Paul De Grauwe

Economics of Monetary Union 12e

Chapter 10: Monetary Policy in the Eurozone

Monetary policy when asymmetric shocks occur

- In an optimum currency area few asymmetric shocks occur.
- ECB has a relatively easy time to stabilize shocks.
- There are few conflicts between member-states and the ECB.

Figure 10.1 Asymmetric shock and monetary policy of the ECB

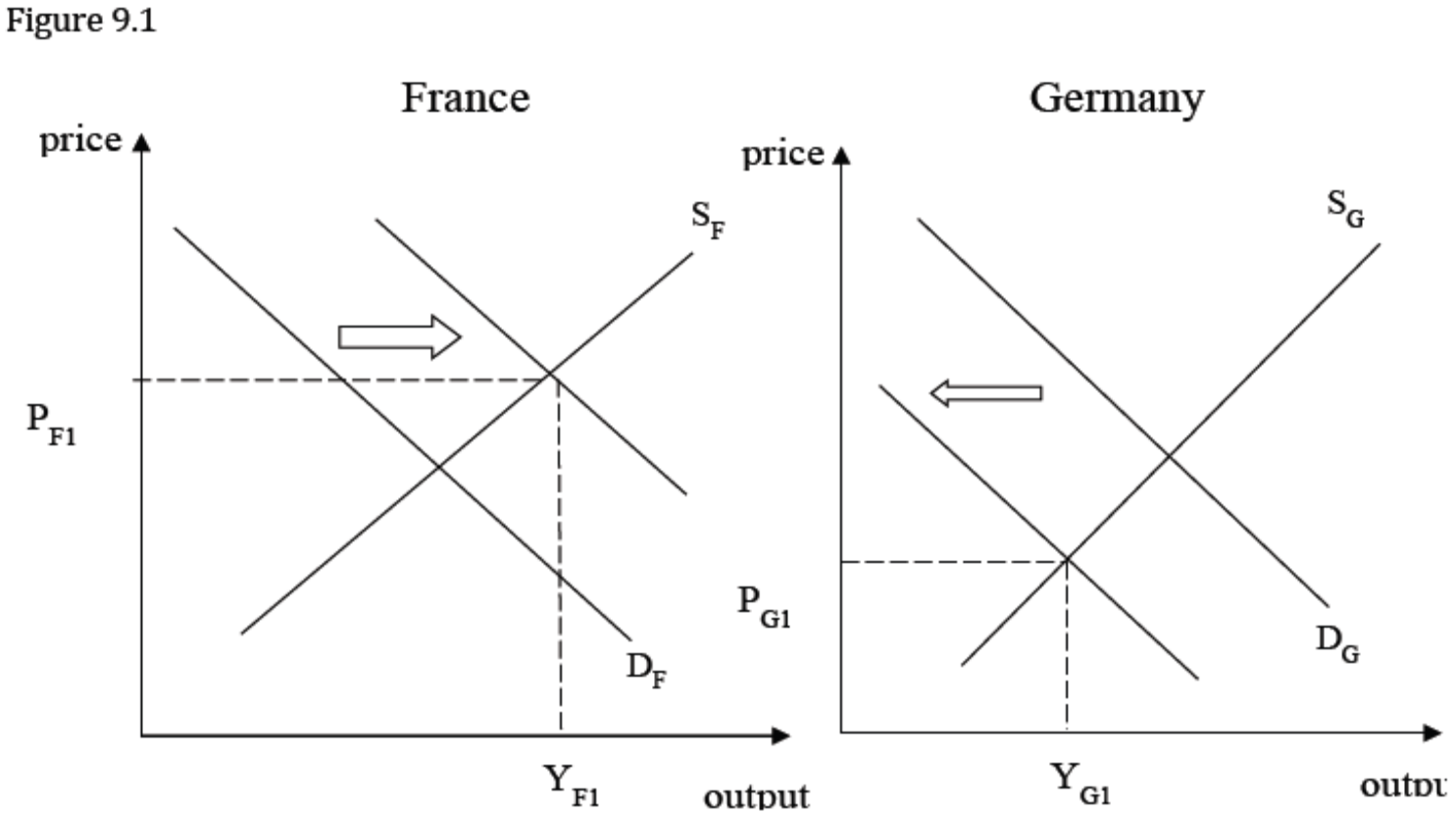
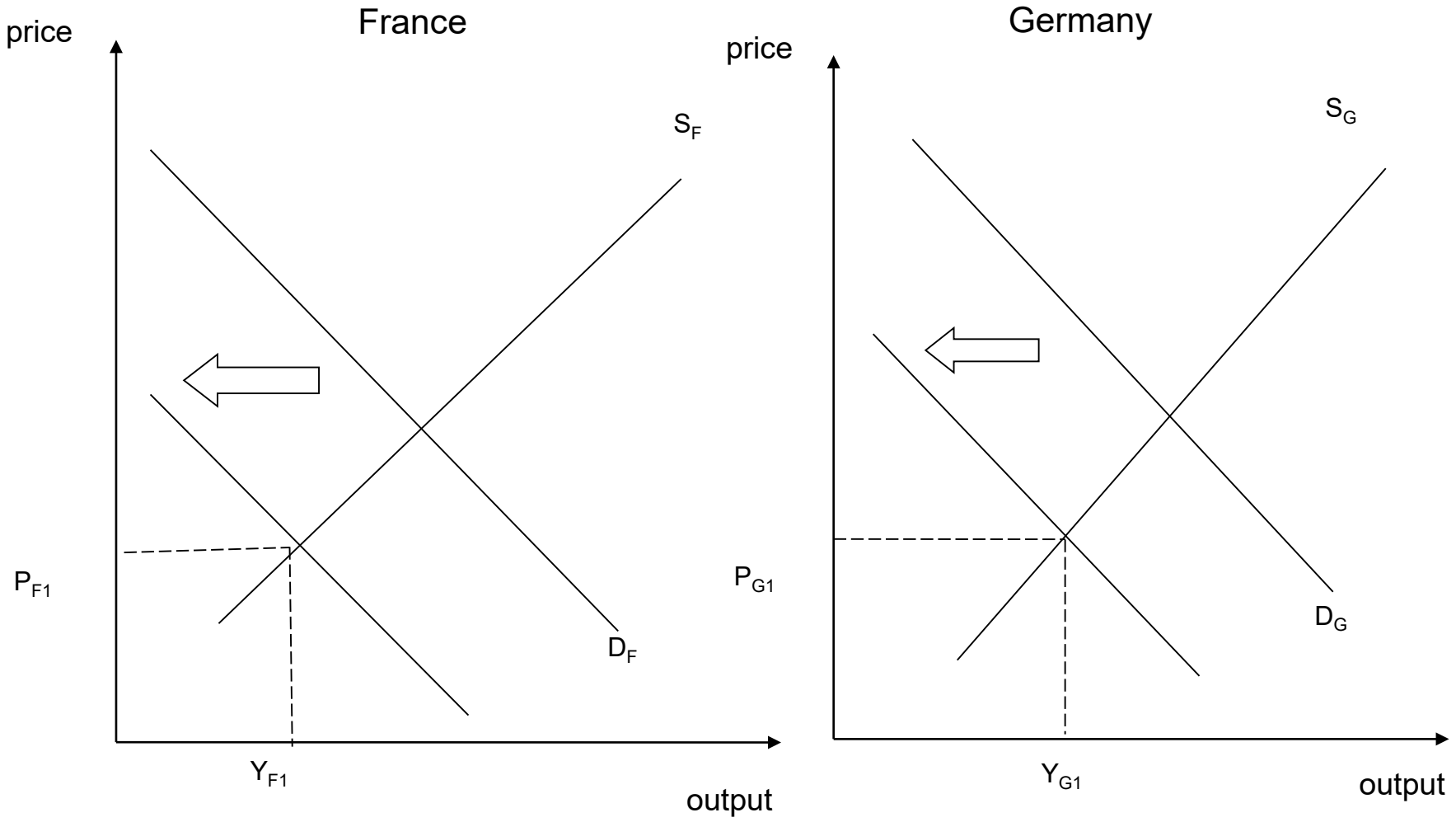


Figure 10.2 Symmetric shock and monetary policy of the ECB



Taylor rule

$$r_t^* = \rho + \dot{p}^* + \mathrm{a}(\dot{p}_t - \dot{p}^*) + bx_t$$

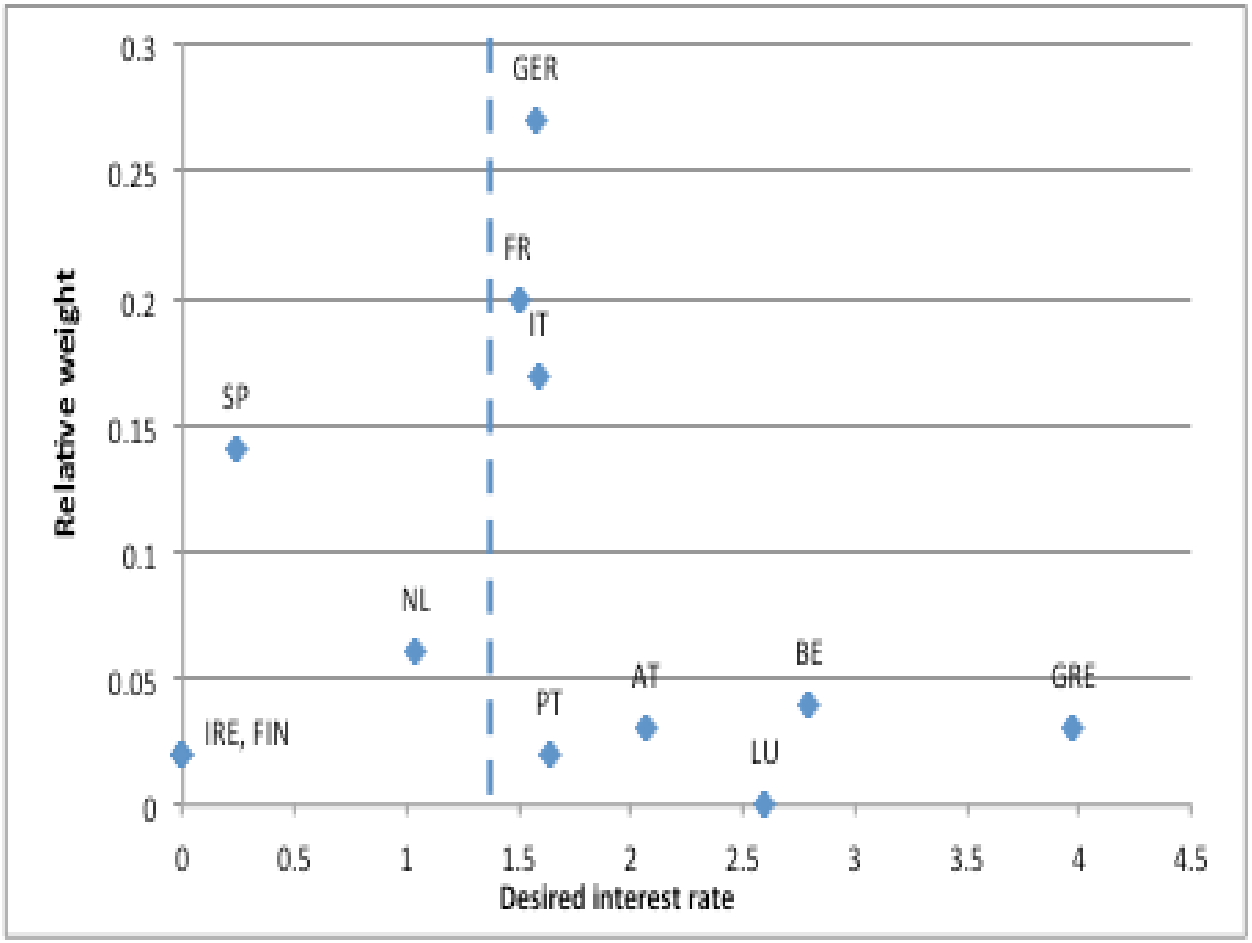
- where r_t^* is the desired interest rate,
- ρ is the long-term real interest rate,
- $\dot{p}^*$ is the inflation target
- x_t is the output gap.

Table 10.1 Desired interest rate using the Taylor rule (2010)

countries	desired interest rate	relative size
Finland	0,00	0,02
Ireland	0,00	0,02
Spain	0,24	0,14
Netherlands	1,04	0,06
ECB Board	1,41	
France	1,50	0,2
Germany	1,57	0,27
Italy	1,59	0,17
Portugal	1,64	0,02
Austria	2,07	0,03
Luxembourg	2,60	0
Belgium	2,80	0,04
Greece	3,97	0,03

Assumptions:
a = 1.5 and b = 0.5

Figure 10.3 Distribution of desired interest rates and country sizes (EU-12) (Taylor rule, 2010).



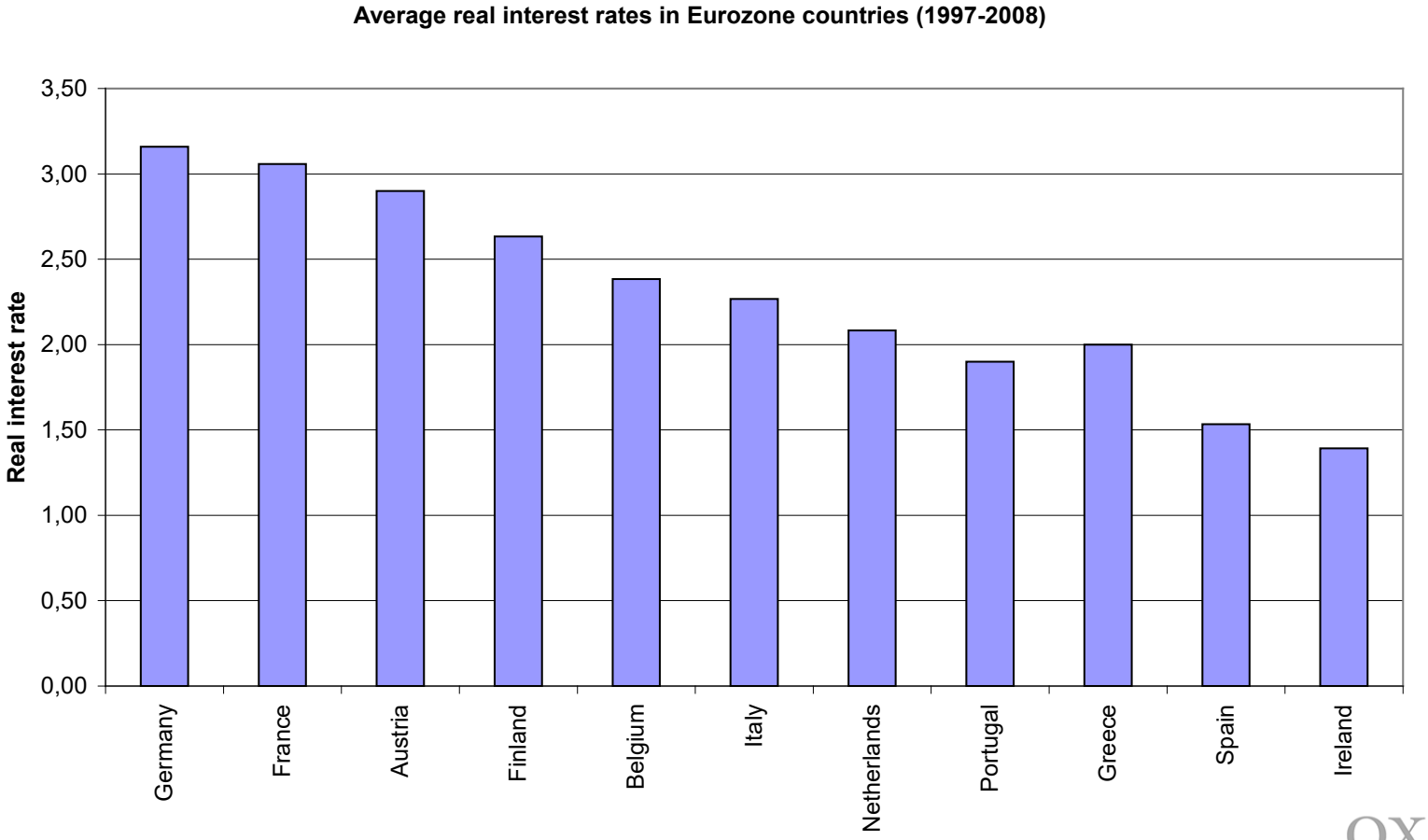
- wide range of desired interest rates in 2010 becasue of substantial divergences in national inflation rates and output gaps
- ECB computes average desired interest rate
- many countries are likely to be less than enthusiastic about the interest rate decisions of the ECB.

Asymmetric shocks and housing prices

- Large inflation differences within Eurozone
- Combined with the same nominal interest rate in the Eurozone
- Create large differences in real interest rates

Large differences in real interest rates in Eurozone

Figure 10.4 Average real interest rates in Eurozone countries (1997–2008)



Create large differences in house price inflation

Figure 10.5 House price indices (% change over 1997–2008)

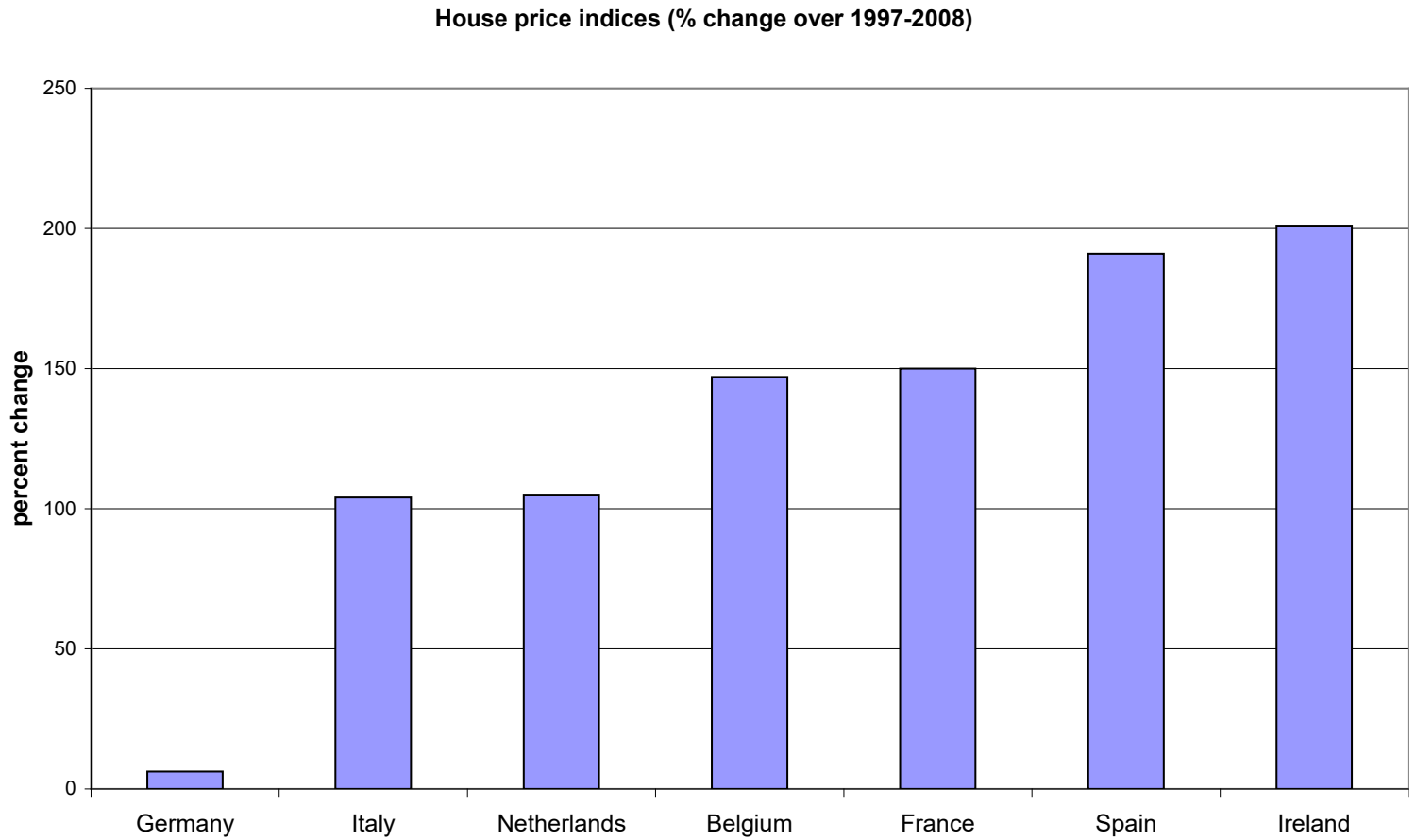
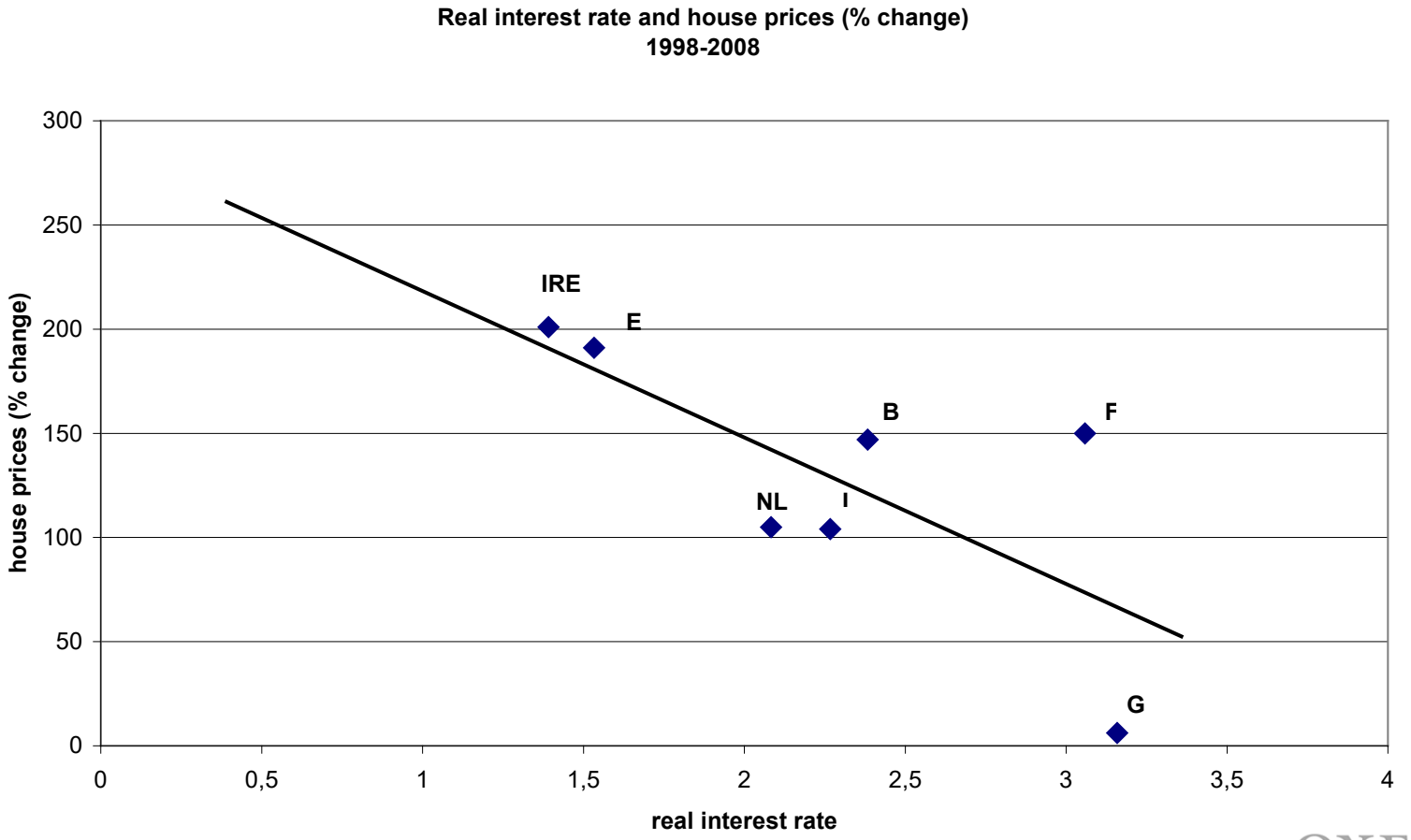


Figure 10.6 Real interest rate and house prices (% change) 1998–2008



The Monetary Policy Strategy of the ECB: a description

- Monetary Policy Strategy (MPS) of ECB consists of two parts:
  - A definition of the objectives
  - The instruments to achieve these objectives.

The objectives

- The Governing Council of the ECB has adopted the following definition:
  - 'price stability shall be defined as a year-on-year increase in the Harmonized Index of Consumer Prices (HICP) for the euro area of below 2%'.
- Thus target range of inflation is 0% to 2%.
- However, later 'clarification': "inflation should remain below but close to 2%"
- 'medium run' objective
  - The ECB does not define what the 'medium run' is.
- No mention of other objectives

The instruments

- Two pillars
- First pillar: Money stock is reference value

  M3 reference value: 4.5%
- Implicit model: quantity theory of money

  $m + v = p + y$

  $\Delta m + \Delta v = \Delta p + \Delta y$

  $\Delta m = \Delta p^* + \Delta y^f - \Delta v^f$
- Same procedure of Bundesbank

The second pillar

- Second pillar
- Other reference values
  - wages
  - energy prices
  - exchange rate
  - yield curve
  - possibly other variables

The Monetary Policy Strategy of the ECB: an evaluation

- The selection of the target
- Two-pillar strategy

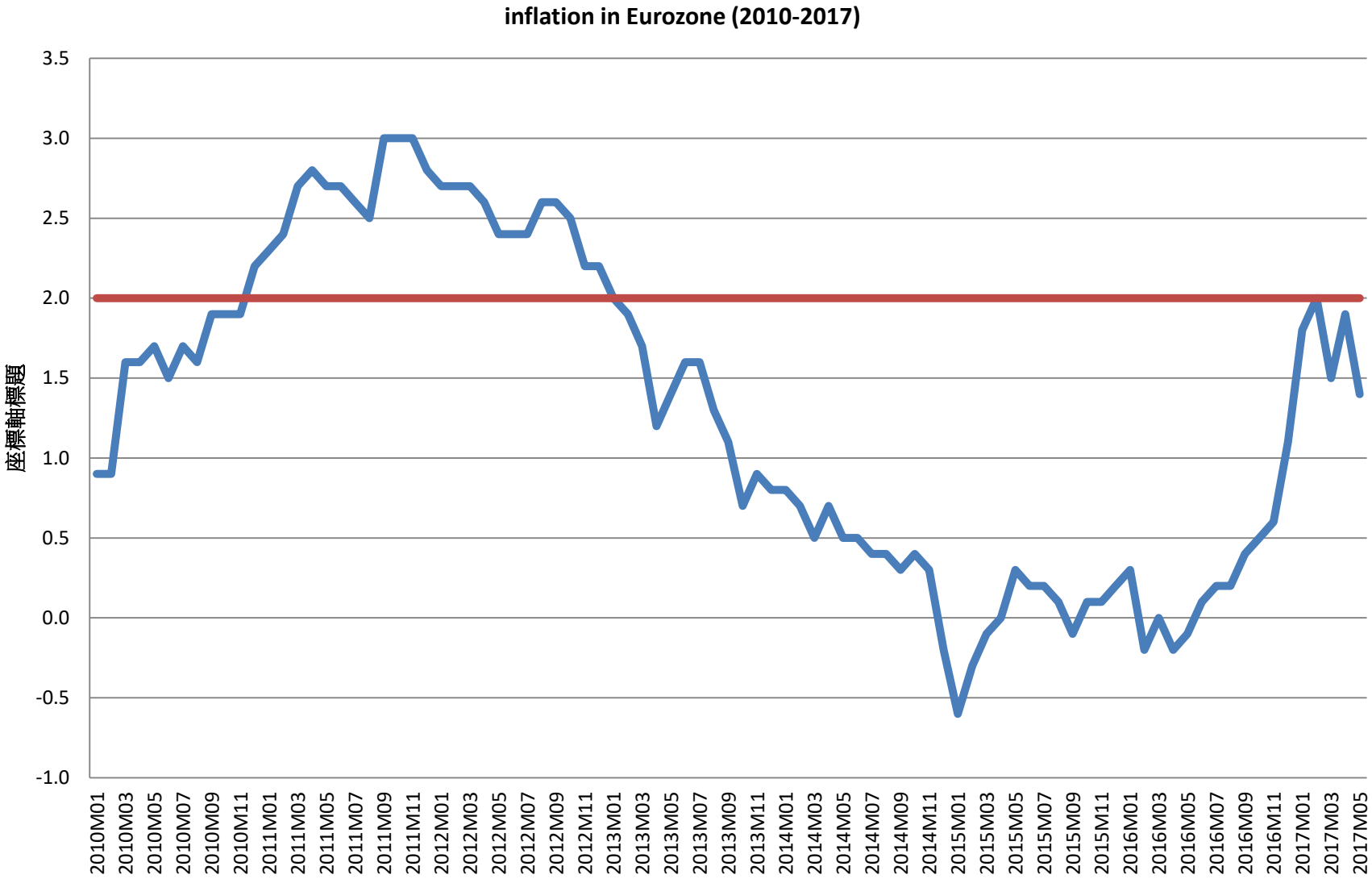
Selection of the target

- In interpreting its mandate ECB has been influenced by the theory of *flexible inflation targeting* as developed by Svensson (1996, 2000).
- The central claim made by this theory is that by stabilizing the price level, the central bank also stabilizes the output level.
- In this view there is no need to target output explicitly.
- Not consistent with mandate set out in Maastricht Treaty.

Selection of target

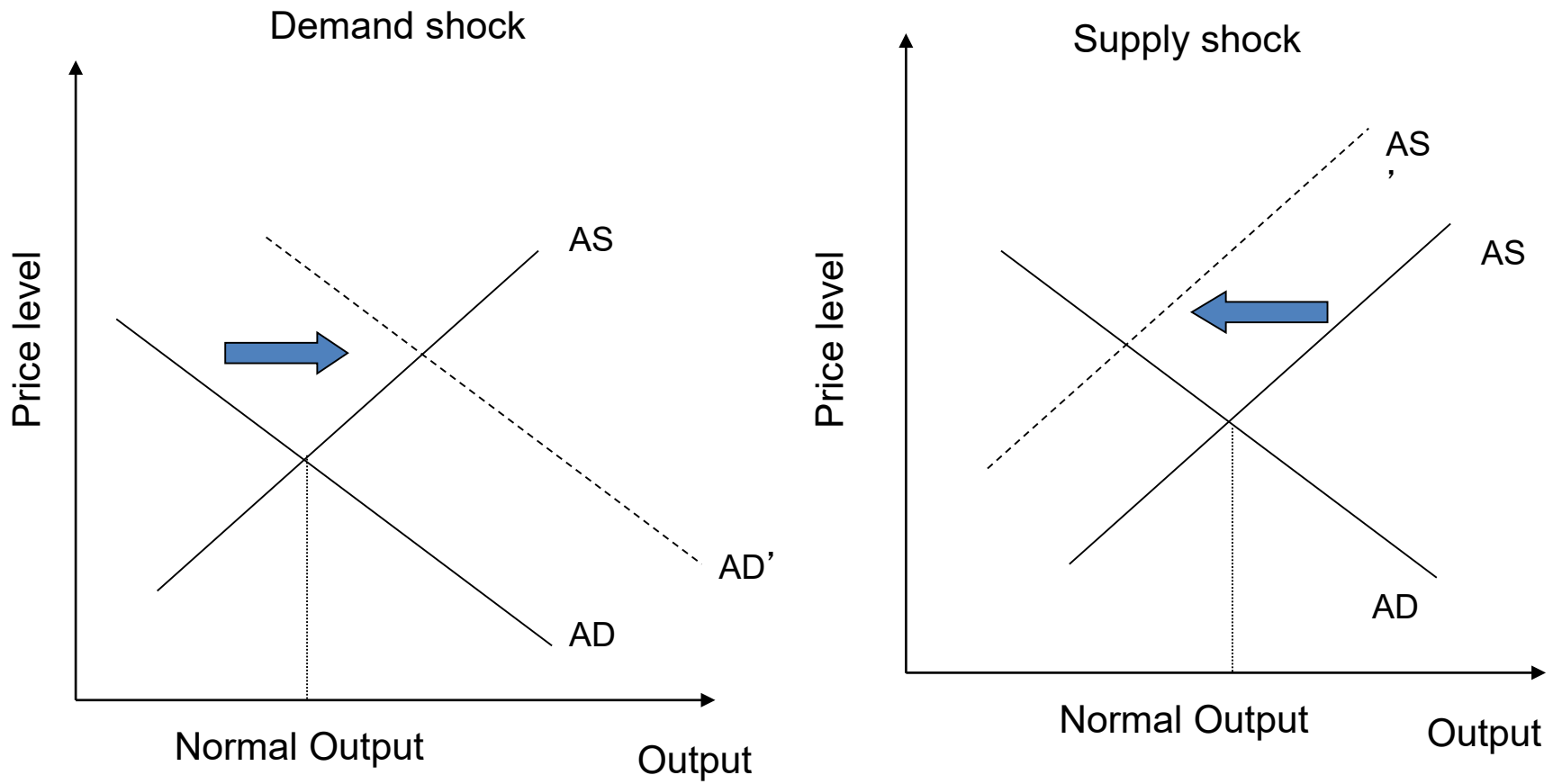
- If we accept the narrowing down of the ECB's responsibility to inflation
- The ECB has been quite successful in achieving the objective of price stability until financial crisis.
- See figure in next slide
- During 1999-2007 success is unmistakable.
- Since 2008 success less visible
- Since sovereign debt crisis ECB found it difficult to prevent deflation
- With QE it attempts to raise inflation again with some success

Figure 10.7 Inflation in Eurozone



Source: ECB

Figure 10.08 Shocks in aggregate demand and supply



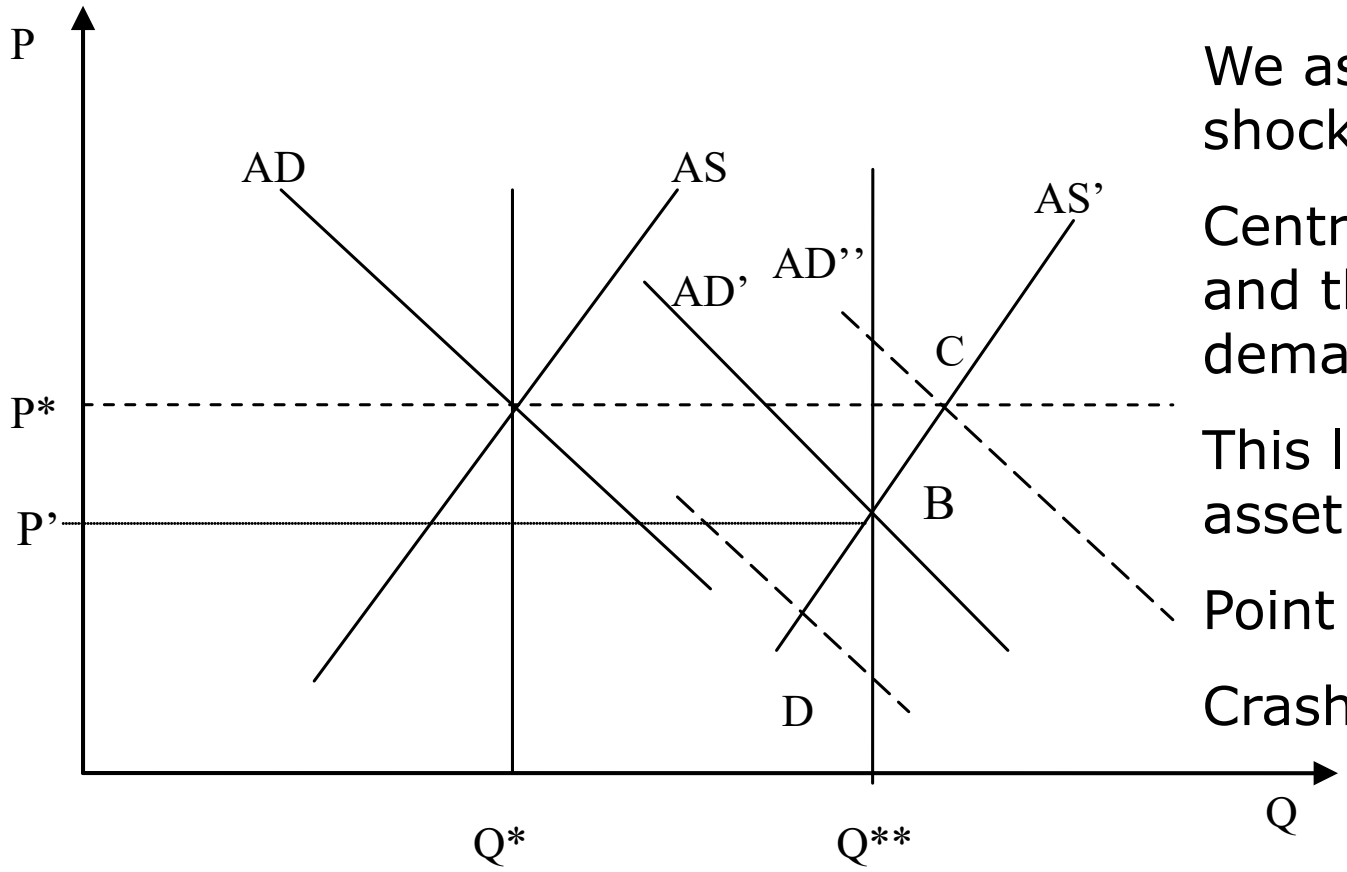
- When demand shocks occur, inflation targeting stabilizes prices and output.
- Not so when supply shocks occur; in this case there is trade-off between output and inflation stabilization.
- ECB has made it clear that when such a trade-off occurs it will choose inflation stabilization.
- Even then gradualism can be applied.

Financial Stability: an additional objective?

- Since the financial crisis of 2007-08 there is a new question: Is financial stability not equally important as an objective of the central bank?
- Before the crisis, the standard response was:
  - first, by maintaining price stability the central bank did all it could do to maintain financial stability.
  - second, the main responsibility for maintaining financial stability is in the hands of the supervisors and regulators.
- Responsibility of the supervisors and the regulators is serious.
- But this does not absolve the central bank from its responsibilities.
- Because there is a trade-off between price stability and financial stability, the central bank has to make a choice: price stability or financial stability.

Trade-off between price stability and financial stability: IT bubble

Figure 10.09 Trade-off between price stability and financial stability



IT-shock leads to shock supply and demand.

We assume supply shocks larger.

Central bank targets P* and thus stimulates demand further.

This leads to further asset bubble.

Point C unsustainable

Crash will occur.

Trade-off between price stability and financial stability: IT bubble

- The trade-off arises because the technology shock has the effect of reducing the aggregate price level.
- The central bank, however, targets a price level corresponding to the pre-technology shock.
- As a result it reacts to the shock by a monetary stimulus, creating an environment that makes a bubble more likely, while keeping the price level unchanged.

Trade-off between price stability and financial stability: IT bubble

- Other booms and busts are possible.
- These can be intensified when the central bank only targets inflation.
- Major central banks (including the ECB) focused mainly on price stability, and were quite successful in keeping inflation low.
- They failed, however, to see the bubbles in asset markets that were threatening financial stability, and that they fuelled inadvertently by allowing excessive credit creation to develop.

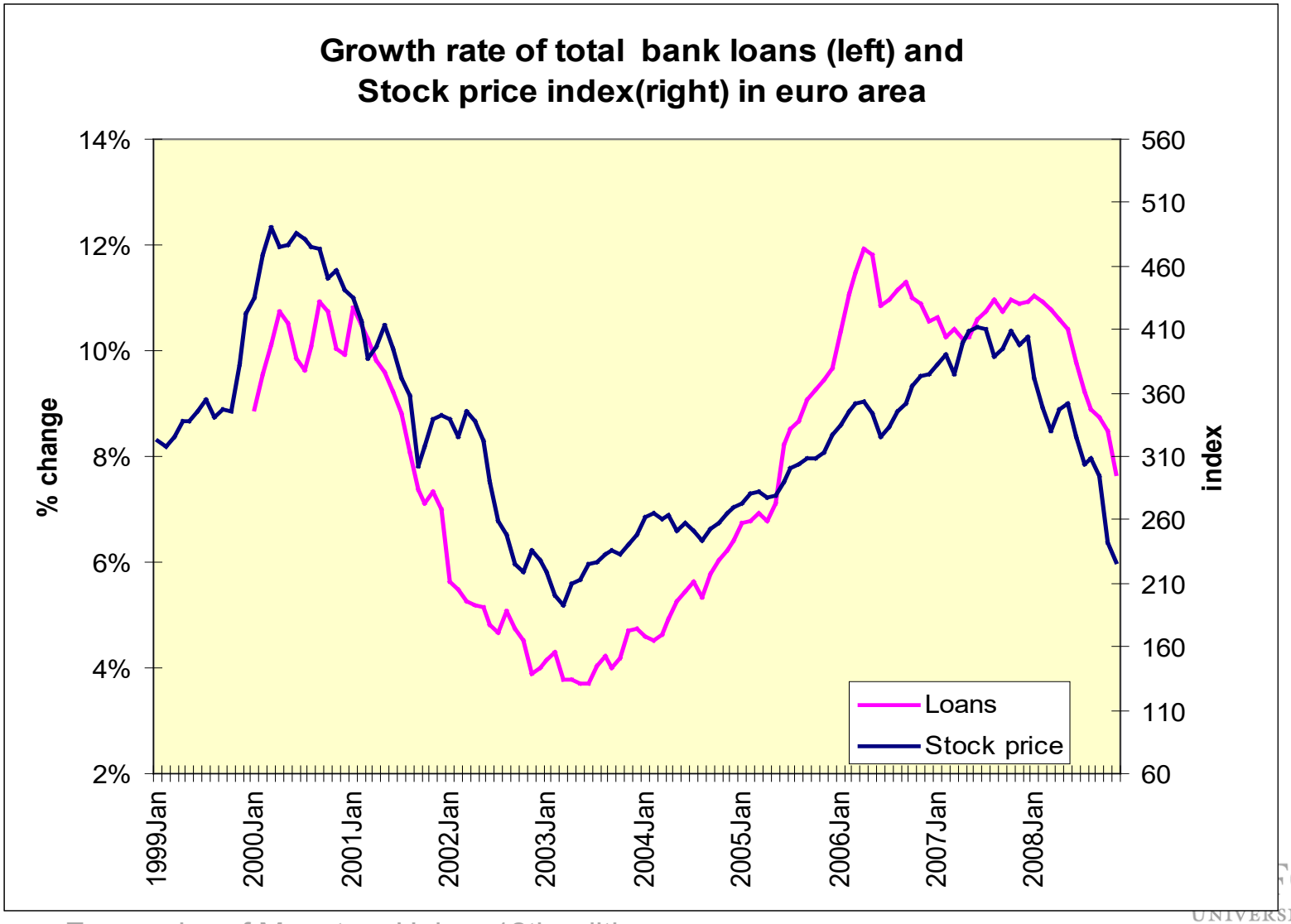
How do we define and monitor financial stability?

- Defining price stability is easy.
- Not so for financial stability.
- Monitoring of financial stability is inherently more difficult than the monitoring of price stability.

How do we define and monitor financial stability?

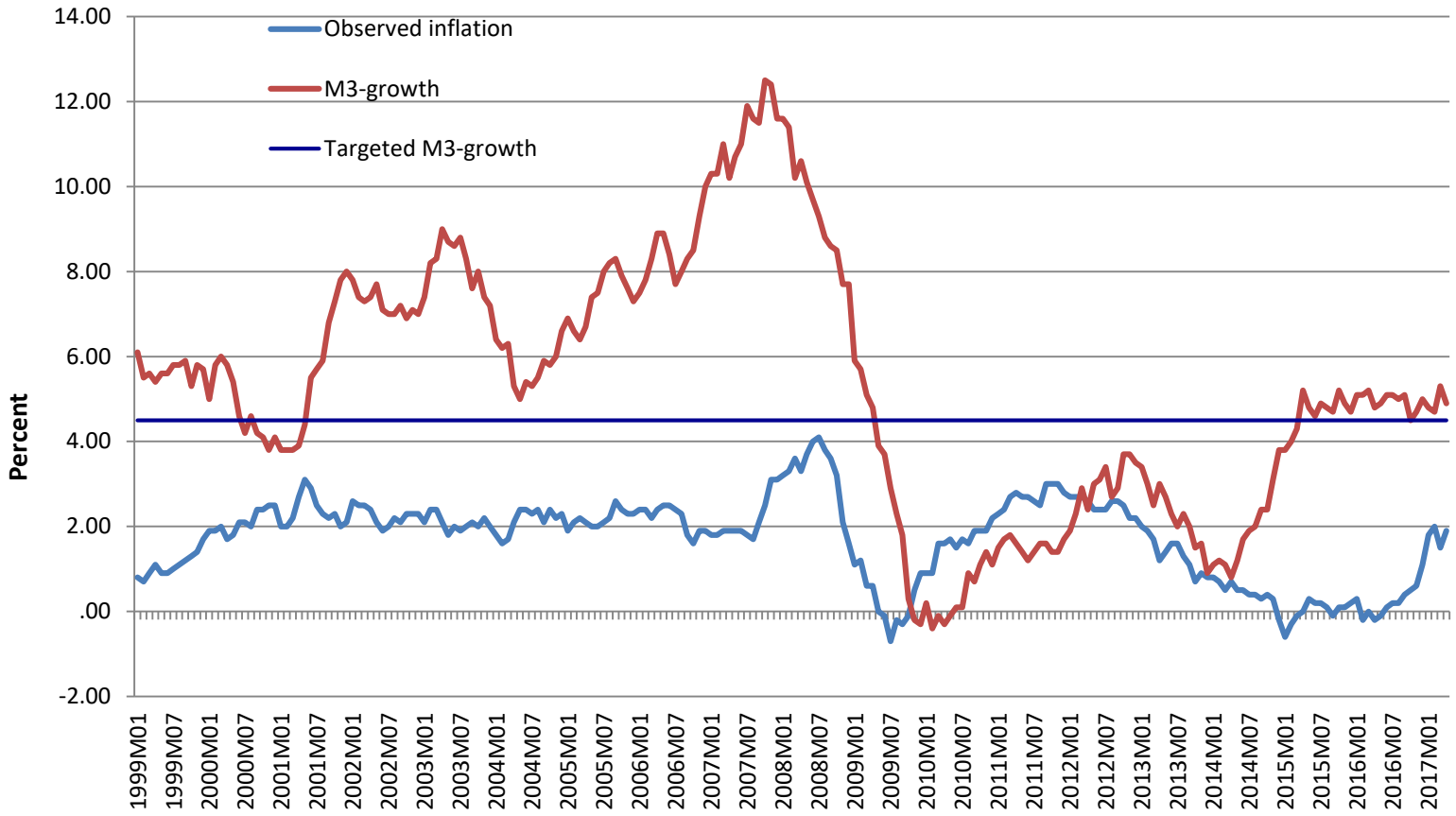
- Borio and Lowe (2002) define financial instability as twin phenomenon:
  - rapid credit growth combined with
  - large increases in asset prices increases the probability
- Simultaneous occurrence of bubble-like developments in asset markets and excessive credit growth as twin indicators of threats to financial stability is also to be found in Kindleberger (2000).
- Thus, the argument that one cannot identify bubble ex ante is weak.

Figure 10.11



How successful was monetary targeting by ECB?

Figure 10.12 Inflation and money growth (M3) in Eurozone



Source: ECB Monthly Bulletin

What do we learn from this?

- First, the ECB was successful in keeping inflation low despite the fact that it completely failed in its announced strategy to control inflation via monetary control.
- Second, it tells us much about the signaling power of money growth in the Eurozone.
  - Prior to financial crisis (2008): M3-growth had almost no power in predicting future inflation in the Eurozone, and exceeded by far target of 4.5%.

What do we learn from this?

- After crisis (2008): growth rate of M3 collapsed and dropped way below its reference value of 4.5% and inflation drops significantly in 2008
- During 2010–14 it appeared that there was again some correlation between money growth and inflation, but this was only temporary.
- From 2014 to 2017 we again observe a sustained departure of inflation from money stock growth.

Why has money growth so little information value for future inflation?

- In a low-inflation environment and in a world of frequent financial innovations the money supply numbers are very unreliable as signals of future inflation
  - Movements in money data dominated by noise coming from financial innovations and disturbances

Rapid expansion of M3 during 2004-08 signaled something different from future inflation.

- It was a signal of future financial upheavals.
  - The expansion of M3 was counterpart of the massive expansion of the balance sheets of banks.
  - Banks were allowed to increase their risky credit portfolios both nationally and internationally in an unprecedented way.
  - Their balance sheets became closely linked to the consecutive bubbles that were going on in asset markets (real estate markets, stock markets, commodities markets).

- Thus the spectacular expansion of M3 (which reflects liabilities side of the banks) was the mirror image of the bubble driven expansion of bank credit (the asset side).
- This expansion of the balance sheet of banks did not lead to inflation in the consumption goods
- but to inflation in asset markets, until the bubble bursts.

- Single minded focus of the ECB on inflation worked as a blind spot,
  - preventing it from seeing that the danger did not come from CPI-inflation but from asset inflation.
  - As a result, it did not use information coming from M3 to stop the bubble.

Inflation targeting: a model for the ECB?

Table 10.3 Money and inflation targeting compared

	Instrument	*Intermediate target*	*Ultimate target*
MS-targeting	Interest rate →	Money stock →	Inflation
Inflation-targeting	Interest rate →	Inflation forecast →	Inflation

- Inflation targeting is superior to money stock targeting (see Svensson (1998)).
- The reason is that with inflation targeting the central bank uses information of all the variables (including the money stock) that will affect future inflation.
- The inflation forecast is then the best possible intermediate target.

- But inflation targeting must be supplemented with policies aiming at preventing asset bubbles from destabilizing banking system
- Inflation targeting alone does not achieve this.

A new ‘two-pillar’ strategy

- In the first pillar, the central bank targets the rate of inflation.
  - This is the pillar that has to be used in normal times.
- In the second pillar, the central bank keeps track of bank credit and asset prices (stock prices and real estate prices).
- In this new two-pillar approach the ECB is responsible to limit the movements in bank credit.
- In order to do so it will need sufficient instruments.
- We return to this issue.

The instruments of monetary policy in the Eurozone

Three types of instruments:

- open market operations
- standing facilities (credit lines)
- minimum reserve

1. Open market operations

- Buying and selling of marketable securities with the aim of increasing or reducing money market liquidity.
- Two ways:
  - Classical way: direct buying and selling of marketable securities in secondary markets; Not used until 2015; since Jan 2015 QE
  - Main financing operations with banks through system of tenders

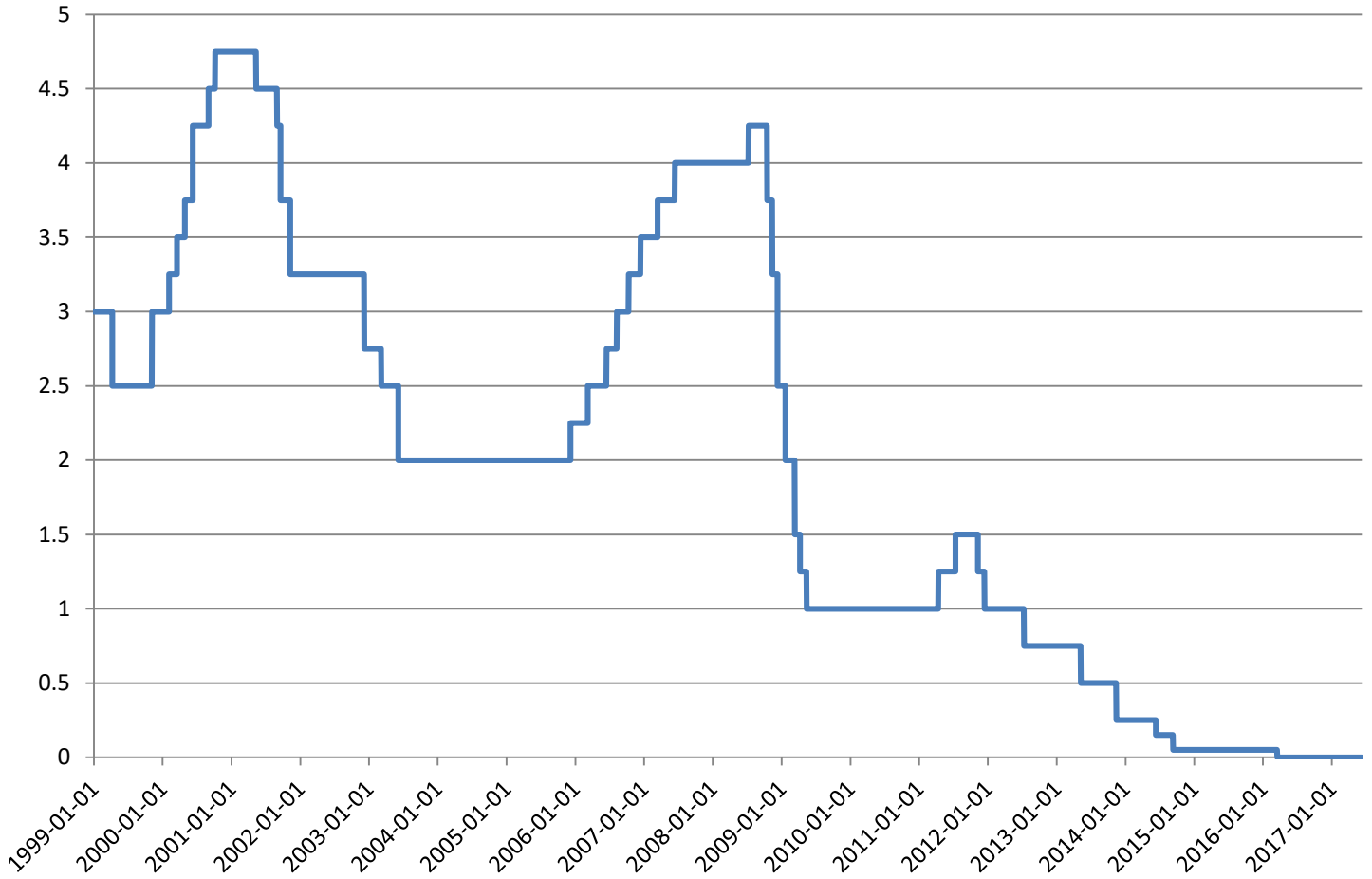
Direct buying and selling of marketable securities

- Is not traditional tool of ECB (contrast with FED and BoE)
- ECB started using this technique when it bought government securities in secondary markets in 2011
- Since Jan 2015: massive purchases of government bonds

Main financing operations

- ECB uses system of tenders, called *main refinancing operations*
- Governing Council sets the interest rate that will be applied in the main refinancing operations (EPO rate).

Figure 10.13 ECB Policy rate (Epo rate)



Source: ECB Monthly Bulletin

Main refinancing operations: how do these work?

- The ECB announces a tender procedure.
- This can be a fixed rate or a variable rate tender.
  - If a fixed rate tender, the interest rate chosen by the Governing Council is fixed rate at which financial institutions can make bids.
  - These bids are collected by the NCBs and centralized by the ECB.
  - The ECB decides about the total amount to be allotted, and distributes this to the bidding parties *pro rata* of the size of the bids.
- Until 2008 ECB only used variable rate tenders.

Main refinancing operations: how do these work?

- Since the banking crisis of October 2008 the ECB returned to the use of fixed rate tenders "with full allotment".
  - The latter means that banks obtain all the desired liquidity at the predetermined rate.
- This was done in the context of the ECB's role of a lender of last resort (cfr infra).

In sum…

- Open market operations are the main tools for the ECB to affect monetary conditions.
  - By increasing or reducing the interest rate on its main financing operations it affects the market interest rates.
  - In addition, by changing the size of the allotments it affects the amount of liquidity directly.

The use of collateral in open market operations

- Eurosystem provides liquidity against collateral provided by the banks.
- Eurosystem accepts a broad range of assets as collateral.
- Assets have to be of a certain quality to be eligible as collateral.
- Two sets of eligibility criteria.
  - First one relates to marketable assets. Typically credit ratings will be used here as an eligibility criterion.
  - Second one relates to non-marketable assets (e.g. asset backed securities that are not traded in markets). Here the Eurosystem applies its own risk assessment.
  - The purpose is to minimize the risk for the Eurosystem when it acquires assets from the banks.

QE : How does it work?

- QE is often presented as a non-conventional policy instrument. In fact it is not.
- Open market purchases (and sales) of government bonds are part of the traditional toolkit of modern central banks.
- Only novelty: the size of the announced purchase.
  - ECB announced that it would buy every month about €60 billion of member countries government bonds until at least April 2017.
  - This deadline was extended until (an unspecified month in) 2018

QE : How does it work?

- In October 2017, the ECB announced that it would start reducing the monthly purchases from €60 billion to €30 billion
- The expectation is that by the end of 2018 this number might decline to 0, i.e. no further purchases.
- At the end of 2017 the cumulative purchases reached 2 trillion euros.

ECB: late adopter of QE

- ECB started much later than Fed and BoE
- There was a lot of fear that if ECB makes losses on its holdings of e.g. Italian bonds, German taxpayers will pay the bill
- That's why the Italian bonds will be held on balance sheet of Bank of Italy, that will bear the risk of possible losses.
- Each national central bank buys an amount corresponding to its equity share

	equity shares	Bond purchase (billion €)
Nationale Bank van België	3,5	44
Deutsche Bundesbank	27,1	341
Central Bank of Ireland	1,6	20
Bank of Greece	2,8	
Banco de Espana	11,9	150
Banque de France	20,3	256
Banca d'Italia	17,9	226
De Nederlandsche Bank	5,7	72
Oesterreichische Nationalbank	2,8	35
Banco de Portugal	2,5	32
Suomen Pankki - Finlands Bank	1,8	23
Others	2,1	26
Total	100	1260

2. Standing facilities

- These facilities aim to provide and absorb overnight liquidity.
- Banks can use the *marginal lending facility* to obtain overnight liquidity from the NCBs.
- The Governing Council fixes the marginal lending rate (1% above the interest rate used in the main financing facility).
- No borrowing limit, provided collateral.
- The marginal lending rate acts as a ceiling for the overnight market interest rate.

2. Standing facilities

- Banks can use the *deposit facility* to make overnight deposits.
- The Governing Council fixes the interest rate on the deposit facility (1% below the interest rate used in the main financing facility).
- This interest rate acts as a floor for the overnight market interest rate.
- In 2015 it became negative because the interest rate of the main financing facility dropped to 0.05%

3. Minimum reserves

- By manipulating reserve requirements the ECB can affect money market conditions.
- ECB remunerates the minimum reserves.
- The ECB uses the minimum reserve requirements as an instrument to smooth short term interest rates.
- ECB does not use the minimum reserve requirements as an instrument of monetary policy.
- This should change.

Minimum reserves as additional instrument in new two-pillar strategy

- Minimum reserve requirements could be a useful instrument to control bank credit (which as we have seen is strongly correlated with asset prices).
- ECB could increase the minimum reserve requirements when bank credit is expanding too quickly.
- Other possible instrument: macro-prudential control.

The Eurosystem as lender of last resort during the financial crisis

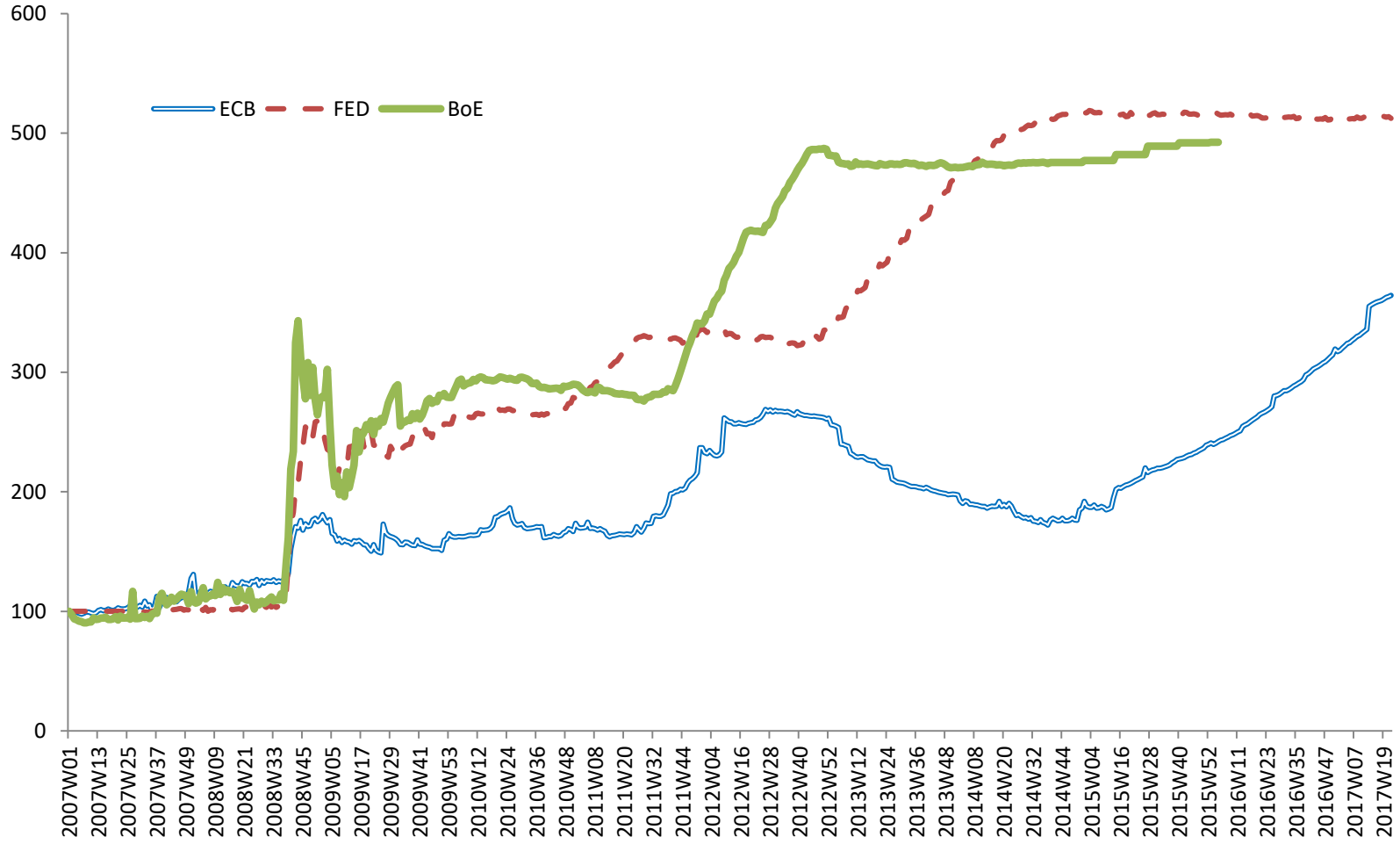
- The ECB has been active lender of last resort in the banking sector since October 2008.
  - The most spectacular intervention occurred during 2011-12 when the ECB provided more than €1 trillion of liquidity to the banking sector.
  - At about the same time it bought for about €165 billion of government bonds in the context of its "Securities Market Programme" (SMP).
  - This was a programme of limited purchases of government bonds at the time of extreme pressure in the government bond markets of a number of Southern Eurozone countries.

- SMP should not be confused with the OMT-programme that we discussed in the last chapter.
  - OMT programme: ECB commits itself to buying an unlimited amount of government bonds in times of crisis.
  - SMP programme: ECB announced that it would buy a **limited** amount of bonds during a **limited** period of time.
    - SMP did not work: it gave a signal to the holders of government bonds to sell as quickly as possible;
    - As a result, the ECB had to buy a lot of these bonds.
    - Contrast with OMT: ECB did not buy a single government bond in the context of OMT

- One important implication of these liquidity injections is that the balance sheet of the Eurosystem expanded massively.
- When Eurosystem performs open market operations it provides liquidity to the banks by accepting eligible assets as collateral.
- Thus, the Eurosystem acquired large amounts of assets previously held by banks in the Eurozone.
- Balance sheet of Eurosystem exploded.

- But expansion of balance sheet of Fed and Bank of England was even stronger
- Note also that since 2012 the ECB has started shrinking its balance sheet
- While Fed and BoE continued to expand
- This illustrates conservative attitude of ECB as compared to these other central banks

Figure 10.14 Balance sheet of Eurosystem, US Fed and Bank of England 2007 = 100.



Sources: European Central Bank, Federal Reserve, Bank of England.

Operational note

- The open market operations are operations not geared towards the support on one particular bank.
- They are designed to provide liquidity in the market in a non-discriminatory way.
- During liquidity crisis NCBs may provide emergency liquidity assistance (ELA) to particular illiquid (but solvent) banks.
- The provision of ELA is undertaken at the discretion of the competent NCB, and only in exceptional circumstances.
- This facility has been used in different countries.
- National governments bear the potential losses.

Conclusion

- Objective of ECB was to keep inflation low.
- It has achieved this objective up to now.
- Since the start of the sovereign debt crisis it experienced difficulties in keeping inflation close to 2% as inflation continued to slide downwards.
- In January 2015, this led the ECB to finally start expanding the money base by buying large amounts of government bonds in the hope of pushing inflation up again

Conclusion

- ECB had also announced that it would achieve low inflation by closely watching the growth rate of M3.
- M3 has played no useful role in the ECB's anti-inflation strategy.
- The massive expansion of M3 before 2008 did not announce inflation, but a massive build-up of the balance sheets of the banks in the Eurozone.
- This expansion reflected bubbles in various asset markets.

Conclusion

- Major responsibility of the financial crisis is to be found in a failure to supervise and to regulate banks.
- But it is also true that the ECB bears part of the responsibility.
  - Its excessive focus on inflation prevented it from taking action aimed at checking the ballooning expansion of bank credit.
  - The ECB should widen its objectives and include financial stability explicitly as an objective at par with price stability.
- We also discussed the instruments that could be used to achieve this dual mandate.

Conclusion

- When the government debt crisis erupted in 2010 the ECB mainly stood on the sidelines.
- It initiated a government bond purchasing program (SMP) but applied this with great hesitations, and announced that this would be temporary.
- The effect of this was that the program lacked credibility, inducing investors to continue to sell government bonds and forcing the ECB to buy large amounts of these bonds.

Conclusion

- In September 2012 the ECB overcame its hesitation and announced its OMT program promising unlimited liquidity support in times of crisis.
- It was a great success and helped to stabilize the government bond markets