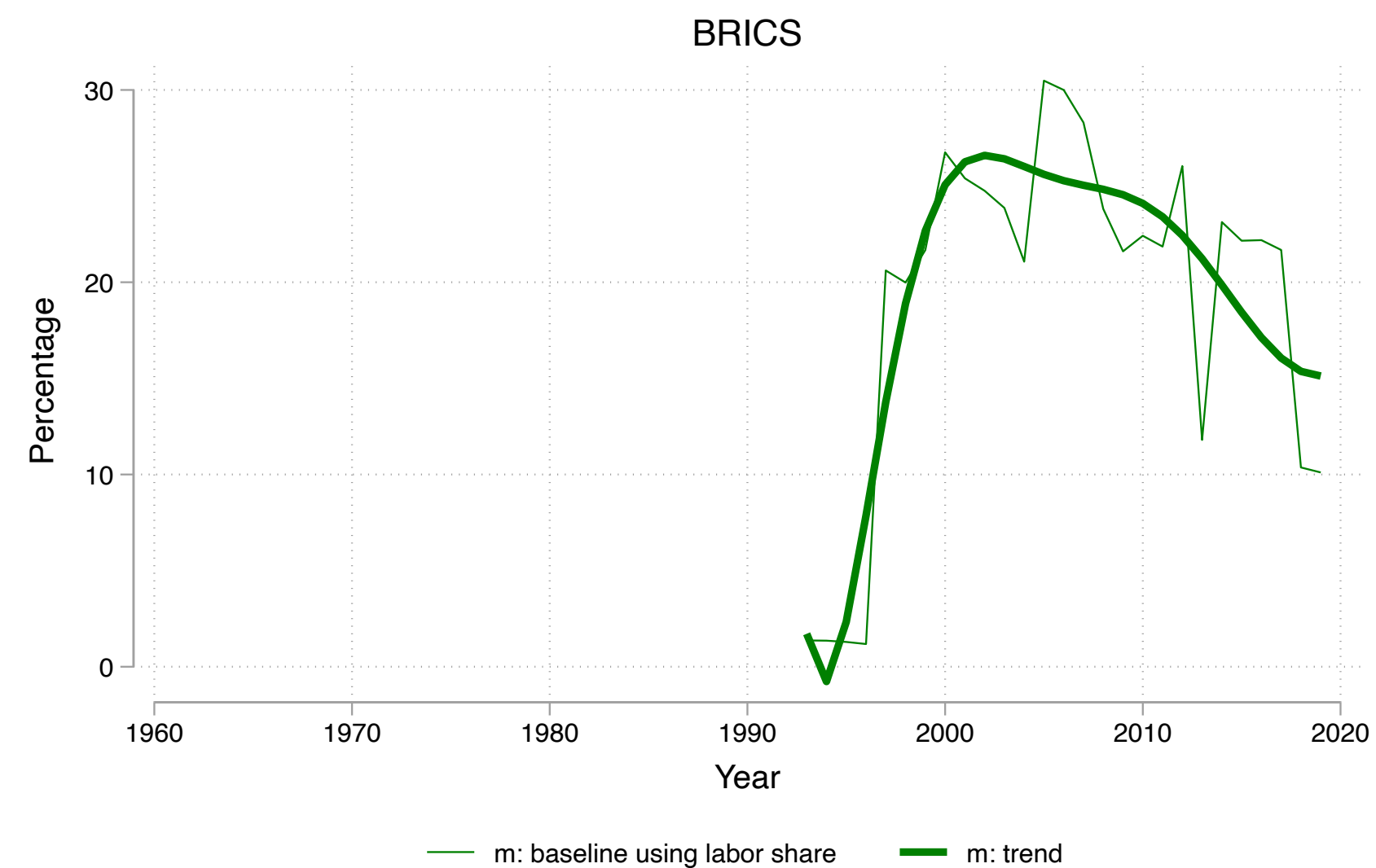
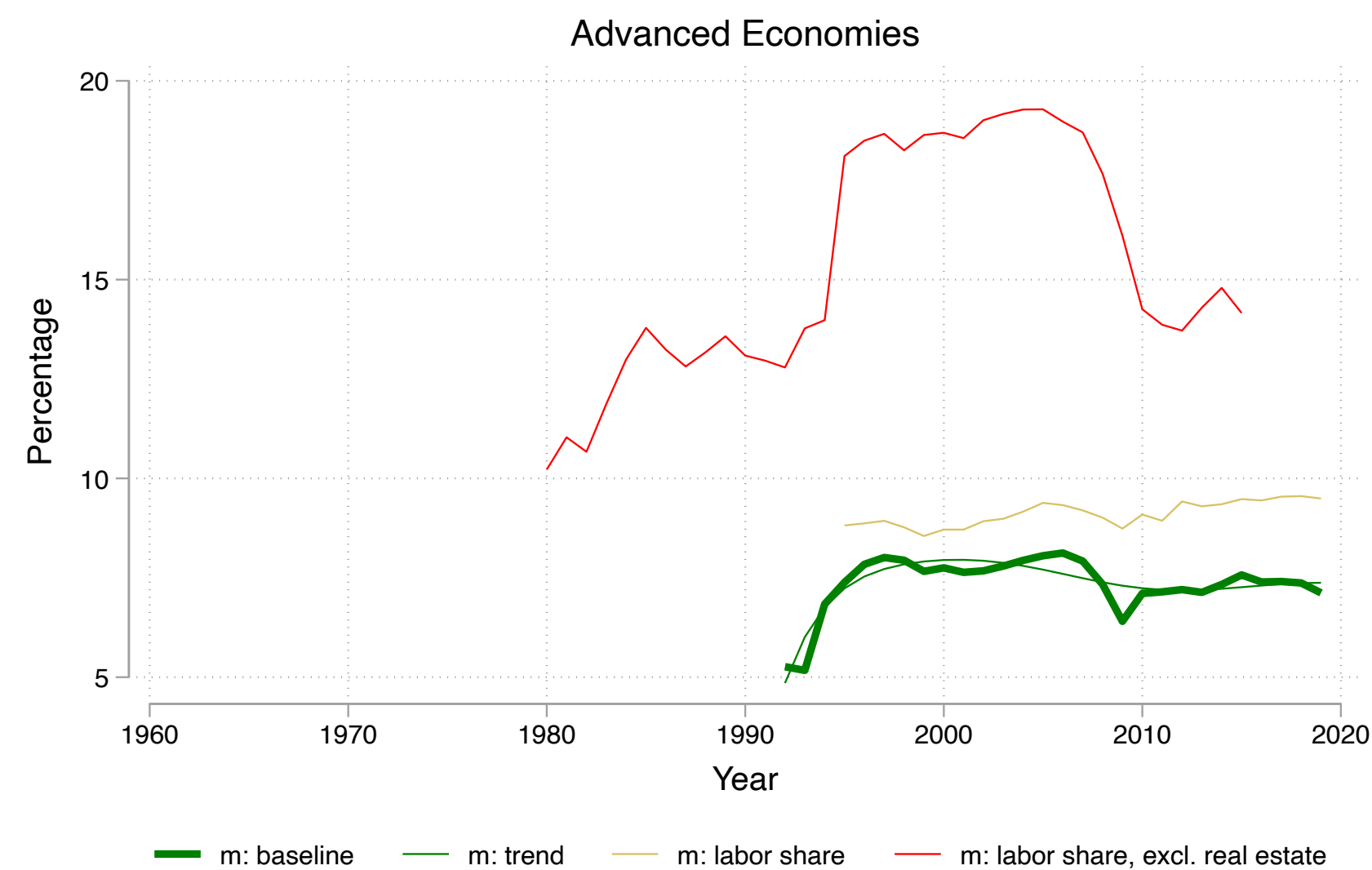
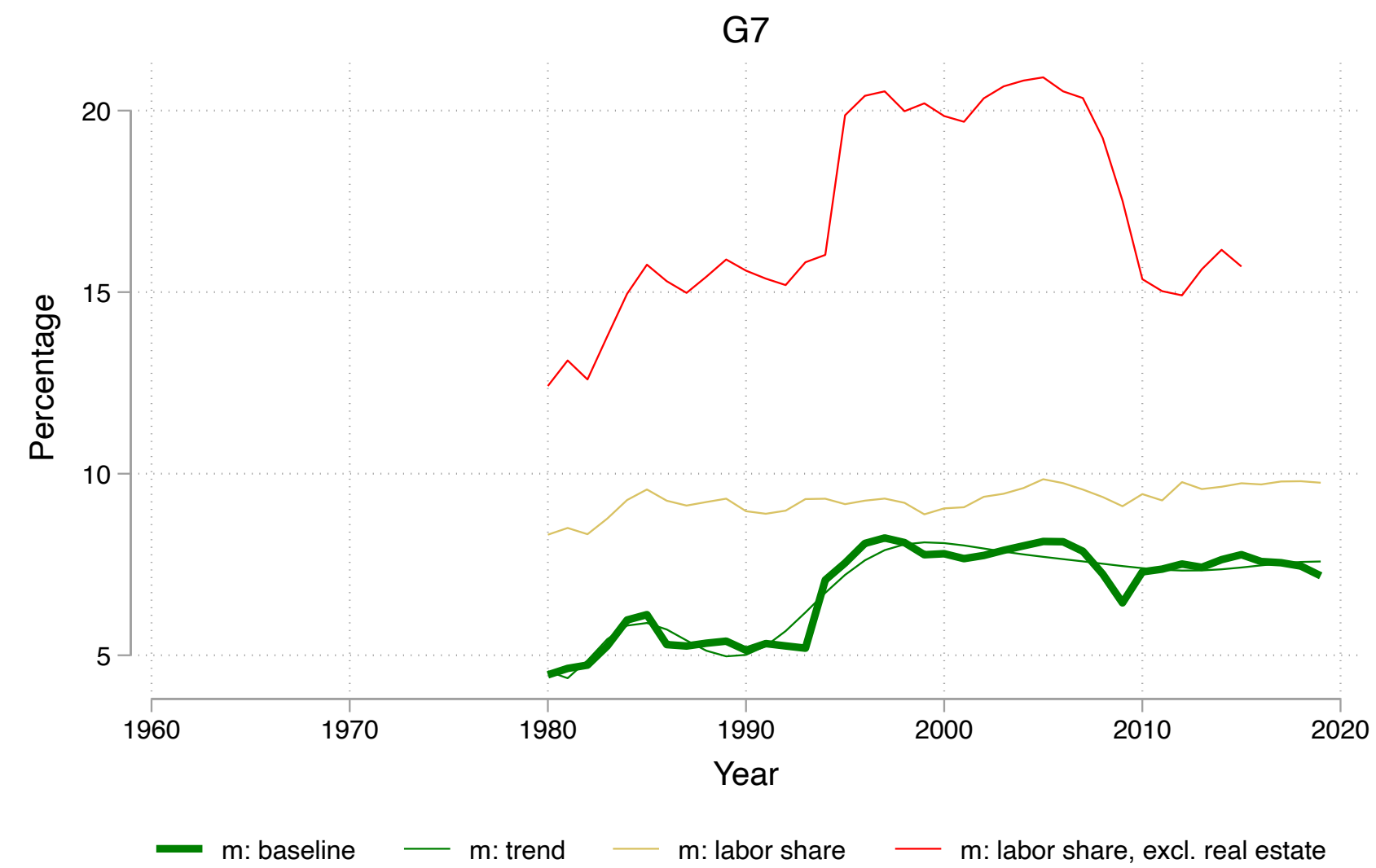
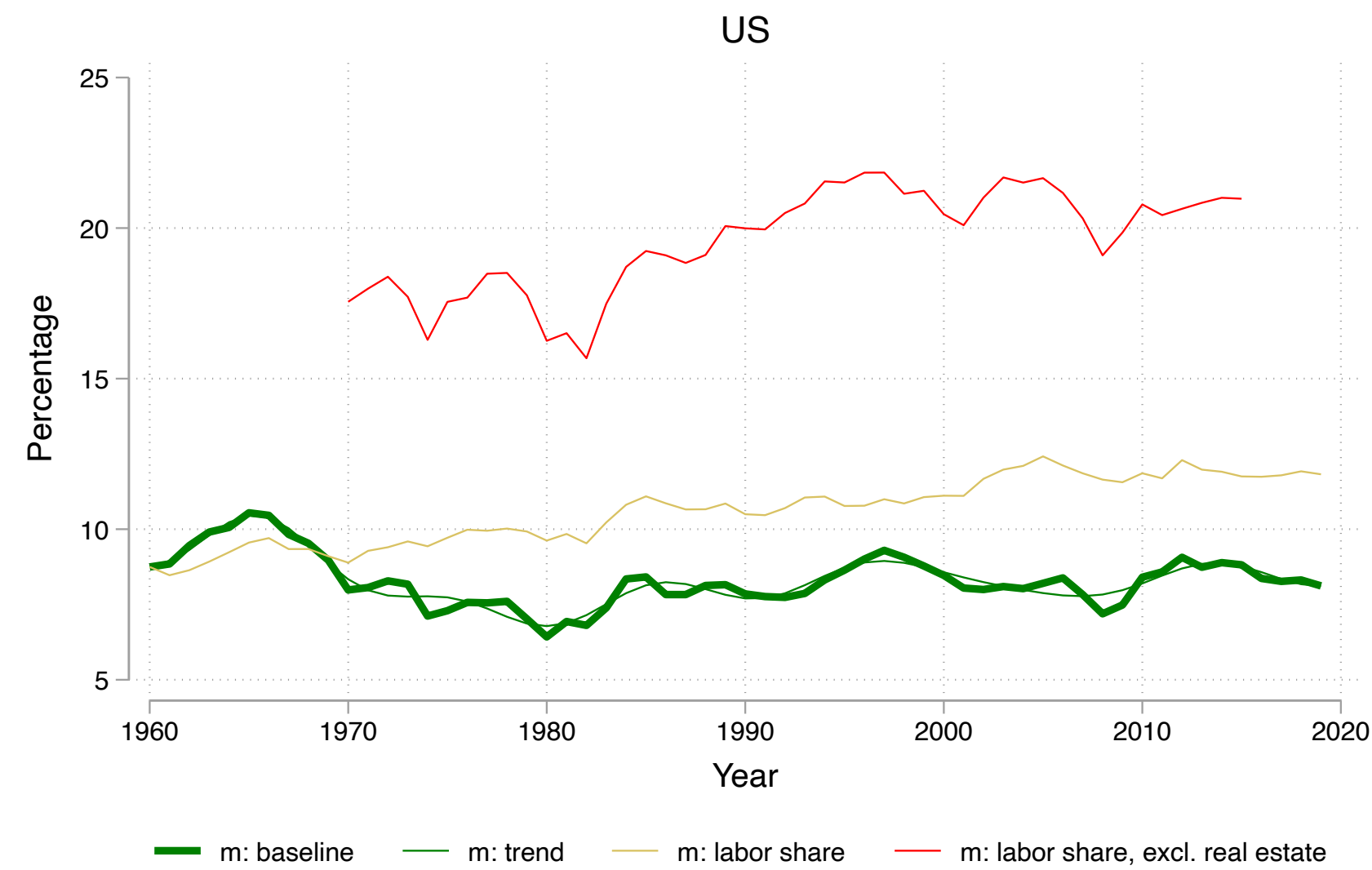


- Include public capital?
- Include capital gains?
- Take out taxes?

# Alternative: labor share estimates

## 1 - labor share

CapitalStock / Output



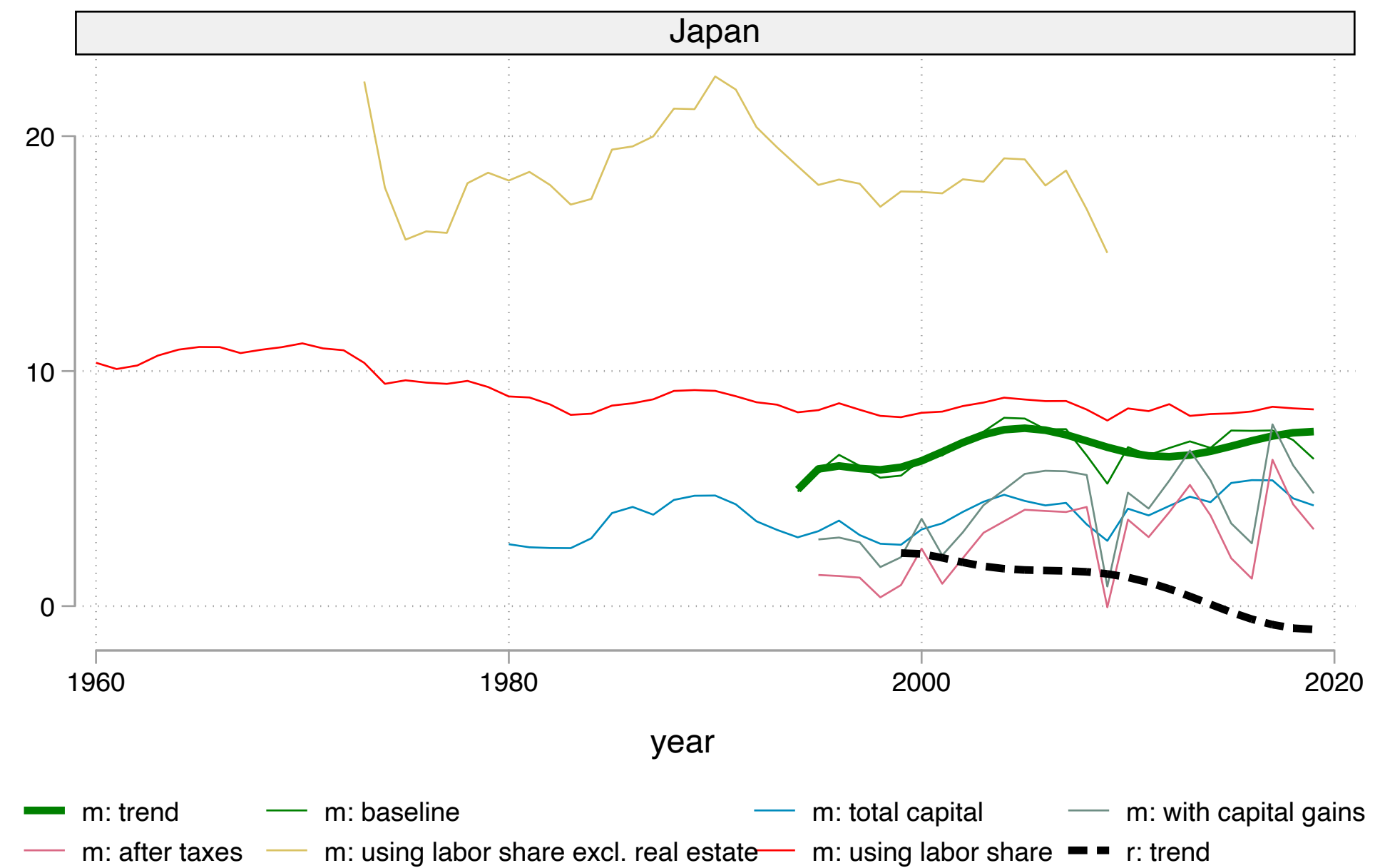
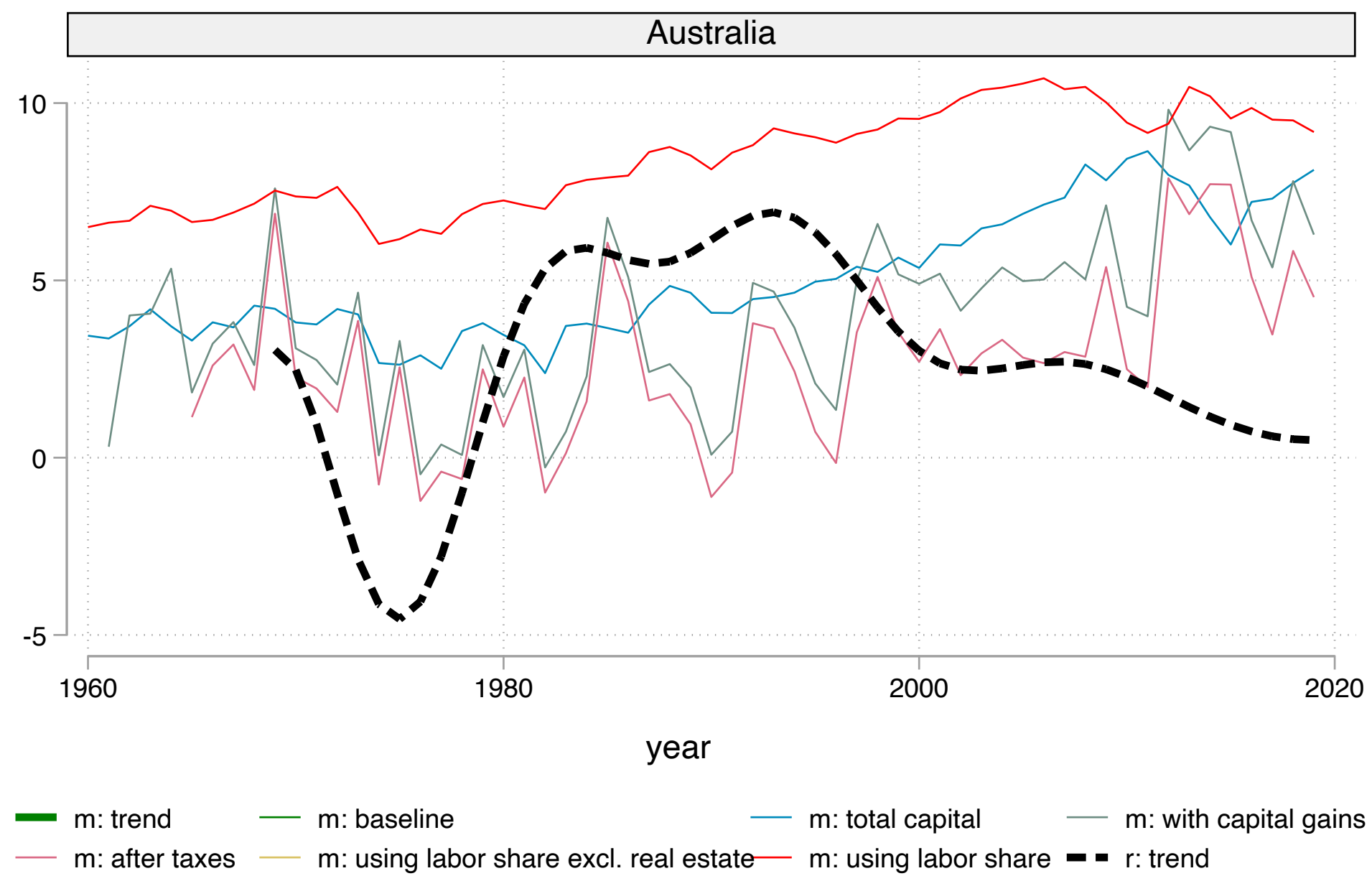
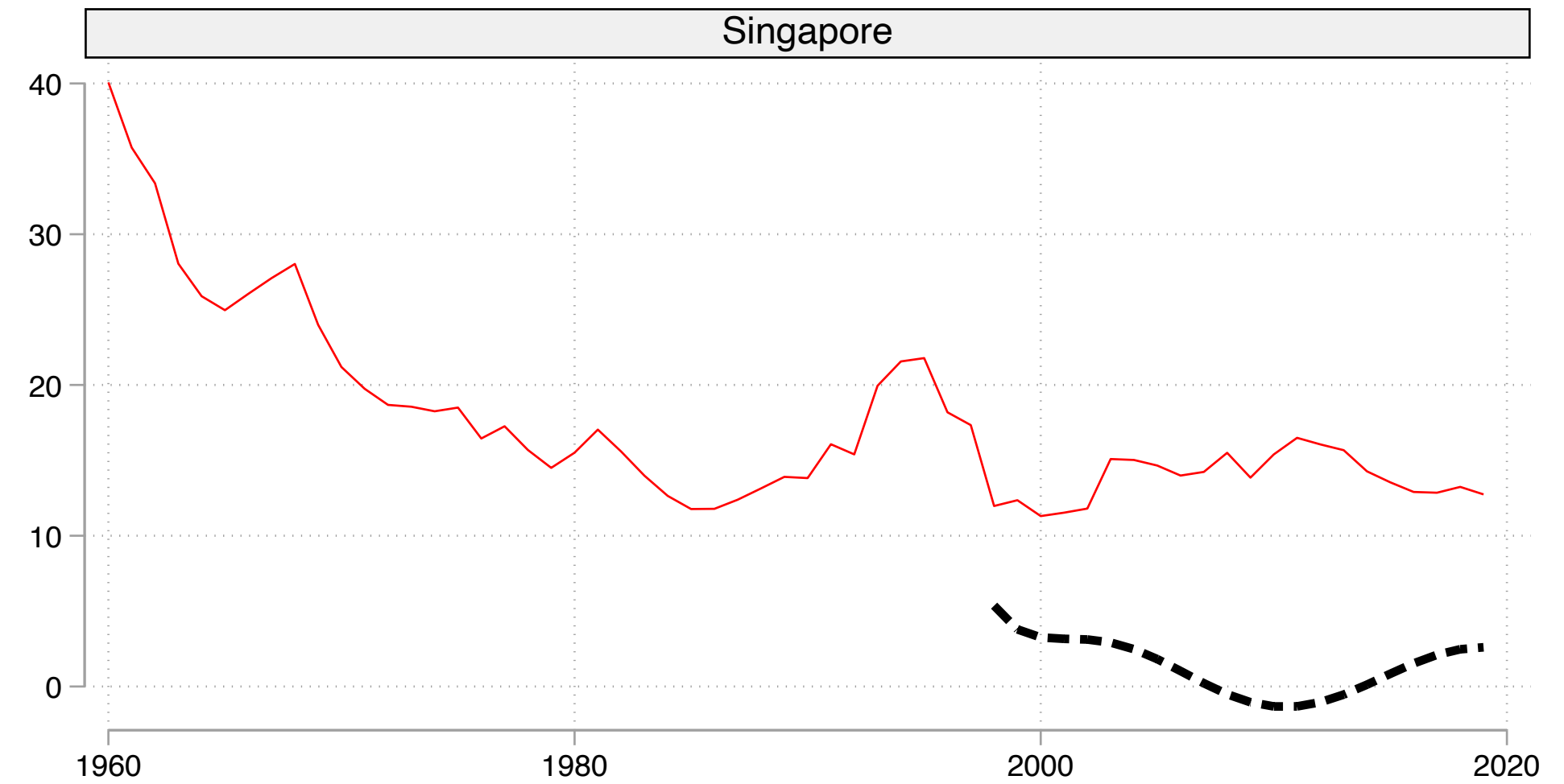
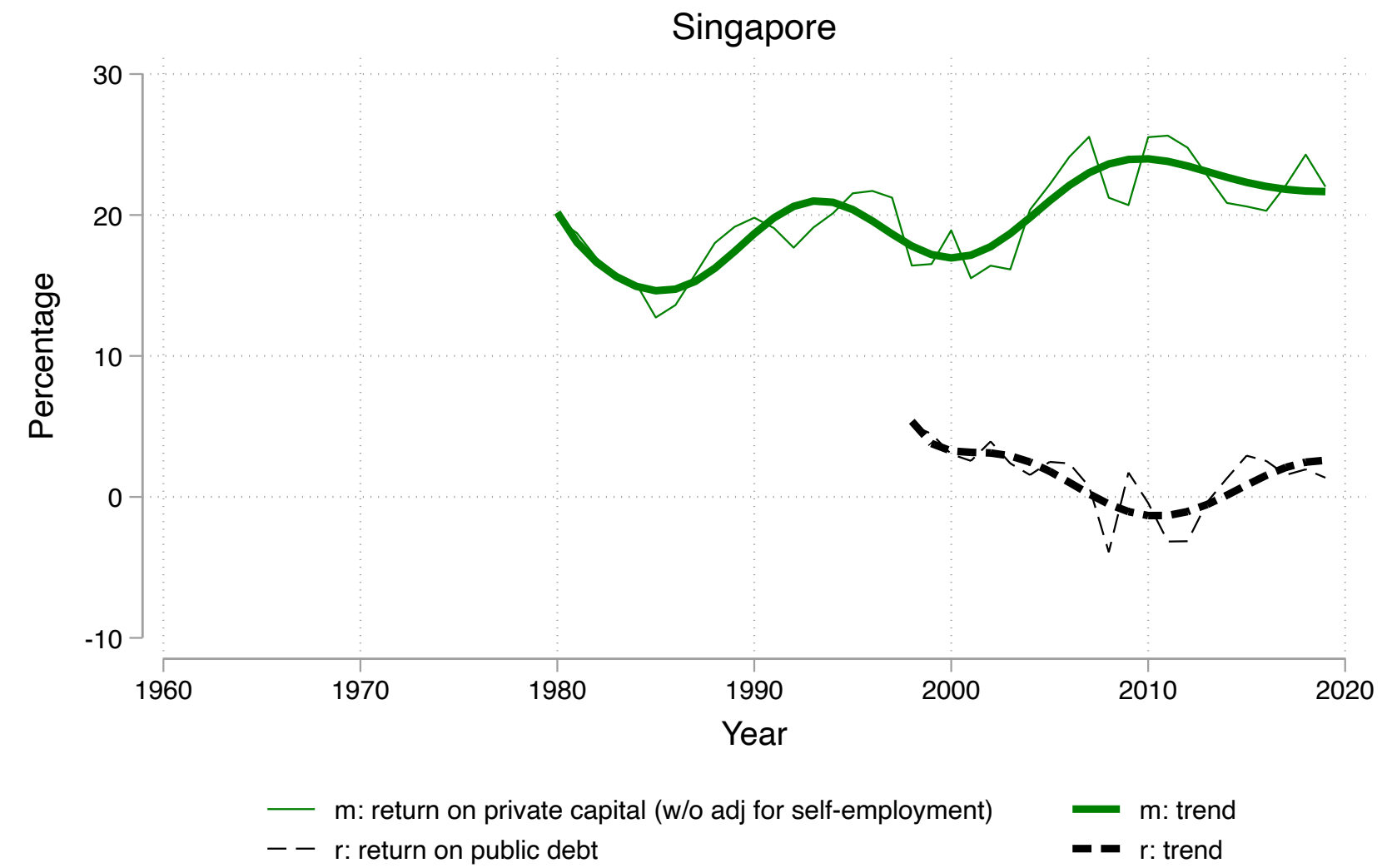
- Numerator: income not to labor

- Denominator: capital to income ratio

- Exclude real estate returns and capital



# Advanced economies in East: similar



# Supply of capital: classic/modern approaches

- Classic Euler equation

$$\text{Real interest rate} = \text{Growth rate output} / \text{IES} - \text{time-preference rate}$$

- Modern Euler equation

$$\text{Consumption growth} = \text{sh.cap} ( \text{sh.investment } R + \text{sh.credit } r ) + \text{sh.htm} (\text{WageGrowth})$$

- Leverage and private credit

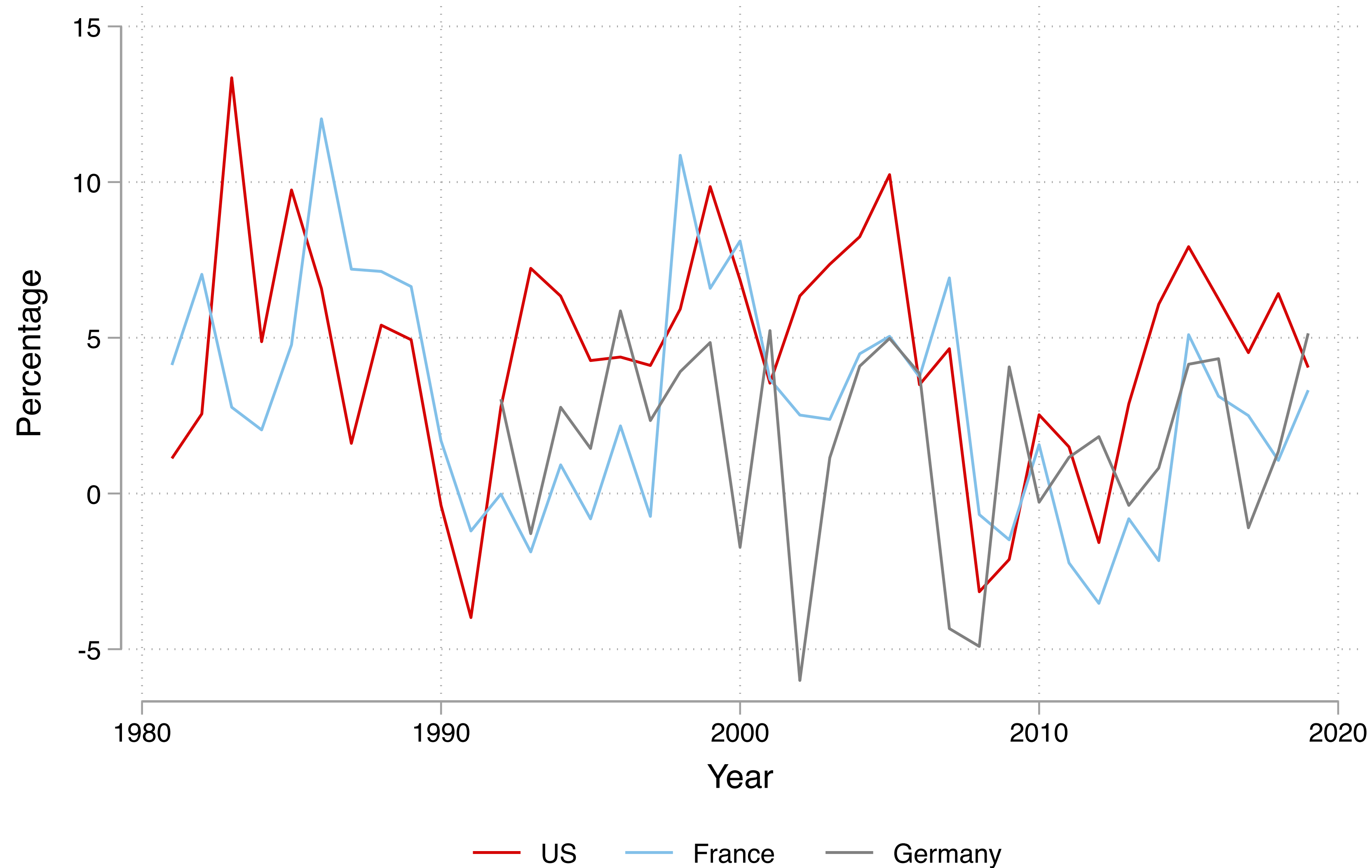
$$R = \text{leveraged return over } m$$

$$\text{PrivateCredit} + \text{PublicCredit} = \text{sh.credit} \times \text{CapitalStock}$$

- All combined give an (inverse) supply function for savings

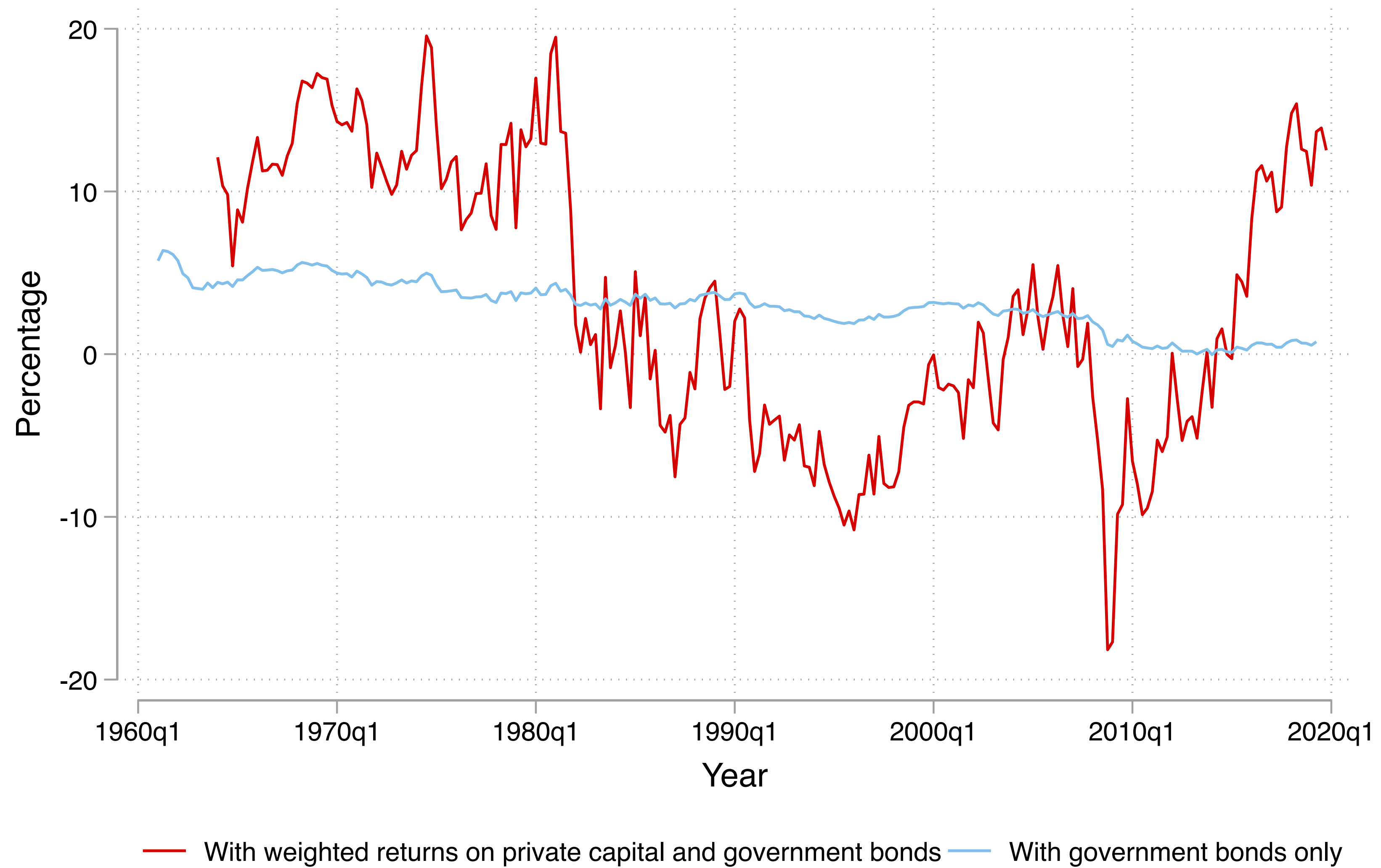
$$m = r + \left( 1 + \frac{b}{k} \right) \left( \frac{x}{v} - r \right)$$

# Estimates of m from supply side



- no clear trend
- if anything increase in last decade
- consistent with demand estimates

# Laubach-Williams: combine the two for US

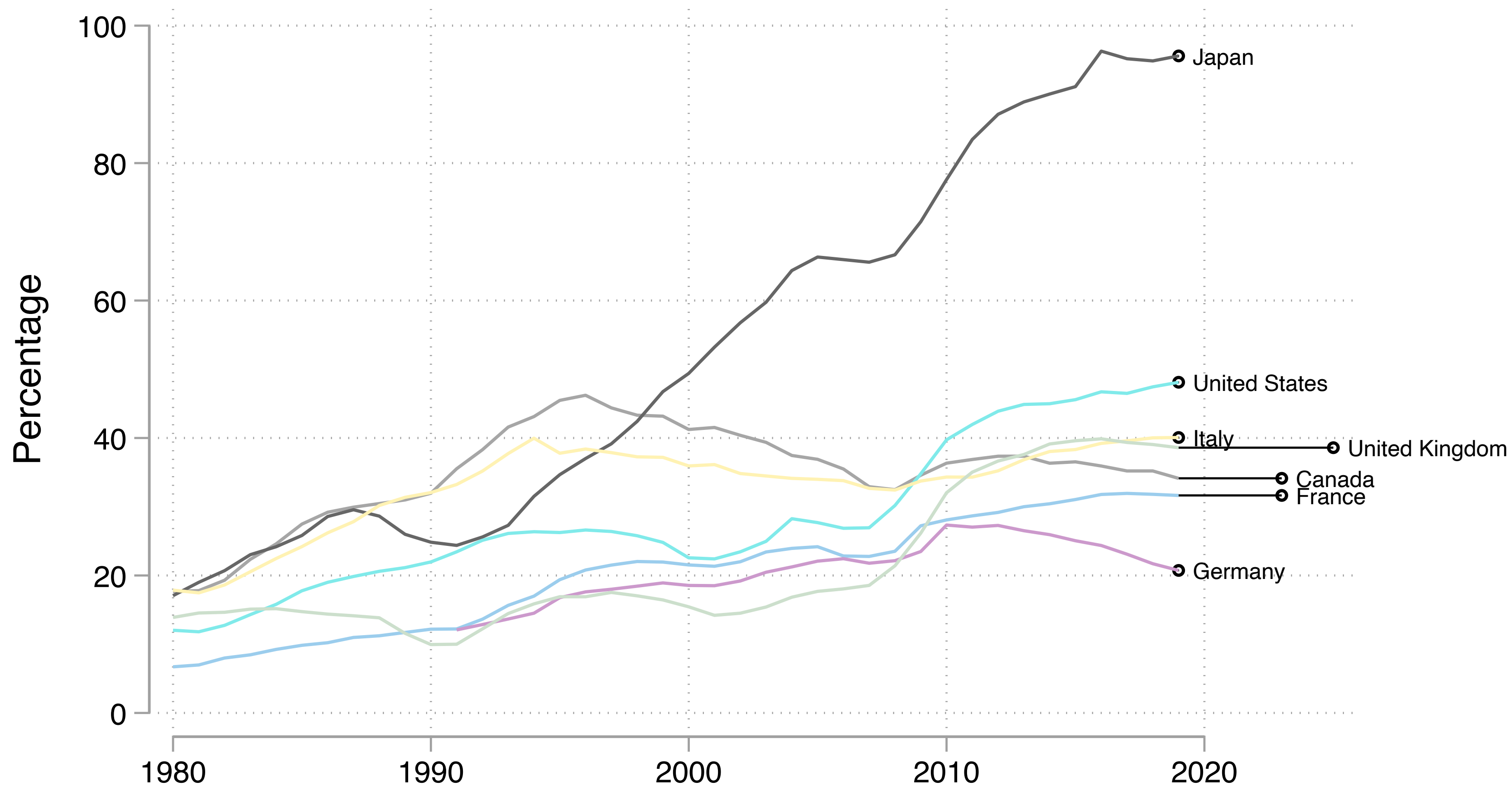


What this means for  
fiscal and monetary policy

# Debt sustainability: it was m-r increase

$$\frac{b}{k} = -\frac{g}{m^* - 1} + \frac{(m^* - r^*)b}{m^* - 1}$$

$$\text{Debt/Capital} = \text{PV}(\text{surplus/capital}) + \text{PV}((m-r) \times \text{debt})$$



- Constant  $m^*$ :  
it was not an increase in PV surplus (actually likely fell)
- Rise in debt revenues:  
annual transfer of resources from bondholders to government by holding inferior-paying debt. Because public debt is special, provides a service

# A neoclassical model with misallocation

- Production side

*Cobb-Douglas production function, constant markup and productivity*

- Labor supply

*Hand-to-mouth workers, supply fixed amount inelastic*

- Savings and consumption

*Capitalists invest in firms, savers invest in public and private credit*

*Misallocation:  $\alpha < 1$  capitalists,  $\gamma < 1$  leverage constraint,  $\alpha + \gamma < 1$*

- Government spending

*Fixed primary deficit as ratio of capital stock*

*Public debt must compete with private credit, both pay  $r$ .*

# What can explain the $m^*-r^*$ rise?

- Productivity growth only thing that matters if efficient capital markets  
*But fall in productivity growth would close the  $m-r$  gap*
- Fall in level of TFP or rise in markups?  
*Lowers capital stock and output, but leaves  $m$  and  $r$  unchanged.*
- Financial development?  
*Makes  $r$  and  $m-r$  move in the same direction*
- Increase in government spending?  
*Crowds out private investment, raises  $m-r$*   
*Rises public debt, which requires a lower  $r$*



# A strong neoclassical result

*Once the effect of  $m^*$  is taken into account, a change in  $r^*$  has no effect on the level of capital, labor or output.*

*(the high or rising  $m$  is a sign of too little capital)*

# Downward nominal wage stickiness and ZLB

When  $r = -\pi > r^*$ , and  $\pi < \pi^*$  but still  $m^* > r^*$

- With efficient capital markets

*Low capital, low employment, secular stagnation.*

*Raising inflation is highly expansionary: commit to being irresponsible*

- With inefficient capital markets

*Higher inflation raises employment, but not directly investment. Smaller stimulus*

*Financial development, lowers  $m$  and  $r$ . Larger benefits.*

*Raising  $r$  directly to escape trap without affecting  $m$  will make things worse*

- In the short run

*Stimulating aggregate demand has a smaller impact because moves  $r$ , not  $m$ .*

*Stimulating aggregate supply has a larger impact, because lowers  $m$  (even if lower  $r$ )*

# Conclusion

# Points made in this talk

1. In advanced economies, the fall in  $r^*$  has come with an increase in  $m^*-r^*$
2. Focussing on  $r^*$  leads fiscal policy to take as given debt sustainability, miss the crowding out effect of spending and public debt, neglect the importance of improving capital allocation as opposed to stimulating demand
3. Focussing on low  $r^*$  leads monetary policy to over-focus on ZLB and worry about deflation while welcoming inflation, instead of closing the  $m-r$  gap
4. Was this over-focus on low  $r^*$  and neglect of high  $m^*-r^*$  the cause of the rise in inflation? Perhaps...