Fiscal Backing for Monetary Policy: What If It Ain't There?

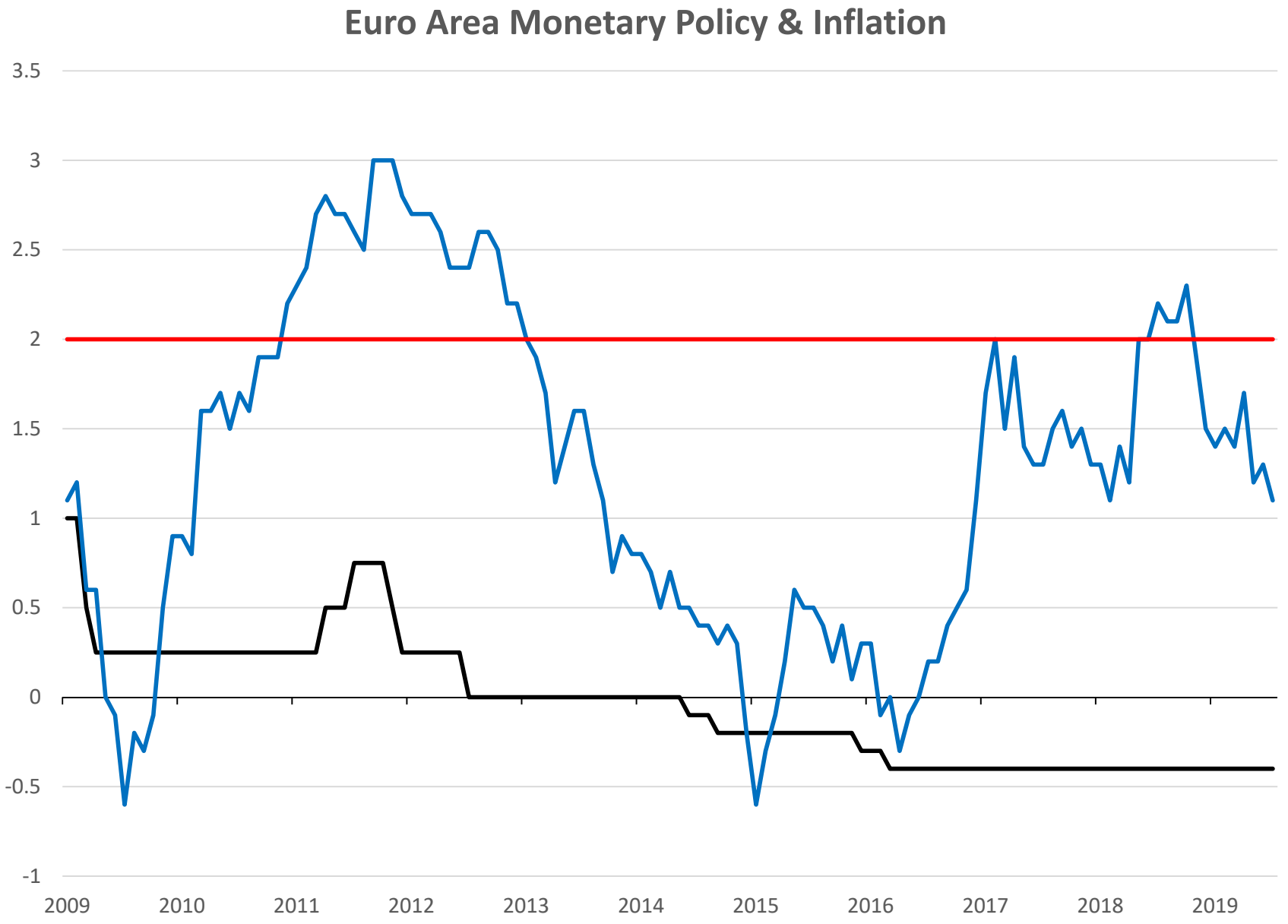
Eric M. Leeper

University of Virginia

Monetary Policy: Bridging Science and Practice, ECB

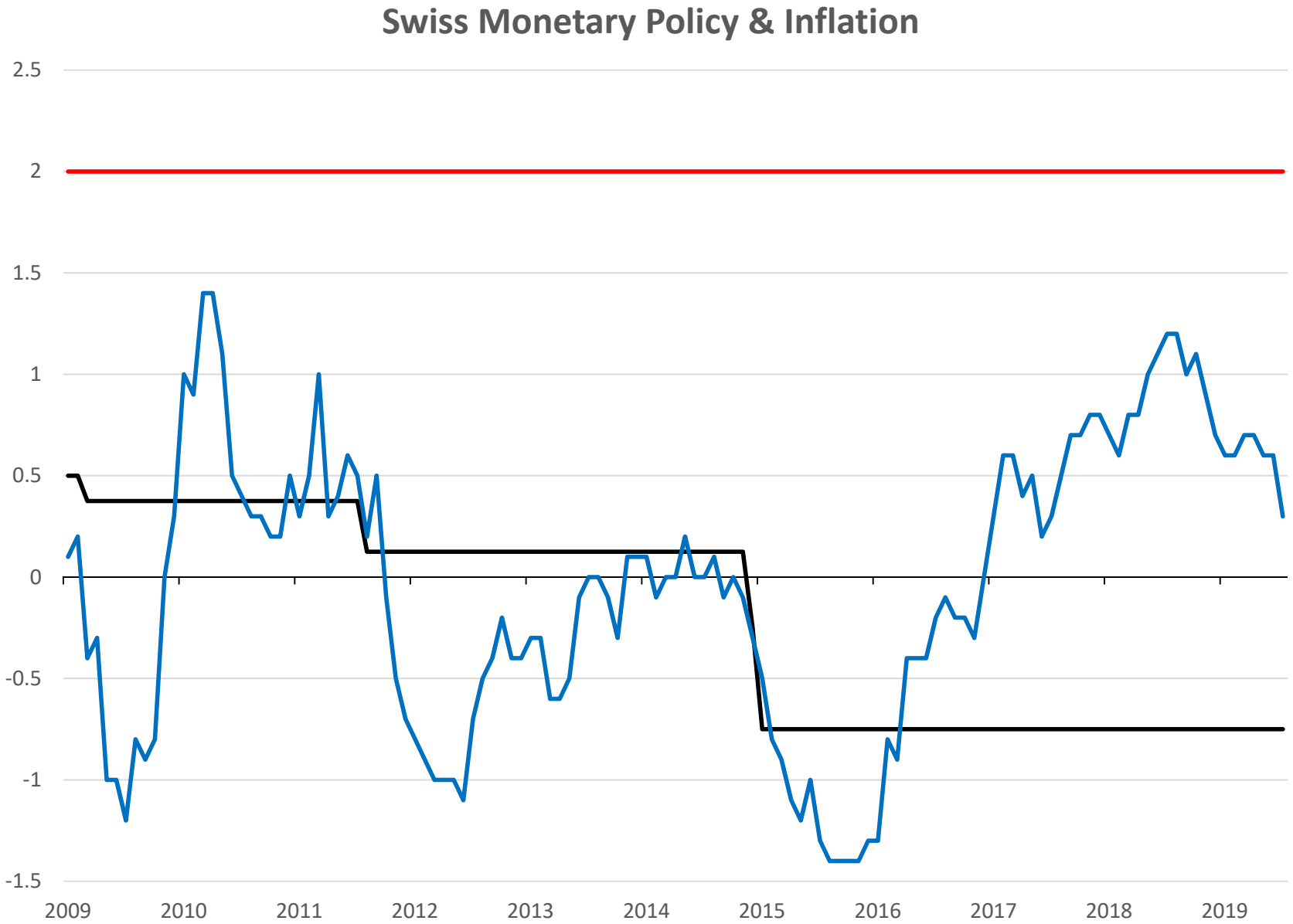
October 2019

What's Wrong with These Pictures?



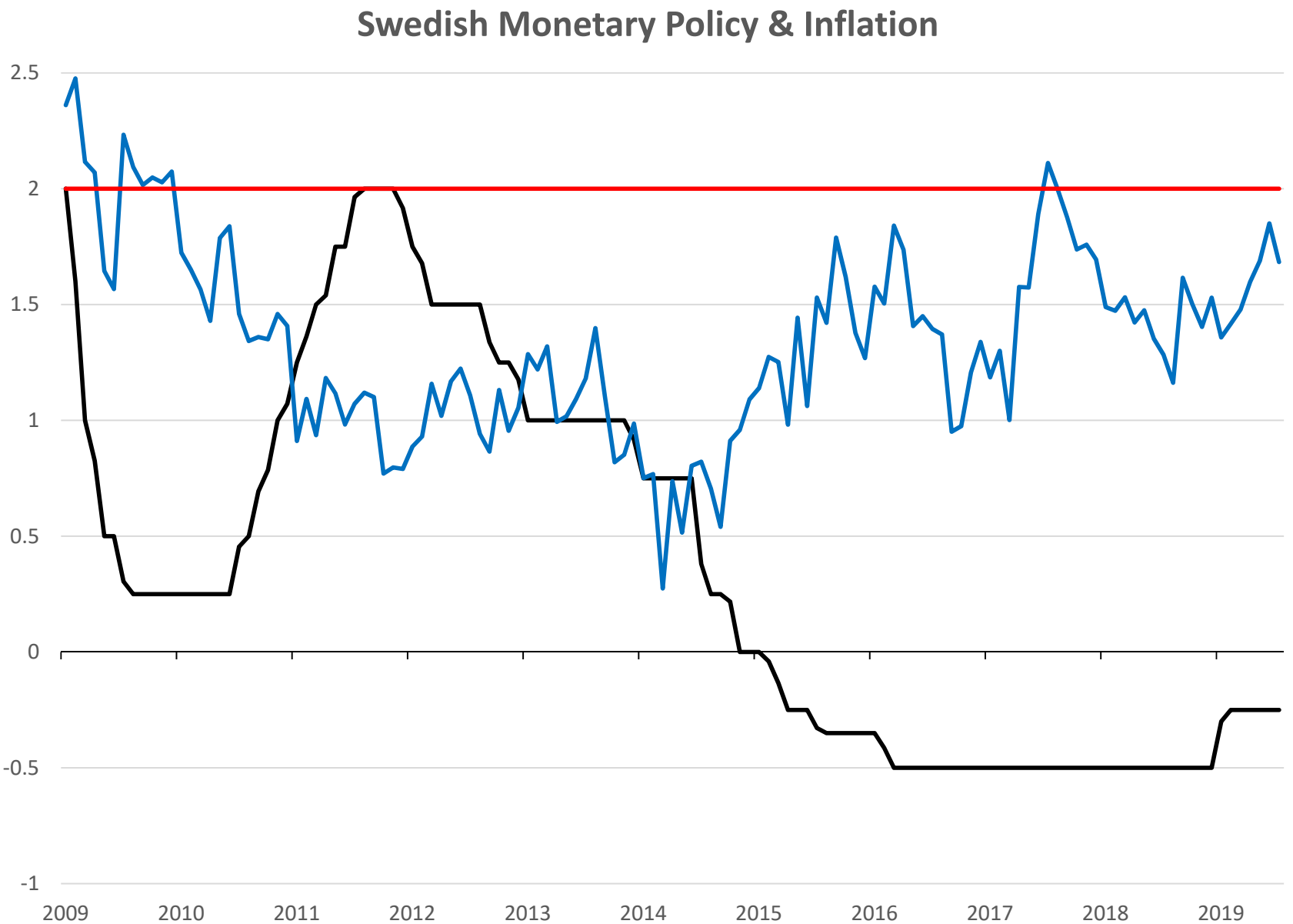
Policy rate, inflation rate & target inflation rate

What's Wrong with These Pictures?



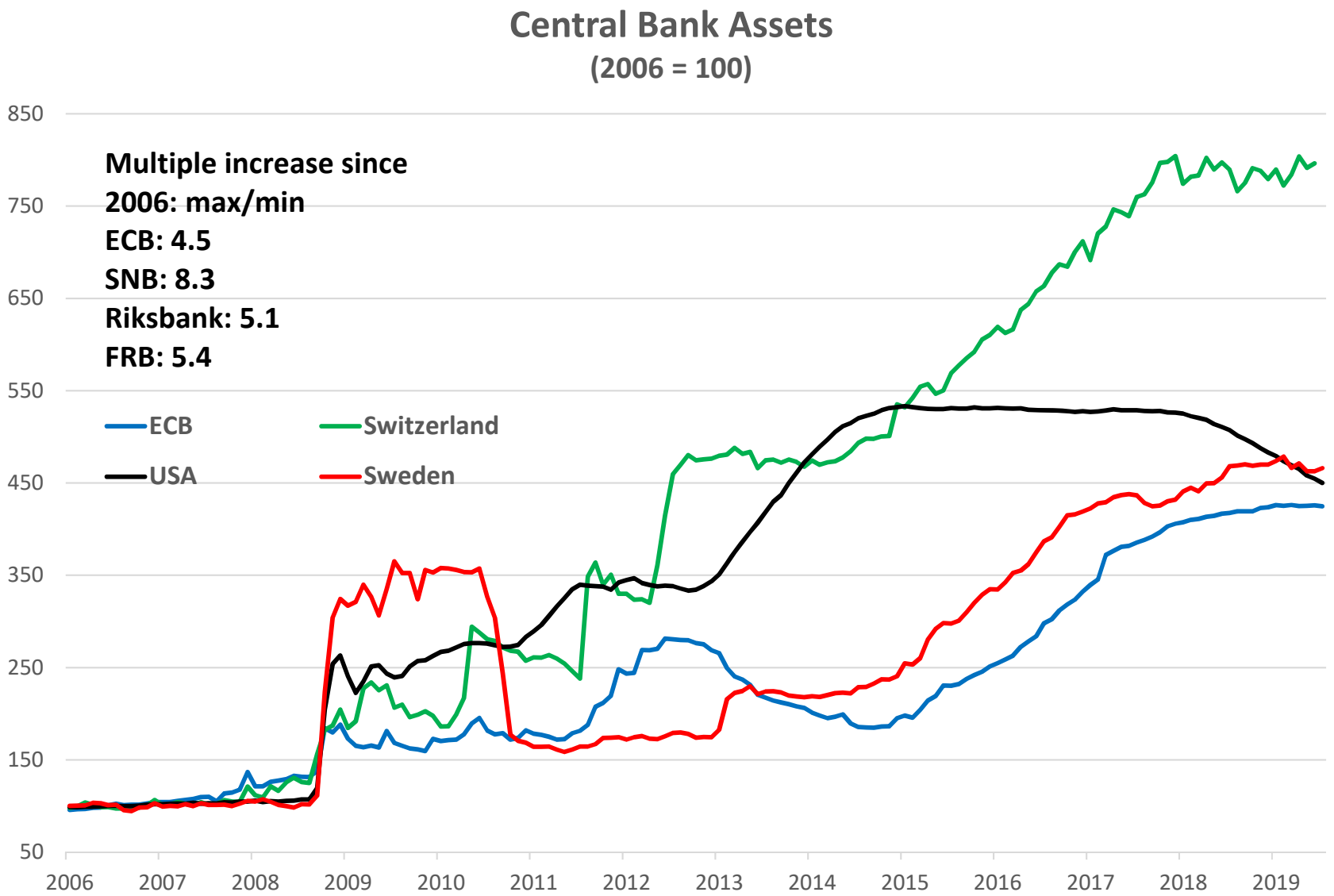
Policy rate, inflation rate & target inflation rate

What's Wrong with These Pictures?



Policy rate, inflation rate & target inflation rate

What's Wrong with These Pictures?



Many fold increases in central bank balance sheets

What's Wrong with Inflation?

- Does fiscal practice undermine monetary science?
- How do the fiscal rules being adopted in Europe interact with monetary policy?
- Message from the science:

  For monetary policy to successfully target inflation, fiscal policy must provide "appropriate backing"

- Do existing fiscal rules deliver perverse backing?

Intuition

- In formal models, macro policy has two prime objectives
  1. uniquely determine inflation
  2. stabilize government debt
- Inflation-targeting regimes clearly assign tasks
  1. monetary policy determines inflation
  2. fiscal policy stabilizes debt
- These assignments hide a dirty little secret:

  While stabilizing debt, fiscal policy must also back monetary policy

Institutional Designs Deny the Secret

Illustrative Model

- Representative household lives forever
  - receives constant endowment of goods, y, each period
  - chooses consumption & bonds to maximize $\mathbb{E}_0 \sum_{t=0}^{\infty} \beta^t u(c_t)$
  - bonds sell at P_t^b & pay geometrically decaying coupons of ρ^{j-1}, for a j-period bond
- Two equilibrium conditions

Fisher Equation $$\frac{1}{R_t} = \beta \mathbb{E}_t \frac{1}{\pi_{t+1}}$$

Term Structure $$P_t^b = \mathbb{E}_t R_t^{-1} (1 + \rho P_{t+1}^b)$$

Illustrative Model

- Model designed to examine how fiscal policy reacts to monetary policy actions
- Monetary policy: sets short-term interest rate, R_t

Monetary Policy $$\frac{1}{R_t} = \frac{1}{R^*} + \alpha\left(\frac{1}{\pi_t} - \frac{1}{\pi^*}\right) + \varepsilon_t$$

  - ε_t: temporary deviation from pure inflation targeting, $\mathbb{E}_t\varepsilon_{t+j} = 0, j > 0$
  - positive ε_t is expansionary monetary policy
  - when $\alpha > 0$, above-target inflation brings higher R_t
  - $\alpha > 1$: the Taylor principle

Illustrative Model

- Fiscal policy: sets primary surplus, s_t

Fiscal Policy $$s_t = s^* + \gamma \left(\frac{P^b_{t-1} B_{t-1}}{P_{t-1}} - b^* \right)$$

  - when $\gamma > 0$, above-target debt bring higher s_t
  - to return debt to target, surplus must respond enough to cover interest payments & retire some debt
  - this requires $\gamma > r$, r is the real interest rate

- But notice: fiscal rule entails direct response to price level when $\gamma > 0$
  - higher P_t leads to lower s_{t+1}

Required Policy Coordination

- Choices of policy parameters, (α, γ), determine **joint monetary-fiscal regime**
- Two distinct policy mixes achieve prime objectives
  1. uniquely determine inflation
  2. stabilize government debt
- I focus only on the conventional inflation-targeting regime
  - monetary policy satisfies Taylor principle, $\alpha > 1$
  - fiscal policy returns debt to target, $\gamma > r$
- Even in this IT regime, fiscal policy must support monetary policy

Equilibrium Inflation

- In this monetary-fiscal regime

Equilibrium Inflation $$\frac{1}{\pi_t} = \frac{1}{\pi^*} - \frac{1}{\alpha}\varepsilon_t$$

- If no shocks, inflation always on target
- Positive shock—expansion—raises inflation
- Tempting to infer. . .
  - only monetary policy choices—$\pi^*, \alpha, \varepsilon_t$—matter for inflation
  - fiscal policy irrelevant for inflation

Do not submit to temptation

What Is Fiscal Policy Doing?

- Full equilibrium requires stable debt
- Transitory shock, so bond prices do not change
- Debt evolution comes from government's budget

$$\frac{P^b B_t}{P_t} + s^* - \gamma b^* = \left[R^b \left(\frac{1}{\pi^*} - \frac{1}{\alpha} \varepsilon_t \right) - \gamma \right] \frac{P^b_{t-1} B_{t-1}}{P_{t-1}}$$

- Monetary expansion, $\varepsilon_t > 0$, raises inflation
  - reduces real debt service, R^b / π_t
  - reduces real value of debt held by the public, $P^b B_t / P_t$
- Fiscal rule: lower real debt service produces lower future primary surpluses

What Is Fiscal Policy Doing?

A monetary expansion that raises inflation is backed by a fiscal expansion that returns debt to target

- This fiscal rule achieves two distinct things
  1. it stabilizes debt
  2. it backs monetary expansion with fiscal expansion
- But don't have to think in terms of "backing"
- Instead ask: What ensures the bond market clears?
- (We usually apply Walras' law uncritically)

A Different Perspective

- In this model, demand for nominal bonds is simple
  - demand is homogeneous of degree 1 in P_t
  - demand is decreasing in bond price, P_t^b
  - bonds derive value from discounted stream of cash flows—primary surpluses
  - nominal demand for the government bond portfolio, B_t^d

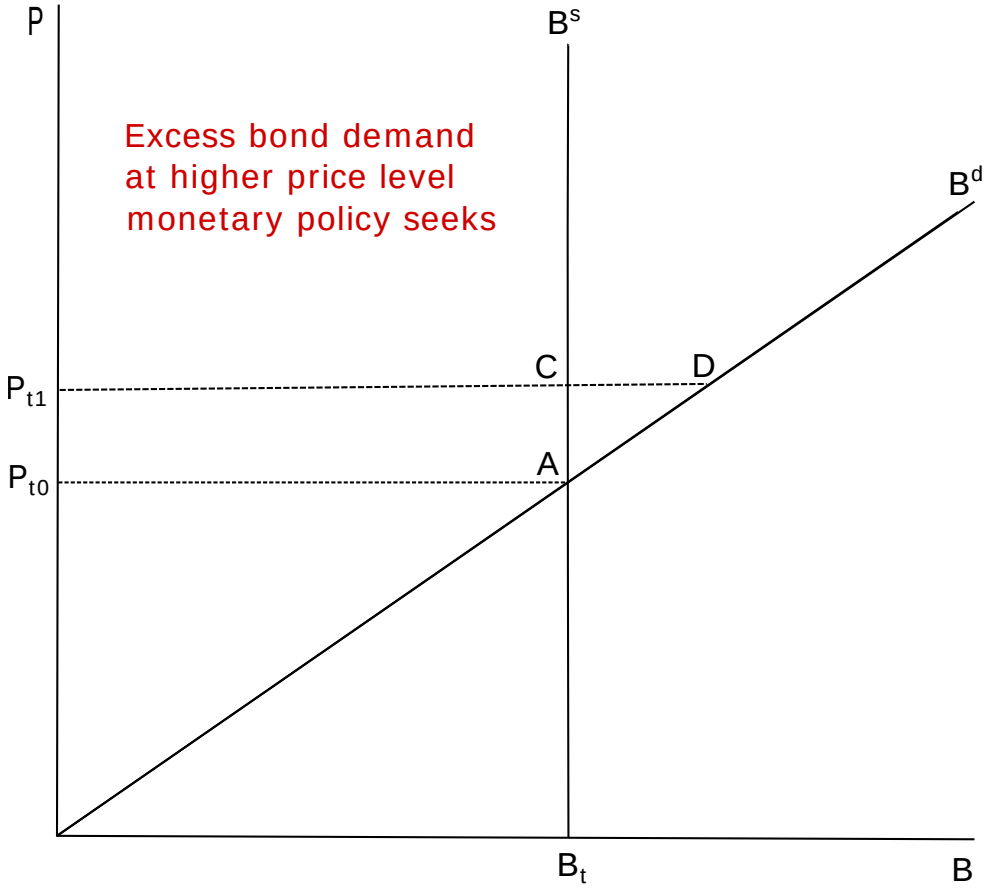
$$B_t^d = \frac{1}{P_t^b} P_t \mathbb{E}_t \sum_{j=1}^{\infty} \beta^j s_{t+j}$$

$$= \frac{1}{P_t^b} P_t \mathbb{E}_t PV(S_{t+1})$$

Bond Market Equilibrium

- Economy initially in equilibrium at price level P_{t0}
- Monetary expansion raises inflation for a single period
- Price level is at the permanently higher level P_{1t}

Bond Market Equilibrium



At new price level, CD is excess demand for bonds
B^s can rise, fall, stay unchanged, depending on s_t
Figure drawn for $s_t = 0$

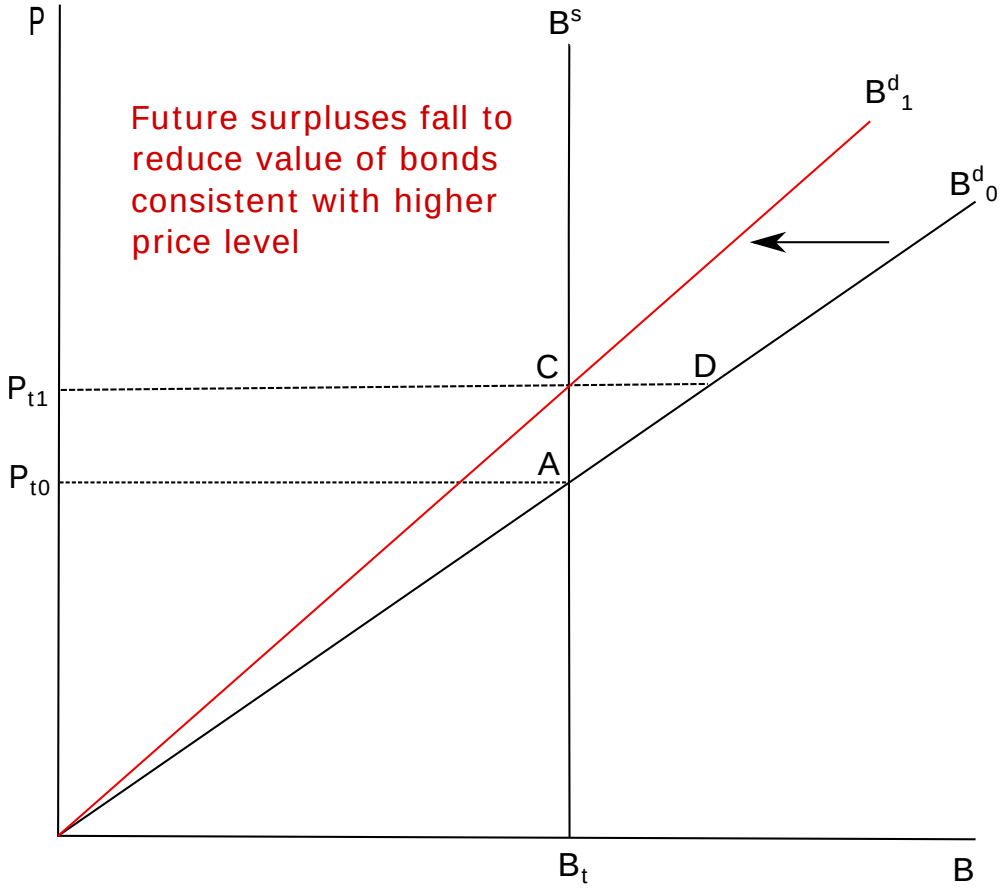
Discussion

- Excess demand for bonds arises for clear reasons
- Monetary expansion reduces the real value of bonds
- If the expected cash flows—surpluses—do not fall. . .
  - the goods cost of a bond has fallen
  - but the goods payoff—surpluses—is unchanged
  - makes bonds attractive
  - individuals substitute out of goods and into bonds
  - reduces aggregate demand for goods
- Bond market behavior counteracts monetary policy's aim to raise aggregate demand

Bond Market Equilibrium

- Models resolve this conflict with a convenient, **completely untested** assumption
- Models typically assume $\gamma > r$, so ...
- Lower real value of debt brings forth lower $\mathbb{E}_t PV(S_{t+1})$
- To reduce bond demand **exactly enough** to clear the bond market at the new higher price level
- This is the magic of Ricardian equivalence

Bond Market Equilibrium



$\mathbb{E}_t PV(S_{t+1})$ falls by exactly enough to eliminate excess demand
B^s can rise, fall, stay unchanged, depending on s_t
Figure drawn for $s_t = 0$

How Have Fiscal Policies Responded to Monetary Ease?

- European fiscal consolidations began as early as 2010 and really kicked in after sovereign debt troubles
- Governments have adopted aggressive rules that. . .
  - aim primarily at reducing government debt & running primary surpluses
  - with some provisions for countercyclical actions
- Rules designed primarily to solve **political problems**
  - certainly a legitimate concern
- But may inadvertently create economic problems

European Fiscal Rules

- It is perfectly possible for fiscal policy to stabilize debt, but not back monetary policy
- Set $\gamma = 0$ in fiscal rule, so $s_t = s^*$
- This will stabilize debt at

$$\frac{P_t^b B_t}{P_t} = \frac{s^*}{r}$$

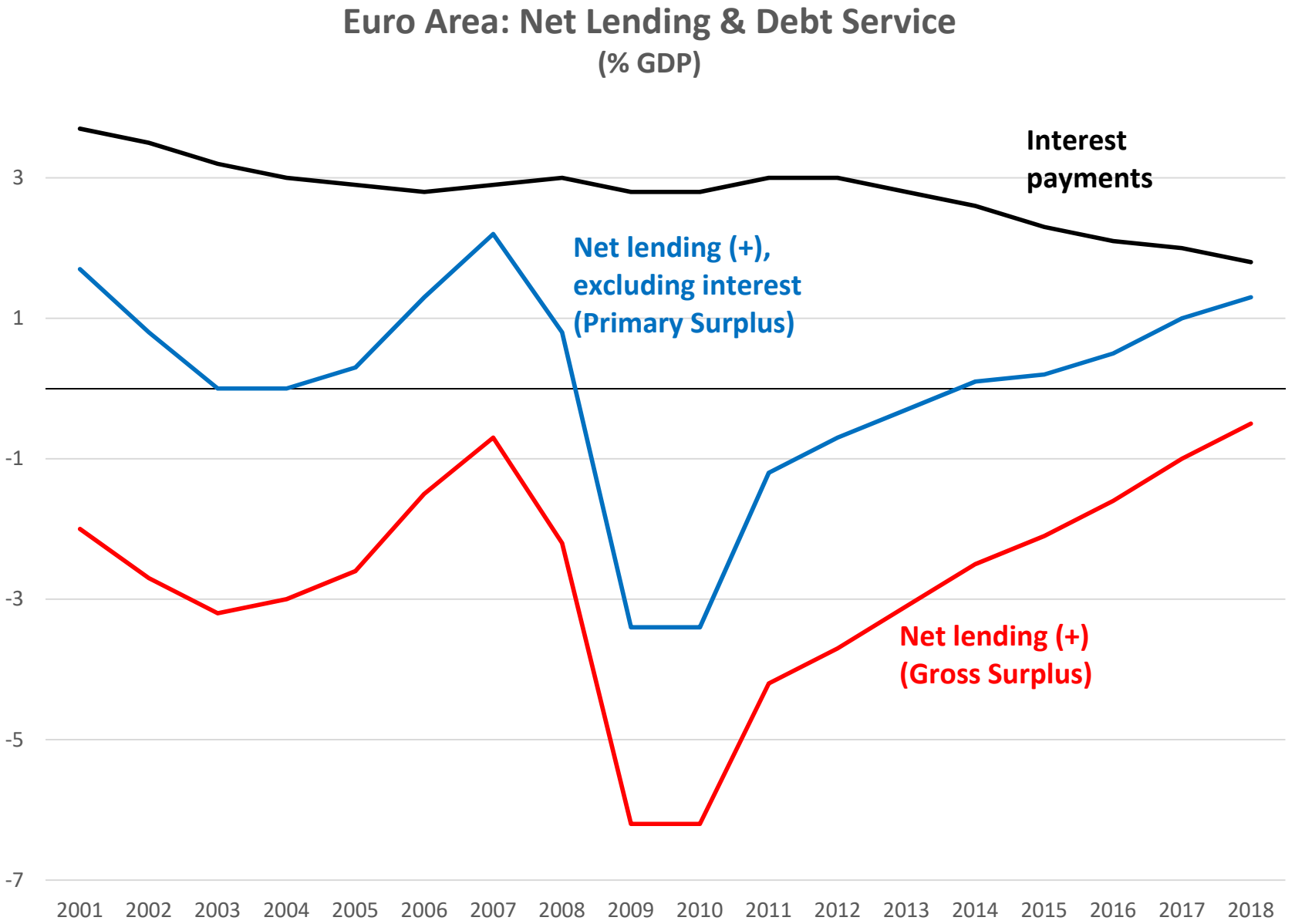
  Nail target b^* by setting target s^* appropriately
- Only one problem: P_t^b / P_t is fiscally determined

Monetary policy can choose **timing** of inflation but not entire inflation path

Problematic Fiscal Rules

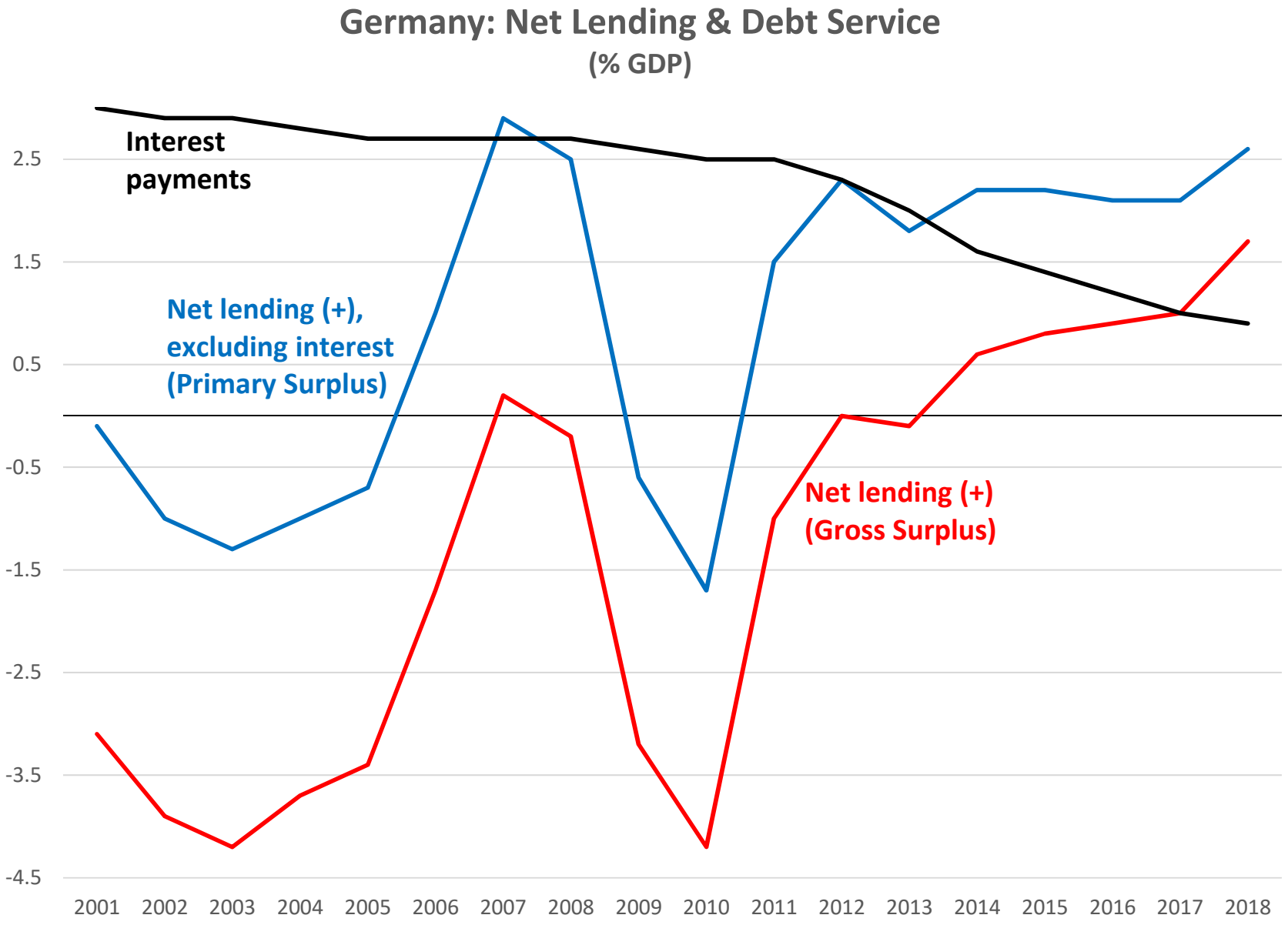
- The essence of fiscal support for monetary policy is that surpluses must respond to the price level
  - a *nominal* impact induces a *real* response
- Fiscal rules that react only to real variables will fail to back monetary policy appropriately
- We see this in the euro area, Sweden, & Switzerland

Euro Area Budget Surpluses



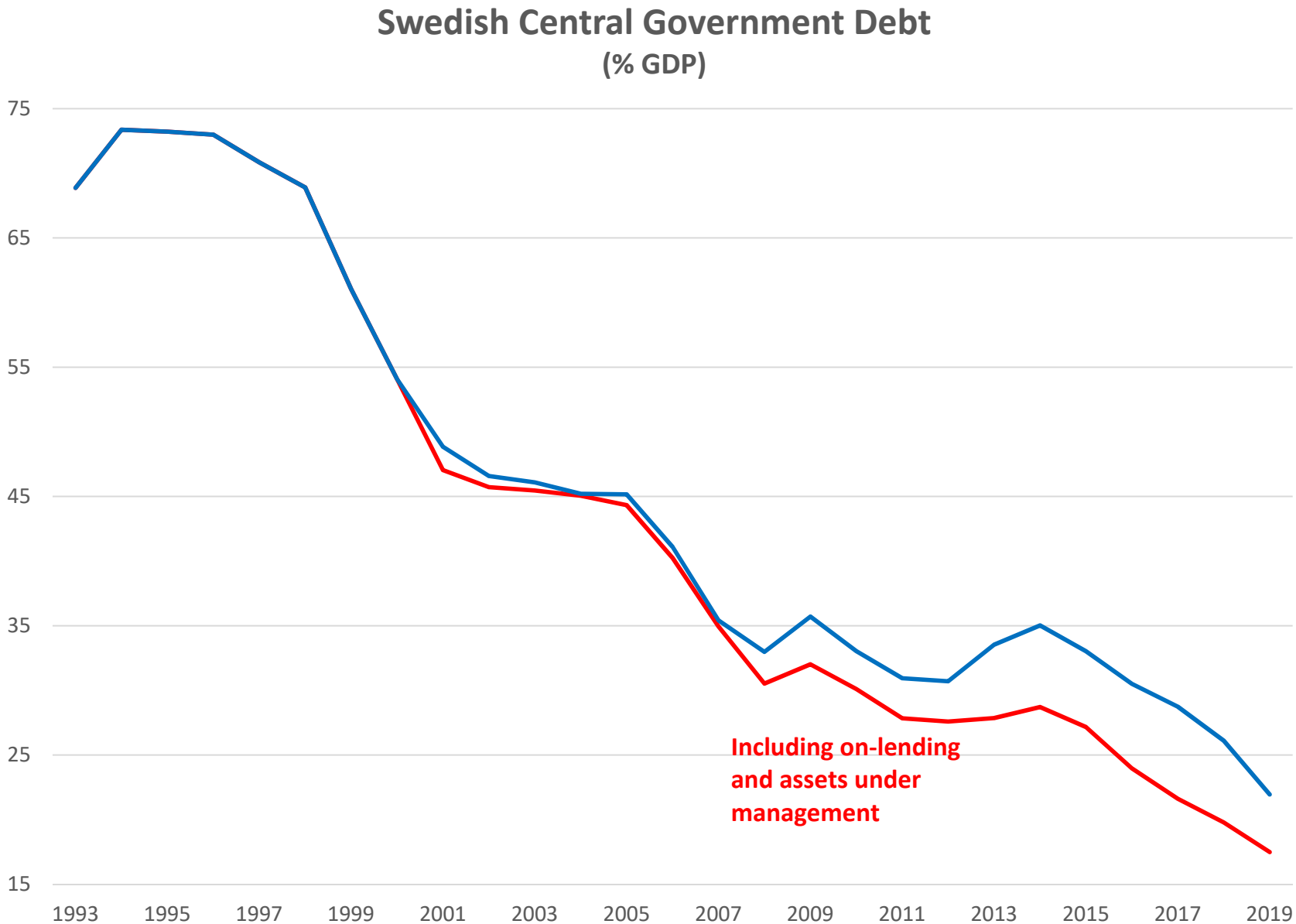
Declining debt service & rising surpluses

Euro Area Budget Surpluses



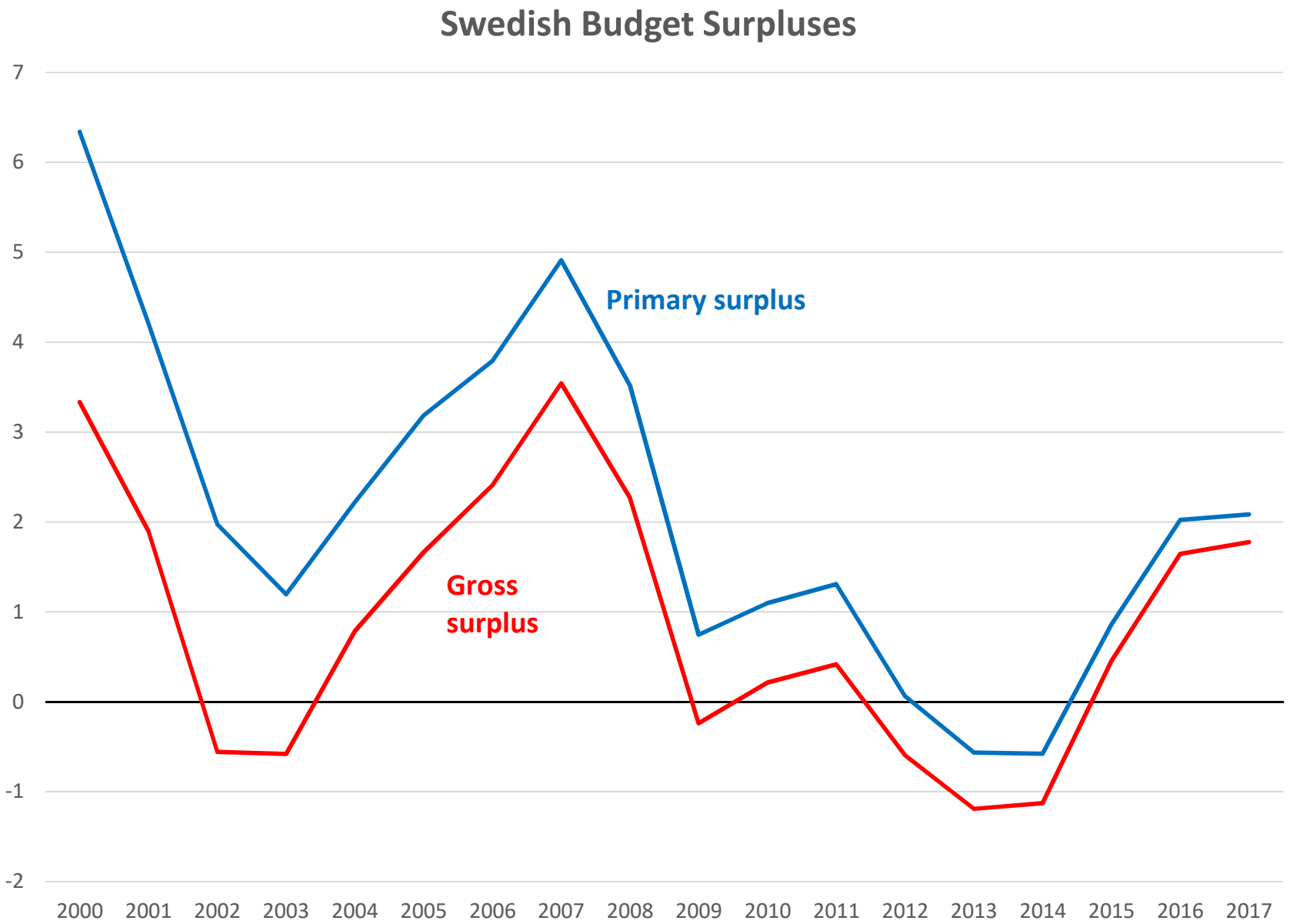
Rapidly declining debt service & rapidly rising surpluses

Swedish Government Debt



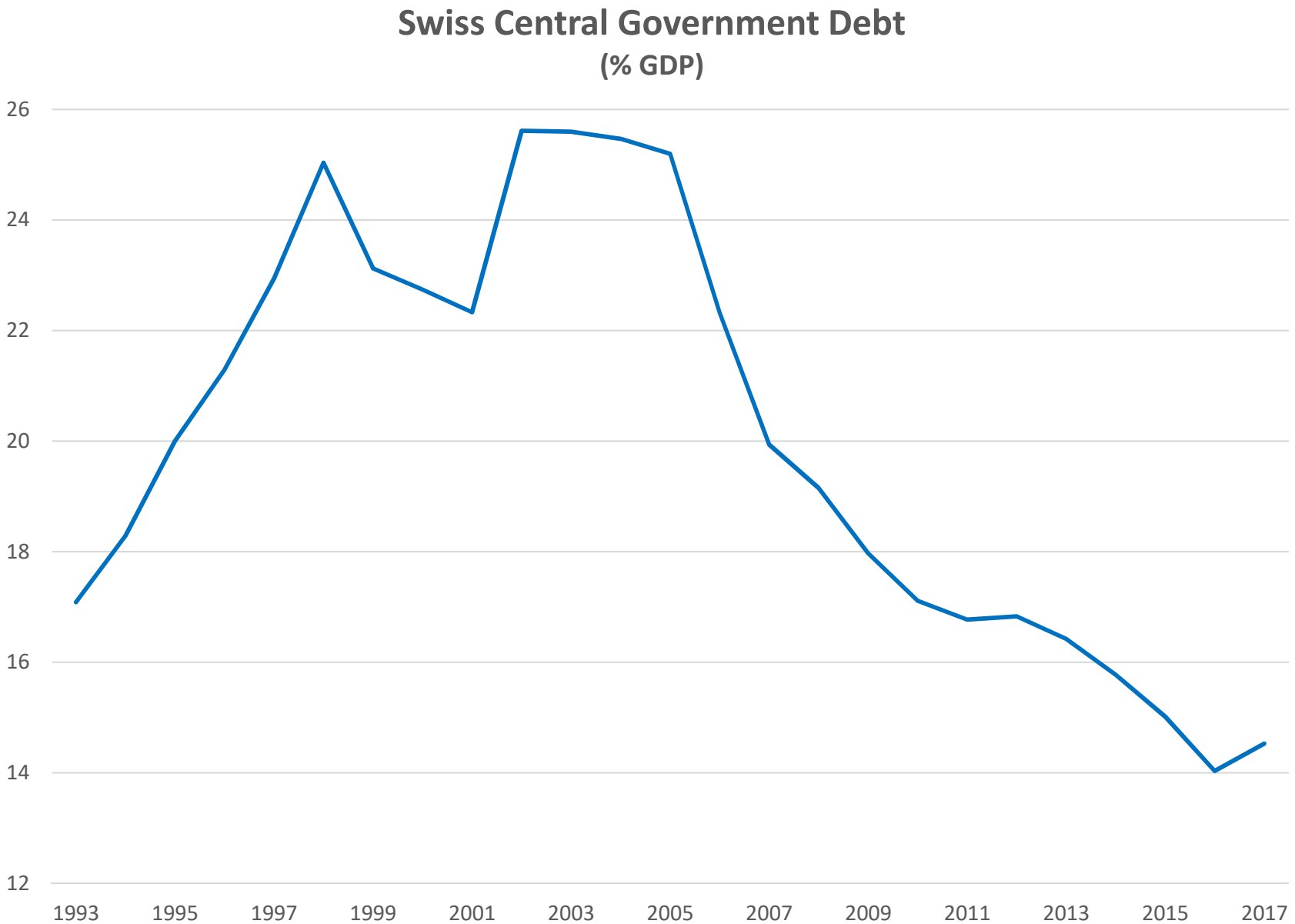
Now well below the 35% debt anchor

Swedish Budget Surpluses



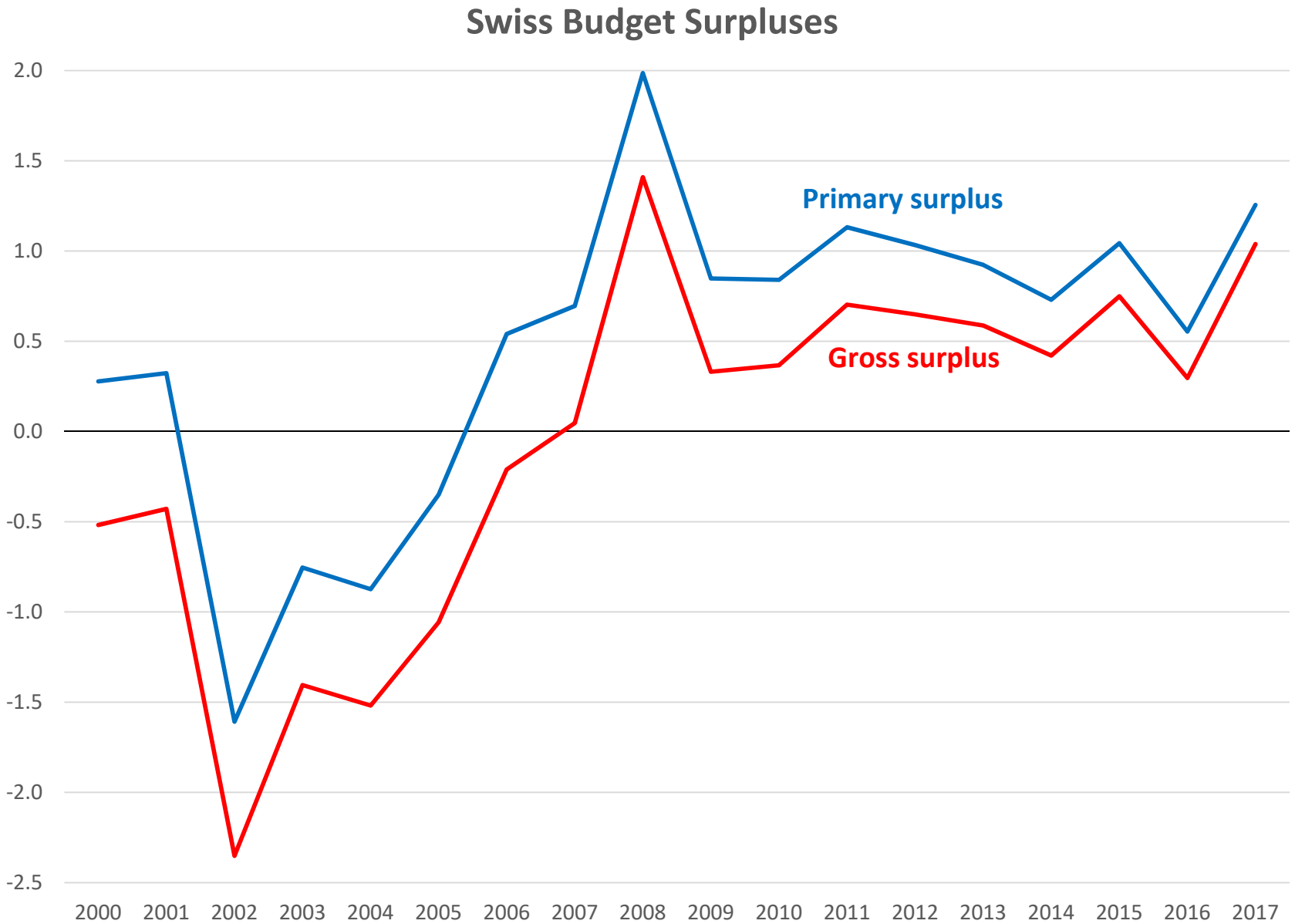
Now well above the 0.33% net lending target

Swiss Government Debt



Surpluses since before the global financial crisis

Swiss Budget Surpluses



Surpluses since before the global financial crisis

European Fiscal Rules

- I've read some of the EC's material on rules
- Fiscal Rule Strength Index. . .
  - only one criterion is about macroeconomic considerations
  - "resilience to shocks outside control of government"
  - only one of the four components of that criterion might refer to fiscal backing for monetary policy
  - "Are there exclusions from the rule in the form of items that fall outside authorities' control at least in the short term (e.g. interest payments, unemployment benefits)?"
- Does this permit routine fiscal support for monetary policy?

Designing Fiscal Rules

- To answer this question, need richer models
- What does fiscal backing look like when. . .
  - monetary policy reacts to a range of non-policy shocks?
  - monetary policy is unconventional (e.g., QE)?
  - monetary policy is at the effective lower bound?
  - there is a single monetary authority & many fiscal authorities?
  - the economy is close to its fiscal limit?
- Need to address these questions before we design fiscal rules
- Need to quantify fiscal backing

Wrap Up

- I am not calling to abandon fiscal rules
- I am calling to design rules with monetary-fiscal interactions in mind
- There is no conflict between rules that. . .
  - stabilize debt at sensible levels and
  - ensure fiscal backing for monetary policy
  - possible to address political & economic problems simultaneously
- Key lies in understanding that monetary & fiscal policies **necessarily interact**
- Denying this fact is religion, not science