Monetary analysis versus real analysis: What are the main differences?

Peter Bofinger

Universität Würzburg and CEPR

German Council of Economic Experts

Motivation provided by John Maynard Keynes

- *"Most treatises on the principles of economics are concerned mainly, if not entirely, with a **real-exchange economy**; and – which is more peculiar- the same thing is also true of most treatises on the theory of money. (…)*

- *The theory which I desiderate would deal, in contradistinction to this, with an economy in which money plays a part of its own and affects motives and decisions and is, in short, one of the operative factors in the situation, so that the course of events cannot be predicted, either in the long period or in the short, without a knowledge of the behaviour of money between the first state and the last. And it is this which we ought to mean when we speak of a **monetary economy**. (…)*

- *Everyone would, of course agree that it is in a monetary economy in my sense of the term that we actually live.(…) . The idea that it is comparatively easy to adapt the hypothetical conclusions of a real wage economics to the real world of monetary economics is a mistake."*

    John Maynard Keynes (1933), The monetary theory of production, in: C.W. XIV, pp. 408-411
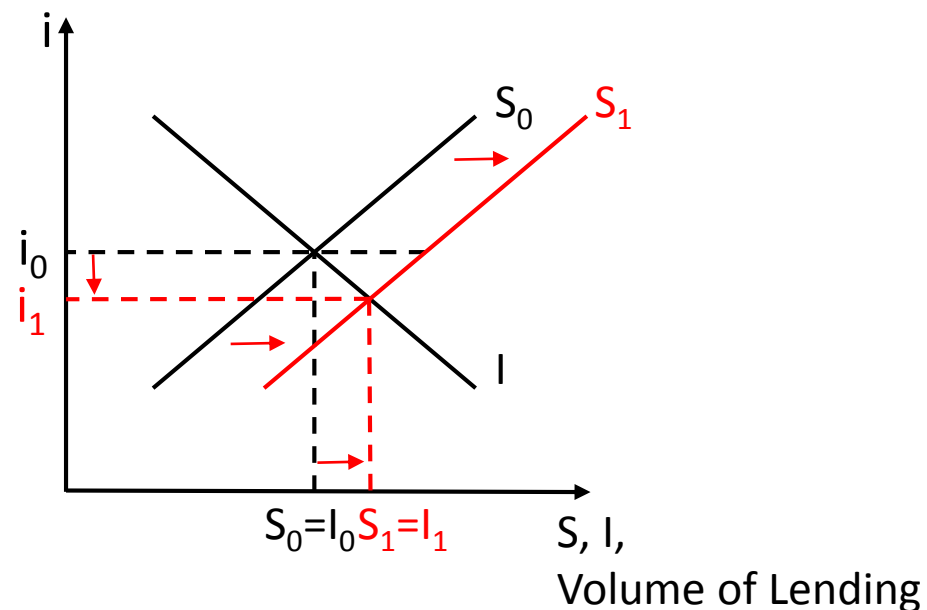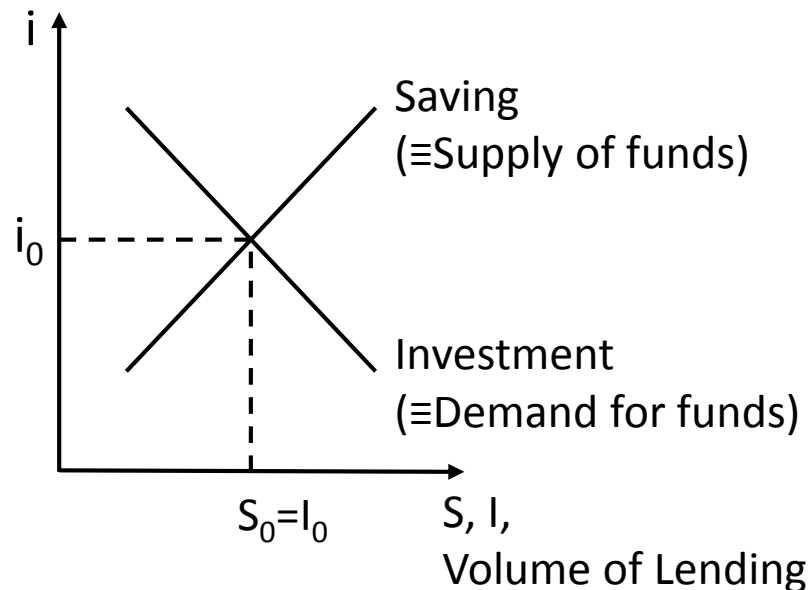
Dominance of the real analysis in macroeconomics and especially in financial economics

- Debate on low interest rates, „saving(s) glut" and „secular depression"
- Microeconomics of banking (Freixas/Rochet)
- DSGE models: Euler equation
- International macroeconomics (Krugman/Obstfeld)
- Fiscal policy: Overlapping generations models, theory of crowding-out
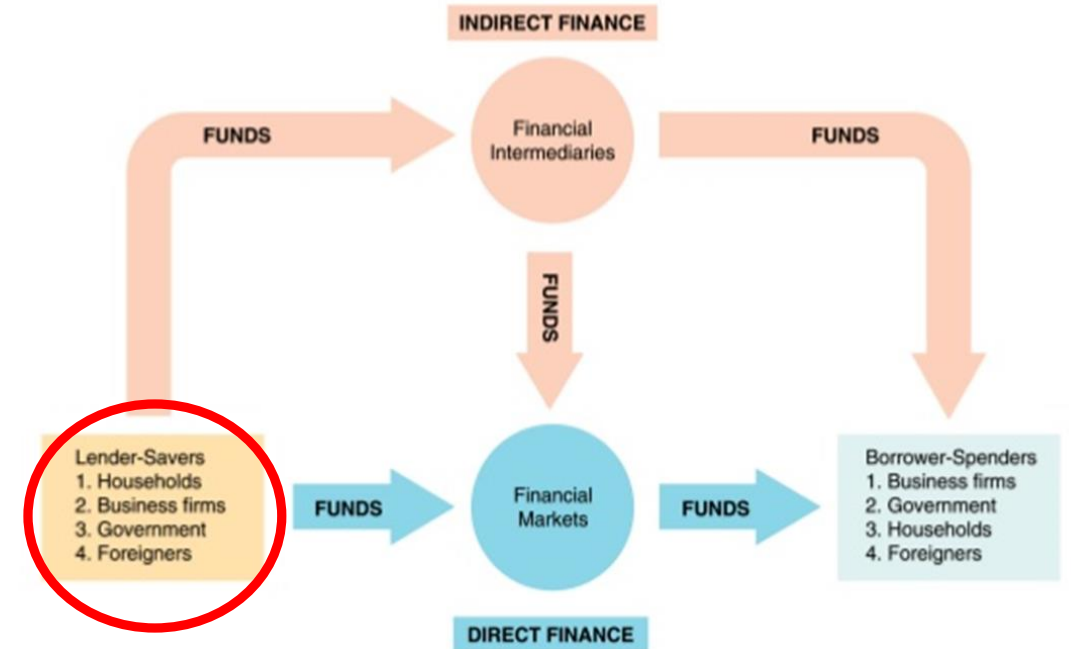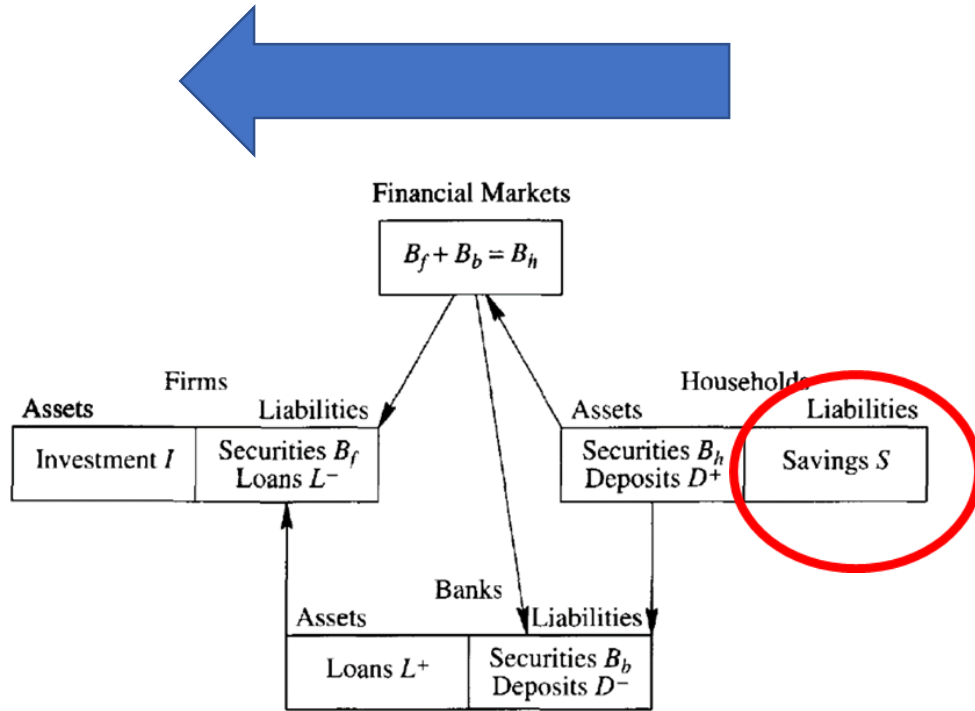- Theories of economic growth

I. Theory

Real analyis: The loanable funds model of the financial market

- Larry Summers (2016): "Just as the price of wheat adjusts to balance the supply of and demand for wheat, it is natural to suppose that interest rates—the price of money—adjust to balance the supply of savings and the demand for investment in an economy."

Real analysis: one-way flow of funds

Freixas, Xavier, and Jean-Charles Rochet (2008), Microeconomics of Banking

Frederic Mishkin (2012), Financial Markets and Institutions, 7th Edition

Axioms of the Real Analysis

- Freixas/Rochet (2008): a model "with a unique physical good, owned initially by the consumers. Some of it will be consumed at date 1, the rest being invested by the firms to produce consumption at date 2."

- Saving, i.e. abandonnement of consumption, is the precondition for investment

- Interest rate is the reward for saving

- Interest rate is a natural rate: $\dfrac{\text{units of the unique physical good tomorrow}}{\text{unit of the unique physical good today}}$

- Banks and financial markets are pure intermediaries for the unique physical good

The effects of household saving in an economy with money (Monetary Analysis)

Household decides to save 1,000 Euro by reducing his consumption by 1,000 Euro.

Balance sheet of the household			
Assets		Liabilities	
Bank deposits	+ 1,000	Net worth	+ 1,000

Balance sheet of the firm			
Assets		Passiva	
Bank deposits	- 1.000	Net worth	- 1.000

Balance sheet of the bank			
		Deposits household	+1.000
		Deposits firm	- 1.000

Household saving in the Monetary Analysis

- Household saving does not generate additional funds. It simply redistributes existing funds (=bank deposits) from the corporate sector to the household sector.

- Household saving has a negative impact on the liquidity position of the corporate sector and on corporate profits (P_F).

- Kalecki equation

$$P_F = I_F + \Delta NFA_F$$

$$\Delta NFA_F = - \Delta NFA_{OTHER\ SECTORS}$$

$$\textcolor{red}{P_F} = I_F - [(\textcolor{red}{Y_{HH}} - \textcolor{red}{C_{HH}}) + (T - G) + (M - X)]$$

Household saving   Government financial balance   Current account deficit

Monetary Analysis: real interest rate for saving = 0

Keynes: "It should be obvious that the rate of interest cannot be a return to saving or waiting as such. For if a man hoards his savings in cash, he earns no interest, though he saves just as much as before. On the contrary, the mere definition of the rate of interest tells us in so many words that the rate of interest is the reward for parting with liquidity for a specified period." (GT, p. 166)

Germany: Real interest rate on saving deposits and on bonds
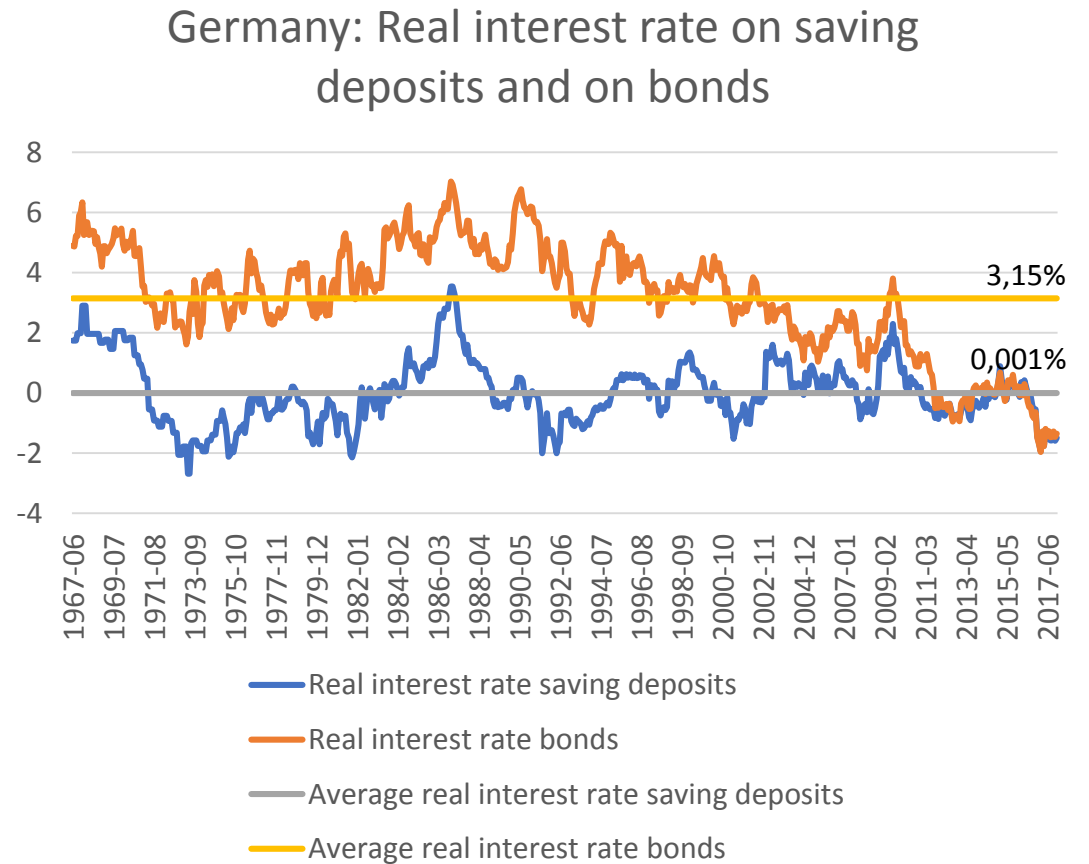
Anomaly of the Real Analysis: „Euler puzzle"

Canzoneri et al. (2007) „ (…) money market rates and the implied consumption Euler equation rates are negatively correlated."
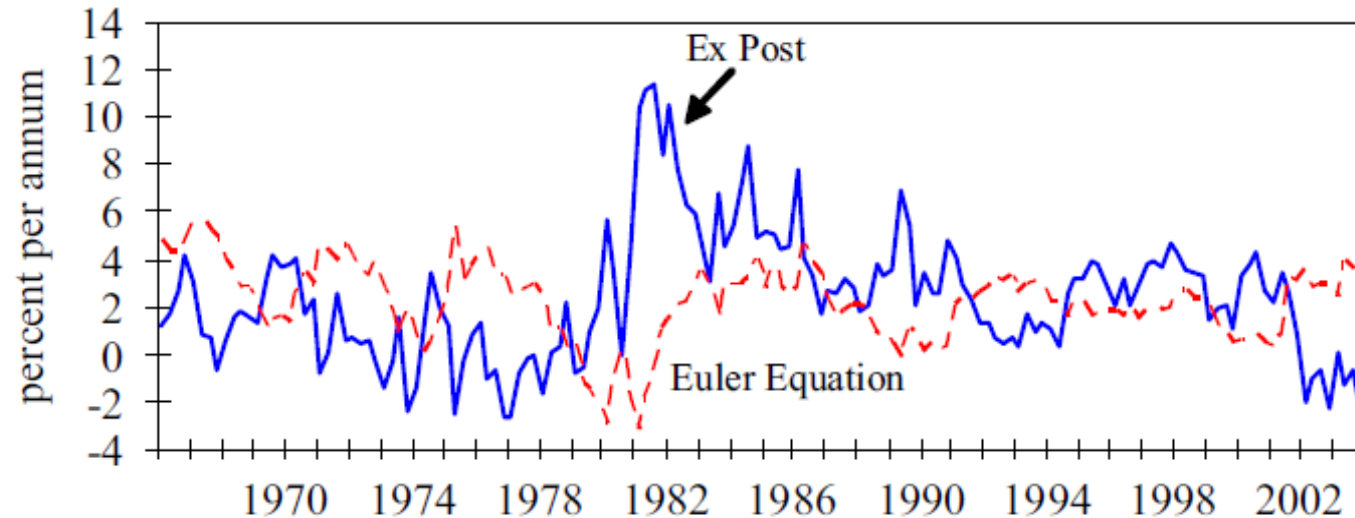
Fig. 5. Real interest rates: ex post and Campbell–Cochrane model.

# Monetary analyis in a very simple model (IS/LM-AS/AD)

i

LM = Financial market equilibrium

IS = Goods market equilibrium

Y
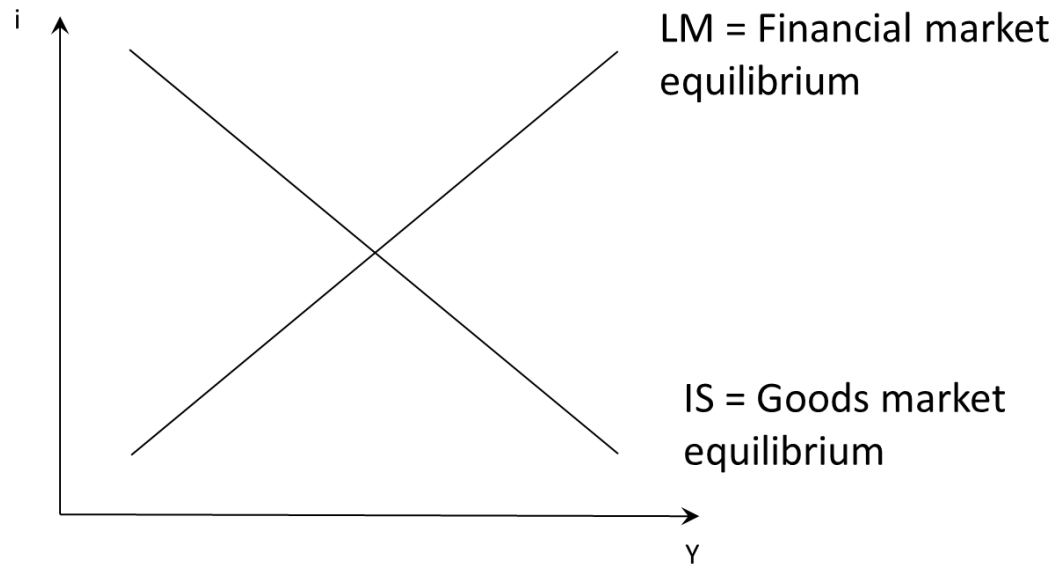
- Multiple equilibria of saving and investment
- Separation of the financial market from the goods market
- Investment creates saving
- Banks create money (Multiplier)
- Interest rate is a money rate
- Saving has no direct impact on the financial market

Axioms of two incompatible paradigms

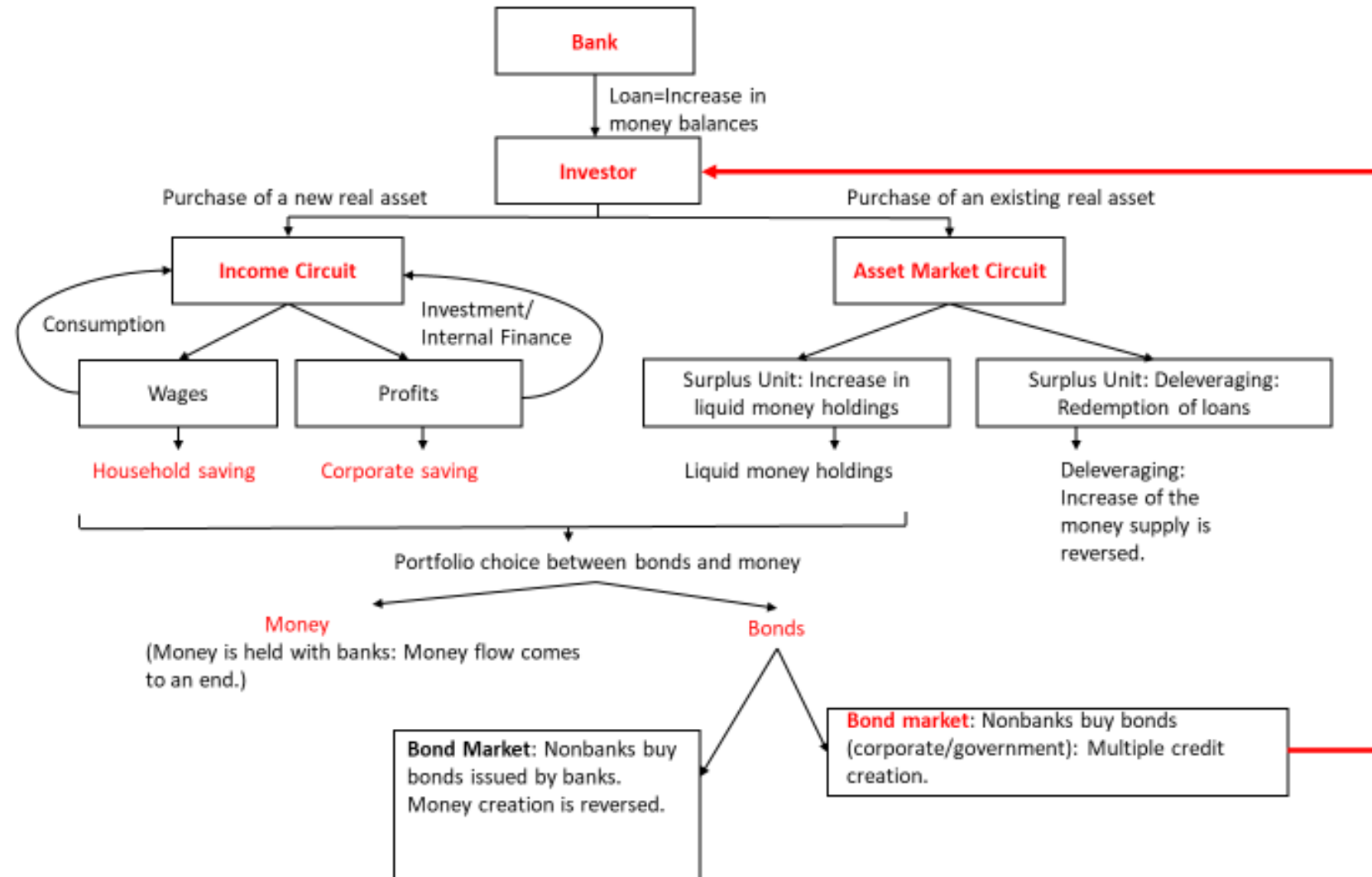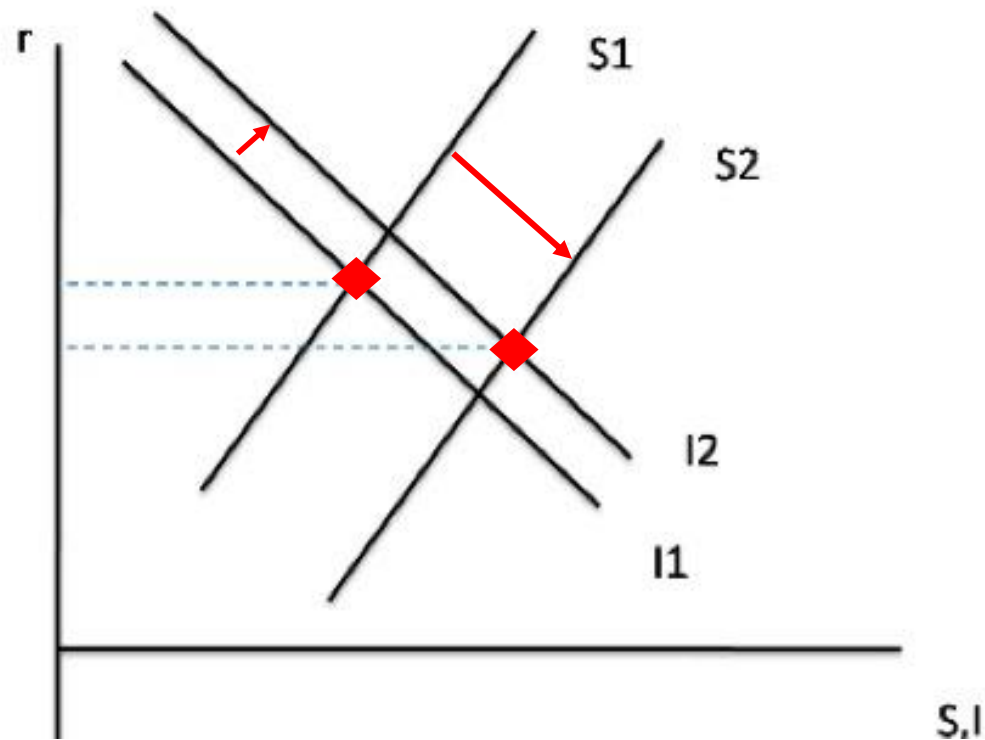|	Real Analysis	Monetary Analysis
Saving	Source for financial funds: Standard commodity becomes available for investment	- Irrelevant for the financial system. No impact on LM-curve. - Reduction of aggregate demand
Financing	Identical with saving	Provision of demand deposits independently of saving
Investment	Requires saving	Generates Saving
Equilibrium of S and I	One equilibrium	Multiple equilibria (IS-curve, LM-curve, IS/LM, AS/AD)
Interest rate	Real rate: $\frac{\text{Units of the standard commodity in t+1}}{\text{Unit of standard commodity in t}}$	Money rate: $\frac{\text{Units of money in t+1}}{\text{Unit of money in t}}$
Banks	- Pure intermediaries - Deposits create loans	- Originators of money - Loans create deposits
Financial markets	Identical with banks: Intermediaries between savers and investors	Fundamentally different from banks: Redistribution of money created by banks
Role of the central bank	Powerless as it neither creates nor destroys the standard commodity	Powerful as it can control the supply of money with its policy rate

Zero-lower bound

Real Analysis
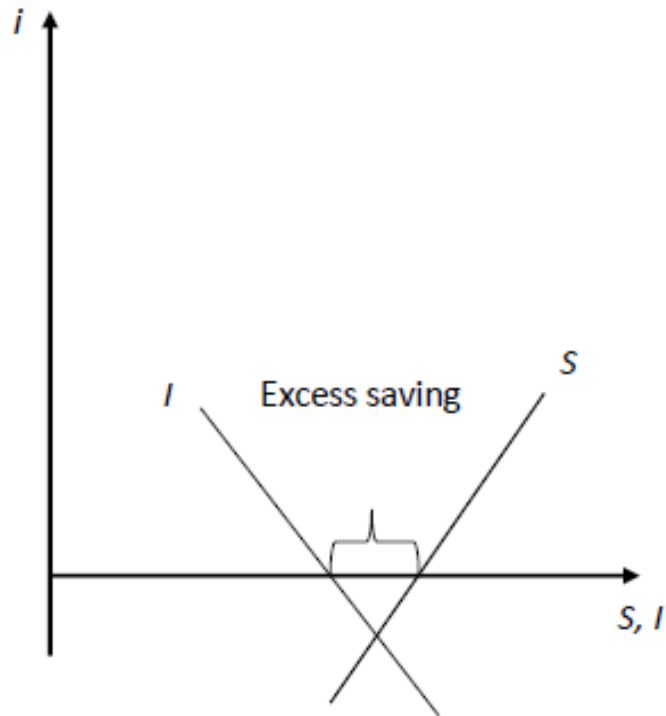
Monetary Analysis
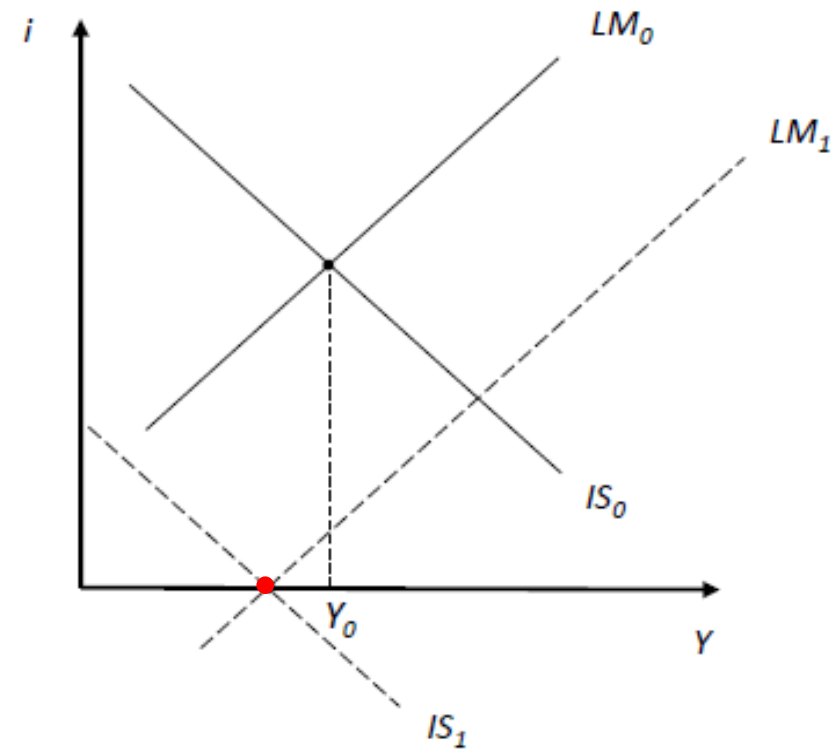
Monetary Analysis: Circular flow of funds

# Attempts to combine Real Analysis and Monetary Analysis

	REAL	MONETARY
Wicksell (1898)	Equilibrium: monetary rate equals neutral rate	Disequilibrium: monetary rate differs from neutral rate
Neoclasssical Synthesis e.g. Rachel and Smith (2015, p. 54)	"to the extent that prices are flexible in the long-run, money is neutral, and only real factors have a lasting effect on long-run real rates"	Short-run
Borio and Disyatad (2011, p. 22)	"Real factors determine at least the steady state equilibrium level of real interest rates."	"Monetary and financial factors determine the actual interest rates that prevail at any given point in time
Krugman (2011)	(…) the distinction between loanable funds and liquidity preference theories of the rate of interest – or, rather, **the ability to see how both can be true at once**, and the implications of that insight – seem to have been utterly forgotten by a large fraction of economists (…)	

Krugman and Woodford: How to derive the IS-curve from the loanable funds modell

r

S1

S2

I2

I1

S,I

A: Effect of an Increase in Aggregate Income on Loan Supply and Demand

i

LS

Interest rate
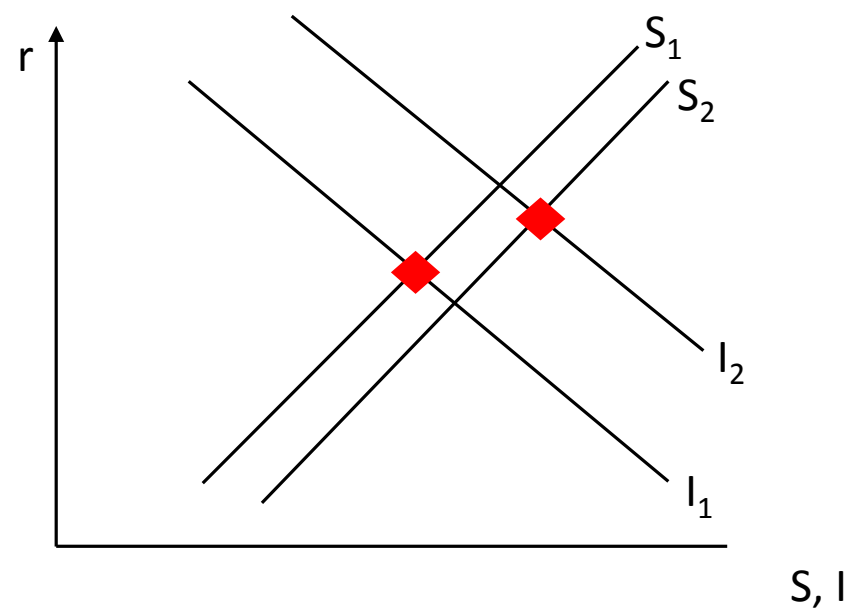
i_1

i_2

LD

L_1 L_2

L

Volume of lending

Krugman (2011): "we imagine that a rise in GDP shifts the savings schedule out from S1 to S2, also shifts the investment schedule, and, as drawn, reduces the interest rate in the market for loanable funds"
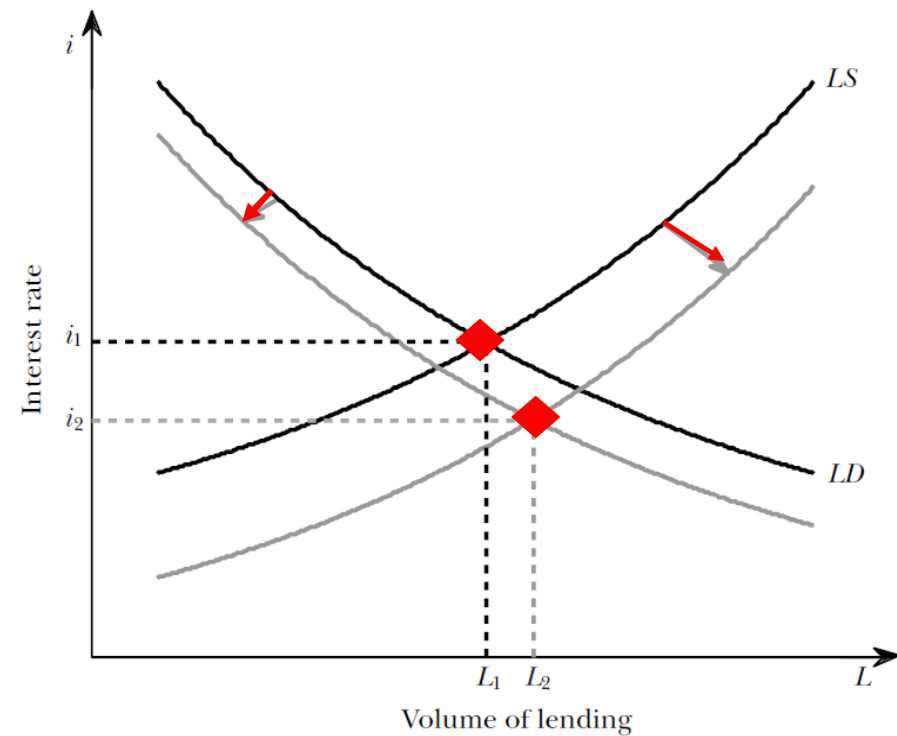
Woodford (2010)

Higher income leads to higher interest rates

II. Why are interest rates so low?
Real Analysis versus Monetary Analysis

Long Run 'Real' Rates (Percent)

1980s average

1980   1985   1990   1995   2000   2005   2010   2015

— World real rate   — Advanced Economies
— Emerging Economies
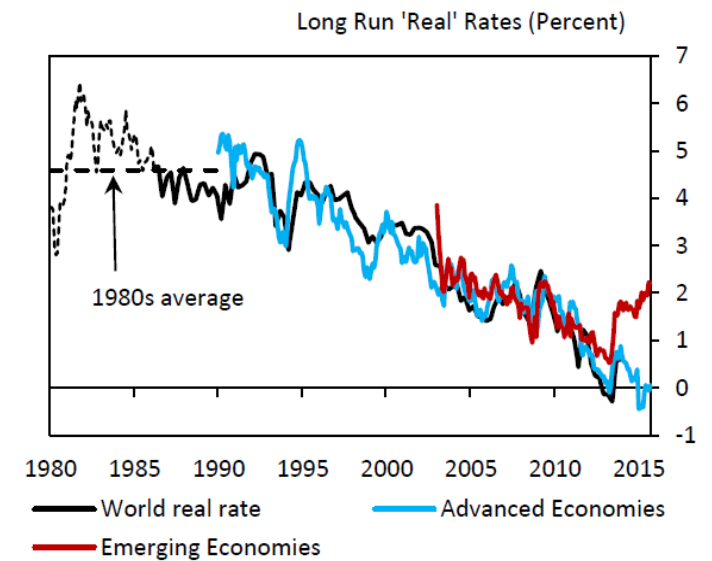
Source: Rachel and Smith (2015)

Larry Summers: "The essence of secular stagnation is a chronic excess of saving over investment."
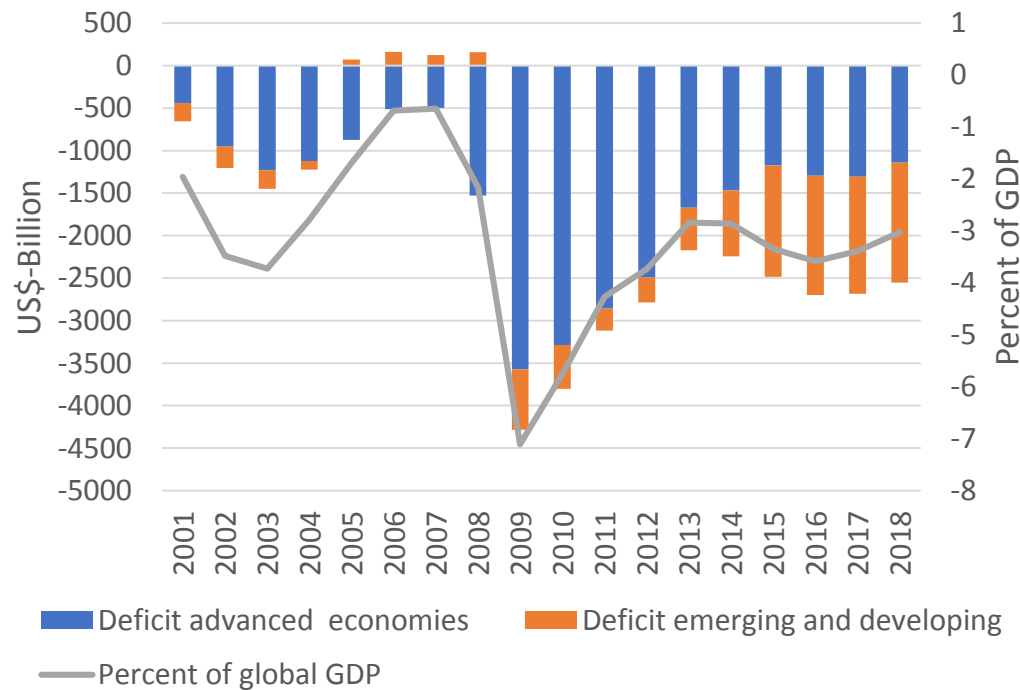
Excess saving/Saving(s) glut:

- $S_{ex\ ante} > I_{ex\ ante}$
- $S_{ex\ ante} + C > I_{ex\ ante} + C$
- Aggr. Supply > Aggr. Demand

➢Global demand deficiency

GDP growth rates
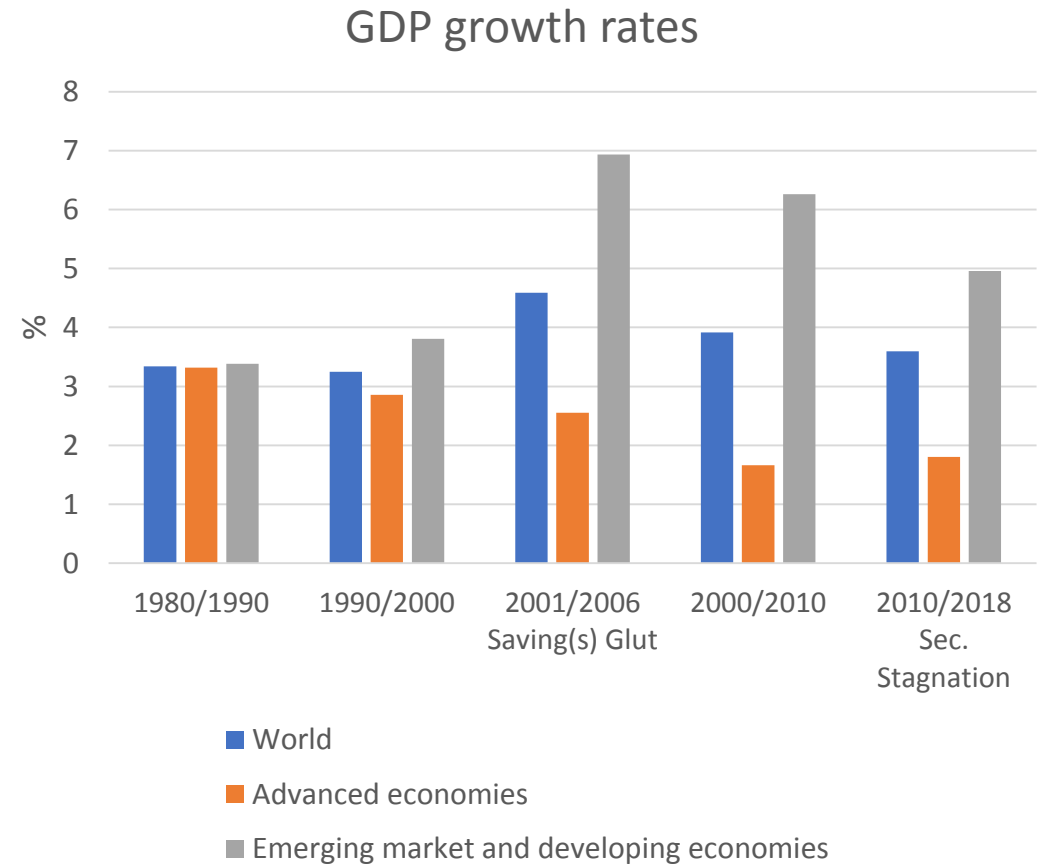
Source: IMF, WEO Database

Excess saving of one sector ($S^A > I^A$) is possible, but it requires excess spending of a another sector ($I^B > S^B$)
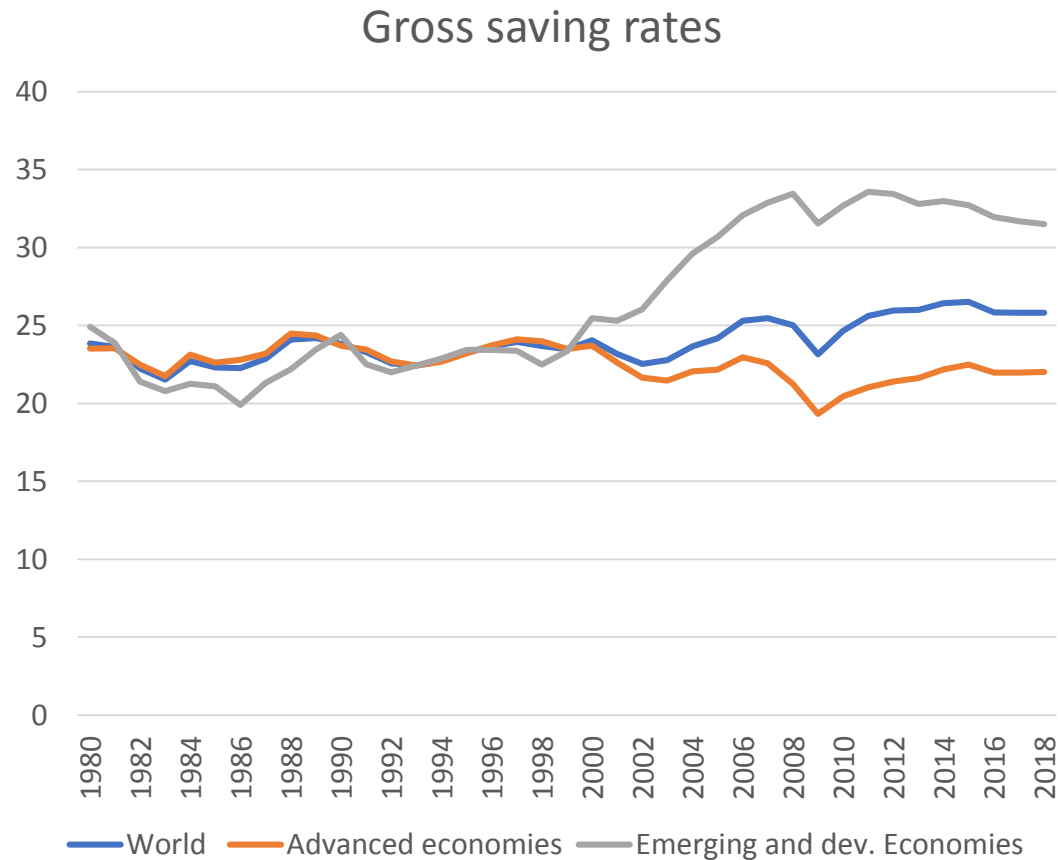

Pubic sector balances (percent of GDP)
Public excess spending and
private excess saving

Current account balances (USD billion)
Excess spending in advanced economies and
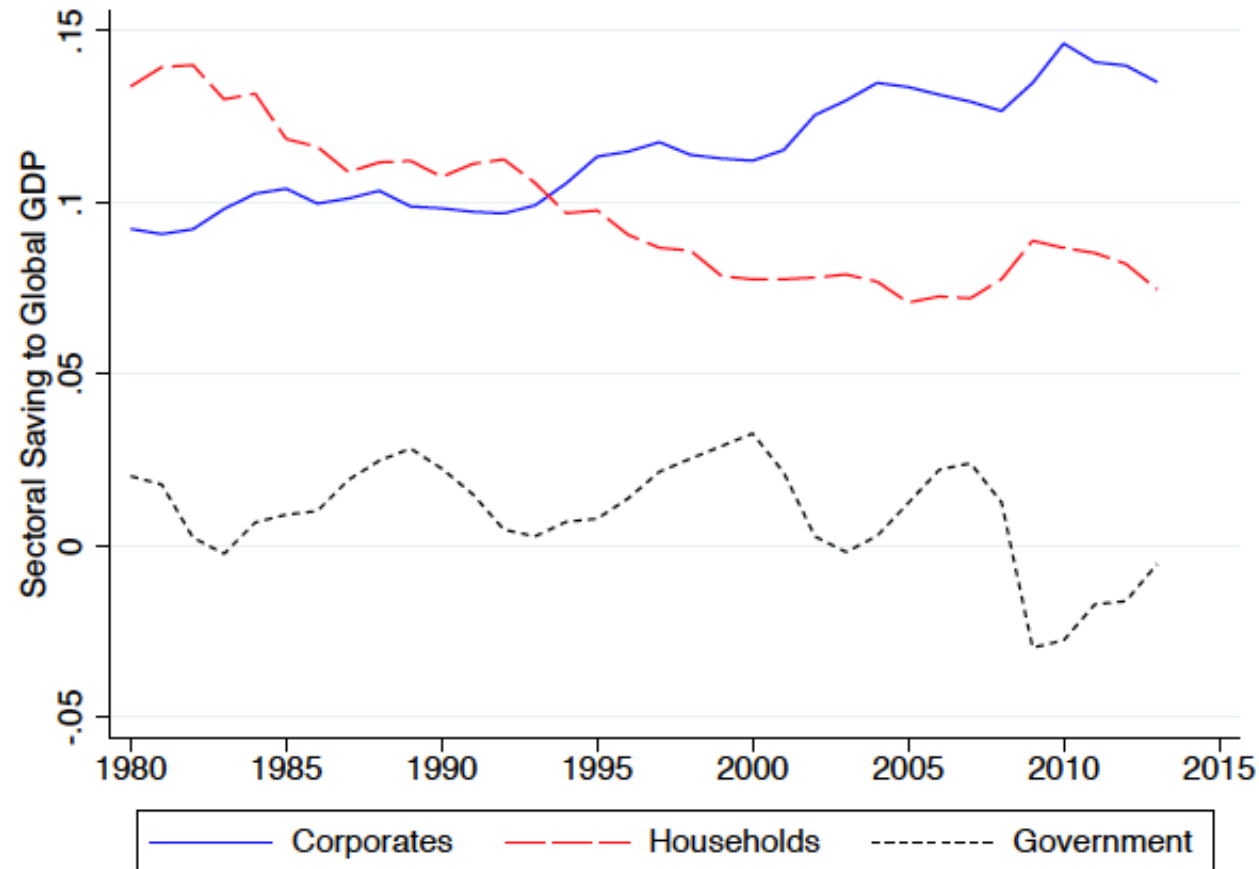excess saving in developing economies
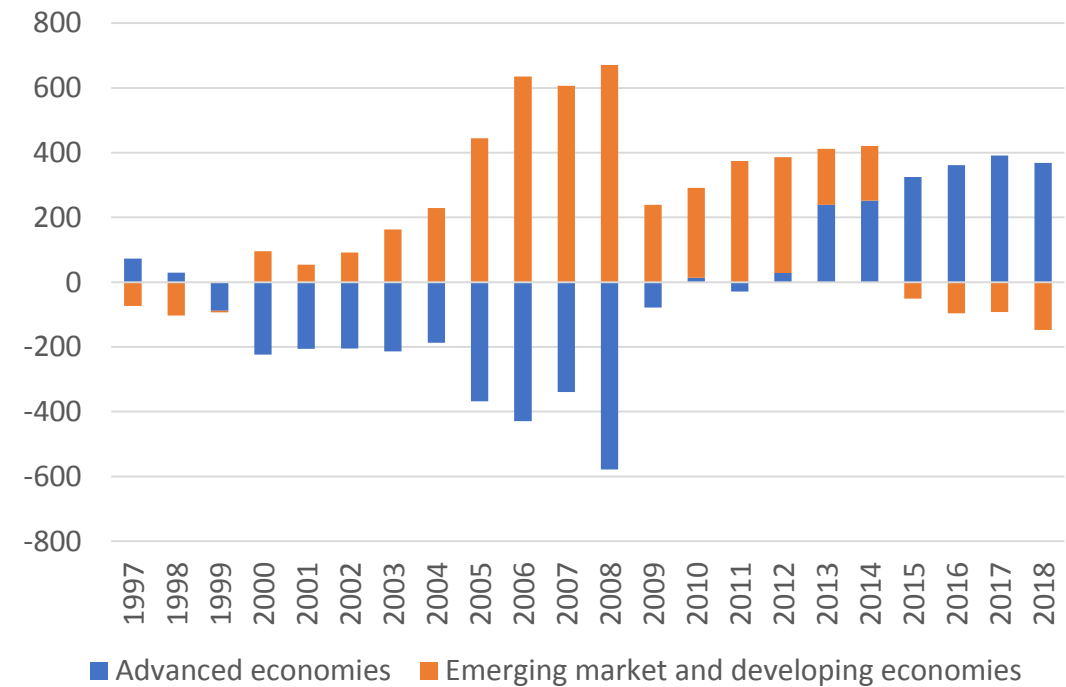
Low interest rate caused by an increase in the global propensity to save?
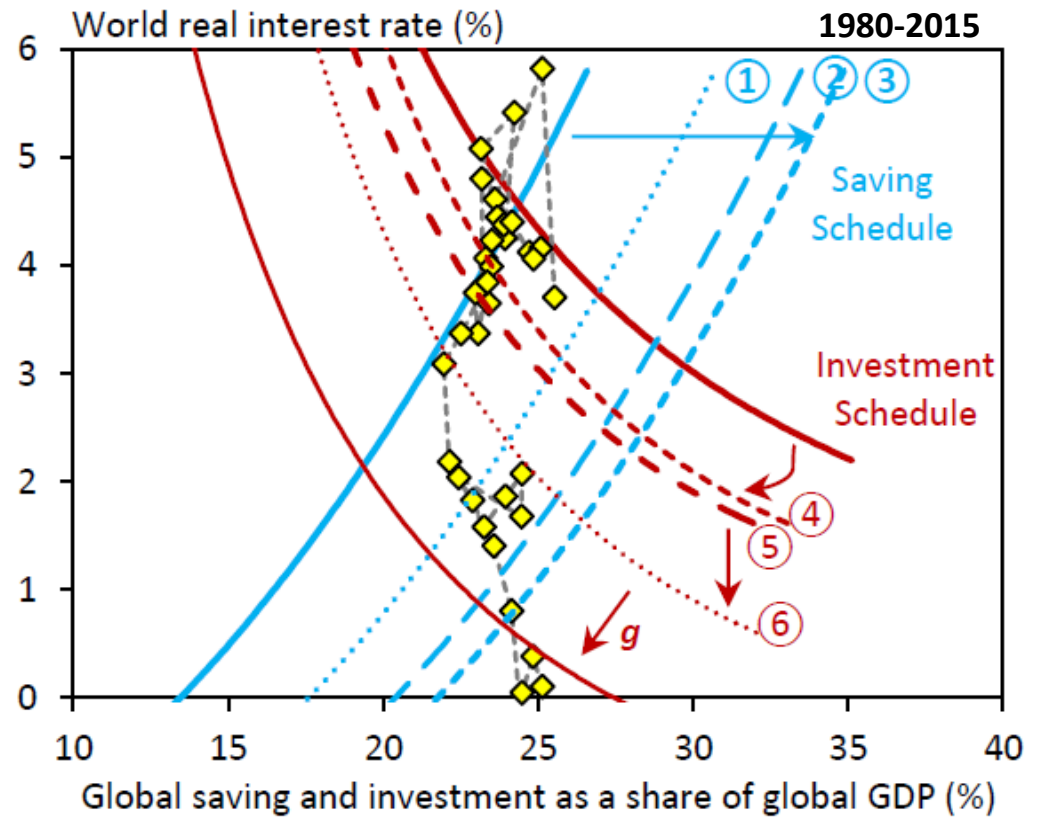
Gross saving rates

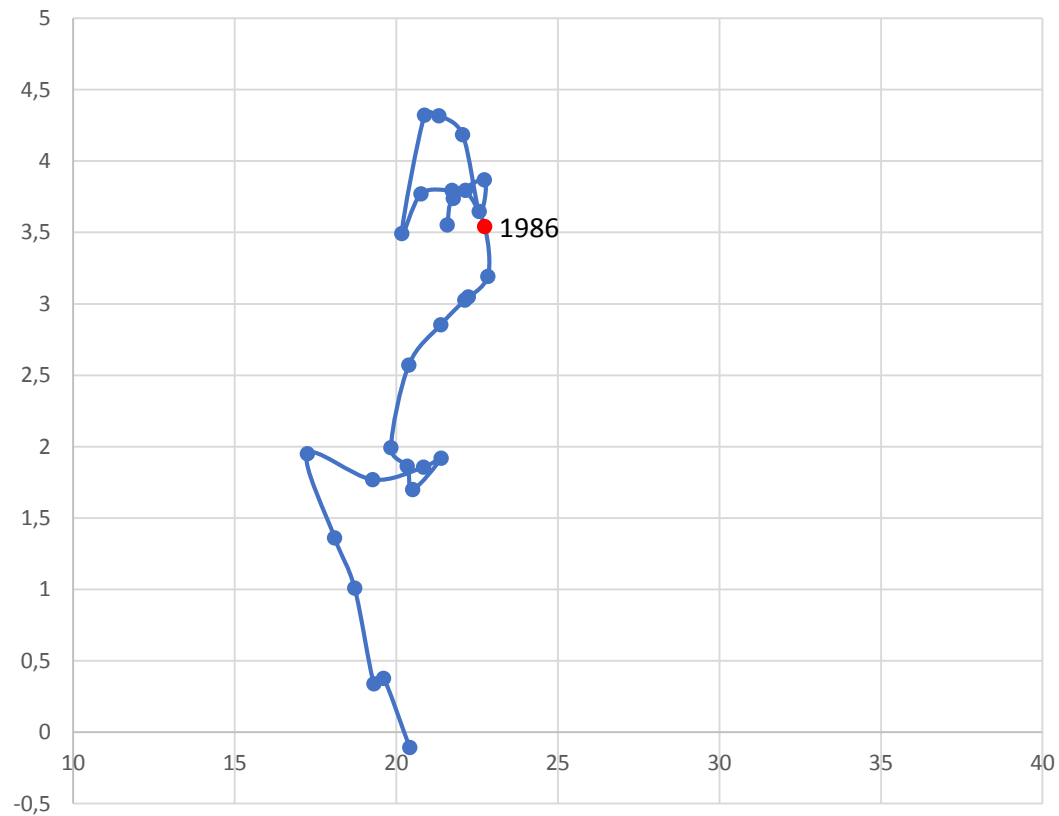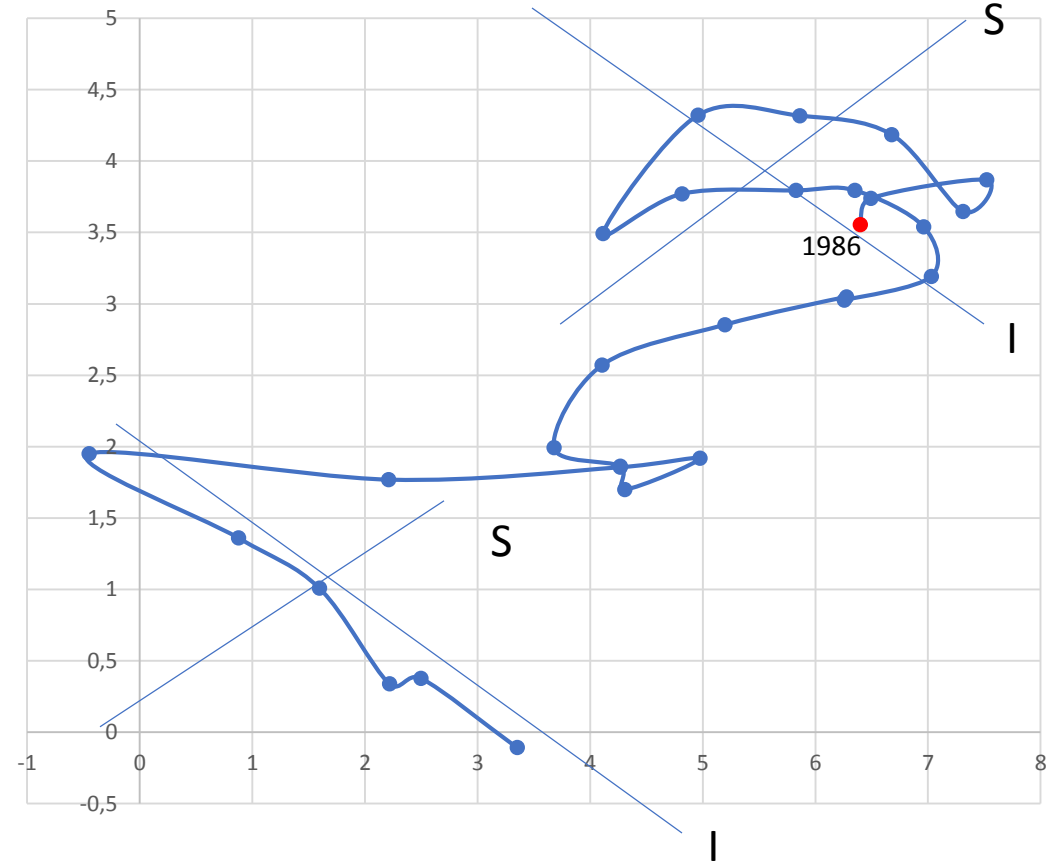Source: Rachel and Smith (2015)

Problem 1: Household saving has declined

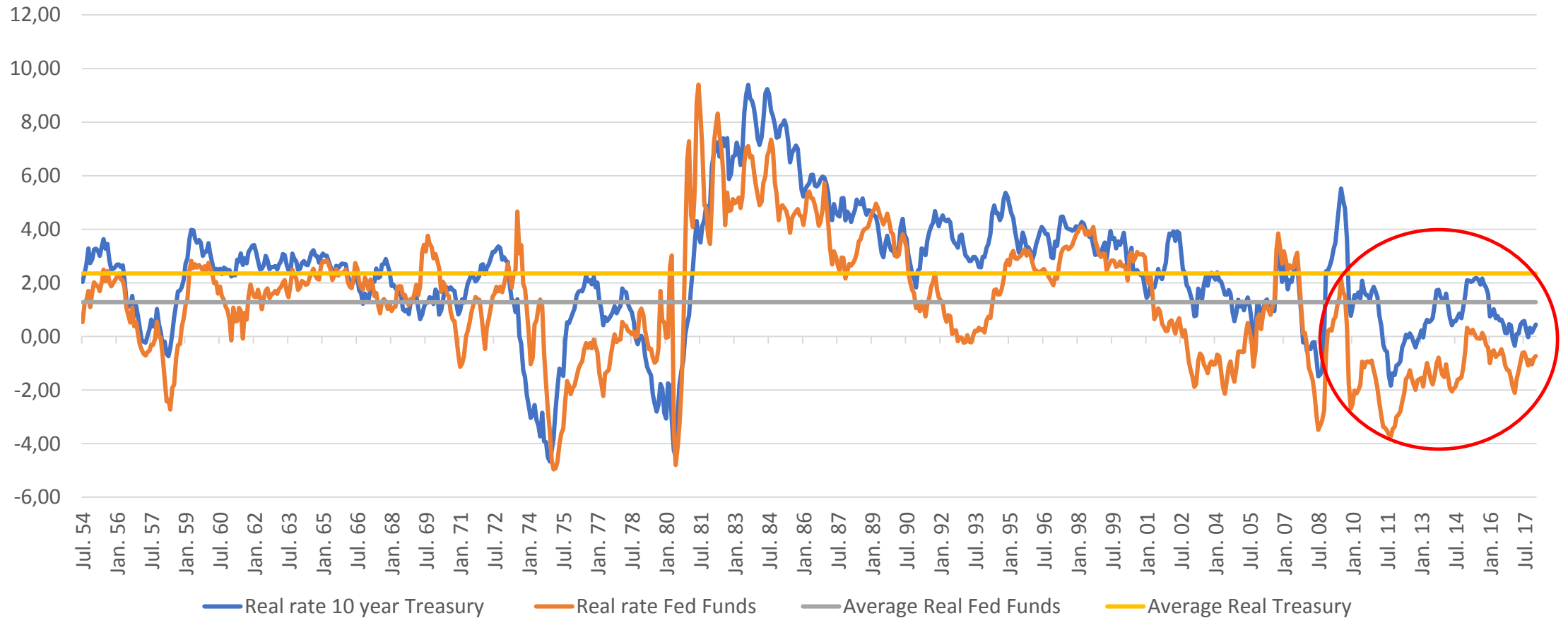# Problem 2: Trends of gross and net saving differ

Gross saving rate and G7 real interest rate (1986-2014)

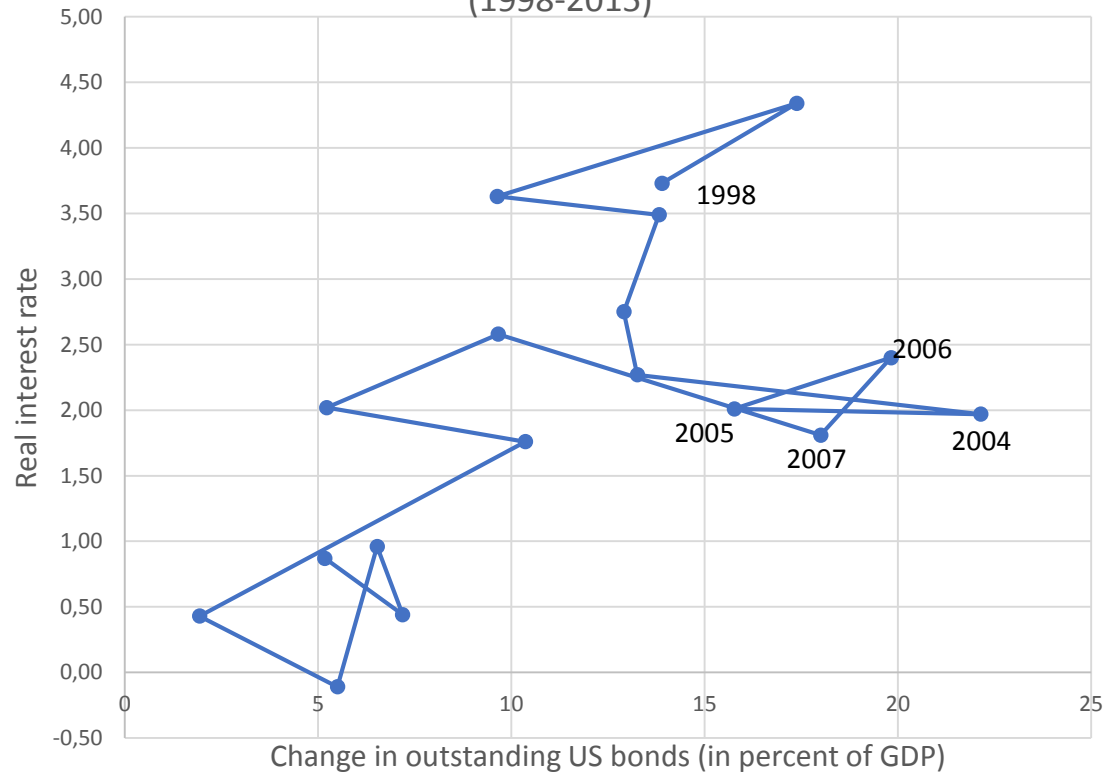**Net saving** rate and G7 real interest rate (1986-2014)

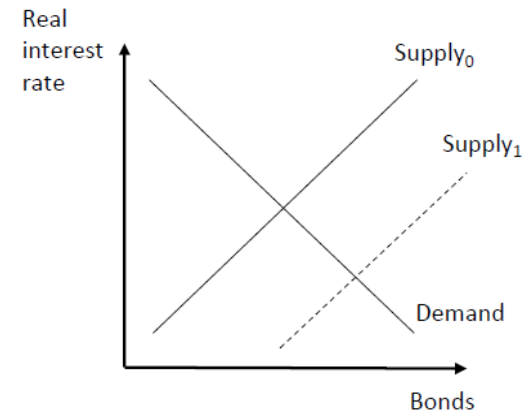# Problem 3: Early 1980s were an outlier
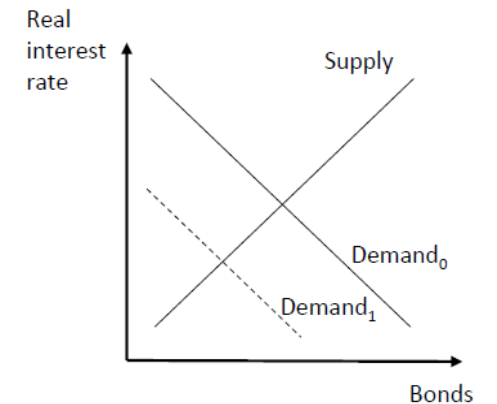
Monetary Analysis: Focus on US-bond market

30-year indexed US-Treasury yield and change in outstanding US-bonds (1998-2015)

Real interest rate (y-axis)
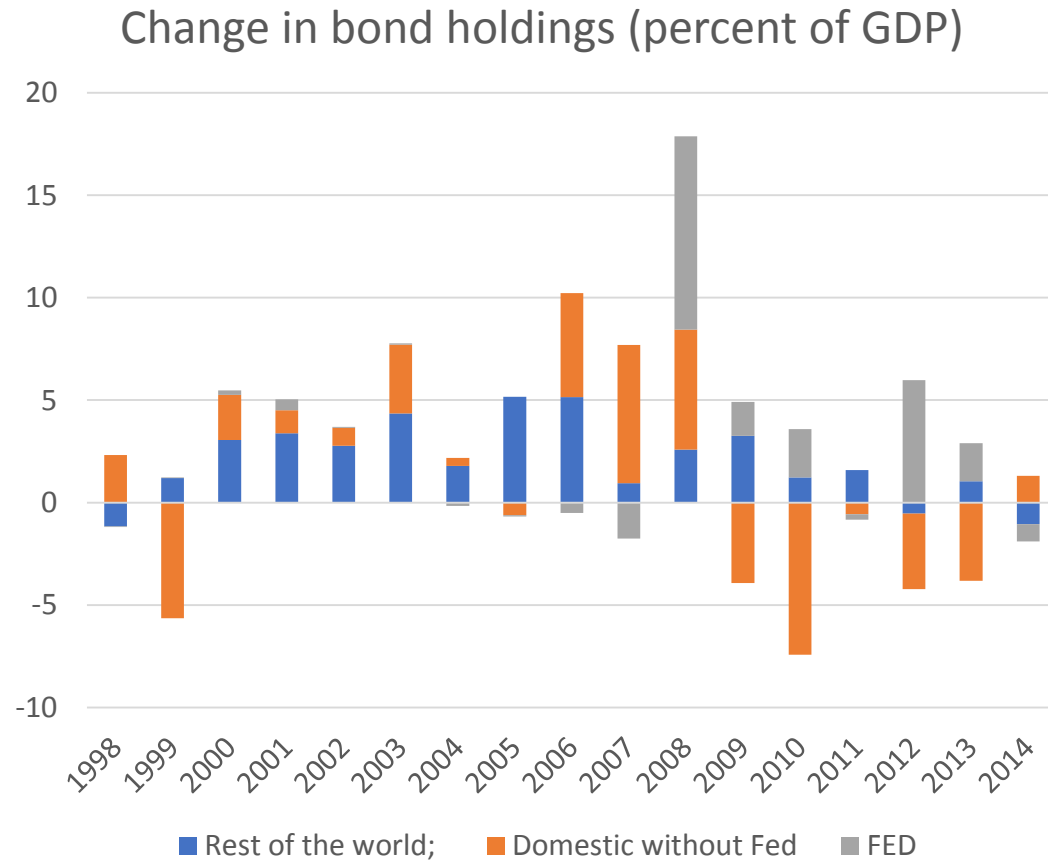Change in outstanding US bonds (in percent of GDP) (x-axis)

1998, 2004, 2005, 2006, 2007

Positive supply shock until crisis („Financing glut")

Negative demand shock after crisis („Borrowing dearth")

Source: Securities Industry and Financial Markets Association

Supply on the US bond market

Change in bond holdings (percent of GDP)

■ Rest of the world; ■ Domestic without Fed ■ FED

Source: Board of Governors

Foreigners: net purchases of securitites in the United States

■ Treasury Bonds and Notes ■ US GOVT Agency
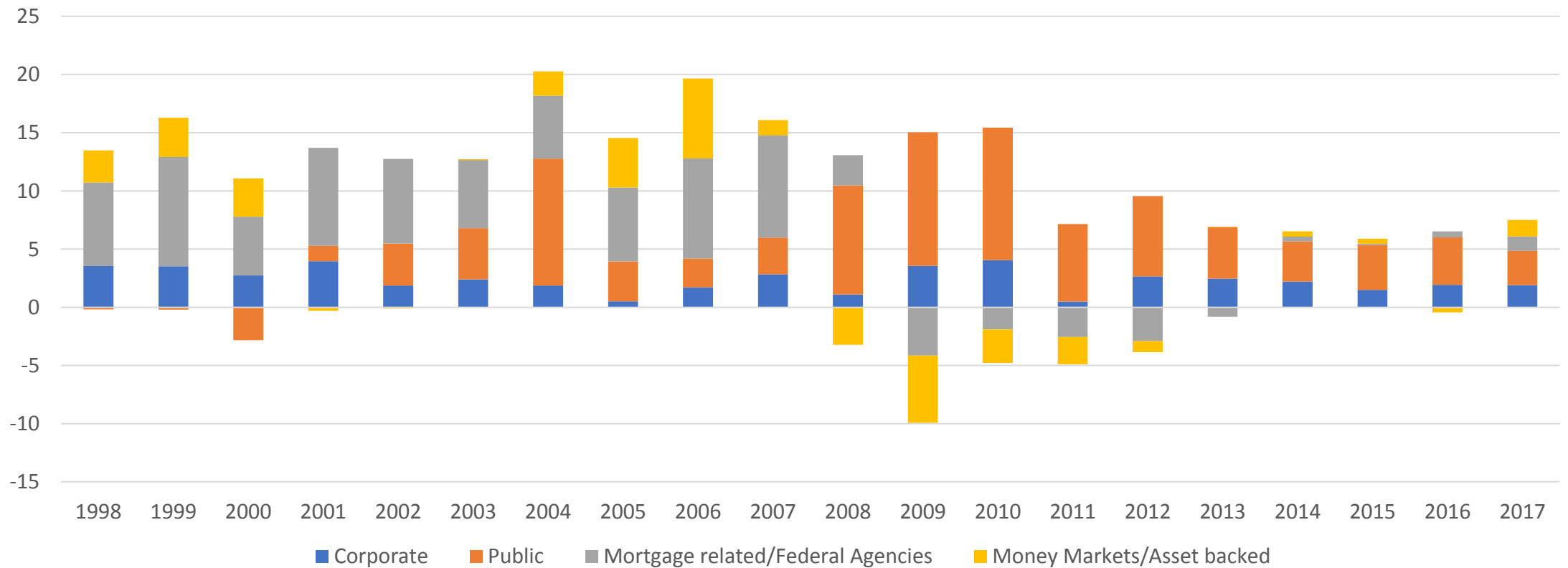■ Corp Bonds ■ Corp Stocks
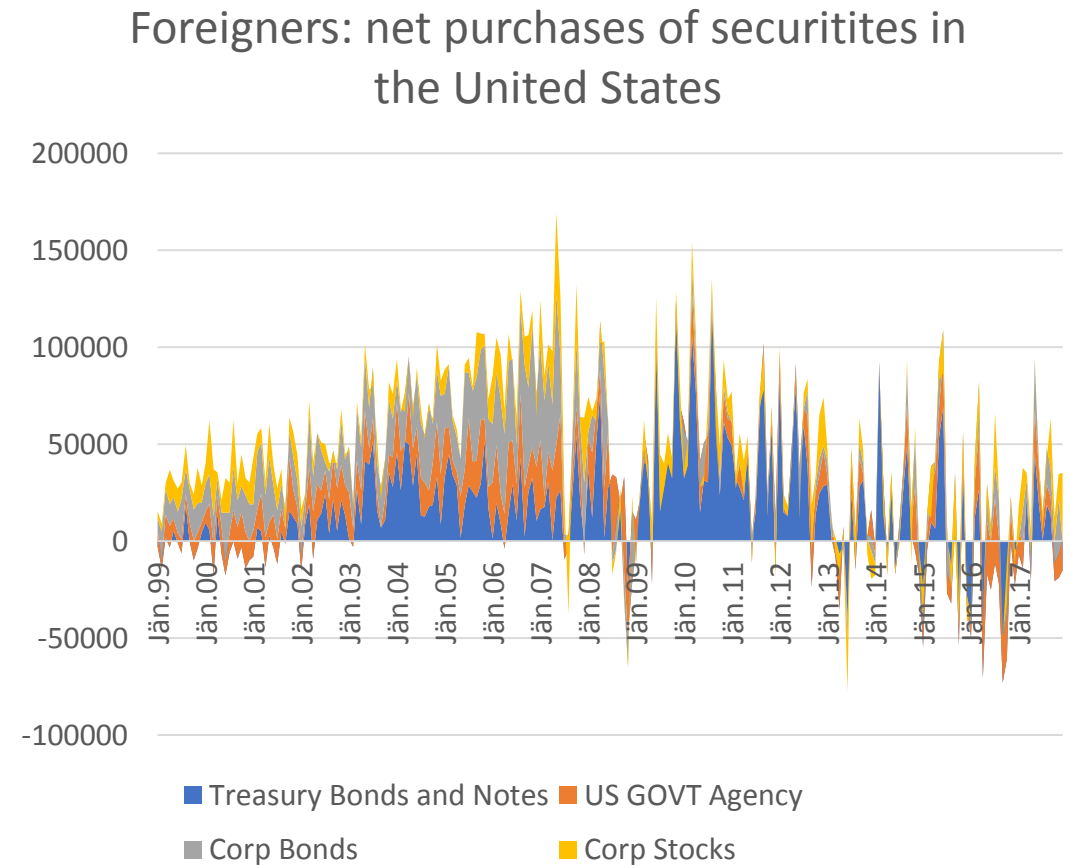
Source: US Treasury, tic data

Demand side of the US bond market

Change in outstanding amount of (percent of GDP)

Source: SIFMA

■ Corporate ■ Public ■ Mortgage related/Federal Agencies ■ Money Markets/Asset backed

Real Analysis: Paradox of capital (Prasad et al. 2017)
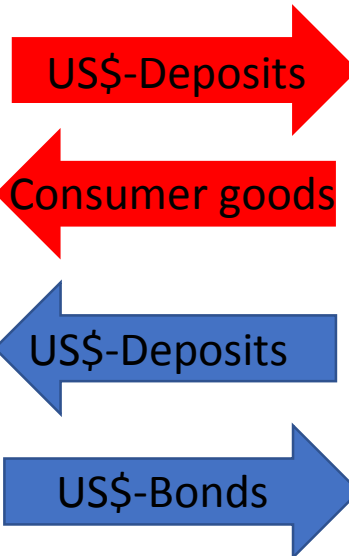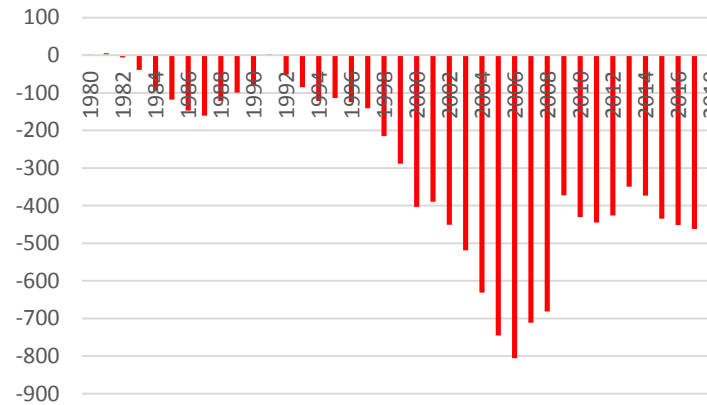

Advanced economies

Emerging economies
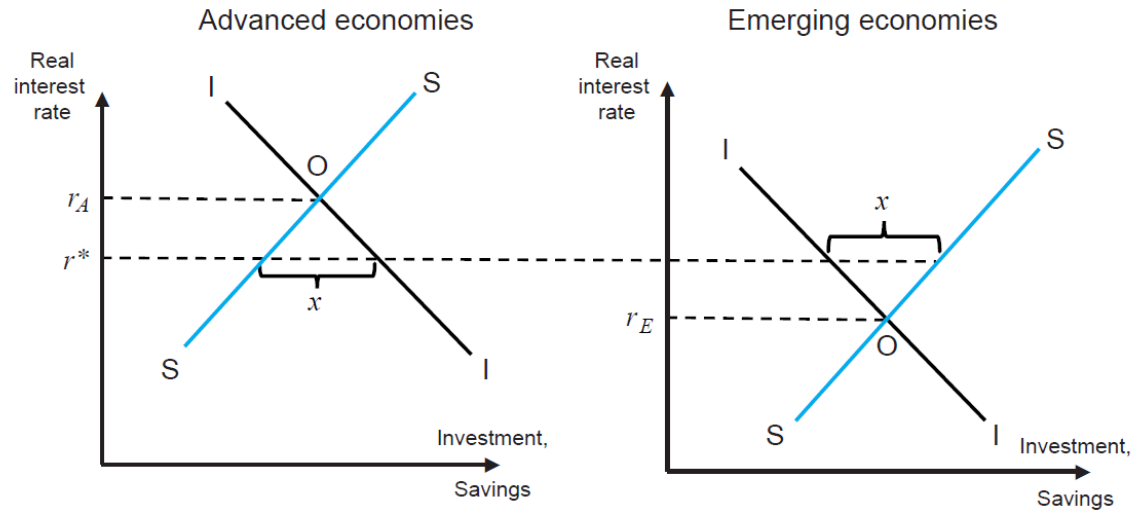
- (...) this paradox has, if anything, intensified over time. (...) the average income, relative to the United States, of capital-exporting countries has fallen well below that of capital-importing countries. In other words, capital has been flowing from poor to rich countries!

Capital

The relative income of capital-exporting countries has fallen when compared with the United States.
(relative per capita GDP weighted by current accounts)

Surplus countries

Deficit countries

Monetary Analysis: The paradox vanishes

Summary

- Real Analysis and Monetary Analysis are incompatible
- Real Analysis is an inadequate model for a reality with money
- The focus on the saver in Real Analysis is misguided. In Monetary Analysis banks and investors are the core actors
- Low interest rates cannot be explained with a higher propensity to save, global „excess saving(s)" or a global saving(s) glut
- The Real analysis completely neglects the role of the central bank
- Bond market data and flow of funds data provide very useful information that has not been exploited so far
- It is time to save other fields of economics from the detrimental influence of the Real Analysis

China's debt-driven growth model
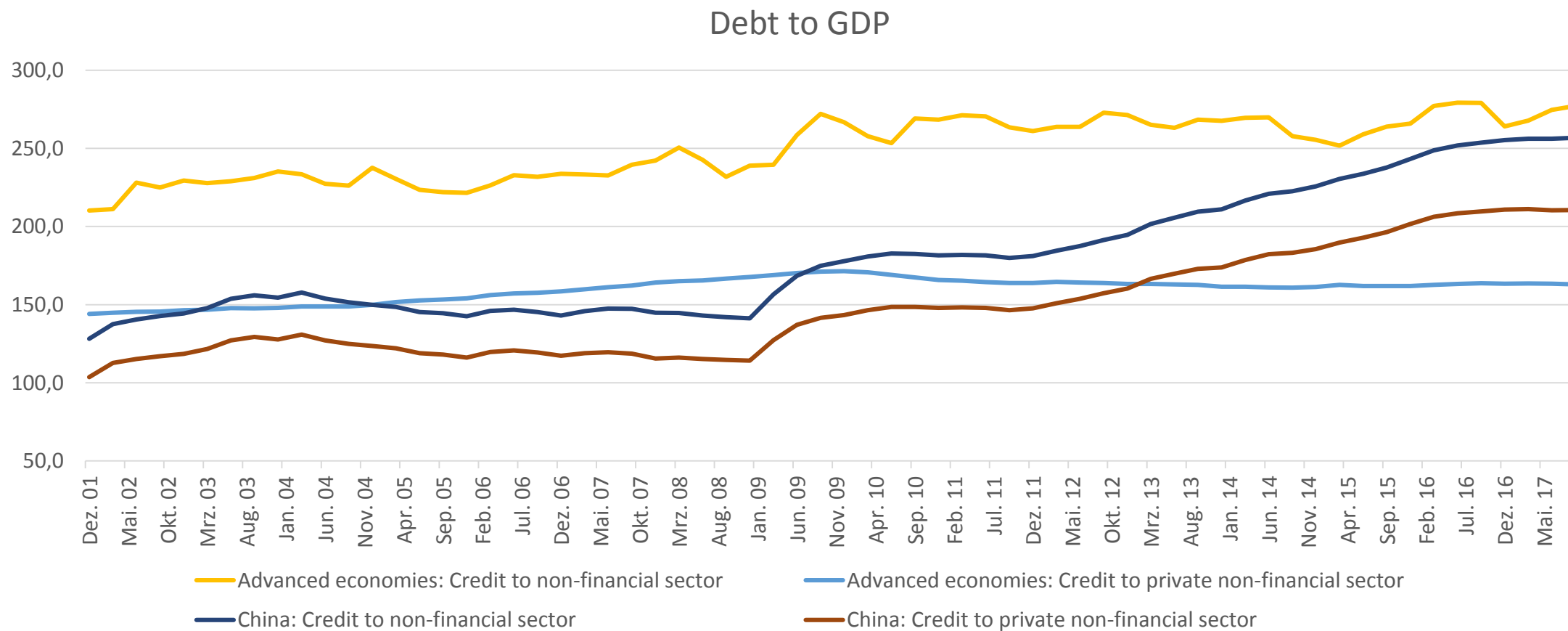
Equilibria

LFT

- Financial market equilium identical with goods market equilibrium (=neutral interest rate)

IS/LM-AS-AD

- Goods market equilibrium (IS-curve)
- Financial market equilibrium (LM-curve)
- IS/LM-equilibrium
- IS/LM-equilibrium at full employment
- AS/AD-equilibrium
- AS/AD-equilibrium with minimal loss
  $$L = (P - P^*)^2 + \lambda\,(Y - YF)^2$$
- ➤ „optimum interest rate" (Keynes))