*http://www.bde.es/webbde/en/secciones/eurosist/intregra/historia.htm
*A historical perspective: from the Council of Europe to the EU

# Monetary Integration

# Monetary Integration in the EU

1970 Werner report for a monetary union in 1980

1972 "monetary snake", fixed exchange rates with the US-$ after the default of the Bretton Woods system
doesn't survive the turbulent 1970s (oil crisis, different inflation rates etc.)

1979 European Monetary System EMS

- Exchange Rate Mechanism: fixed exchange rates among the European currencies, fluctuation width of 2.25% (6% for the Italian Lira), with adjustable central parities
- European Currency Unit ECU

central parities frequently adjusted until 1987 in order to adapt the exchange rates to inflation differences (this made the system vulnerable to speculative attacs)

# IMonetary Integration in the EU

1986 Single European Act: Common Market, including free movement of capital

1989 Report of the Delors Commission on the Monetary Union

1990 first step: freedom of capital movements is completed as part of the Single Market Program

1991 Maastricht Treaty introduces the steps and criteria for participation in the Monetary Union: achieve economic convergence before fixing the exchange rates for good

# Monetary Integration in the EU

1992/3 Crisis of the EMS

- rejection of the Maastricht Treaty in the first Danish referendum
- sustained differences in inflation rates, but no adjustment of central parities since 1987 $\Rightarrow$ loss of competitiveness (esp. Italy)
- asymmetric effects of German reunification on demand conditions and monetary policies (high interest rates set by the Bundesbank) cause difficulties in the other countries

$\Rightarrow$ speculative attacks because devaluations were to be expected (Lira, Pound Sterling)
and self-fulfilling attacks that enforced devaluations (various currencies)

$\Rightarrow$ central banks had to intervene, adjust exchange rates, GB and Italy left the ERM (Italy rejoins in 1996)

$\Rightarrow$ fluctuation bands are widened to 15%

# Monetary Integration in the EU

1994 second step: creation of the European Monetary Institute

1997 agreement on the Stability and Growth Pact

1999 third step: € as "virtual currency" in 11 countries, exchange rates fixed, ECB starts working, ERM-2 for non-participating countries € (GR, DK)

- Greece didn't fulfill the Maastricht criteria yet (inflation)
- GB and Denmark: opt-out
- GB and Sweden don't participate in the ERM

2002 € bills and coins introduced in 12 countries of the "Eurozone"

2007-11 Slovenia, Malta, Cyprus, Slovakia and Estonia enter the Monetary Union

# Theory of Monetary Integration

**Gains from a monetary union:**

- reduce transaction cost

$\Rightarrow$ reduces the EU's dependence on the dollar

- increases competitiveness and markets' transparency
- permanently fixed exchange rates among members of a monetary union eliminate exchange risk

$\Rightarrow$ easy free trade and factor movements

$\Rightarrow$ Euro is a major world currency able to compete with the Japanese Yen and the US dollar

**Loss due to a monetary union:**

- If countries deprive themselves of exchange rates as policy instruments,

$\Rightarrow$ they impose on themselves losses that are essentially losses emanating from enforced departure from internal balance

$\Rightarrow$ risk of *asymmetric shocks*

- different preferences about unemployment and inflation

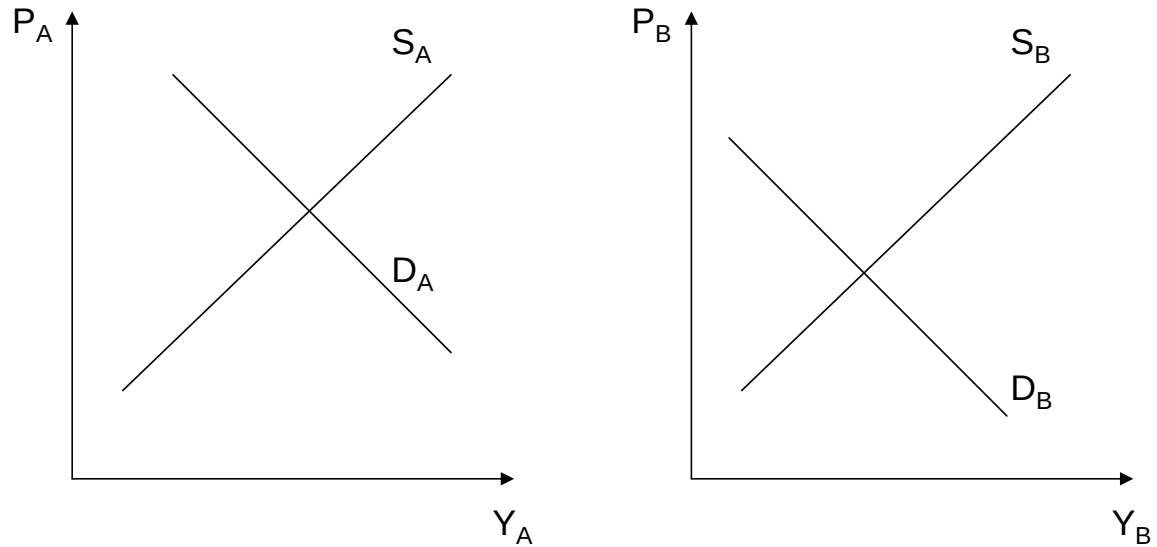
# Theory of Monetary Integration

Gains and loss from a monetary union:

*Size matters*: marginal costs of enlarging a monetary union increase as the number of countries rises, while the marginal benefit decreases. A middle sized area will present more benefits than cost, while a larger area reverses the balance.

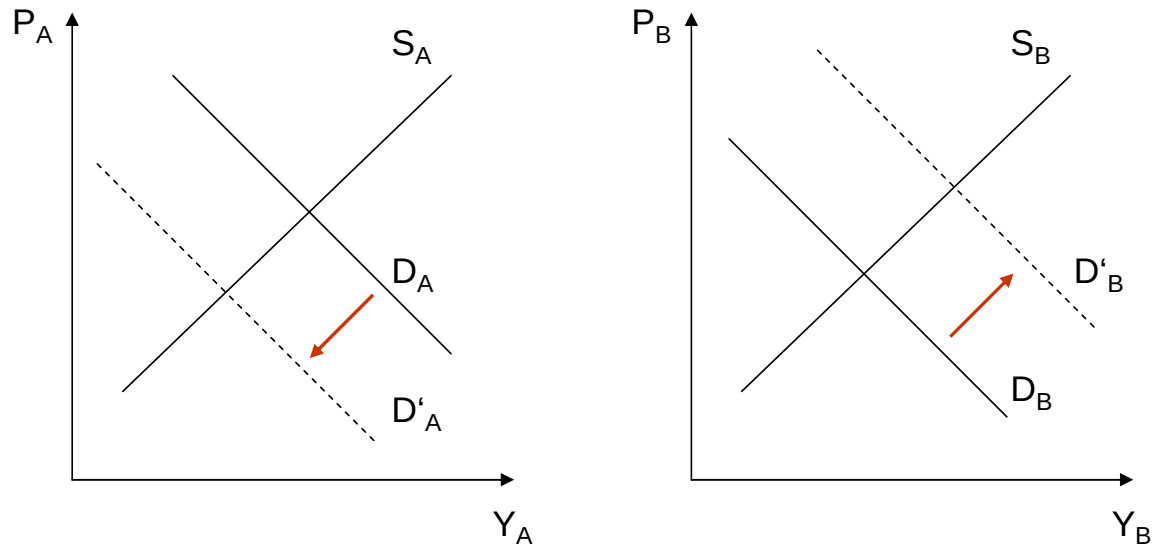
# Costs I: asymmetric shocks

Two open economies A and B:
Initial equilibrium in the goods markets



# Costs I: asimetric shocks

Two open economies A and B:
asymmetric demand shock: change in the consumers preferences in favor of B produced goods




A: $Y_A$ decreases (recession), **unemployment**, **public deficit**

B: $Y_B$ increases (boom), **inflation**, public superavit

# Costs I: asymmetric shocks

enforced departure from internal balance – Adjustment Mechanisms?

- control the public deficit:
  decrease expenditure in A, increase in B or tax reduction
  – situation deteriorate further ↯
- currency devaluation in A:
  increase the demand of goods from A and decreases from B
  – impossible within the monetary union ↯
- monetary policy:
  reduce interest rate in A to stimulate the demand, and increase the interest rate in B to slow down inflation
  – impossible within the monetary union, no possibility to accommodate both countries ↯

# Costs I: asymmetric shocks

enforced departure from internal balance – Adjustment Mechanisms?

- fiscal transfers:

  Country B passes his superavit to country A to compensate the imbalances

  – possible in a federation, but low probability between independent countries

# Costs I: asymmetric shocks

enforced departure from internal balance – Adjustment Mechanisms?

- flexible wages:

  wage reduction in A, reduces unemployment, lower production cost, $S_A$ shifts to the right $\longrightarrow$ equilibrium: $Y_A$ approaches the initial level but with lower prices and lower deficit

  In B, increased demand raises wages and the higher production cost shift $S_B$ to the left $\longrightarrow$ equilibrium: $Y_B$ approaches the initial level but at a higher level of prices

# Costs I: asymmetric shocks

enforced departure from internal balance – Adjustment Mechanisms?

- labor mobility:

  migration of unemployed from A to B $\longrightarrow$ social expenditures in A decrease, lower public deficit

  lower wages in B, supply increases, lower inflation and public deficit

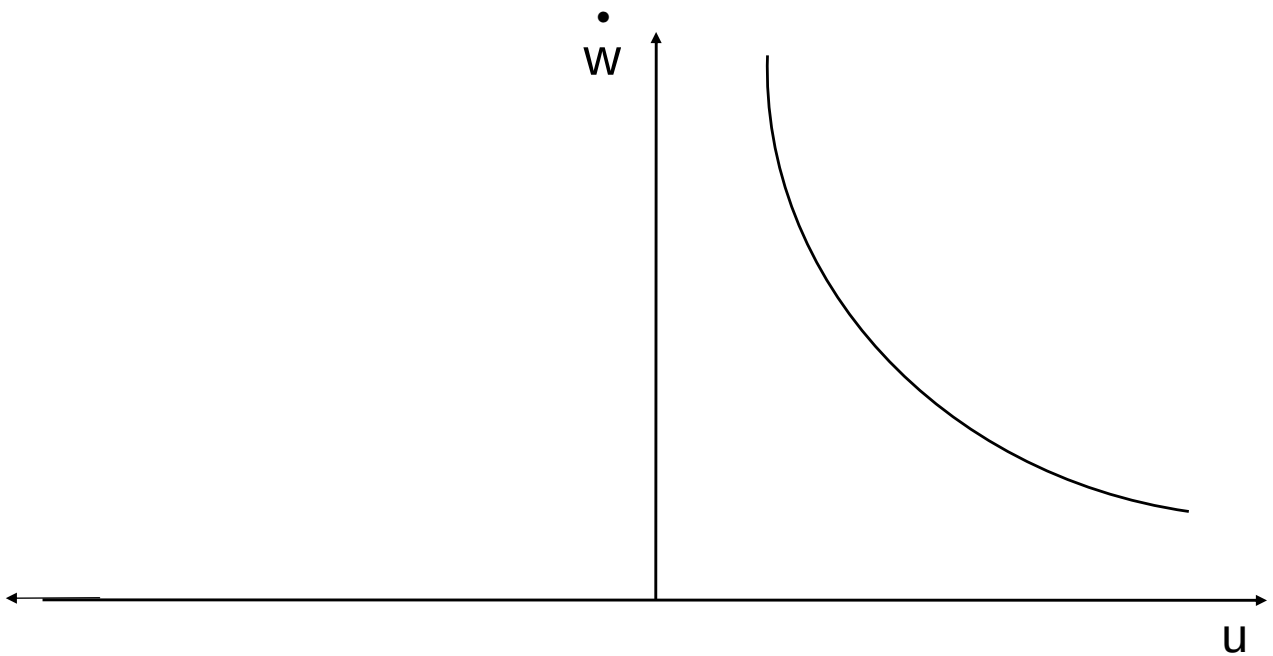
# Costs I: asymmetric shocks

Model critics:
Assumptions made by Fleming and Corden are extremely controversial: no costs in avoid devaluations

- idea: the collateral effects of devaluations in integrated economies make devaluations ineffecient on the long run
- example: relatively cheaper products from A,
  but imported products from B relatively more expensive
  $\longrightarrow$ production in B is now more costly,
  loss of purchasing power because of higher import prices
  $\longrightarrow$ the increase on wage rise production cost (without productivity increases)
- effect: A level of prices rise, demand reduction, partially compensating the devaluation effects

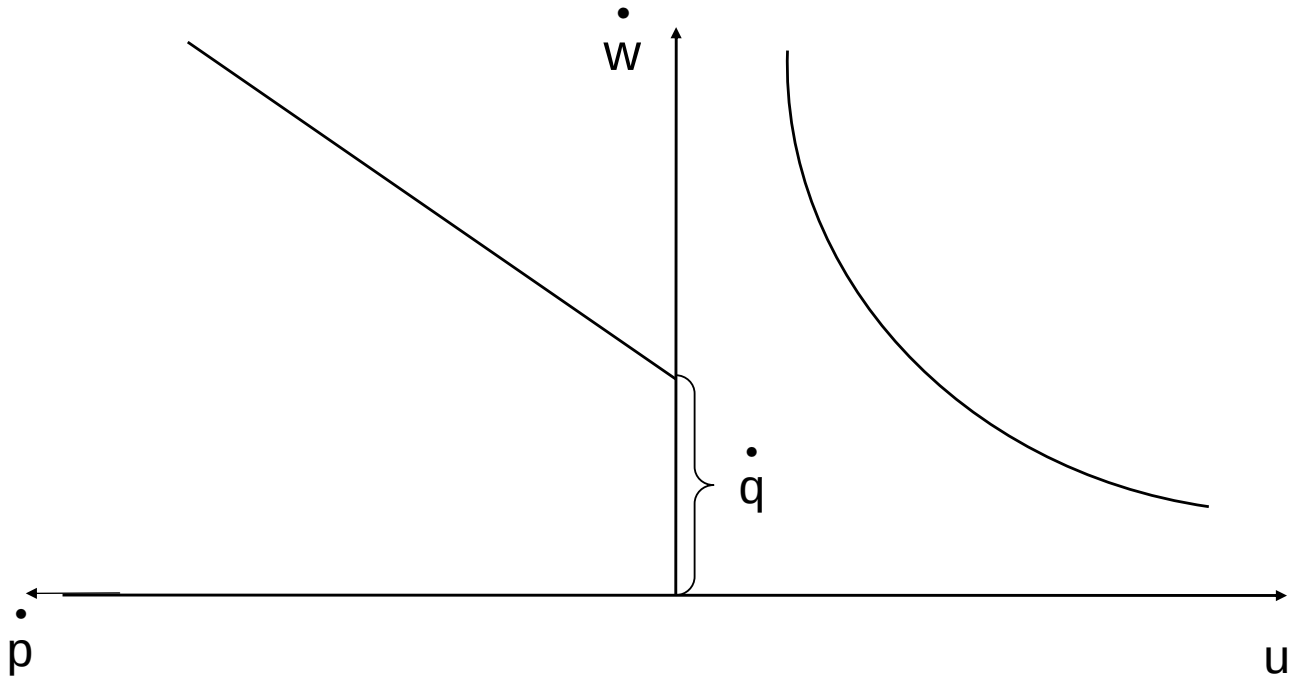
# Costs II: Different Preferences
# Fleming-Corden model: Original Version

with higher (lower) unemployment $u$, less (more) wage increases $\dot{w}$
Assumption: inflationary expectations are given (original version of the model)



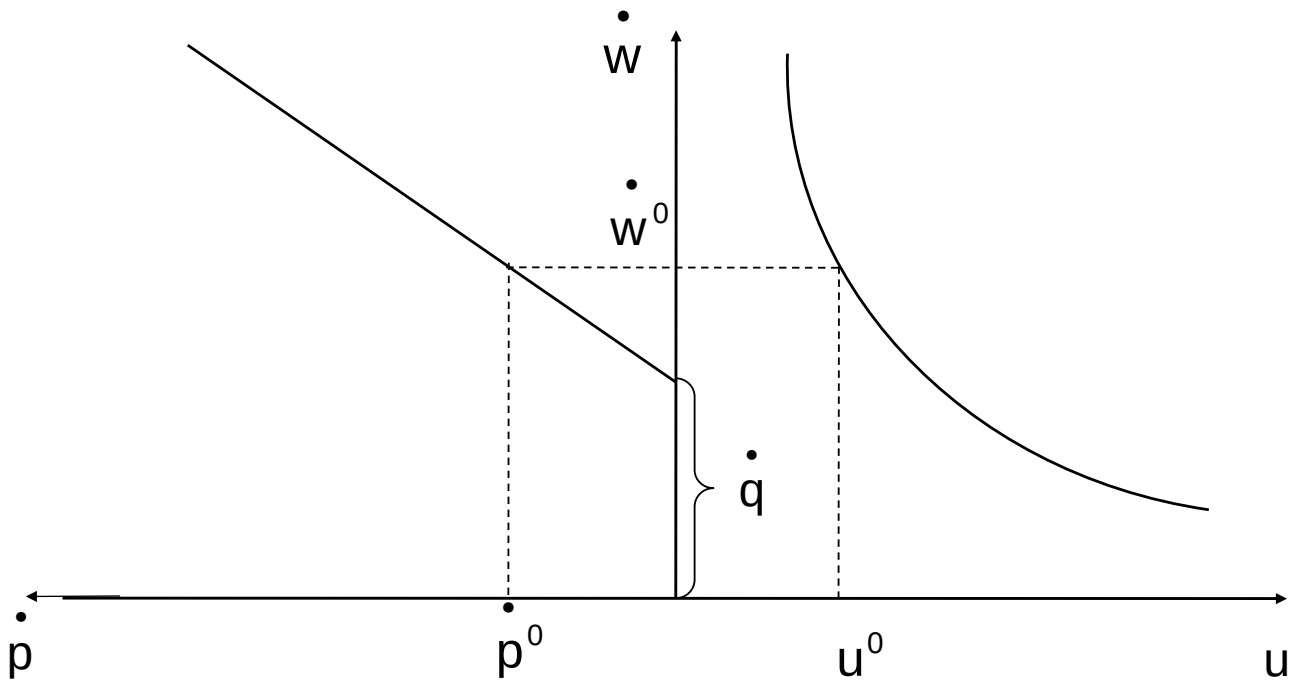
# Costs II: Different Preferences
# Fleming-Corden model: Original Version

Increase of wages $\dot{w}$ = inflation+ $\dot{p}$ + increase productivity $\dot{q}$



# Costs II: Different Preferences
# M Fleming-Corden model: Original Version

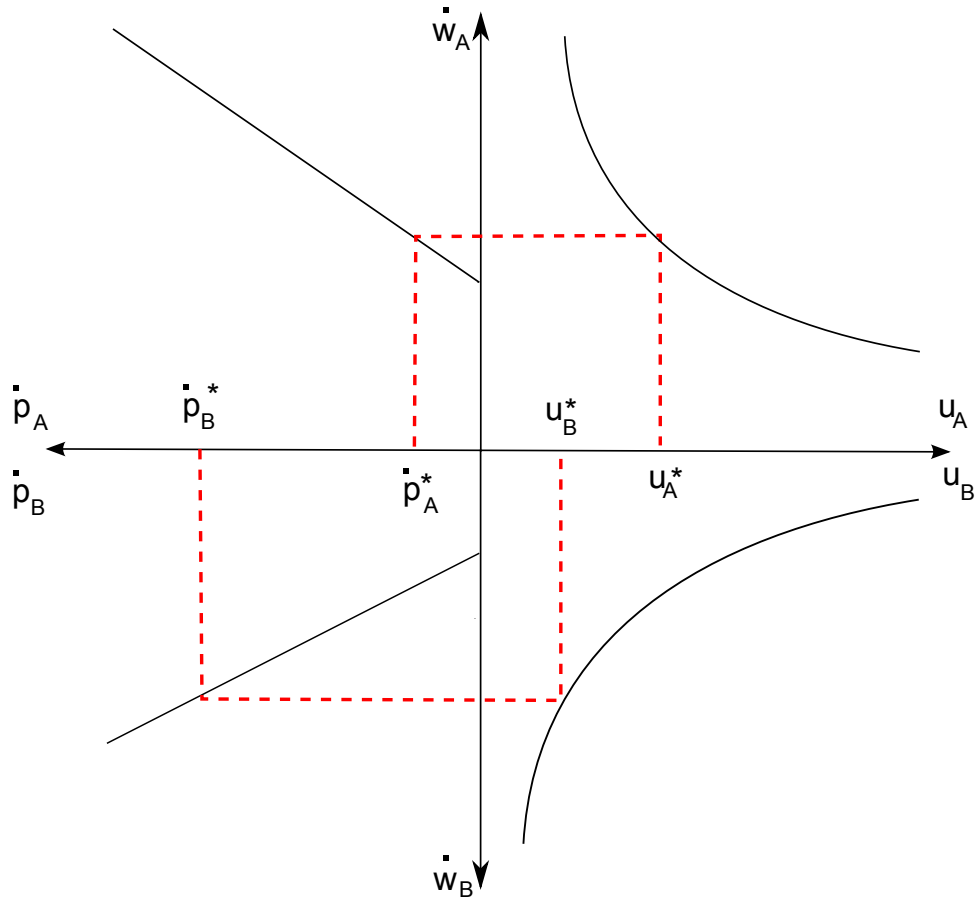
$\Rightarrow$ Choice between inflation $\dot{p}$ and unemployment $u$ (Phillips curve):



# Costs II: Different Preferences

## Fleming-Corden model: Original Version

Countries A and B have different preferences: low inflation rates is more important for A (e.g. Germany) than for B (e.g. Italy), lower unemployment matters more in B



# Costs II: Different Preferences
# Fleming-Corden model: Original Version

Different inflation rates are possible if the exchange rate $e$ can be adjusted: e.g.: devaluating B's currency against A to recover B's productive competitiveness.

$$p_B = e\left(\frac{\$_B}{\$_A}\right) \cdot p_A$$

$$\dot{e} = \dot{p}_B - \dot{p}_A$$

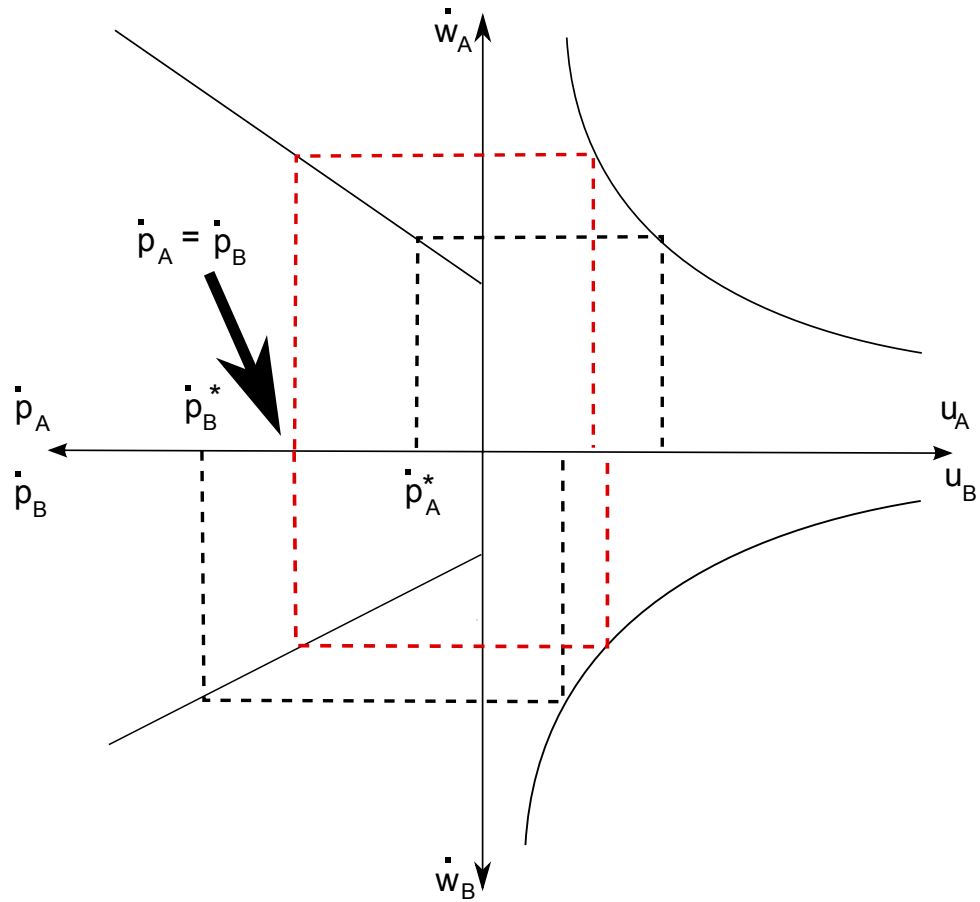
$\dot{p}_B > \dot{p}_A \;\Rightarrow\; \dot{e} > 0 \;\Rightarrow$ devaluation of $\$_B$

# Costs II: Different Preferences

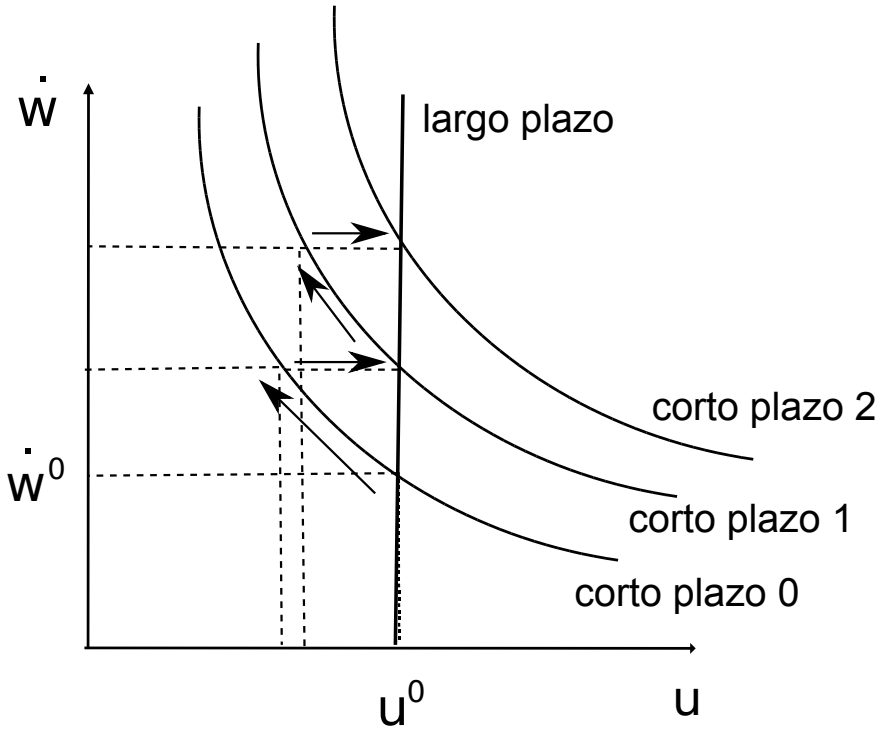
## Fleming-Corden model: Original Version

Monetary Union:

devaluation is impossible, $\dot{e} = 0 \Rightarrow$ inflation must be equalized in countries A and B



# Costs II: Different Preferences
## Phillips curve with rational expectations



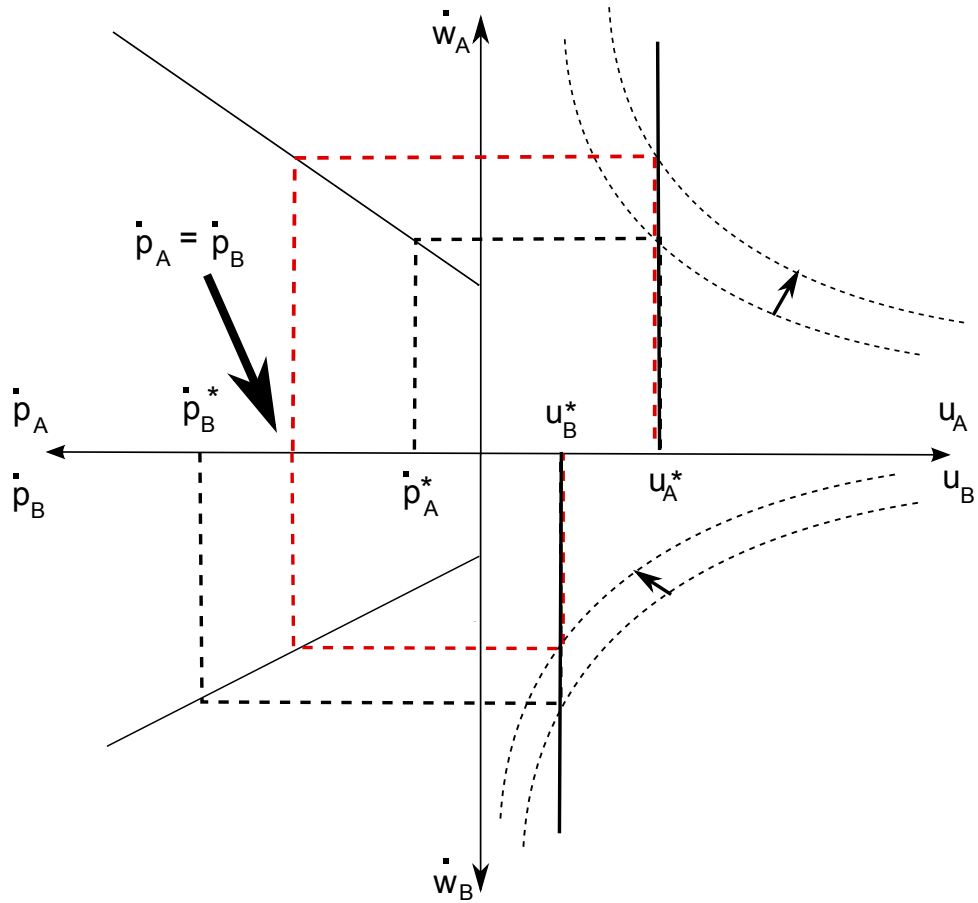

Phillips curve that assumes a natural unemployment rate characteristic of each country.
Under this NAIRU (non accelerating inflation rate of unemployment) model the long run unemployment rate is constant, so the Phillips curve is vertical (see next graph)
Implications of the change from normal Phillips curve to vertical:
1. Monetary integration will have no long-term effect on either partner's rate of unemployment since this will be fixed at the appropriate natural rate for each country
the Unions demands move the short run the Phillips curve
but expectations move on the long-run Phillips curve to vertical

# Costs II: different preferences

## Fleming-Corden model: modern version

inflation is not able to "buy" less unemployment;

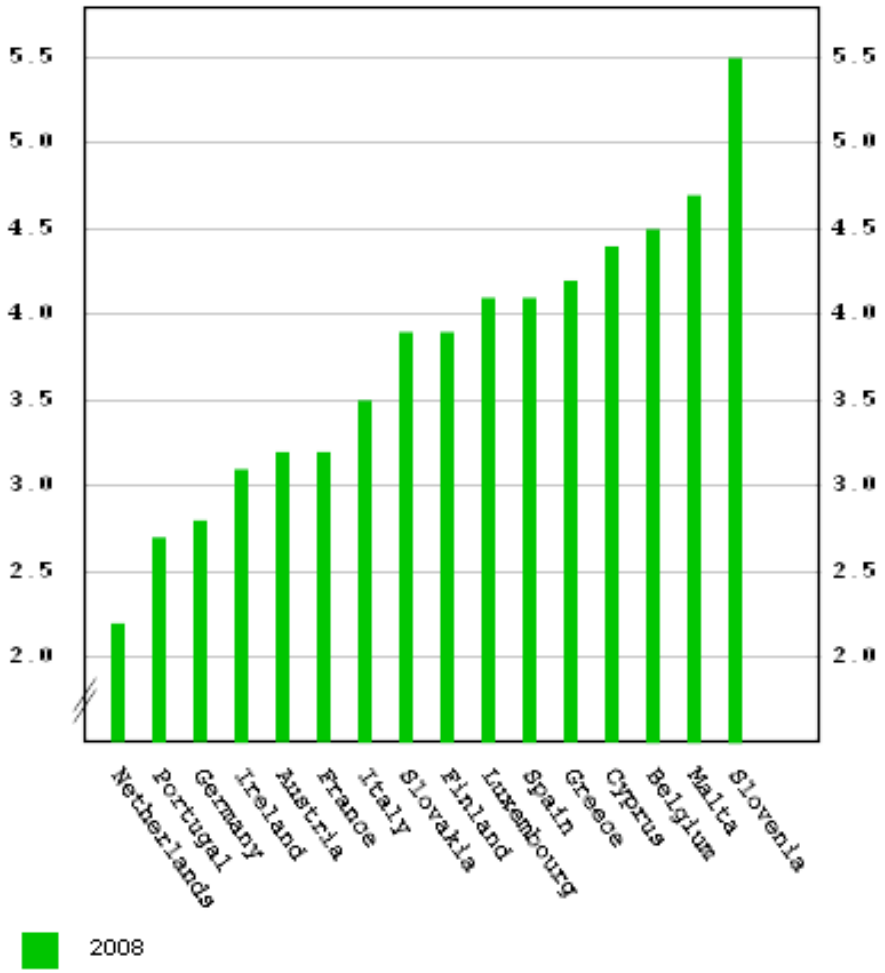
Monetary Union helps the country with relatively high inflation to reduce rate, with transitory unemployment increases



# Different inflation rates in the Eurozone

**Inflation rate**

Annual average rate of change in Harmonized Indices of Consumer Prices (HICPs)




**Source of Data:** Eurostat
**Last Update:** 10.03.2009

# Different inflation rates in the Eurozone

Are different inflation rates possible between Member States with different employment rates?

- internationally tradeable goods:

$$p_B = e\left(\frac{\$_B}{\$_A}\right) \cdot p_A \ , \quad \dot{e} = 0 \Rightarrow \dot{p}_B = \dot{p}_A$$

- Services, not tradable, less exposed to international competition $\Rightarrow$ price may be different.
  Suppose that the price of non traded goods is wage related $w_i$

# Different inflation rates in the unemployments

Inflation in the country $i$:

$$\pi_i = a\dot{p}_i + (1-a)\dot{w}_i$$

Different inflation rates, even though $\dot{p}_B = \dot{p}_A$ :

$$\pi_A - \pi_B = (1-a)(\dot{w}_A - \dot{w}_B) = (1-a)(\dot{q}_A - \dot{q}_B)$$

Higher productivity increases $\Rightarrow$ Higher wage increases
$\Rightarrow$ Higher inflation increases in the no-tradable sector
$\Rightarrow$ On average higher inflation, without creating imbalances

# Criteria for an Optimum Currency Area

- low probability of asymmetric shocks:
  - diversified output (asymmetric shocks do not affect the overall production) or
  - the production structure is similar in all participating countries (higher probability that shocks will be symmetric)
  - Open economies: The monetary union is not forgoing the availability of exchange rate variations relative to the outside world
  - The situation does not lead to surplus regions financing deficit regions indefinitely because no single region is likely to be in deficit or surplus permanently

# Criteria for an Optimum Currency Area

- Cost of adapting to asymmetric shocks are moderate:
  - labour mobility and flexible wages are alternative mechanismes of adaptation
- cooperation in the asymmetric shocks response:
  - fiscal transparency (fiscal transfers to counterbalance asymmetric shocks)
  - homogeneous preferences (e.g., low unemployment or low inflation?)
  - in practice there would never be a separation between the exchange-rate union and market integration
  - devaluation is nothing but a temporary adjustment device as the discussion of the monetary approach to the balance of payments has shown

# The Eurozone – An Optimum Currency Area?

Difficult to assess in practice. Criteria:

- Diversified output at national level or similar between countries production structures? ✓
- Are Member States open economies ? Is intra-European trade more important than trade with third countries? ✓
- Are asymmetric shocks frequent and relevant? Or are business cycle largely synchronized in Europe?
- Are preferences similar between countries with respect to monetary policy?
- Are there labour mobility and flexible wages? ↯
- Fiscal transferences implemented after 2011? ↯

# The Eurozone – An Optimum Currency Area?

These criteria are partially endogenous:
conditions can improve after the creation of a monetary union

- automatically
  - because of trade creation using the single currency
  - trade tends to synchronize business cycle
- by the political will (e.g.: after 2008 financial crisis)
  - reforms in labour markets
  - fiscal harmonization etc.

# The ECB "European Central Bank"

- In practice there would never be a separation between the exchange-rate union and market integration.
- Devaluation is nothing but a temporary adjustment device as the discussion of the monetary approach to the balance of payments has shown

videos de la página web del BCE estan en ingles y en Español
http://www.ecb.int/ecb/educational/movies/html/index.es.html

# Monetary Union in practice: The Maastricht Criteria

precondition for joining the €, they are intended to reflect the degree of economic convergence that has been achieved

- price stability
  - inflation rate $\leq$ average inflation of the three countries with lower rates $+1{,}5$ pp
- stable exchange rate
  - no devaluation and participation on the European Exchange Rate Mechanism without leaving bounds in the last two years
- long run interest rate
  - average interest rate $\leq$ average interest rate of the 3 countries with lower rate $+$ 2 pp
- sustainable public finances
  - public deficit $\leq 3\%$ of GDP or near 3% but decreasing, only overpassing exceptionally (under recessions)
  - public debt $\leq 60\%$ over GDP or approaching this bench mark

# Sustainabilty of public finance

Why the limits to the public deficit?

- public deficit increases capital demand,
  increases interest rates $\Rightarrow$ crowding-out of private investments
- public deficit generates incentives for inflation

Why limit to the public deficit to: $d_t = D_t/Y_t \leq 3\%$ of the GDP?

- public deficit = public debt for the next generations;
  acceptable if it increases growth rates (= next generations resources). $3\% \approx$ public investment

# Sustenaibilty of public finance criteria

Why limits the public debt to: $b_t = B_t / Y_t \leq 60\%$?

- is the maximum sustainable level of public debt with $d_t = 3\%$:

$$B_t = B_{t-1} + D_t$$

$$\frac{B_t}{Y_t} = \frac{B_{t-1}}{Y_{t-1}} \frac{Y_{t-1}}{Y_t} + \frac{D_t}{Y_t}$$

$$b_t = b_{t-1} \frac{1}{1 + g_t} + d_t$$

sustainable public debt means: $b_t = b_{t-1}$:

$$d_t = b_t \frac{g_t}{1 + g_t}$$

inflation target 2%, real expected growth 3%
$\Rightarrow$ nominal growth $g_t = 5\%$, $d_t = 0,03$
$\Rightarrow$ operating give us a value of: $b_t \approx 60\%$

# EMU in practice: the SGP

Objective:

- achieve sustained convergence of economic policies, in order to avoid disequilibria
- avoid that loose fiscal policy of one member state of the Eurozone increases the interest rates, implicating the other member countries (negative externality)

# EMU in practice: the SGP

Elements:

- preventive: annual reports of the ME mutual supervison and pressures, Commissions supervise national budgets
- correction of trespassing: public deficit must remain below 3% of GDP
  - recommendation to correct deficit in an agreed lag
  - initial sanction: no interest deposit for the first year, 0,2% of the GDP (fix component) + 0,1*($d_t$−3% GDP) (variable component)
  - after the first year: only variable component in an additional deposit
  - after two years without correction the deposit becomes an income of the EU budget (tikect, after a Council decision)

# EMU in practice: the SGP

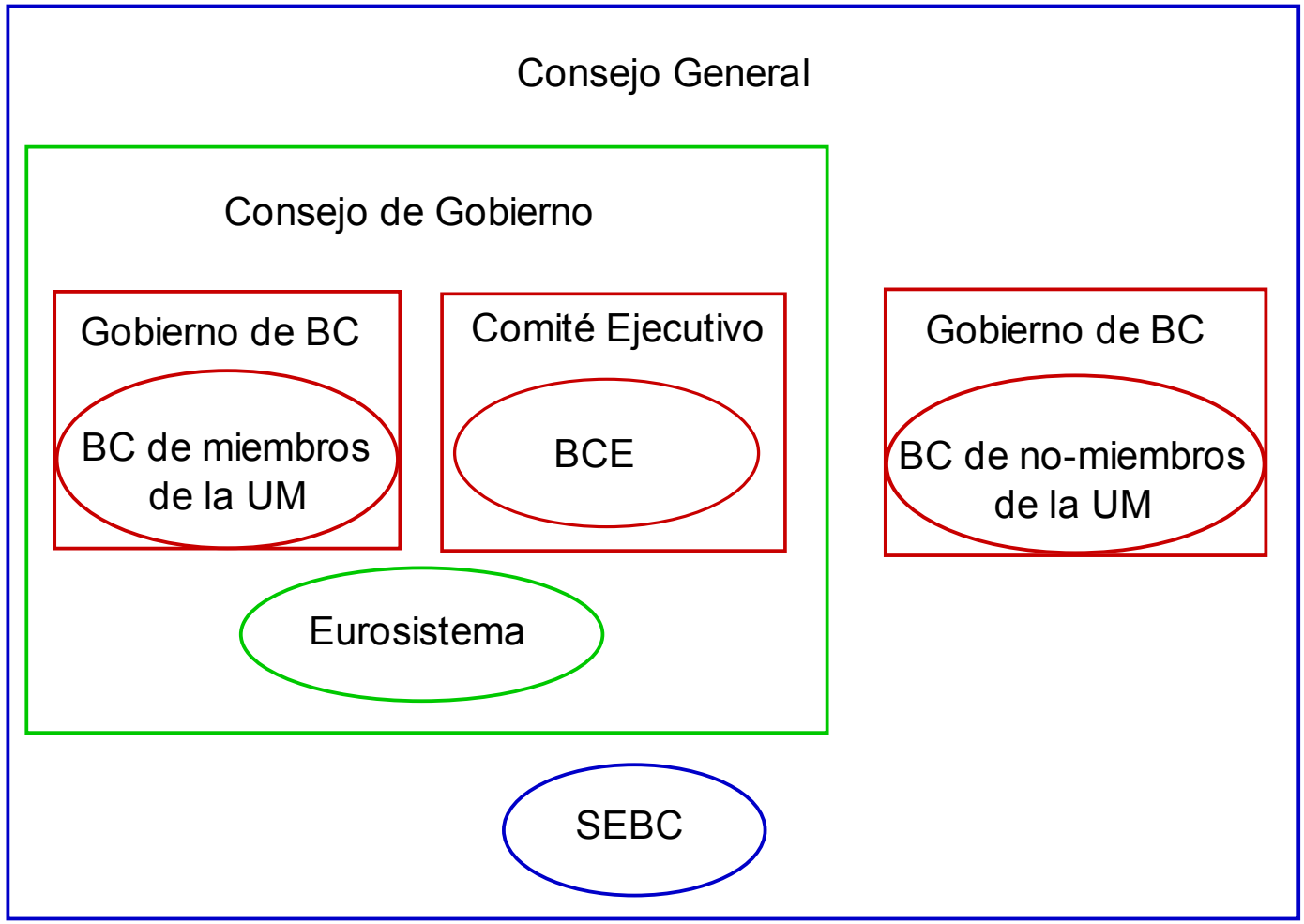
special circumstances: a deficit $> 3\%$ is allowed if

- rate of GDP growth decreases 2% or more in one year,
- rate of GDP growth decreases more than 0,75% in an exceptional and/or abruptly

SGP reform 2005: more flexibility / weakness

- wider and less precise definition of "exceptional circumstances"
- include to account for "other factors", e.g. investments in the Lisbon strategy targets, reunification expenses for Germany pensions reforms expenses, ...

# EMU in practice: The ECB and the ESCB



# EMU in practice: The ECB and the ESCB

Target of the Eurosystem:

- "The main objective of the ESBC is to support **price stability**", defined as approaching rates of inflation below, but close to 2%
- "Also collaborating in the general economic policies of employment and sustainable growth in the EU"

Politically independent:

- with the objective of preserving price stability
- may not national or regional institutions or national government
- may not grant credits to EU institutions or national public sectors
- Governing Council and other bodies with long term mandates and no renewable positions

# EMU in practice: The ECB and the ESCB

The functions of the ESCB/Eurosystem

- To define and implement the single monetary policy.
- To perform foreign currency transactions consistent with the established foreign exchange policy
- To hold and manage the official foreign currency reserves of Member States, notwithstanding the holding and management of the official working capital in foreign currency on behalf of their governments.
- To authorize the issue of banknotes in the euro area.
- To promote the proper functioning of the payment systems in the euro area.
- To contribute towards the proper management of the prudential supervision policies of the credit institutions and the stability of the financial system. The EU establishes that the European Council may entrust the ECB with specific tasks in this area, after consulting it.

# EMU in practice: The ECB and the ESCB

Strategy of the ESCB to control inflation:

- first pillar: to control M3 (interest rate like control variable) as long run inflation determinant.

$$M \cdot V = p \cdot Y \quad \Rightarrow \quad \hat{M} = \hat{p} + \hat{Y} - \hat{V}$$

  - objetive: inflation $\hat{p} = 2\%$
  - expected growth $\hat{Y}^e \approx 2$ a 2,5%
  - circulation speed decreasing $\hat{V}^e \approx$ -0,5 a -1%

  $\Rightarrow$ $\hat{M} =$ 4,5 a 5,5%

- second pillar: account for short run business cycle effects

# Reference

Prof. C. San Juan Reference:
A. M. El-Agraa. The European Union. Economics and Policies. Financial Times-Prentice Hall. 2004 (7Th. Edition) pp. 144-155