Università della Svizzera italiana

3.1 Money Supply, Interest Rates and Exchange Rates

Global Business Environment

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Goals and Learning Outcomes

- Define monetary aggregates
- Understand the relationship between money supply and the monetary policy rate
- Explain how monetary policy works
- Analyze the effect of monetary policy on the exchange rate

Money Supply

- Monetary aggregate M1 in Switzerland:

$$M = \text{Currency} + \text{Sight Deposits}$$

- Most liquid monetary aggregate
- M2 = M1 + savings deposits
- M2 is less liquid than M1
- Monetary base: currency + sight deposits of commercial banks at the SNB

The Measures of Money: March 2025

		Switzerland		U.S.	
	Assets included	CHF mill	% GDP	USD bill	% GDP
C	Currency	71’957	9	2’367	8
M1	C + sight deposits	653’032	79	18’561	64
M2	M1 + savings deposits	996’455	121	21’763	75

Money Demand

- The aggregate demand for money M^d can be expressed as

$$M^d = P \times L(R,Y)$$

P is the price level, i.e. the price of the typical consumption basket
Y is real national income
L(*R*, *Y*) is the aggregate real money demand

- Useful to express money demand in real terms

$$\frac{M^d}{P} = L(\underset{-}{R}, \underset{+}{Y})$$

Equilibrium in the Money Market

- The money market is in equilibrium when real aggregate money demand is equal to real money supply

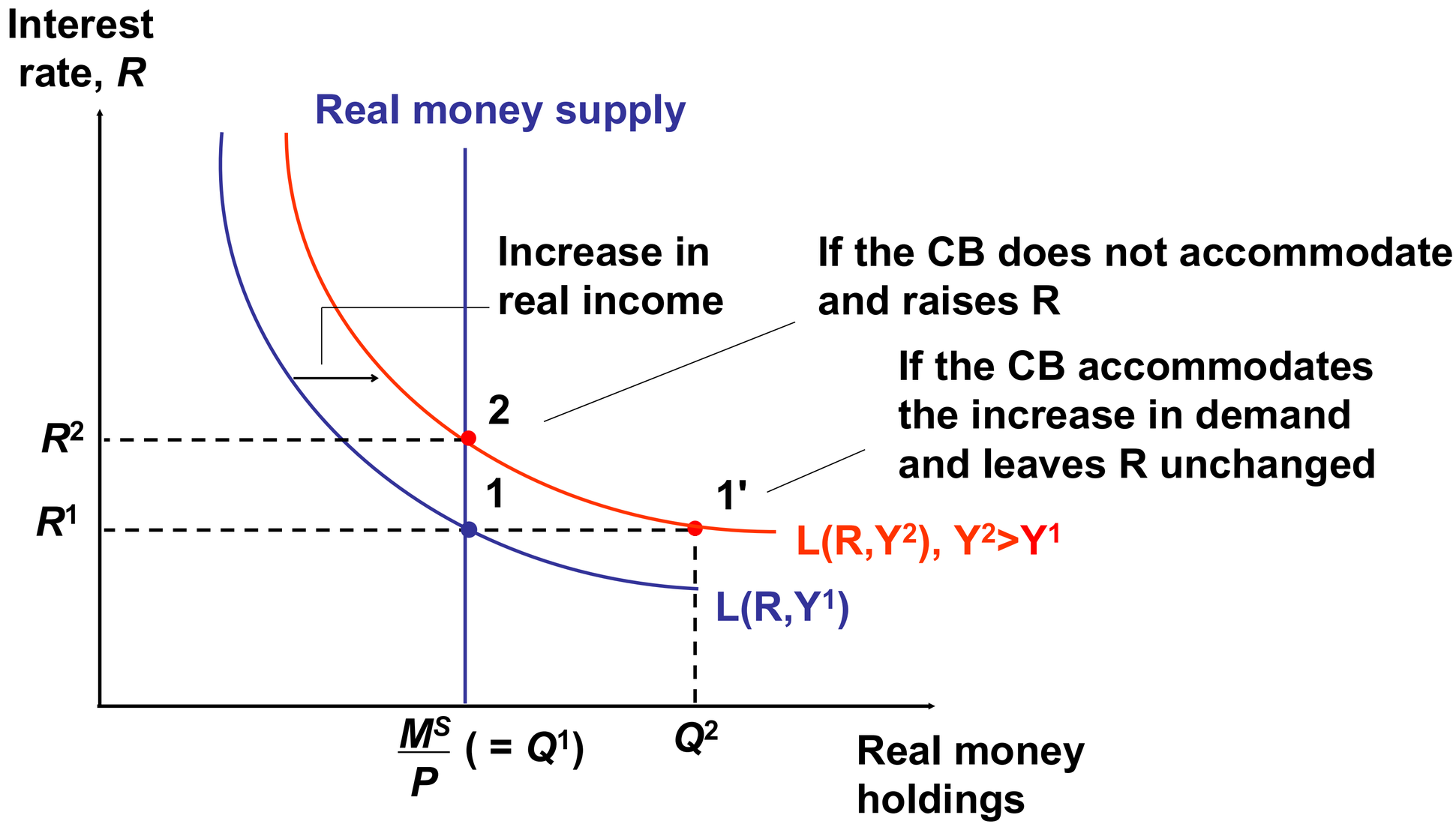
$$\frac{M^d}{P} = \frac{M^s}{P}$$

- The interest rate R adjusts to ensure equilibrium in the money market
- Who decides M^s? Central banks via monetary policy

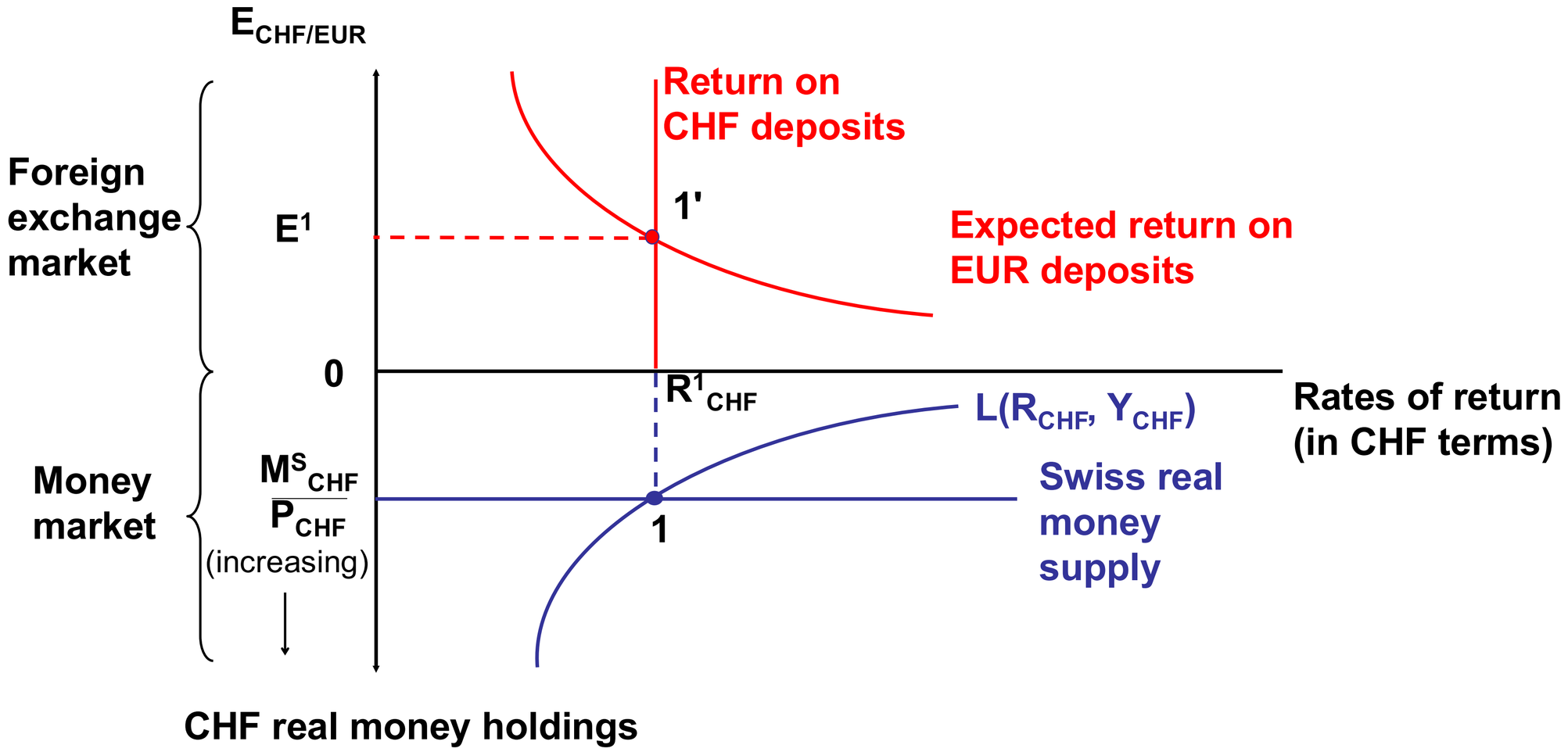
The Price Level in the Short Run

- Assume that the price level P does not adjust in the short run
- Some prices adjust instantaneously: agricultural goods traded in markets, commodities (oil, raw materials, etc.), stock prices
- Other prices do not adjust instantaneously: consumer goods in retail stores, prices on catalogues (IKEA), wages are negotiated periodically
- Wages account on average for 70% of the cost of producing goods and services

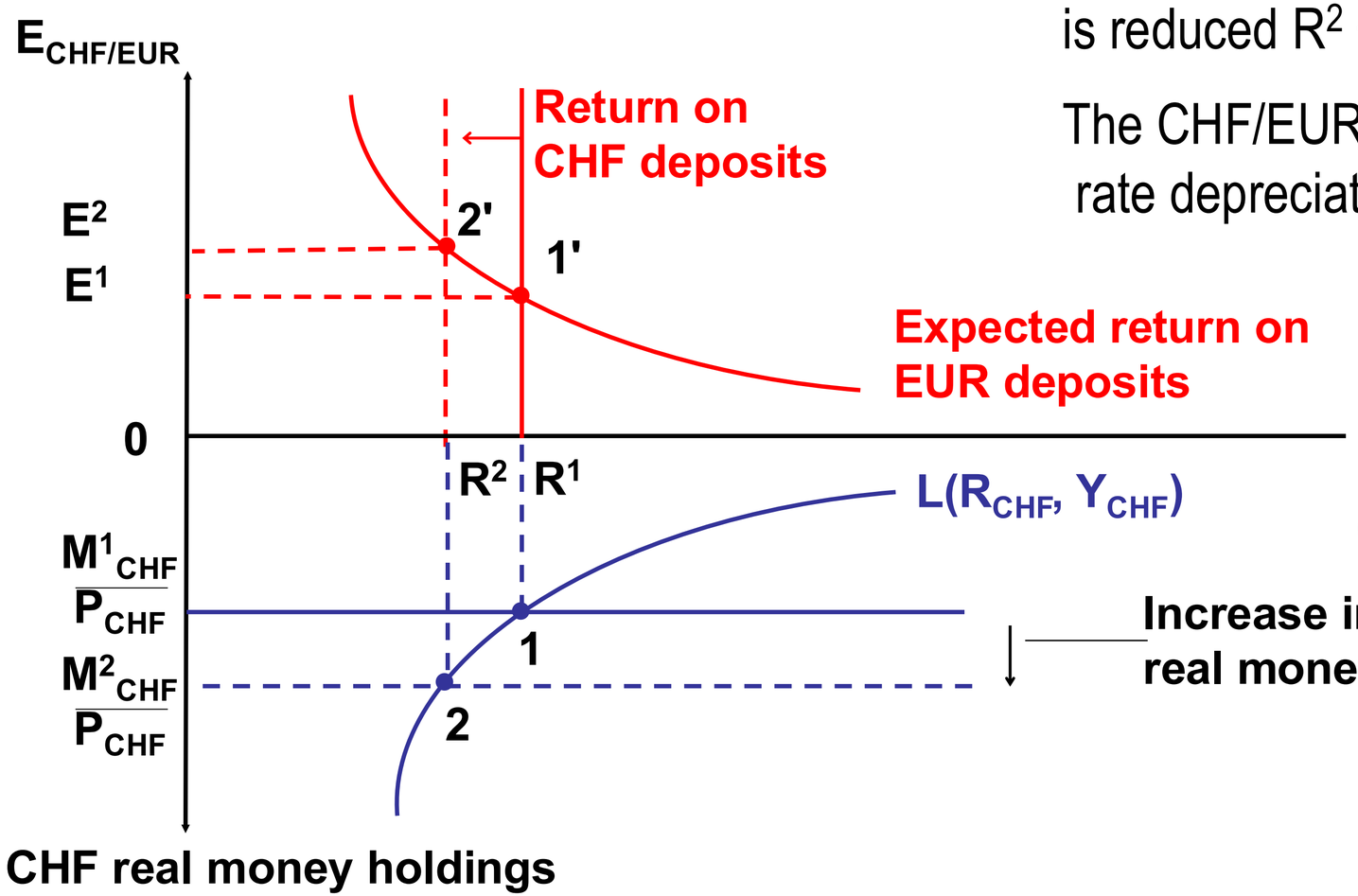
Equilibrium in the Money Market



Equilibrium in the Money and FOREX Markets



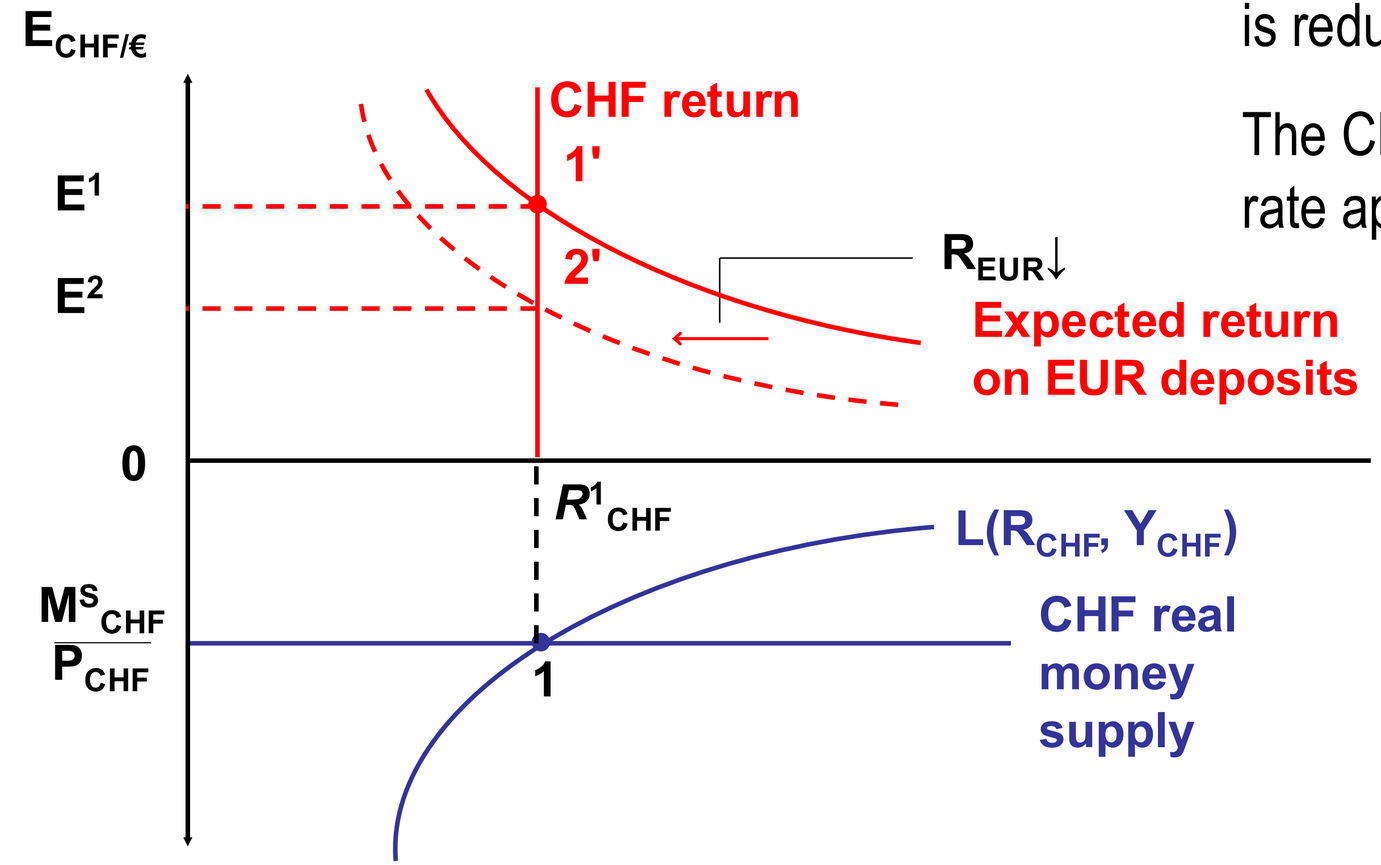
Domestic (CHF) monetary expansion, $M^2 > M^1$



The domestic interest rate is reduced $R^2 < R^1$

The CHF/EUR exchange rate depreciates

Foreign monetary expansion



The foreign interest rate is reduced R_{EUR}↓

The CHF/EUR exchange rate appreciates

Money Supply, Interest Rates and Exchange Rates - Summary

- Conventional monetary policy
- Money supply, money demand and the equilibrium in the money market
- Effects of monetary policy on the exchange rate

3.2 Conventional Monetary Policy

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Monetary Policy in Practice

- In Switzerland, the Federal Constitution
  - entrusts the Swiss National Bank (SNB) to carry out monetary policy as an independent central bank
  - gives it the mandate to ensure price stability and, in so doing, to take due account of economic developments
- Independent = the SNB is free to use its tools to carry out its mandate
- The SNB targets inflation and, if possible, economic activity
- SNB is accountable to the Federal Council, the Federal Assembly and the public

Monetary Policy in Practice (2)

- The SNB equates price stability with a rise in the Swiss CPI ≤ 2% per year
- It decides its monetary policy on the basis of a medium-term conditional forecast of inflation
- The SNB implements monetary policy by setting a target for the SNB policy rate. Currently, the target is 0%.
- It then conducts open market operations to bring SARON (secured overnight money market rate) close to the target for the SNB rate
- The SNB has other tools: standing facilities, foreign exchange spot and forward transactions, foreign exchange swaps and the purchase or sale of securities in Swiss francs, interest rate on sight deposits held at the SNB (same as policy rate up to a threshold)

Open Market Operations – How do they work?

- Suppose the SNB raises the policy rate by 50 bp, i.e. 0.5%
- The SNB enters a repo transaction where it sells securities for cash with an agreement to repurchase later. The SNB (cash taker in this case) pays interest (repo rate) for the term of the transaction
- The price of the securities falls ↓ and the yield goes up (R↑)
- The SNB continues selling securities until R has reached the desired target
- Securities enter the secondary market; money goes out of circulation
- Money supply has fallen M^s↓; the SNB absorbs liquidity

Conventional Monetary Policy

- When inflation is expected to exceed its target, the central bank raises R → money supply is reduced
- Monetary policy can be described by the Taylor rule:

$$R = R^* + \phi_\pi\,(\pi - \pi^*) + \phi_y(y - y^*), \quad \phi_\pi > 1,\ \phi_y \geq 0$$

π: inflation

π^*: inflation target

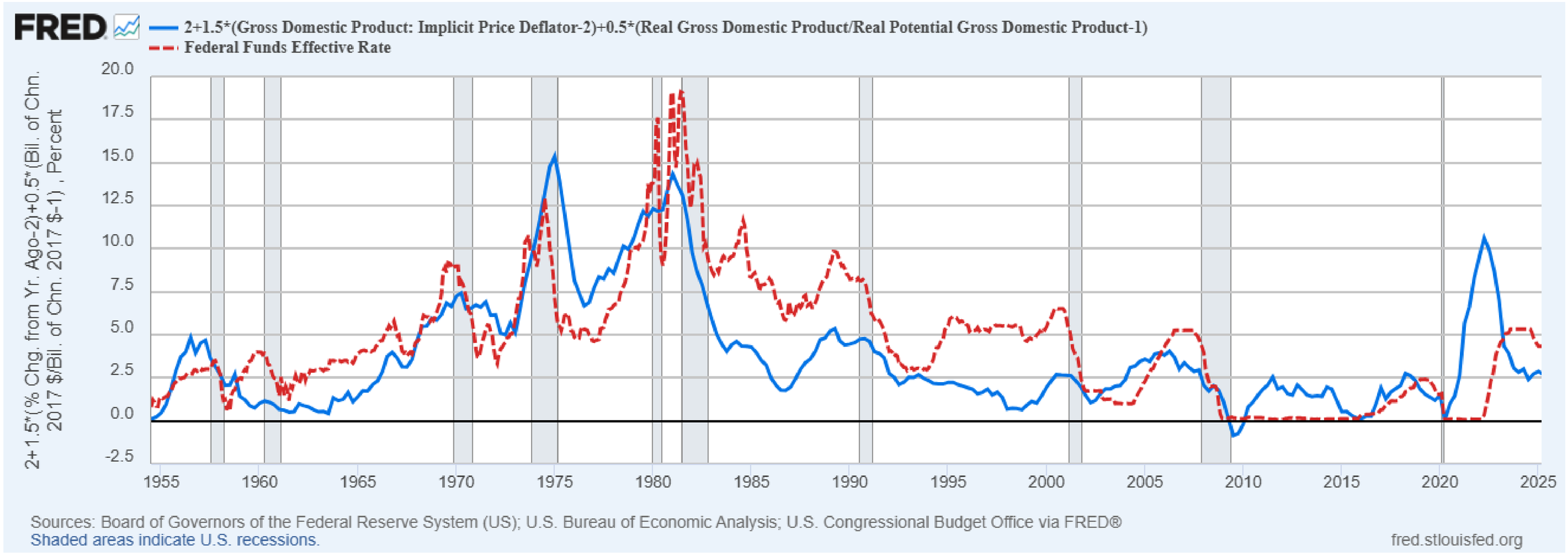
y: output

y*: potential output

R*: “equilibrium” monetary policy rate when inflation and output are on target

- Strict inflation targeting: $\phi_y = 0$
- Estimates for several countries are $\phi_\pi = 1.5,\ \phi_y = 0.5$

Taylor Rule: United States



Monetary Transmission Mechanism

- Suppose inflation goes above its target
- The central bank raises the policy rate R
- An increase in the policy rate R transmits to all other interest rates (mortgage, loans, credit cards, etc.)
- The cost of borrowing goes up
- Investment falls
- Private saving increases because the real interest rate (R-π) goes up
- Private consumption falls and aggregate demand falls
- Inflationary pressure are reduced