

# Money and Macroeconomics

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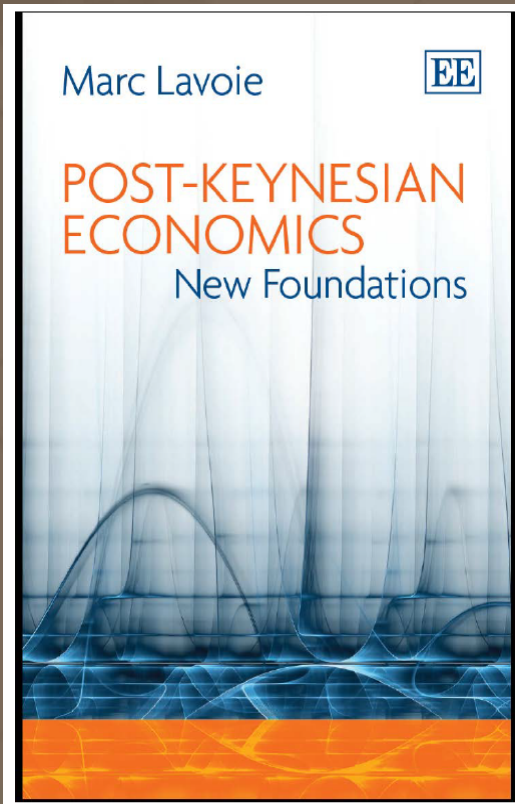
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POST-KEYNESIAN  
ECONOMICS

New Foundations



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# Outline

- Historical background: introduction
- Main claims of PK monetary theory
- Money creation
- The defensive role of central banks
- Modern monetary theory (MMT) or neo-chartalism
- Developments in monetary policy implementation
- Systematic view: the fundamental identities
- Open-economy economics: compensation thesis and the cambist view



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# SECTION I

## Introduction to post-Keynesian monetary economics

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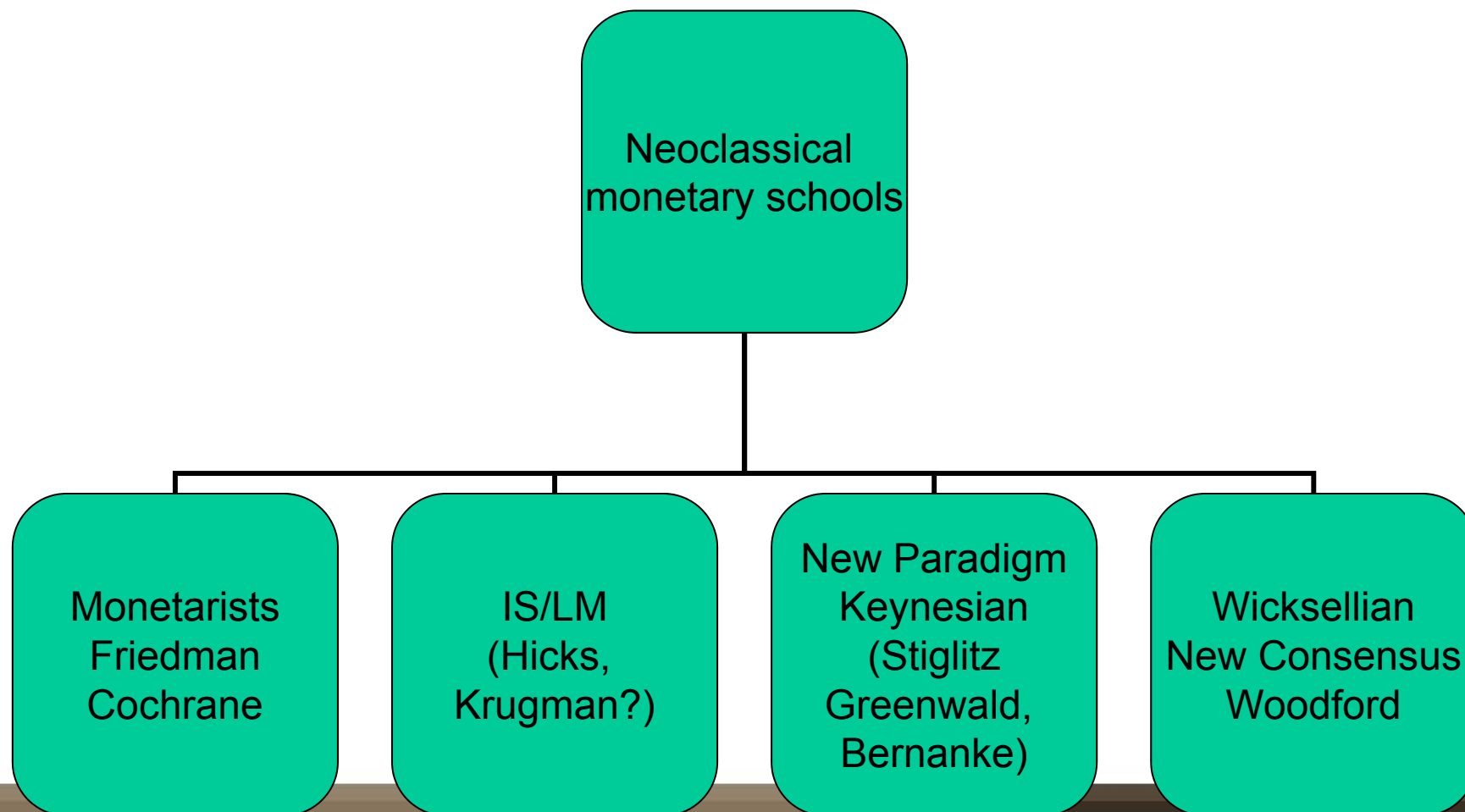


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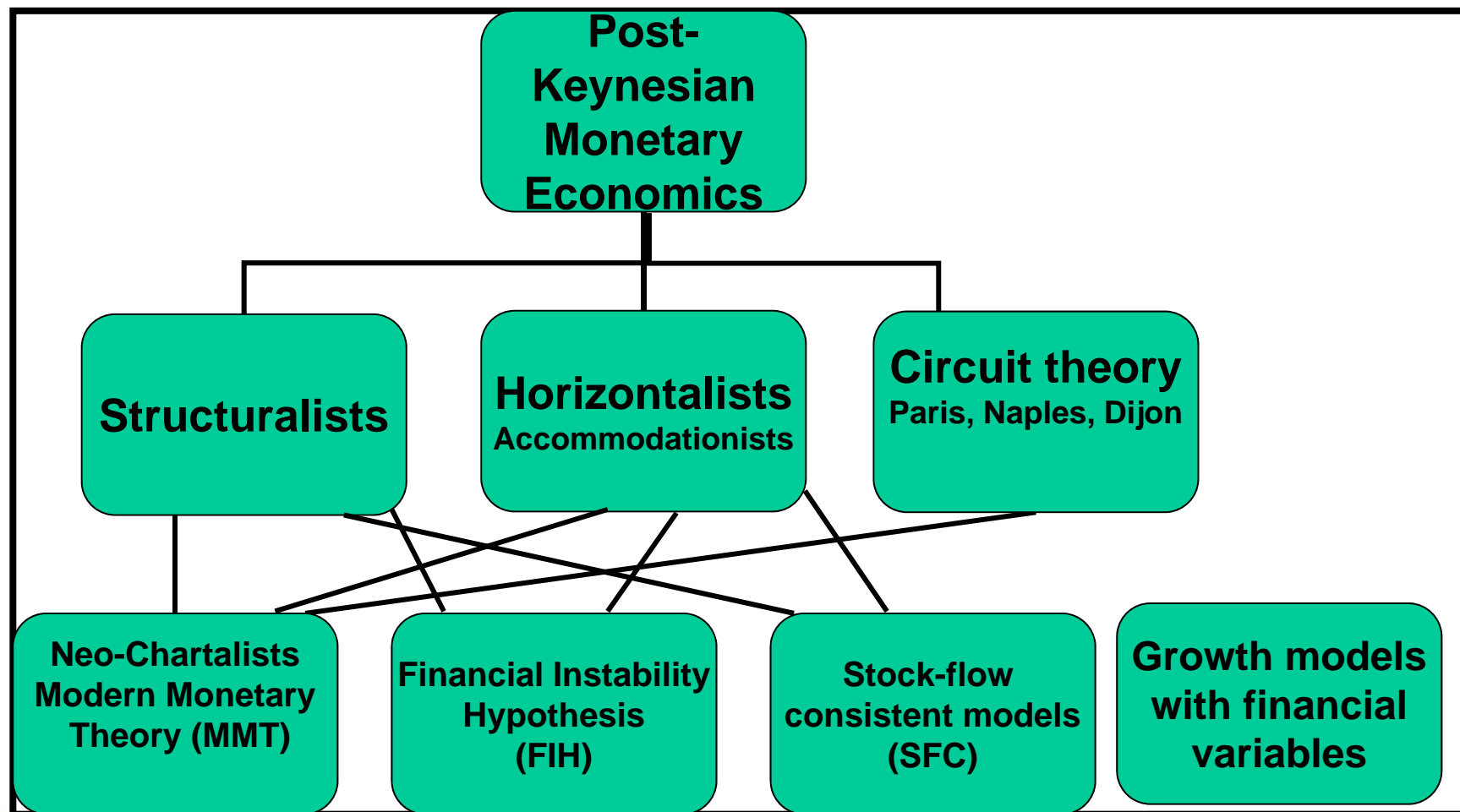
# Cambridge proverbs

- « Highbrow opinion is like a hunted hare; if you stand in the same place or nearly in the same place it can be relied upon to come round to you in circle. » (**D.H. Robertson 1956**)
- « Economic ideas move in circles: stand in one place long enough, and you will see discarded ideas come round again. » (**A.B. Cramp 1970**)
- Tooke, Thornton 1830's
- Wicksell 1900
- Radcliffe committee 1959

# Neoclassical monetary sub-schools



# Post-Keynesian monetary sub-schools





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## SECTION II

Main claims of post-Keynesian  
monetary economics

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# Main features, money and credit

Features	PK school	Neoclassical
Money	Has counterpart entries	Falls from an helicopter
Money is seen	As a flow and as a stock	A stock
Banks are	Creators of credit flows	Financial intermediaries
The supply of money is	Endogenous and demand-led	Exogenous
Main concern with	Debts, credits	Assets, money
Causality	Reversed: credits make deposits (credit divisor)	Reserves allow deposits (money multiplier)
Credit rationing due to	Lack of confidence, uncertainty	Asymmetric information

# Main features, interest rates

Features	PK School	Neoclassical
Interest rates	Are income distribution variables	Arise from market laws (loanable funds)
Liquidity preference	Determines the differential relative to base rate	Determines the interest rate
Base rates	Are set by the central bank	Are influenced by market forces
The natural rate	Takes multiple values or does not exist	Is unique, based on thrift and productivity

# A crucial rejection of the natural rate

- Thus, as Mario Seccareccia (1994, p. 70) points out, we cannot just assert that ‘it is money-supply endogeneity which fundamentally distinguishes the neoclassical from the post-Keynesian conception of money, one would like to think that there is substantially more than the endogeneity/exogeneity issue that separates them’.
- As Smithin (1996, p. 93) puts it, ‘in the absence of a natural rate of interest, it can be argued that central bank control over short real rates will ultimately influence the entire structure of interest rates in the economy, including long rates....Eventually, the real economy must adjust to the policy-determined interest rate, rather than vice-versa. This is therefore the precise opposite to the natural rate doctrine’.

# Main features, macro implications

Features	PK School	Neoclassical
Schumpeter's distinction	Monetary analysis (monetized production economy)	Real analysis (money neutrality, inessential veil)
Financial disturbances have	negative effects both in short and long run	Have effects only in the short run
Macro causality	Investment determines saving	Saving determines investment
Inflation	The growth in money stock aggregates is caused by the growth in output and prices	Price inflation is caused by an excess supply of money (or discrepancy between actual and natural interest rate)



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# SECTION III

## Money creation

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## **What PKE is clearly against**

- PKE reject the money creation process based on the money multiplier and the fractional-reserve banking system !

# The role of banks

- Banks are not merely financial intermediaries, that would lend deposits that they have been entrusted with.
- They have the capacity to create new credit and new money (no need for gold, previous savings or cash being deposited at a bank)
- They can add to the capacity of agents to purchase financial assets or goods and services (Keen vs Krugman controversy)

## Even the Bank of England agrees!

- ‘One common misconception is that banks act simply as intermediaries, lending out the deposits that savers place with them. In this view deposits are typically “created” by the saving decisions of households and banks then “lend” out those existing deposits to borrowers ....
- Another common misconception is that the central bank determines the quantity of loans and deposits in the economy by controlling the quantity of central bank money – the so-called “money multiplier” approach’. (McLeay et al. 2014: 2)

## Loans are created *ex nihilo*

- Loans are created *ex nihilo*, at the stroke of a pen, or by punching a key on the computer, *as long as the borrower is credit-worthy*, that is, as long as the borrower can show some collateral.
- The main limit to this process is given by the amounts of loans which can be granted to credit-worthy borrowers. This depends on the willingness of borrowers to borrow, on the amount of collateral they can show, and on the willingness of banks to grant credit-worthy status to their customers.
- In a sense, loans are not truly created *ex nihilo*, since they generally require collateral.

# Loans make deposits

Balance sheet of a bank in a pure credit economy

Assets	Liabilities
Loans B	Deposits D

# Any other limit to credit creation?

- Compulsory bank reserves (deposits of banks at the central bank) ?
- Access to banknotes issued by central bank ?
- Bank equity (the own funds of the banks = retained earnings plus the proceeds of share issues) ?
- Capital adequacy ratios (Basel III ratios = own funds to risk-weighted assets) ?
- The confidence/trust of other financial institutions (easier if everyone is moving in step)

# The monetary circuit theory

- To produce and pay their workers, firms need to have access to credit and hence money balances.
- Once they get it, their money balances get transferred to the households.
- The households then spend their wages on the product of firms or they purchase financial assets issued by firms.
- The firms are then able to reimburse their bank loans.



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# SECTION IV

The defensive role of central  
banking, and neo-chartalism

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# Monetary targeting vs interest-rate targeting

- Central banks now explicitly target interest rates.
- The procedures of some central banks are more transparent (than they were and than those of other central banks), so the horizontalist story is more obvious: Canada, Australia, Sweden
- The procedures of other central banks are less transparent; but when interpreted in light of horizontalism, we can see that their operational logic is identical to that of the more transparent central banks (like the Fed, before 2008).

# Two different justifications for the current interest rate procedures ?

- **Post-Keynesians**

- Based on a **microeconomic** justification
- Tied to the inner functioning of the clearing and settlement system
- Linked to the day-by-day, hour-per-hour, operations of central banks

- **New Consensus**

- Based on the 1970 Poole article
- A **macroeconomic** justification
- If the IS curve is the most unstable, use monetary targeting
- If the LM curve is unstable (money demand is unstable), use interest rate targets

# The microeconomic justification for interest rate targeting

- Central bank interventions are essentially « defensive ». Their purpose is to compensate the flows of payments between the central bank and the banking sector.
- These flows arise from: a) collected taxes and government expenditures; b) interventions on foreign exchange markets; c) outright or repo purchases or sales of government securities, or repurchase of securities arriving at maturity; d) provision of banknotes to private banks by the central bank.
- Without these defensive interventions, bank reserves or clearing balances would fluctuate enormously from day to day, or even within an hour. The overnight rate would fluctuate wildly.

# Authors who support the microeconomic explanation

- Several central bank economists
  - Bindseil 2004, 2014 ECB, Clinton 1991 BofC, Lombra 1974, Whitesell 2003, Keister et al. 2008 Fed, Bank of England 2014
- Some post-Keynesian authors
  - Eichner 1985, Mosler 1997-98, Wray 1998 and neo-chartalists in general
- Institutionalists
  - Fullwiler 2003 et 2006

# **This was understood a long time ago by some PK economists**

- “The Fed’s purchases or sales of government securities are intended primarily to offset the flows into or out of the domestic monetary-financial system” (Eichner, 1987, p. 849).
- “Fed actions with regards to quantities of reserves are necessarily defensive. The only discretion the Fed has is in interest rate determination” Wray (1998, p. 115).

## **There is no relationship between open market operations and bank reserves**

- “No matter what additional variables were included in the estimated equation, or how the equation was specified (e.g., first differences, growth rates, etc.), it proved impossible to obtain an  $R^2$  greater than zero when regressing the change in the commercial banking system’s nonborrowed reserves against the change in the Federal Reserve System’s holdings of government securities ....”(Eichner, 1985, pp. 100, 111).

# ■ Impact of Various Transactions on Settlement Balances (reserves) and Overnight Interest Rates:

TABLE 7

Impact of Various Transactions on Settlement Balances and Overnight Interest Rates: A Recap

Action	Settlement Balances	Overnight Interest Rates
Citizens pay their federal taxes. Central bank sells securities. Central bank sells bank notes to banks. Central bank sells foreign currency on foreign exchange markets. Central bank transfers government deposits to its own accounts.	Fall (Banks make a payment outflow involving the Bank of Canada)	Tend to rise
Federal government pays its employees. Central bank buys securities. Central bank buys foreign currency on foreign exchange markets. Central bank transfers government deposits to other banks.	Rise (Banks receive a payment inflow involving the Bank of Canada)	Tend to fall

# The main line of neo-chartalism

- Neo-chartalists wish to demonstrate that setting up public employment programmes (ELR) and taking Lerner's functional finance seriously, even if it leads to huge deficits, does not pose a financial problem.
- It is a response to the crowding-out argument, according to which government deficits lead to higher interest rates
- Neo-chartalists claim instead that government deficits tend to reduce overnight interest rates (as in the previous slide)
- As a result, financial markets will not attack countries that have a 'sovereign currency'.

# The sovereign currency of MMT

- Neo-chartalists don't claim that their proposals are valid everywhere at all times.
- They claim that it applies for nations with a « sovereign currency » (USA, Canada, Japan, Australia) [Wray 2002, p. 24].
- There are degrees of sovereignty, the highest being a country where
  - the domestic currency is the unit of account;
  - taxes and government expenditures are paid in this domestic currency;
  - the central bank is unhindered by regulations;
  - There is no public debt limit;
  - the public debt and private debts are issued in domestic currency;
  - there is a floating exchange rate regime.

## Links with circuit theory

- In circuit theory, firms borrow from banks and spend first, and then, in a second stage obtain the means to the final finance of their expenditures.
- In the neo-chartalist theory, the story is very similar. The (federal) government borrows from the central bank and spends first, and then, in a second stage, it secures its final finance, through taxation and the sale of financial assets to the private sector. « Logically, and in practice, government spending comes *prior* to taxation » [Tcherneva 2006, p. 70; cf. Parguez 2002, p. 88; cf. Forstater and Mosler 2005, p. 537].
- In circuit theory, consumers cannot buy goods until they get paid. In neo-chartalism, households cannot pay their taxes until they get the central bank money; and financial institutions cannot purchase government securities until they have the reserves to buy them.



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# SECTION V

## New developments in monetary policy implementation

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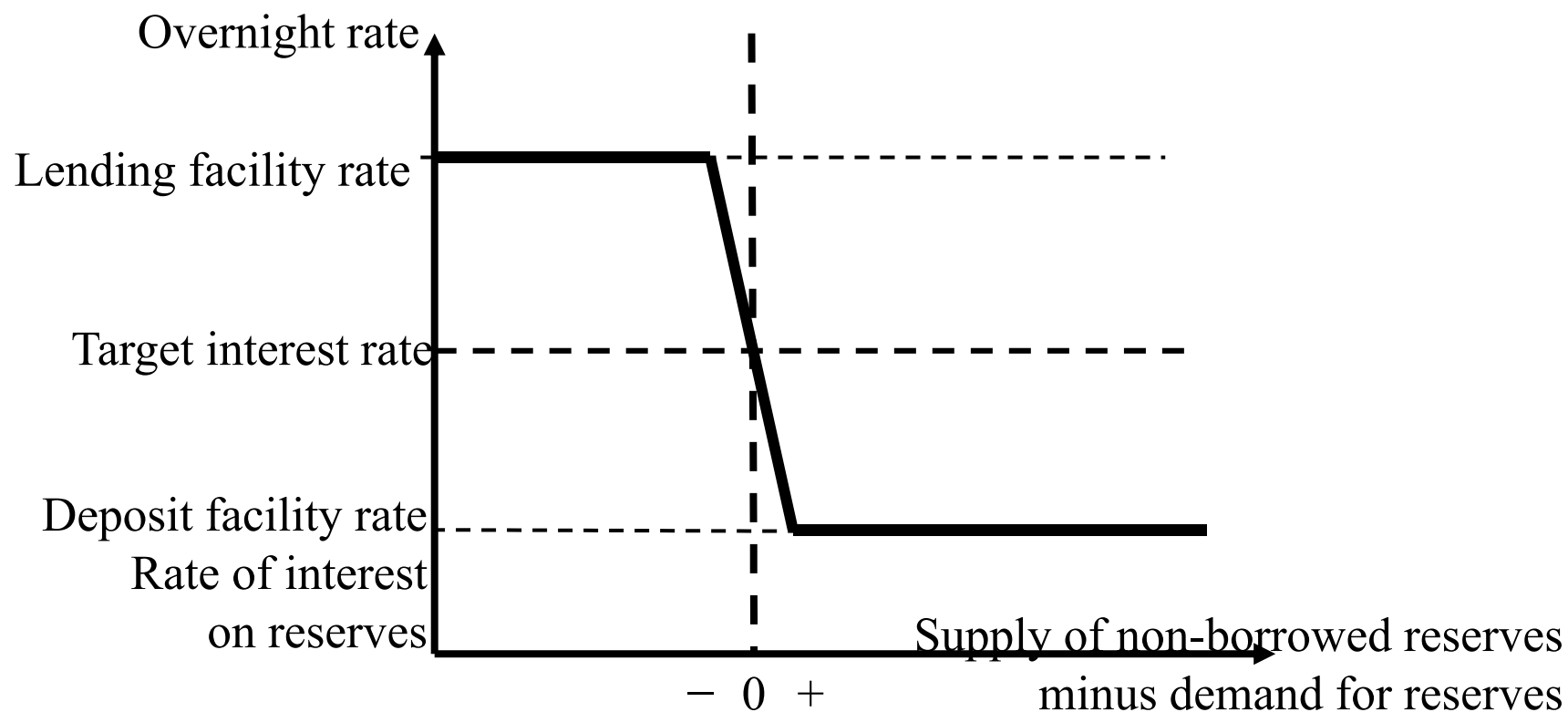
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## **Four ways to control interest rates**

- a symmetric corridor system;
- a no-interest on reserves system;
- a floor system;
- and a ceiling system

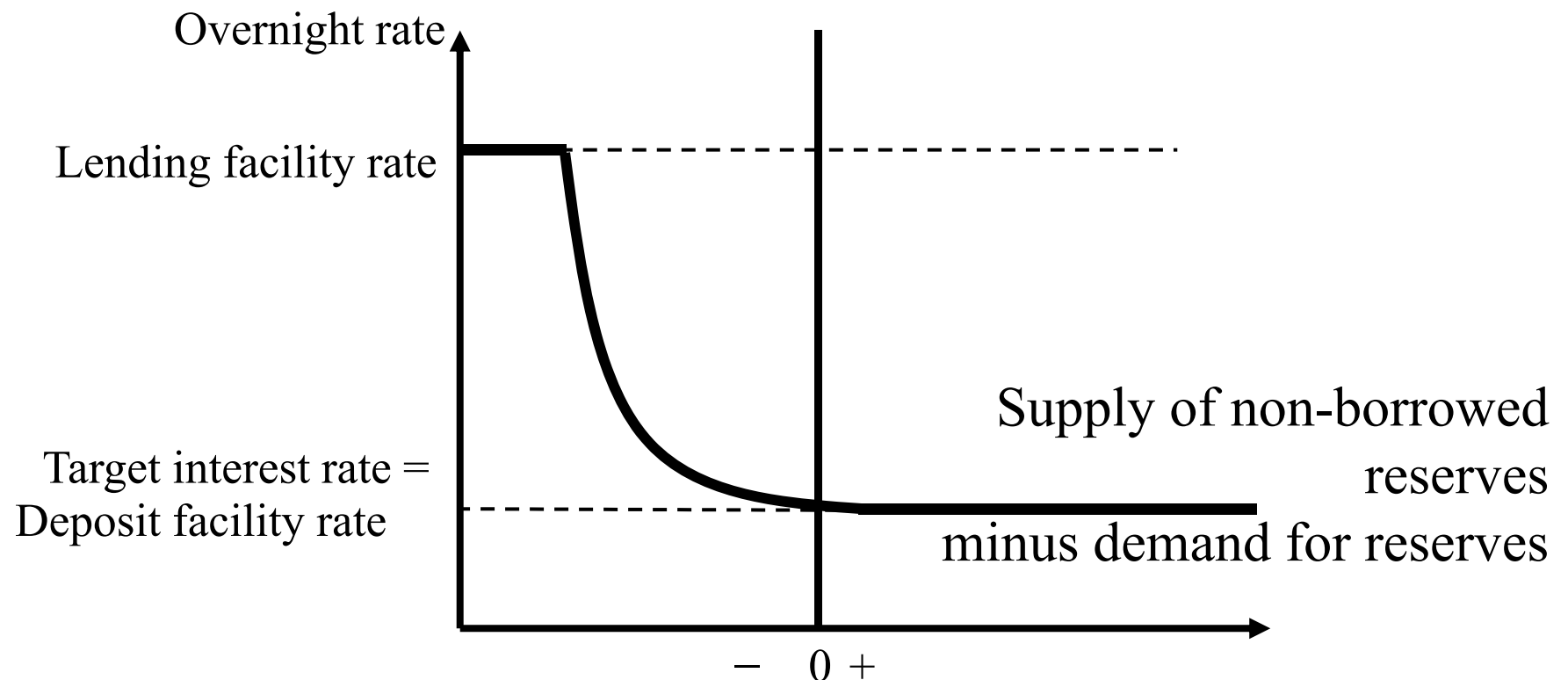
# The symmetric corridor system (IOR: interest on reserves)



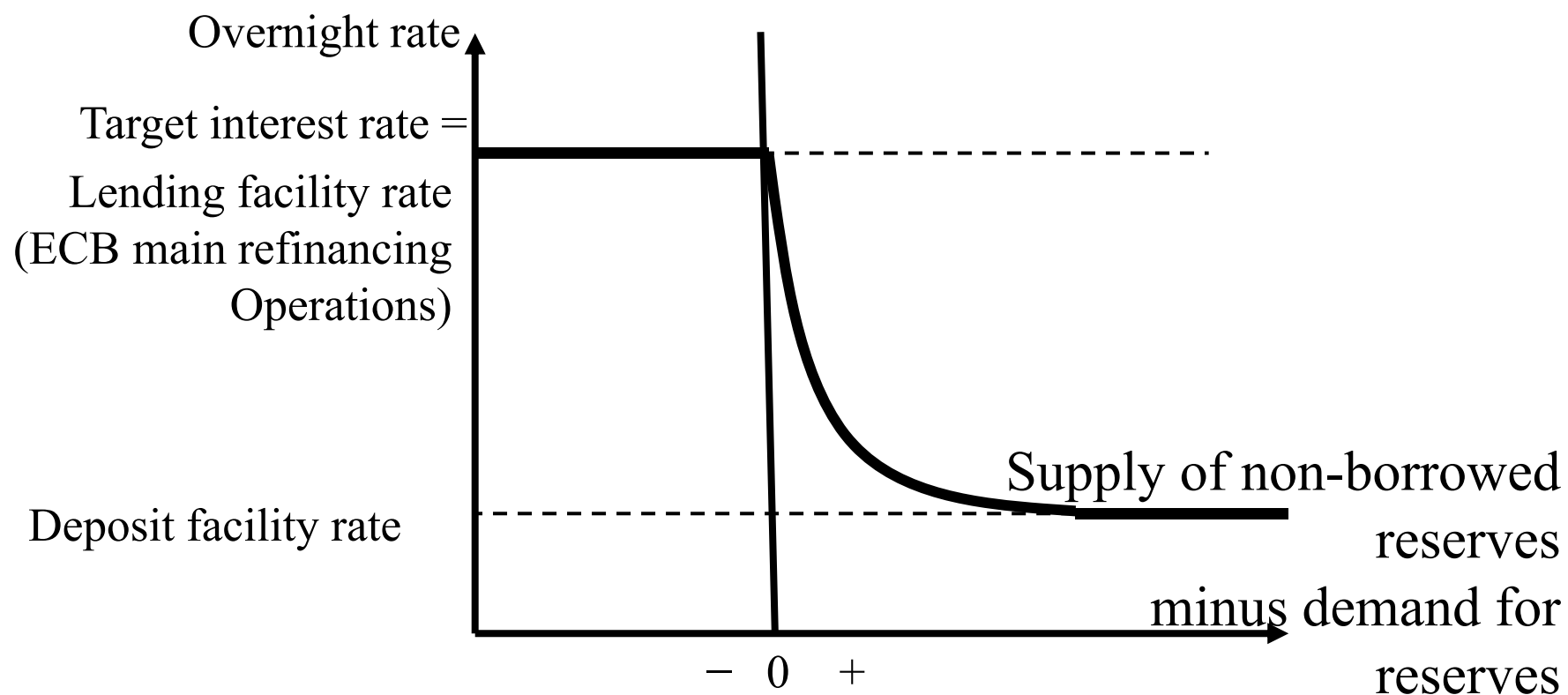
## The decoupling principle

- ‘Changes to the monetary policy stance, that is, of the target short-term interest rate, may be made without any change in reserve market conditions by simply moving the standing facilities corridor in parallel with the target rate’ (Bindseil 2004a, p. 252).
- ‘Crucially, the interest rate can be set quite *independently* of the amount of bank reserves in the system. *The same amount of bank reserves can coexist with very different levels of interest rates; conversely, the same interest rate can coexist with different amounts of reserves*’. (Borio and Disyatat 2010, p. 56)

# The floor system (Japan 1996; New Zealand and Norway before 2009; USA between 1933 and 1951 and since November 2008)

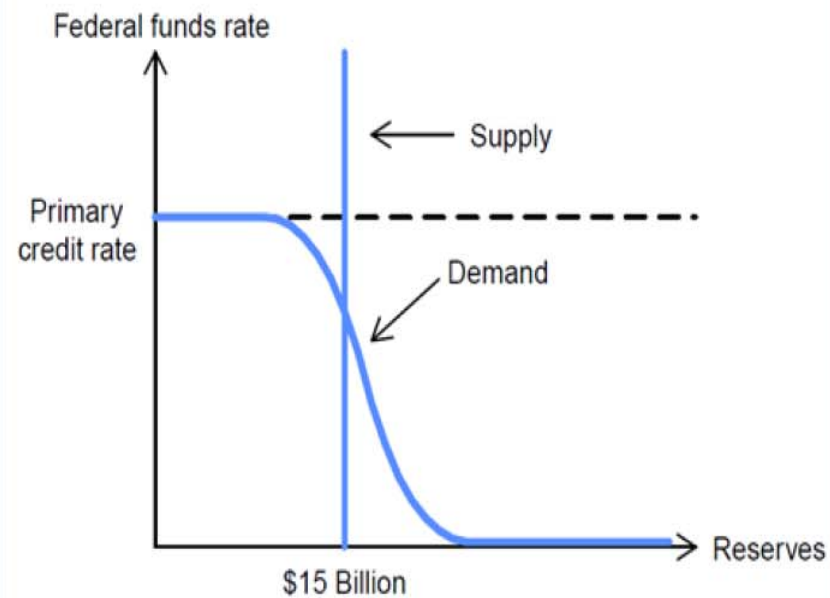


## The ceiling system ('in the Bank')

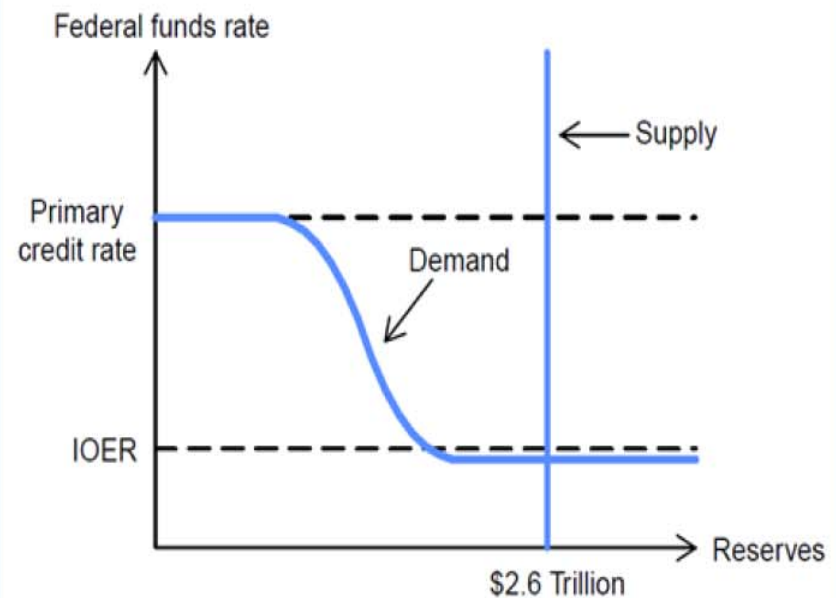


## Banks' demand for and the Fed's supply of reserve balances

**(a) Before the financial crisis**

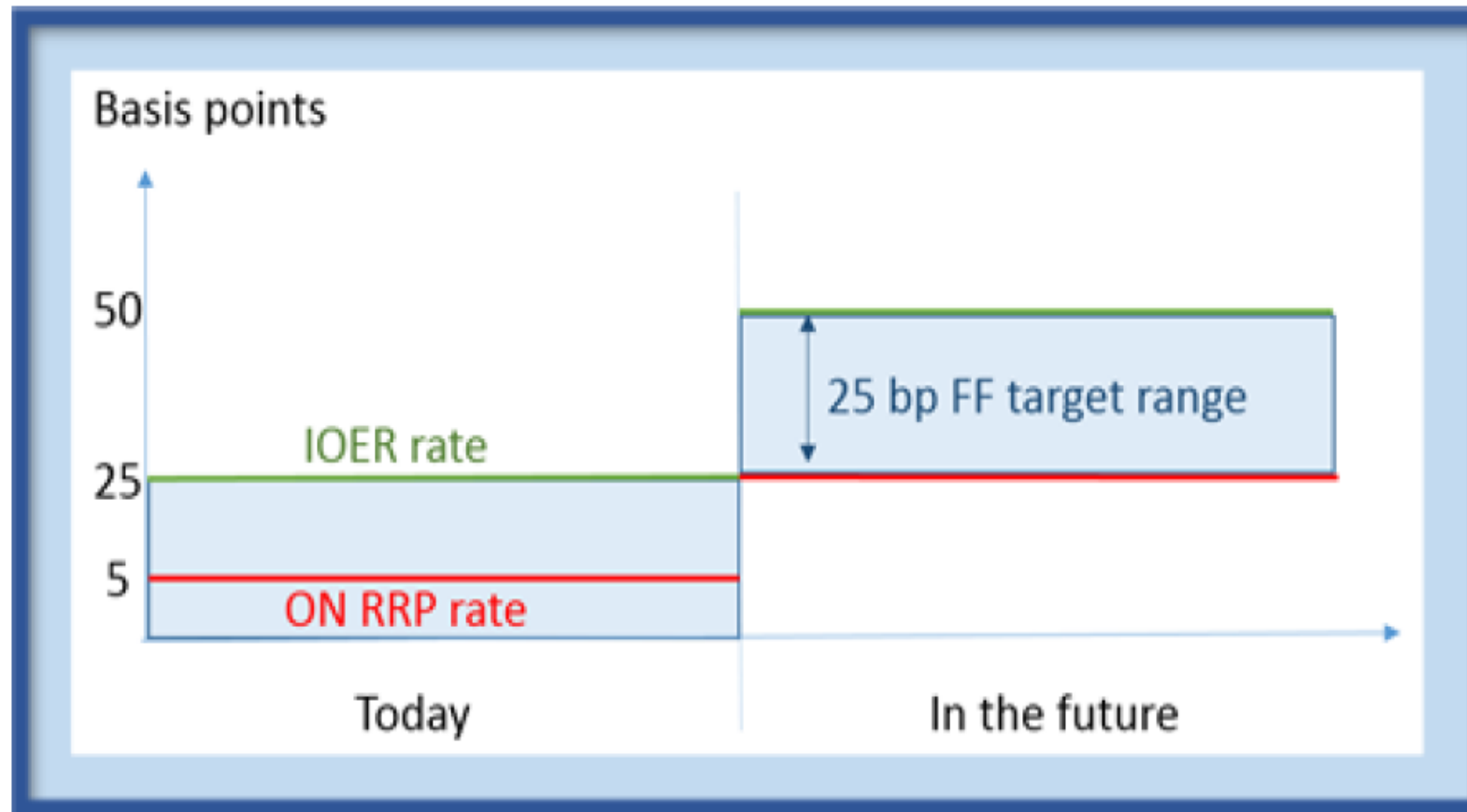


**(b) Today**



Monetary policy 101, Ihrig et al., 2015, Fed

## The Fed's administered rates and the federal funds (FF) target range



# How to set the target interest rate?

- For PKE, the rate of interest is a distributive variable.
- The real rate of interest should be roughly constant.
- Counter-cyclical policies should be done through fiscal policy.
- Inflation should be managed through incomes policies.
- Different opinions on what the rate should be.
- Roughly speaking, it should provide a low real rate of return.

# **QUANTITATIVE EASING (QE)**

Toronto, PEF May 2015



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## QE: False arguments

- Sellers of assets will deposit the proceeds in banks, which will have more funds and more reserves at the central bank, thus allowing them to make more loans.
- This will lead to a multiple increase in the money supply;
- This will lead to higher economic activity and to higher price inflation, which will help in reducing real interest rates, and thus increase real investment.
- Here QE is just the child of monetarism, but in reverse gear.

# Quantitative easing (QE)?

## Acceptable arguments

- QE supports asset prices and thus reduces long-term yields;
- QE thus helps firms to issue bonds and shares at a lower interest cost to finance their real investments;
- QE generates capital gains for sellers or holders of financial assets, thus helping to raise consumption expenditures.
- QE may help to depreciate the domestic currency, as asset-holders may decide to use their newly-acquired deposits to rebalance their portfolio by purchasing foreign financial assets.

## QE with an increase in the money supply which is smaller than the increase in reserves!

Commercial banks		Sellers of financial assets	
Assets	Liabilities	Assets	Liabilities
Reserves +100	Deposits +100	Gilts and ABS -100 Deposits +100	
Reserves +100 Loans -90	Deposits +10	Gilts and ABS -100 Deposits +10	Loans -90



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# SECTION VI

## The fundamental identities

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# The fundamental identity: financial balances

- This is an accounting identity 'discovered' by Wynne Godley in 1974.
- The identity can be found in some textbooks.
- The identity is now used by several researchers in the forecasting units of banks, such as Goldman Sachs.
- Others use it to explain what is going on (Richard Koo )
- The fundamental identity is also often mentioned by MMT authors.

## Financial balances

- In Godley's approach, the analysis of financial balances – the fundamental identity – gives clues to where the economy is going in the medium term.
- The fundamental identity is used to check the coherence of various parts of a model.
- Godley made use of the financial balances for his strategic analyses for the Levy Economics Institute (as discussed by Gennaro Zezza)

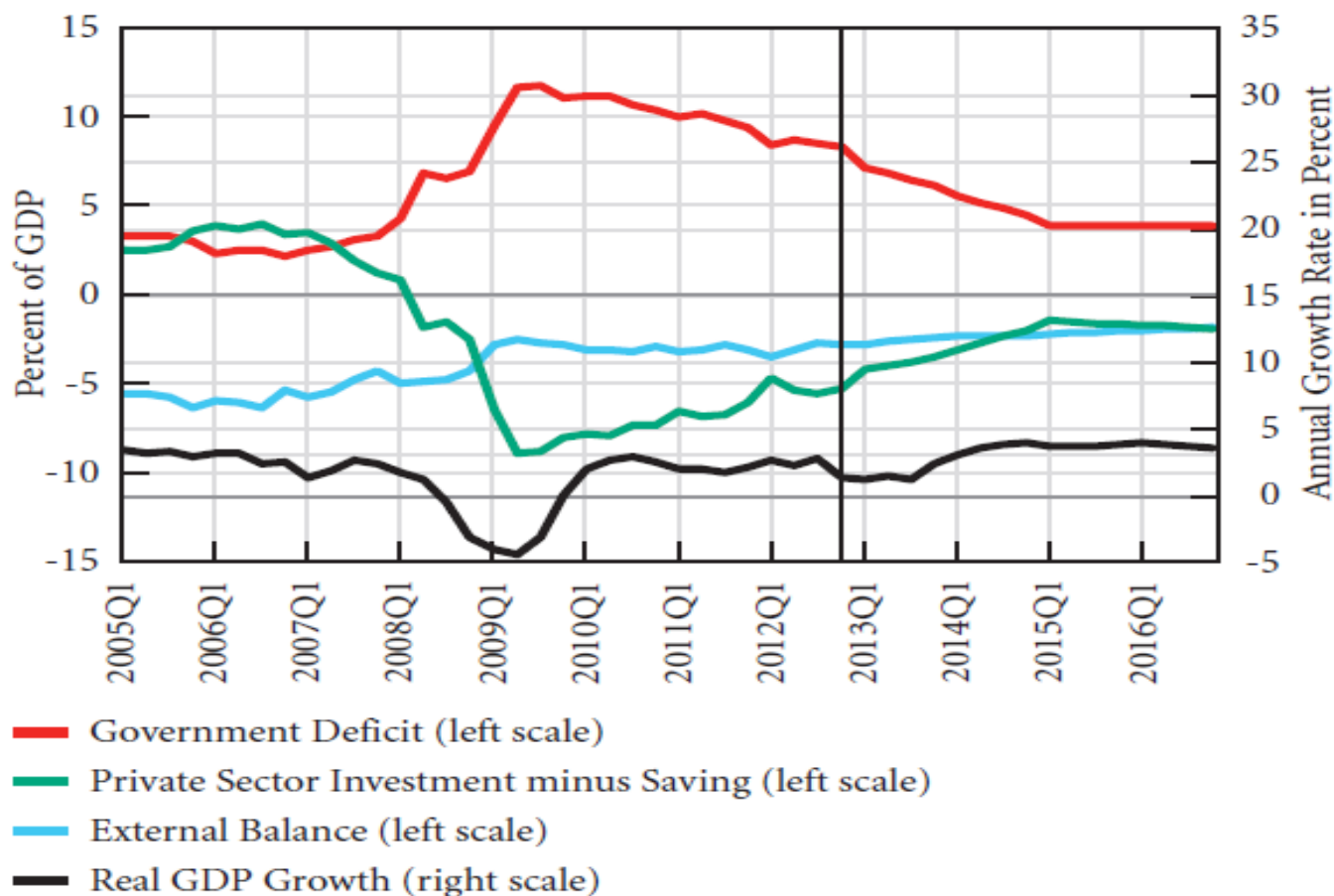
# Getting to the Fundamental identity

- $GDP = C + I + G + X - M$
- We move from the gross domestic product to gross national income,  $GNP$ , by taking into consideration foreign income accruing to nationals,  $FY$ , so that  $GNP$  equals:
- $GNP = C + I + G + X - M + FY$
- We subtract taxes  $T$  from both sides, and move private expenditures to the left:
- $(GNP - C - T) - I = (G - T) + (X - M + FY)$
- $(S - I) = (G - T) + (X - M + FY)$
- **$(S - I) = (G - T) + CAB$**
- In the terms of Godley, the NAFA of private sector = PSBR + current account balance
- As to be discussed by Steve Fazzari, many adjustments need to be made

# The fundamental identity

- $(S - I) + (T - G) - CAB = 0$
- In words, using national accounting terminology:
- *Domestic private net lending + Domestic public net lending + Foreign net lending = 0*
- $(S - I)$  can also be interpreted as the *net financial saving* or *net financial investment* of the domestic private sector. This is the amount which is being lent to the other two sectors.
- When the amount is negative, it is the *net borrowing* of the domestic private sector.
- The domestic private net lending is in fact made up of two components: the *additions to financial assets* from which are subtracted the *additions to financial liabilities*.

**Figure 6 Baseline: US Main Sector Balances and Real GDP Growth, 2005Q1–2016Q4**



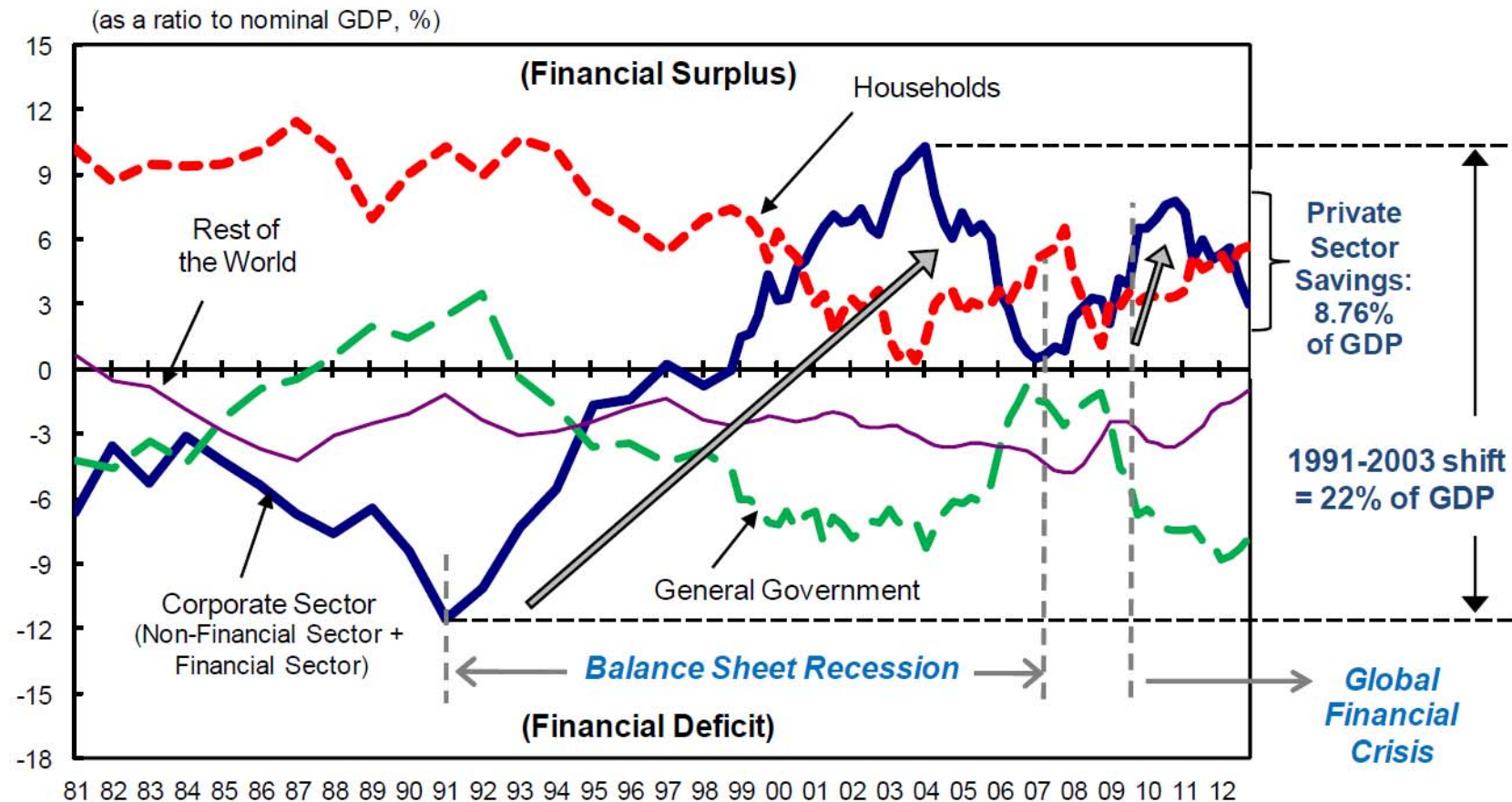
$$(G - T) + (I - S) + CAB = 0$$

Source: Levy Economics Institute

## Variants of the fundamental identity

- Four balances:
- $(S_f - I_f) + (S_h - I_h) + (T - G) - CAB = 0$
- If  $(G - T) = CAB = I_h = 0$ ,  $S_h = I_f - S_f$
- If  $(S - I) = 0$  (UK in the 1960s?),  $G - T = -CAB$   
(twin deficits)
- If  $CAB = 0$ ,  $(S - I) = (G - T)$   
(closed economy, MMT story)

# Japan, 1981-2012

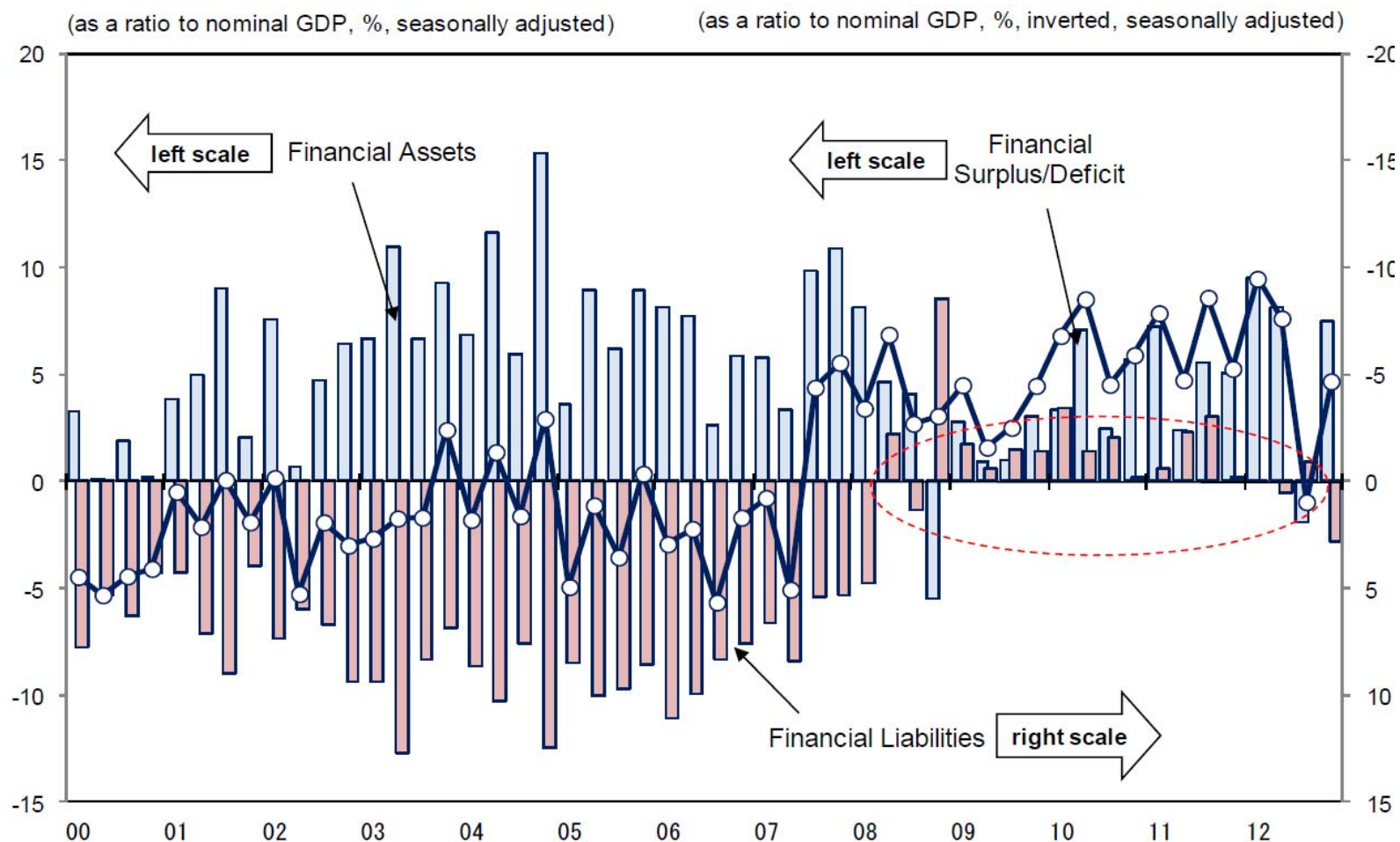


Source: Koo 2013

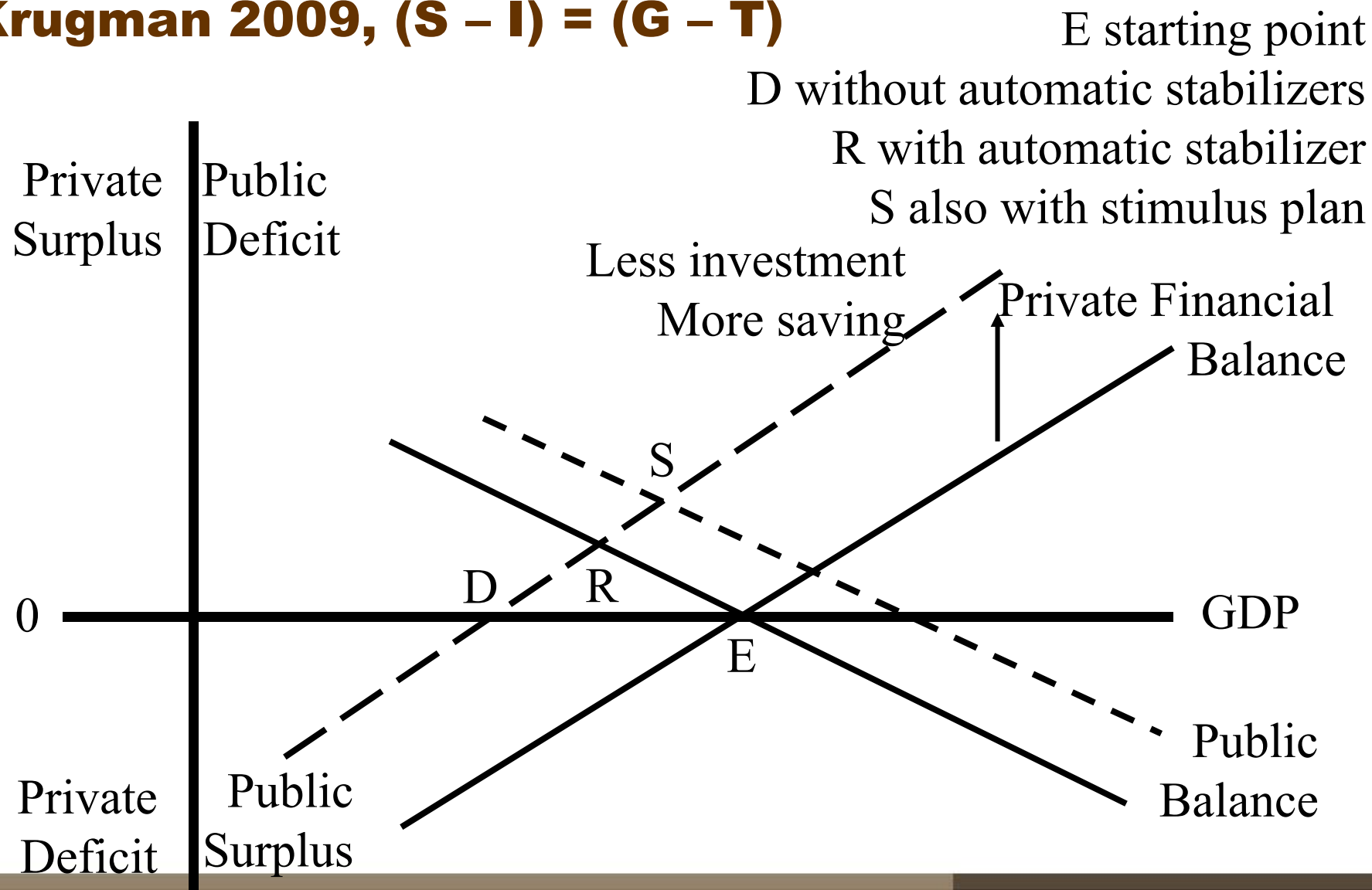
## **$S - I = \Delta$ in financial assets minus $\Delta$ in financial liabilities**

- Recall how we defined  $(S - I)$ , the *net financial saving* of the domestic private sector, that is, the domestic private net lending.
- The domestic private net lending is in fact made up of two components: the *additions to financial assets* from which are subtracted the *additions to financial liabilities*.
- (See next slide)

# US Household deleveraging – negative net borrowing, 2008 onwards (Koo 2013, EJEEP)



# The fundamental identity in a closed economy (Krugman 2009, $(S - I) = (G - T)$ )



## Conclusions and policies

- Fiscal policy is needed to close the gap in aggregate demand generated by the collapse in private sector borrowing
- All countries cannot simultaneously have a current account surplus; at the world level, the current account surplus is zero, so at the world level we have:  $(S - I) = (G - T)$
- Remember however that  $(S - I) = \text{financial saving}$ ; we could have a positive  $(S - I)$  with a high level of economic activity because:

$$Y = C + I + G + NX$$



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# SECTION VI

PK open-economy monetary  
economics

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# The impossible trinity – the trilemma

- The Mundell-Fleming model has given rise to the claim of the impossible trinity. As is well-known in Latin America, mainstream authors claim that one cannot have together:
  - Fixed exchange rates;
  - Capital mobility;
  - An independent monetary policy (Home-made interest rates set by the central bank).
- Such a claim relies:
  - on the mistaken belief in the relevance of the unbiased efficiency hypothesis (tied to real interest parity),
  - on the confusion between perfect capital mobility and perfect asset substitutability,
  - on the ignorance of the compensation principle,
  - and on the inability to distinguish between countries in BOP deficit and surplus positions.

# Outline

- The compensation thesis or endogenous sterilization
  - The (neoclassical) rules of the Game
  - The PK view vs Mundell-Fleming
- Interest parity
  - Components of real interest parity
  - The cambist view

# **THE COMPENSATION THESIS**

Campinas 2014





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# The fixed exchange rate case

- The main assertion of mainstream theory is that an economy operating with fixed exchange rates would lose control of the money supply, and hence that monetary policy is ineffective (in contrast to the situation with flexible exchange rates).
- The mainstream claim is that a central bank gaining (losing) reserves would see its monetary base grow (diminish) and hence interest rates would drop (rise).
- The money supply here is endogenous, but **supply-led**.
- (in the PK view the money supply is endogenous, but **demand-led**).

# The standard view of the impact of a balance of payment surplus on the balance sheet of the central bank

Assets	Liabilities
Foreign reserves 	Banknotes  Bank deposits (bank reserves)
Claims on domestic government (Treasury bills)	

# The (neoclassical) rules of the Game

- “The *Rules of the Game* must be such that a balance of payments deficit should be fully reflected in a reduction in the supply of money, and a surplus should be fully reflected in an increased money supply” (Ethier 1988: 341).


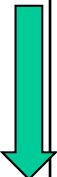
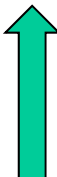
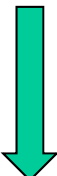

# What about sterilization ?

- The effect on the stock of base money of a purchase of foreign currency can be undone by the sale of government securities by the central bank. This is sterilization.
- It is usually argued that sterilization cannot be pursued for very long or is ineffective.
- For Claassen (1996) [and also McCallum (1996)], ‘in the context of “perfect capital mobility” ... sterilized intervention policies are doomed to be ineffective’.
- In our opinion, such statements confuse *perfect capital mobility* with *perfect asset substitutability*.
- They also do not distinguish between countries that are in a current account deficit situation and losing reserves, and those that are in a surplus situation and gaining reserves (say China).

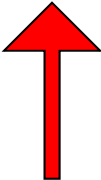
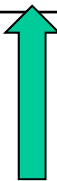

## The opportunity cost of sterilization if interest rates are high in the domestic economy (the case of a surplus economy)

Assets	Liabilities
Foreign reserves (US Treasury bills at 1%) ↑	Banknotes (cash) +
Domestic government securities (at 10%) ↓	Bank reserves = <i>High powered money M0</i> <i>Monetary base</i>

## A PK, more realistic, balance sheet of central banks, with compensation

Assets	Liabilities
Foreign reserves 	Banknotes Bank deposits (bank reserves)
Claims on domestic government (Treasury bills) 	Government deposits 
Claims on domestic banks (advances) 	Central bank bills 

# The currency board variant of a fixed exchange rate

Assets		Liabilities
Foreign reserves (some of which borrowed)		Banknotes Bank deposits (bank reserves)
		Government deposits 
		Central bank bills 

## **History shows that the rules of the game never held**

- Bloomfield (1959, p. 49) in the period before the First World War – the heyday of the gold.
- Ragnar Nurkse (1944) for the 1922-1938 period.
- Pierre Berger (1972) Banque de France view
- Jacques Le Bourva (1962)

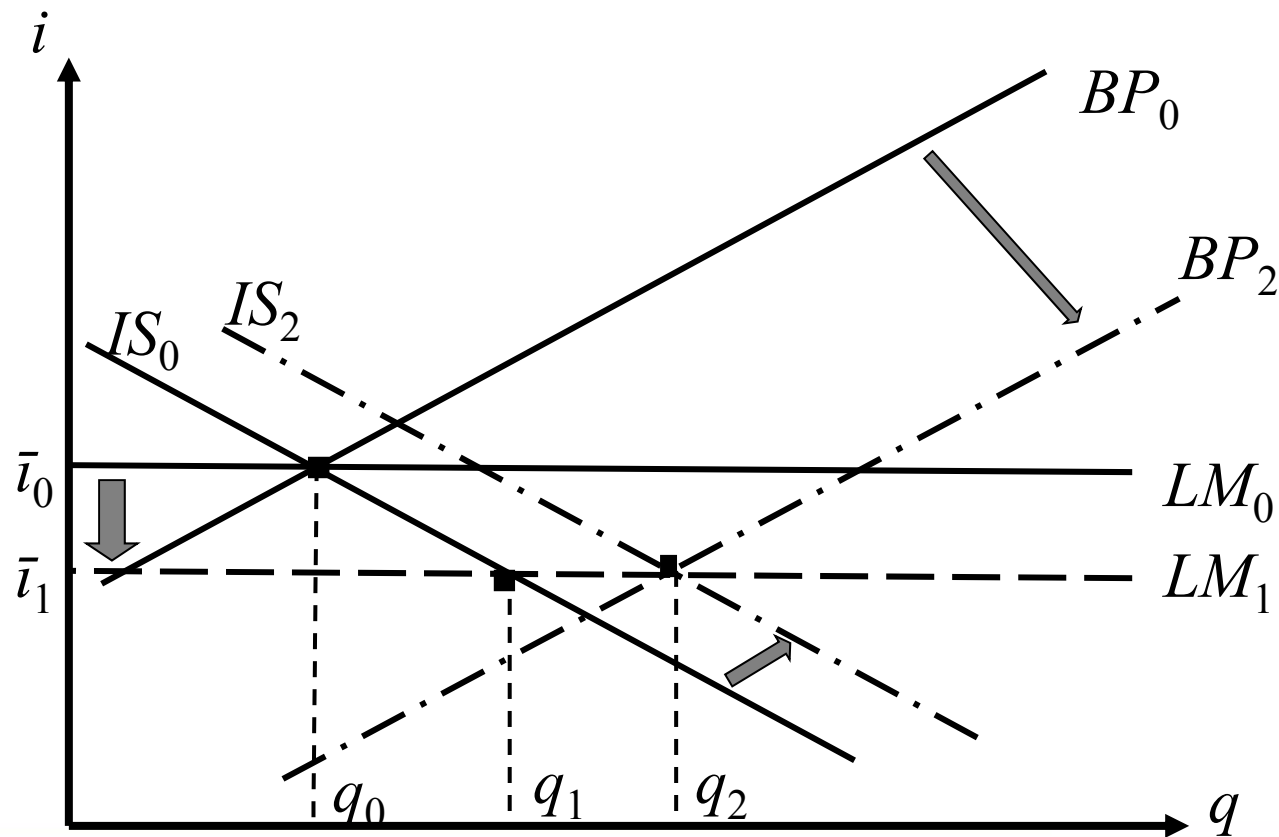
# Central banks always pursue sterilization and say so

- In a background paper, the Bank of Canada (2003) explains that when it conducts exchange rate operations, moderating a decline in the Canadian dollar for instance, it must sterilize its purchases of Canadian dollars by *‘redepositing the same amount of Canadian-dollar balances in the financial system’*, in order *‘to make sure that the Bank’s purchases do not take money out of circulation and create a shortage of Canadian dollars, which could put upward pressures on Canadian interest rates’*.
- Thus sterilization is not a matter of choice, it is a necessity as long as the central bank wants to keep the interest rate at its target level.

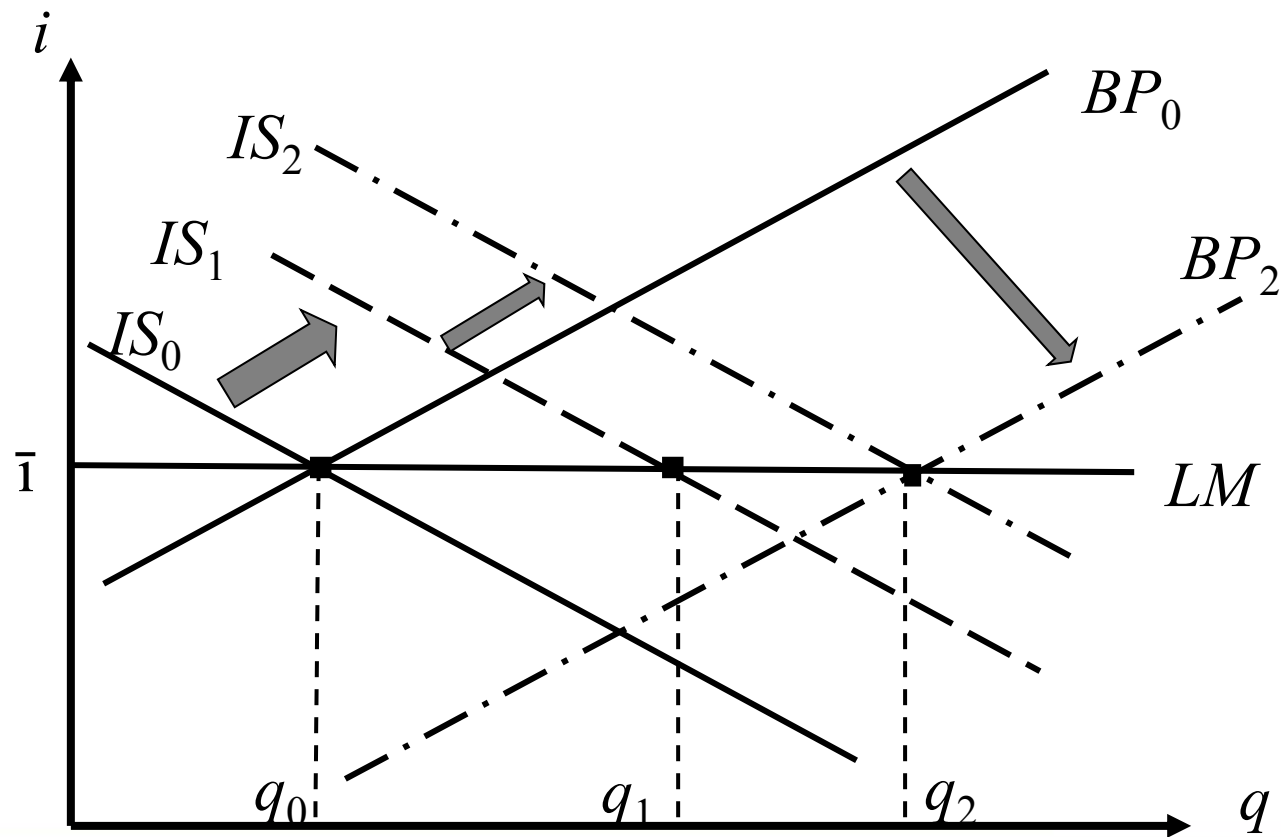
# The Mundell-Fleming model is wrong

- **The MF model says that monetary policy is ineffective with a fixed exchange rate.** It is said, for instance, that a deflationary monetary policy, with higher interest rates, will be counter-productive, because the higher interest rates will lead to net financial inflows, which will increase the foreign reserves of the central bank, thus leading to an increase in high powered money and in the money supply, thus bringing back interest rates to their starting level.
- **The MF model also says that fiscal policy is ineffective with a floating exchange rate.** An expansionary fiscal policy is likely to lead to higher interest rates, which will cause an appreciation of the domestic currency, thus reducing both investment and net exports and thus counter-acting the expansionary fiscal policy.

## Expansionary monetary policy in PKE, with fixed and flexible exchange rate

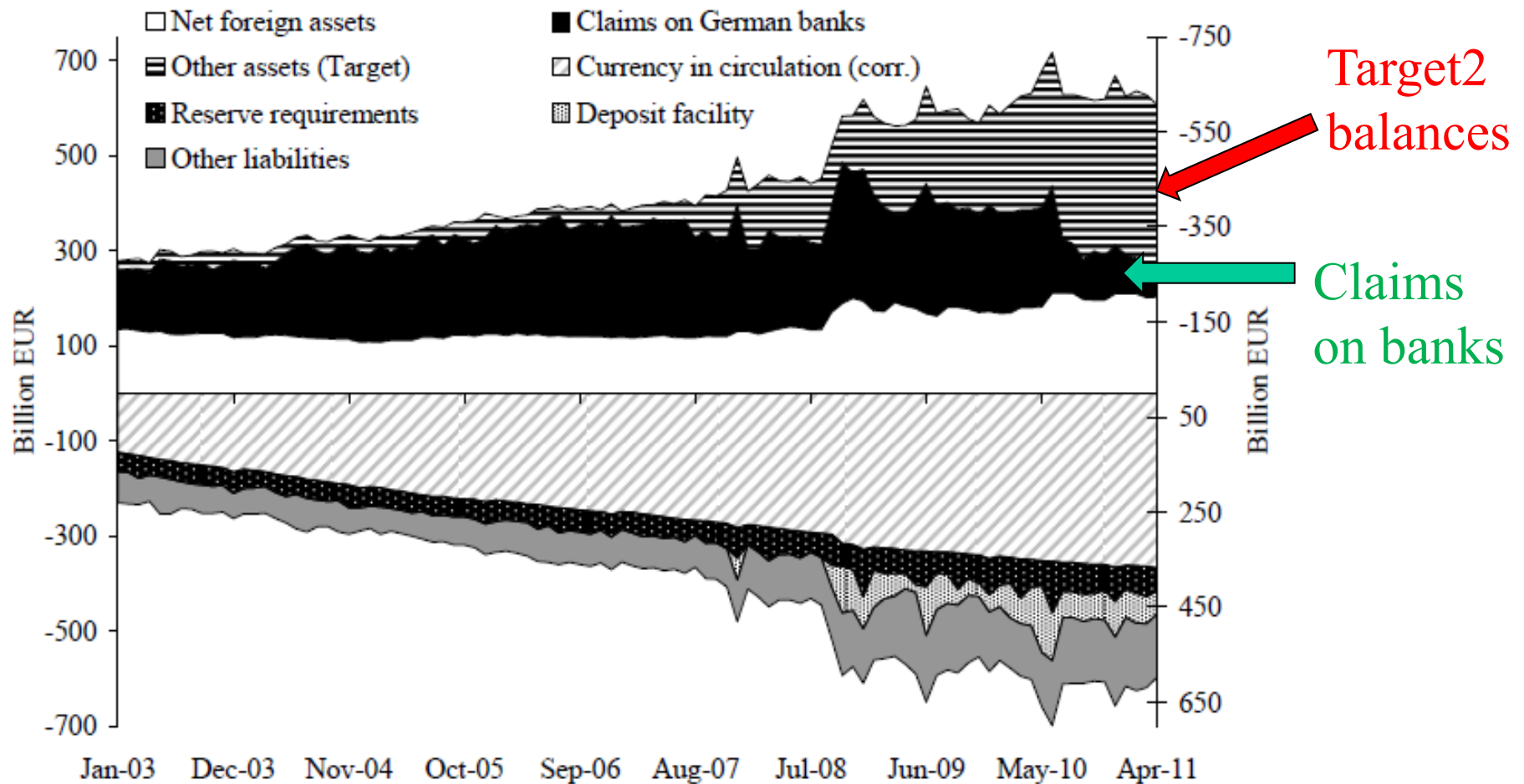


## Expansionary fiscal policy in PKE, with fixed and flexible exchange rates

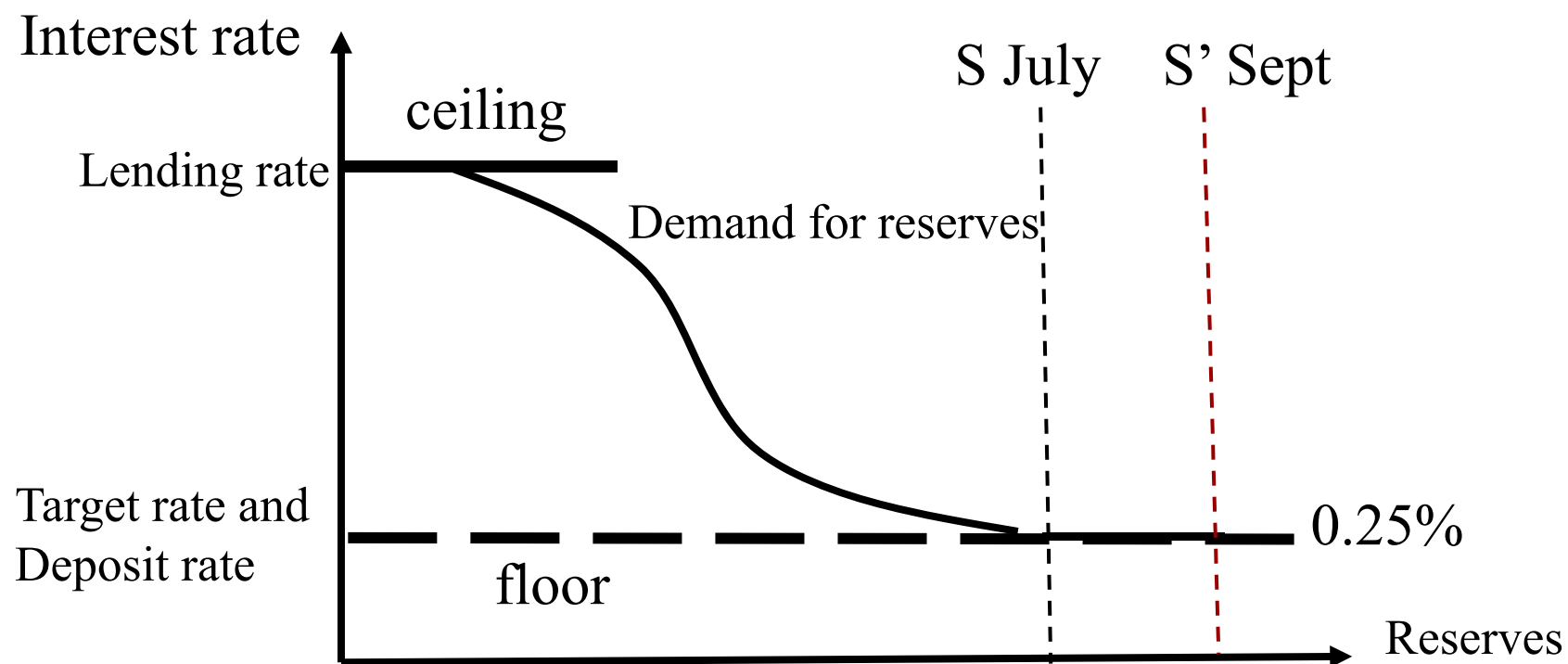


# Sterilization at the Bundesbank

Deutsche Bundesbank



**There is no need for sterilization (in a BOP surplus position) when there is a floor system (Switzerland July-September 2011, with target rate at 0 to 0.25% !)**



# INTEREST PARITY

Campinas 2014



uOttawa

## Intro: the PK view

- Central banks are at liberty, to some extent and within the limits associated with their exchange rate objectives, if any, to set interest rates of their choice, both within flexible exchange rate regimes and within fixed exchange rate regimes.

# Real interest parity (RIP): Mainstream view

- The crucial relation in mainstream open-economy macroeconomics is the real interest parity (RIP) condition, which says that (expected) real interest rates ought to be equalized across countries.
- This means that within the context of an open economy, without capital controls, the central bank is not at liberty to set real interest rates. The RIP condition forces the domestic real interest rate to be in line with the world real interest rate.
- **RIP, as Smithin (2002-03, p. 224) mentions, ‘in effect transfers the doctrine of the “natural rate of interest” to the international setting’.**

## RIP in logarithmic values

- Real interest differential:

$$i_{Rd} - i_{Rf} = [(i_d - i_f) - (s_{t+1} - s_t)] - [(\hat{p}_d - \hat{p}_f) - (s_t - s_{t+1})]$$

- = Dif UIP + Dif Relative PPP

$$\begin{aligned} \bullet \quad = i_{Rd} - i_{Rf} &= [(i_d - i_f) - (f_t - s_t)] + [f_t - s_{t+1}] + \\ &\quad [(\hat{p}_f - \hat{p}_d) - (s_t - s_{t+1})] \end{aligned}$$

- = Dif CIP + Dif UEH + Dif RPPP

- UEH : unbiased efficiency hypothesis: the forward exchange rate today is the spot rate of tomorrow, that is, the forward rate is the correctly forecasted future spot rate.

## Reality check

- RIP will not hold either because:
  - PPP does not hold; UIP does not hold
- And UIP does not hold either because:
  - CIP does not hold; or UEH does not hold.
- In reality, PPP only holds over very long periods of time.
- In reality, UIP does not hold;
  - CIP holds (almost) all the time;
  - So, it must be that UEH does not hold.

# **It is better to be precisely wrong than vaguely right**

- Leaving aside RIP, orthodox models in open-economy macroeconomics all assume that uncovered interest parity holds. UIP is 'a constituent of virtually all contemporary exchange rate models, from small-scale theoretical systems... to large-scale econometric system constructed and tended by teams of researchers employed by organizations such as the IMF' (McCallum, 1996, p. 191).
- UIP is used as a means to close open-economy models.
- Lance Taylor (2004, p. 315) acknowledges that UIP 'does not fit the data', but he introduces UIP to close his model on the grounds that UIP relies on 'arbitrage arguments that should be true' (p. 333).

# The cambist view

- The spread between forward exchange rates and the spot exchange rate are administratively set by foreign exchange dealers, on the straightforward basis of the interest rate differentials on the euro-currency markets which are accessible to the banks making the deal.
- In other words, covered interest parity always holds perfectly, by definition.
- The forward exchange rate ***f*** is not an **expectational** variable.
- The three-months forward rate is not the spot rate that is expected to be realized in three-months time.
- It is instead the result of a simple arithmetic operation:
- $$F_t = S_t \frac{(1+i_f)}{(1+i_d)}$$

## Which holds true? CIP or UEH?

- CIP:  $f_t = s_t + (i_d - i_f)$
- or UEH:  $f_t = s_{t+1} - \sigma$
- An obvious consequence of the cambist view is that 'the spot-forward relationship is contemporaneous, not lagged, as the unbiased efficiency hypothesis suggests' (Moosa, 2004, p. 404)

# Empirical test of cambist view

- Moosa (2004) shows that the link between the forward rate and the spot rate is best explained by a contemporaneous relationship.
- Empirical analysis also fails to achieve a one-to-one relationship between the forward rate and the future spot rate, and the lagged relationship requires the addition of time-varying parameters that presumably reflect a risk premium.
- However, when the spot rate of the current period is explained by the spot rate of the previous period and the forward rate of the previous period, the latter being said to forecast the spot rate of the current period, the risk premium proxy loses its statistical significance.

## Conclusion from Moosa (2004)

- The finding that the spot rate is related to the contemporaneous rather than the lagged forward rate implies the failure of the unbiased efficiency hypothesis. Given that it is a necessary condition for RIP to hold, this finding implies the empirical failure of RIP, irrespective of the validity of PPP (which is another necessary condition). **If this is the case, then the Post Keynesian view that the monetary authorities can control domestic interest rates is valid**, or at least that the opposite mainstream view is invalid. (Moosa, 2004, p. 416).

# QUESTIONS ?



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