

When does it make sense (from an economic point of view) to join a monetary union?

Costs and Benefits



ROBERT MUNDELL
1932-2021

Nobel Prize 1999 for
his pioneering work in
monetary dynamics and
**optimum currency
areas (OCA).**

Robert Mundell: *A Theory of Optimum Currency Areas*, AER 1961

«...supposing that the Common Market countries proceed with their plans for economic union, **should these countries allow each national currency to fluctuate, or would a single currency area be preferable?**

.....

The problem can be posed in a general and more revealing way by defining **a currency area** as **a domain within which exchange rates are fixed** and asking:

What is the appropriate domain of a currency area?

It might seem at first that the question is purely academic since it hardly appears within the realm of political feasibility that national currencies would ever be abandoned in favor of any other arrangement.

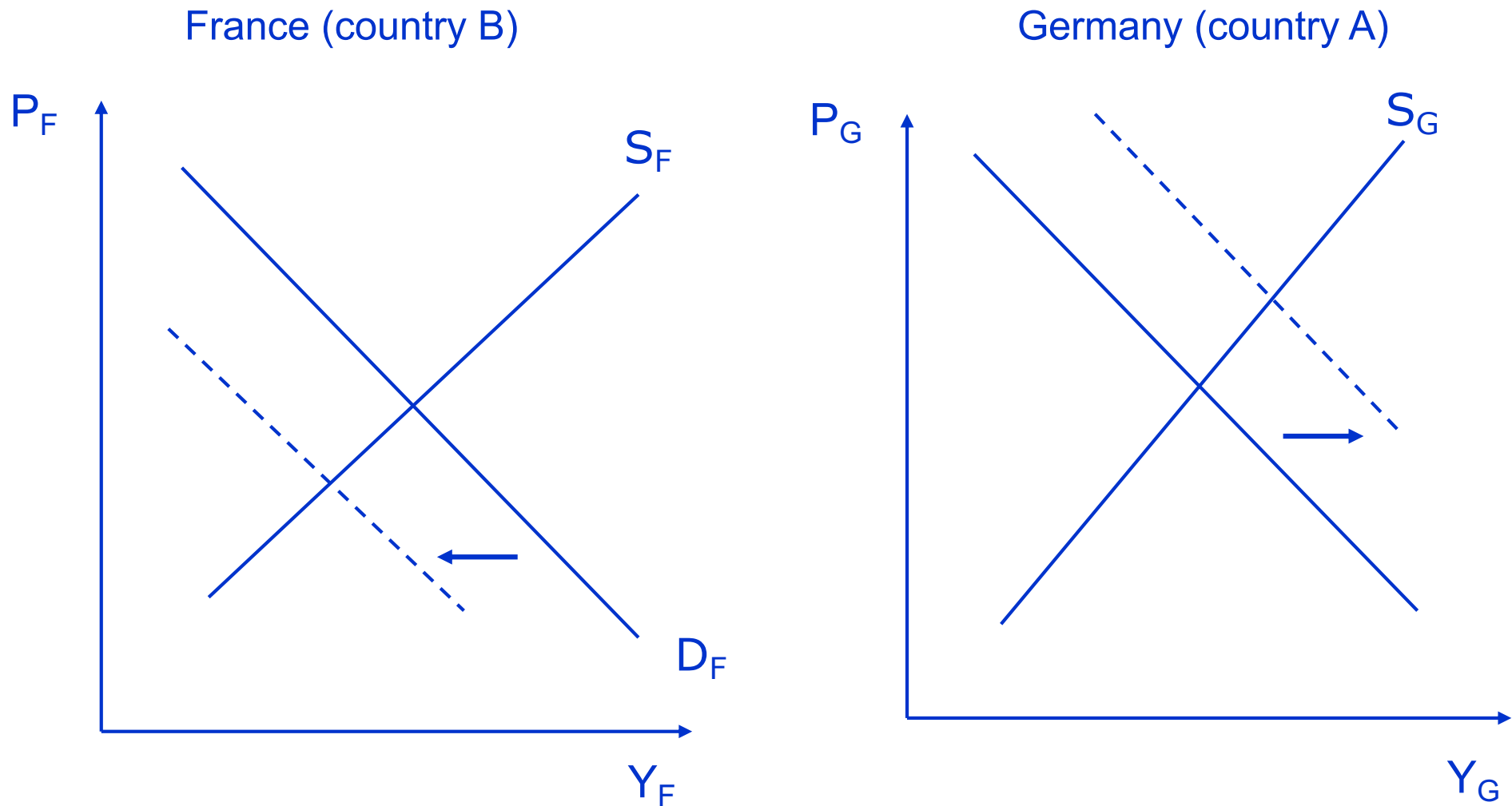
....[But] **certain parts of the world are undergoing processes of economic integration and disintegration**, new experiments are being made, and a conception of what constitutes an **optimum currency area** can clarify the meaning of these experiments.....

Shifts in demand (Mundell)

Analysis that follows is based on Mundell (1961)

- Assume two countries: France (B) and Germany (A)
- Asymmetric and permanent shock in demand
 - Decline in aggregate demand in France
 - Increase in aggregate demand in Germany
- We will analyze this shock in two regimes
 - The two countries form a monetary union
 - The countries are independent

An asymmetric demand shock hits France and Germany



- A: inflationary pressure; B: unemployment
 - Also: changes in income → public finances, balance of payments...
- A: rise in income and inflation
 - Increase in government revenues and decline in gov. expenses (e.g. less unemployment benefits) → gov. budget surplus.
 - External balance: rise in exports due to rise in demand and likely current account (CA) surplus
- B: drop in income and unemployment
 - budget deficit and likely CA deficit (twin deficits)

- How can country A and country B deal with this shock if they form a monetary union?
 - **Monetary policy**: expansionary? Restrictive?
 - If expansionary it will aggravate **inflation** in A but restore **full employment** in B
 - If restrictive it will aggravate unemployment in B but tame inflation in A

...Mundell (1961)

“...Indeed, the principal way in which the monetary policy is effective in correcting **full employment in the deficit region is by raising prices in the surplus region.**

Full employment thus imparts an inflationary bias to the multiregional economy or (more generally) to a currency area with common currency. ”

...Mundell (1961)

“...in a currency area comprising many regions and a **single currency**, **the pace of inflation is set by the willingness of central authorities to allow unemployment in deficit regions.**”

- How willing will be the Central Bank (CB) to allow unemployment in deficit countries vs inflation in surplus countries? (see next lectures on CB preferences – theory- and ECB objective as declared in the TFUE)
- Suppose the CB stays put; then, France cannot stimulate demand using monetary policy nor can Germany restrict aggregate demand using monetary policy
- Equilibrium is not restored by monetary policy

Fiscal policy

it is not ideal if shocks are permanent

1. The Union budget is **centralized**: income transfers from one country to another (inter-regional transfers).
 - However, if the shock is permanent → 'moral hazard' (opportunistic behaviour), with serious consequences → transfers should not be used
 - if the shock is transitory → **inter-regional transfers** may be a good solution (see next lectures: are EU shocks mainly transitory or permanent?)
2. If the Union budget is **not centralized**: automatic national stabilisers may be used. However:
 - **Automatic stabilizers** make sense only for transitory shocks
 - Even in that case, the space for fiscal manoeuvre may be too limited, given the fiscal rules, especially if public debt or deficit are already high. It may also be difficult to raise resources through the market → in some cases automatic stabilizers cannot work at all or are switched off (see later: role of financial investors).
 - In case shocks are permanent fiscal policy could determine increase in public debt (**see next lectures**)
 - Notice also: public debt implies **inter-generational transfers**

Alternative adjustment mechanism

First conclusion: in a monetary union, monetary and/or fiscal policy may not be effective.

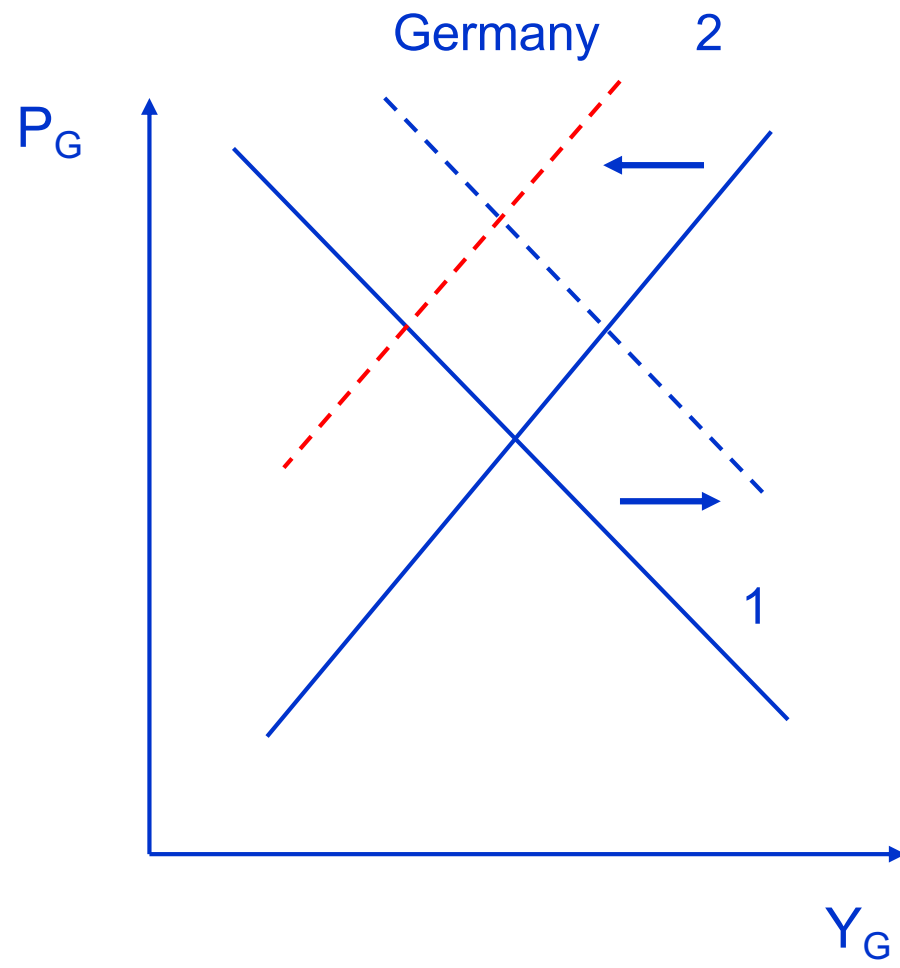
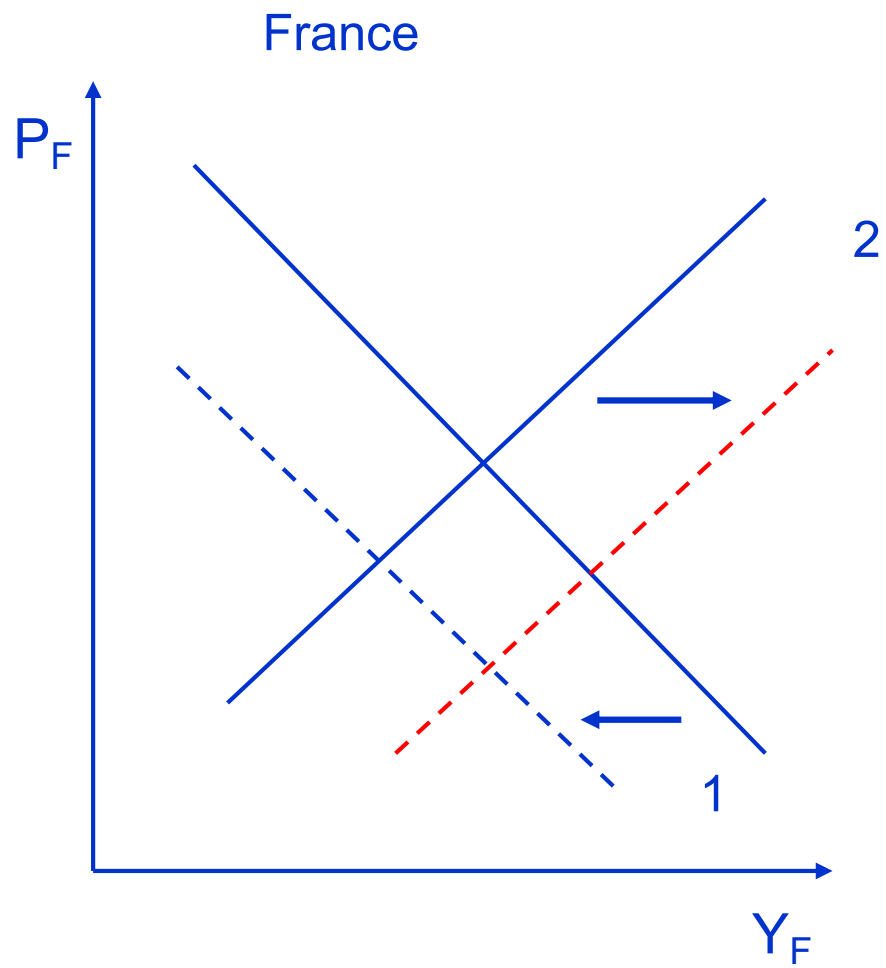
Are there **alternative** adjustment mechanisms that autonomously can bring the economies back to the equilibrium?

1. Wage flexibility

- where U increased W decline → aggregate supply curve for France shifts downwards
- where U declined W increase → aggregate supply curve for Germany shifts upwards

The wage change determines a change in prices –ceteris paribus- and a shift of supply curve (see picture)

- Wage flexibility → Price flexibility $\dot{p} = \dot{w} - \dot{q} + \Delta m$



Alternative adjustment mechanism

In addition, there are second order effects of the wage decline in France:

- France internal consumption and demand decline (the real wage W/P decline: W declines more than consumption prices $P \rightarrow W/P$ declines)
- But France competitiveness vs Germany increases
 - $E^R_F = P_F/P_G$
- Likewise, Germany competitiveness vs France declines
- Notice that both countries 'contribute' to the change in their relative competitiveness

To restore equilibrium, prices need to fall in France **and** increase in Germany.

But

Are wages and prices allowed to adjust? Are they sufficiently flexible?

- *Wages may be rigid downward (in country B) – minimum wages- or CB may fear inflationary pressure (in country A)*
- Indeed, Mundell warns that...

...from Mundell (1961)

“... if A tightens credit restrictions to **prevent prices from rising**, all the burden of adjustment is thrust onto country B;

what is needed is a reduction in B's **real income** and it must be accomplished by **a decline in B's output and employment.**

The policy of surplus countries in restraining prices therefore imparts a recessive tendency

”
...

Alternative adjustment mechanism

2. Labour mobility within the area (across countries)
 - French unemployed move to Germany (wages need not change)

Does labour mobility work in Europe?

Meade (1957) argued that the conditions for a common currency in Western Europe did not exist, especially because of the lack of labor mobility

In 1992, Blanchard, Dornbusch, Fischer, and Krugman took part in a panel discussion at MIT and agreed, that “a common European currency would have unfavourable economic repercussions.” Blanchard noted that “currency unification works in the US because labour can move between states. The labour mobility in Europe is negligible.”

Dao et al. (2013, vox.eu) say that although Europe has strengthened the adjustment mechanism based on labour mobility, especially during the 2008-9 recession, it is still not high enough.

Basso et al. (2019, vox.eu) The elasticity of labour supply in response to economic shocks is still lower in the euro area than in the US.

Lack of labour mobility may be an obstacle to labour market adjustments in the euro area.

Very limited mobility especially for low skilled workers

Main reason: social security systems

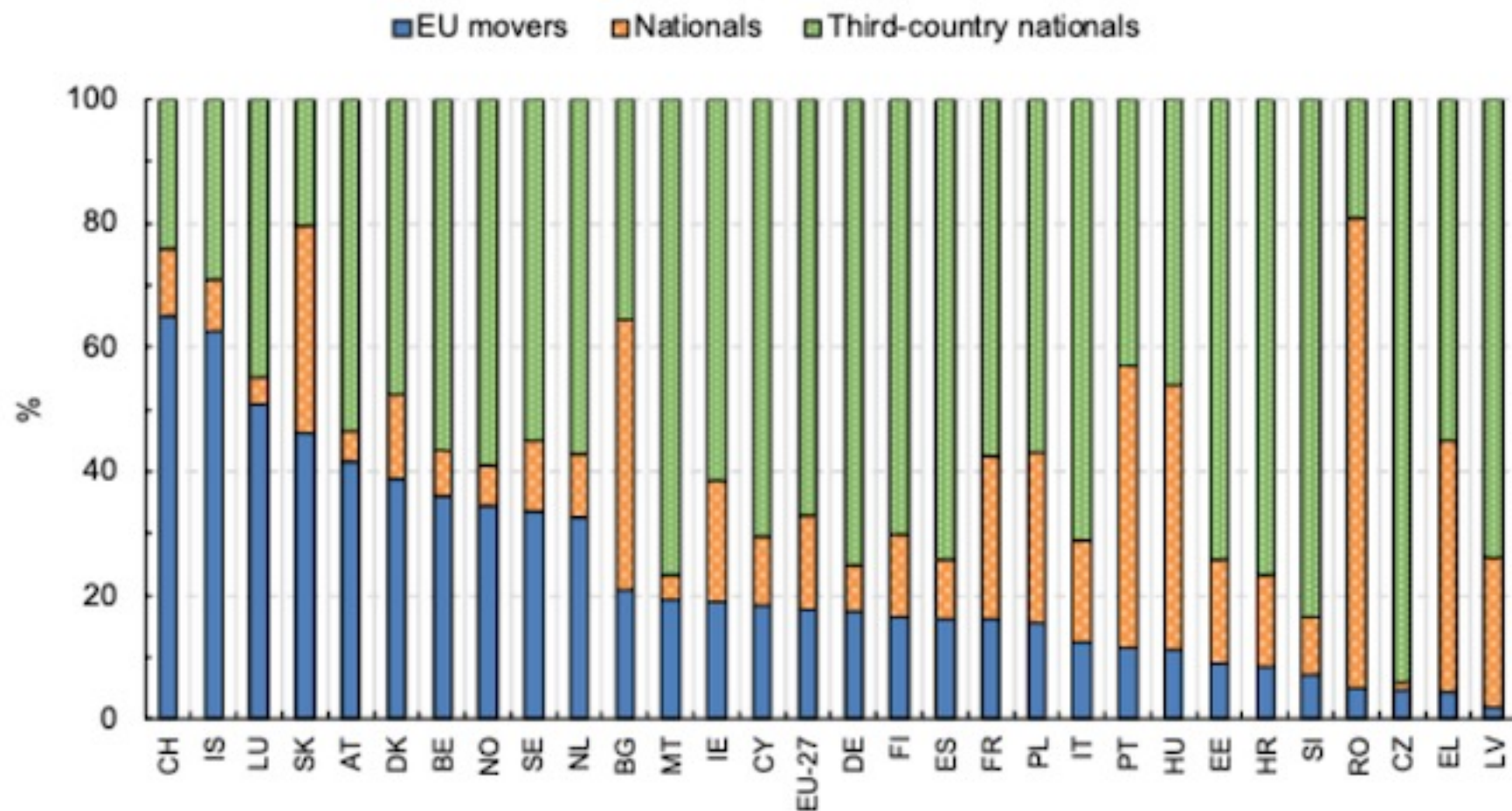
Other reasons: cultural differences, language

FACTS

EU 2024 ANNUAL REPORT ON INTRA-EU LABOUR MOBILITY

- The total number of EU citizens living in another EU or EFTA country has remained relatively stable over time: around 10 million working-age movers
- The number of third-country nationals is around 20 million and has increased by an average of 7% on average per year since 2019 (partly due to Russia's invasion of Ukraine)
- Romanians continue to account for the largest share of EU movers in 2024 (26%), followed by Poles (11%) and Italians (10%).
- Germany remains the top destination for EU movers in 2024 (3.2 million), followed by Spain, Switzerland and Italy, each with over 1 million movers.
- In 2024, 41% of working-age EU movers were aged 35-49, compared to an average of 34% for nationals. Also, 32% of working-age movers were aged 20-34, showing that working-age EU movers tend to be relatively young.

Figure 6: Composition of inflows of movers to EU and EFTA countries, 2022



Note: EFTA movers excluded due to low numbers. 2021 data used for Romania.

Source: EU Annual Report on Intra-EU Labour Mobility 2024

https://employment-social-affairs.ec.europa.eu/annual-report-intra-eu-labour-mobility-2024_en

First conclusion:

- In the event of an asymmetric and permanent demand shock, monetary union will be **costly**, if:
 - Wages and prices are not flexible
and/or
 - Labour is not sufficiently mobile
- If monetary policy is irresponsive, and automatic mechanisms are not effective, then the country that faced a negative shock needs to find a way to return to equilibrium → *internal devaluation* has sometimes been the policy (**see next lectures**)

Second regime: monetary independence

- What if France and Germany had maintained their own currencies and national central banks?
- Then, national interest rate and/or exchange rate could be used to cope with the shock.
- How?

How can the exchange rate or the interest rate be used to re-gain the equilibrium, i.e. to reduce unemployment in France and reduce inflation in Germany?

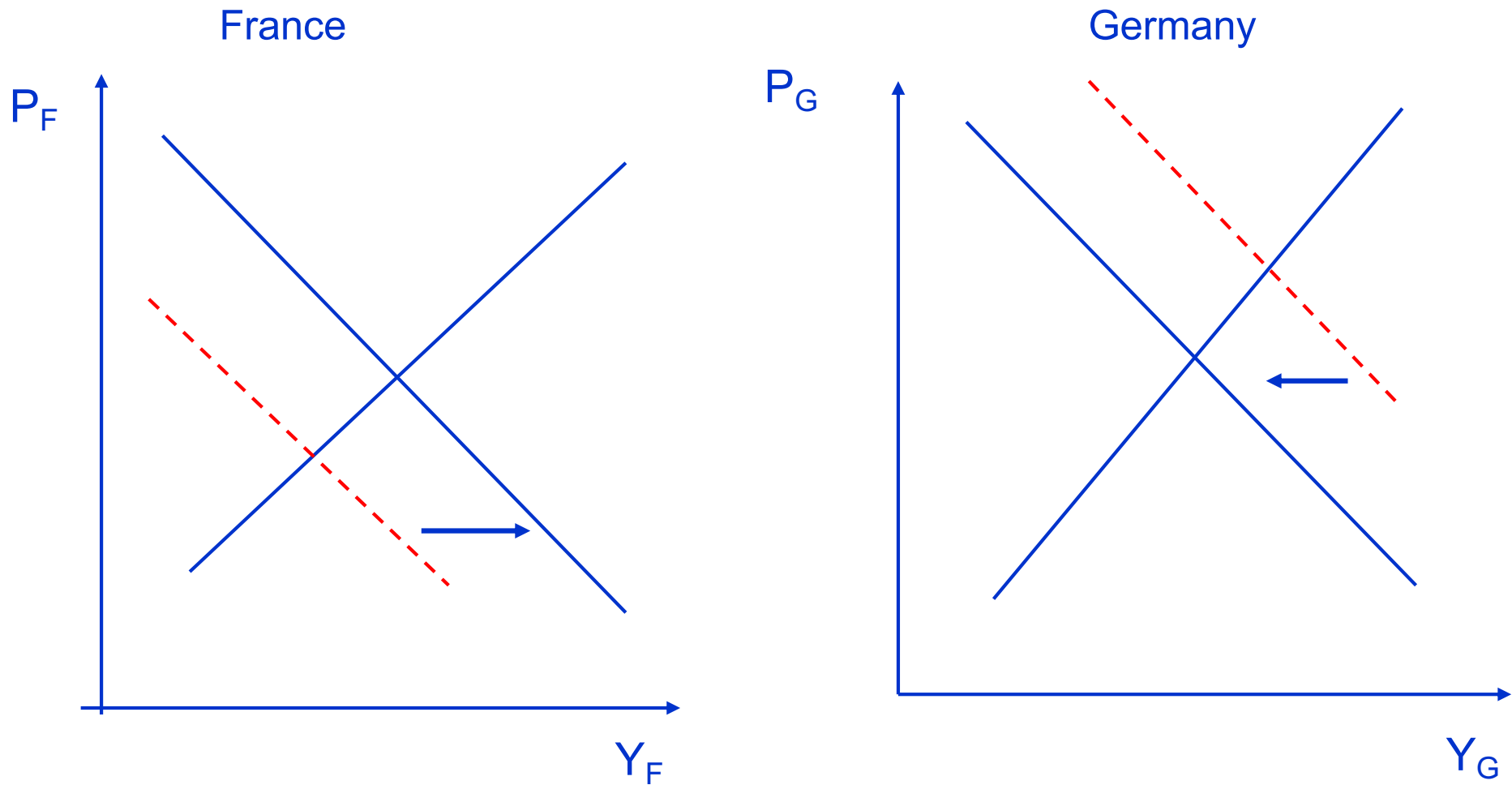
France

- Depreciation/devaluation of the exchange rate or decline of the interest rate (expansionary monetary policy)

Germany

- Appreciation/revaluation of the exchange rate or increase of the interest rate (restrictive monetary policy)

Effects of monetary expansion in France and monetary restriction in Germany



- Thus, when asymmetric shocks occur and there are a lot of rigidities,
- Being in a monetary union may be more costly than not being in a monetary union
- Next, we will ask **how effective is the exchange rate policy** pursued by independent countries in the face of a permanent demand shock.
- **Note:** if asymmetric **shocks are not at the country level** but across countries (e.g. related to across-the-border production sectors) or regard only a region of the country, then the disequilibrium would not be so easily resolved by changes in the exchange rates

Arguments that qualify the benefits associated to independent monetary policies

Critique to the view that independent countries are better fitted to face asymmetric shocks.

Two main arguments:

1. Is national monetary policy (including exchange rate policy) **effective**?
2. Is national monetary policy **credible**?
3. How **likely** are asymmetric shocks? How relevant are the differences between countries that could give rise an asymmetric permanent shock?

Are national monetary policies effective to correct for asymmetric disturbances?

Assume a permanent negative demand shock.

The independent country depreciates or devalues

What are the effects?

- given prices, competitiveness increases (AD rises)
- **import prices rise** → prices rise
- possible important '*second round effects*' through so-called 'wage resistance', i.e. calls for wage increases to secure stable '*consumption wages*' or *wage purchasing power* (the ratio of nominal wage to consumer price index)

The effect of depreciation on consumption wage

Consumer prices P_C : weighted geometric mean of domestic (P_E) and import prices (P_M):

$$P_C = P_E^{1-s} \cdot P_M^s$$

s =share of imports in basket (Relatively large in small open economies which make them more vulnerable to exchange rate variability)

$$P_C = P_E^{1-s} \cdot (P_{M\$} / E)^s$$

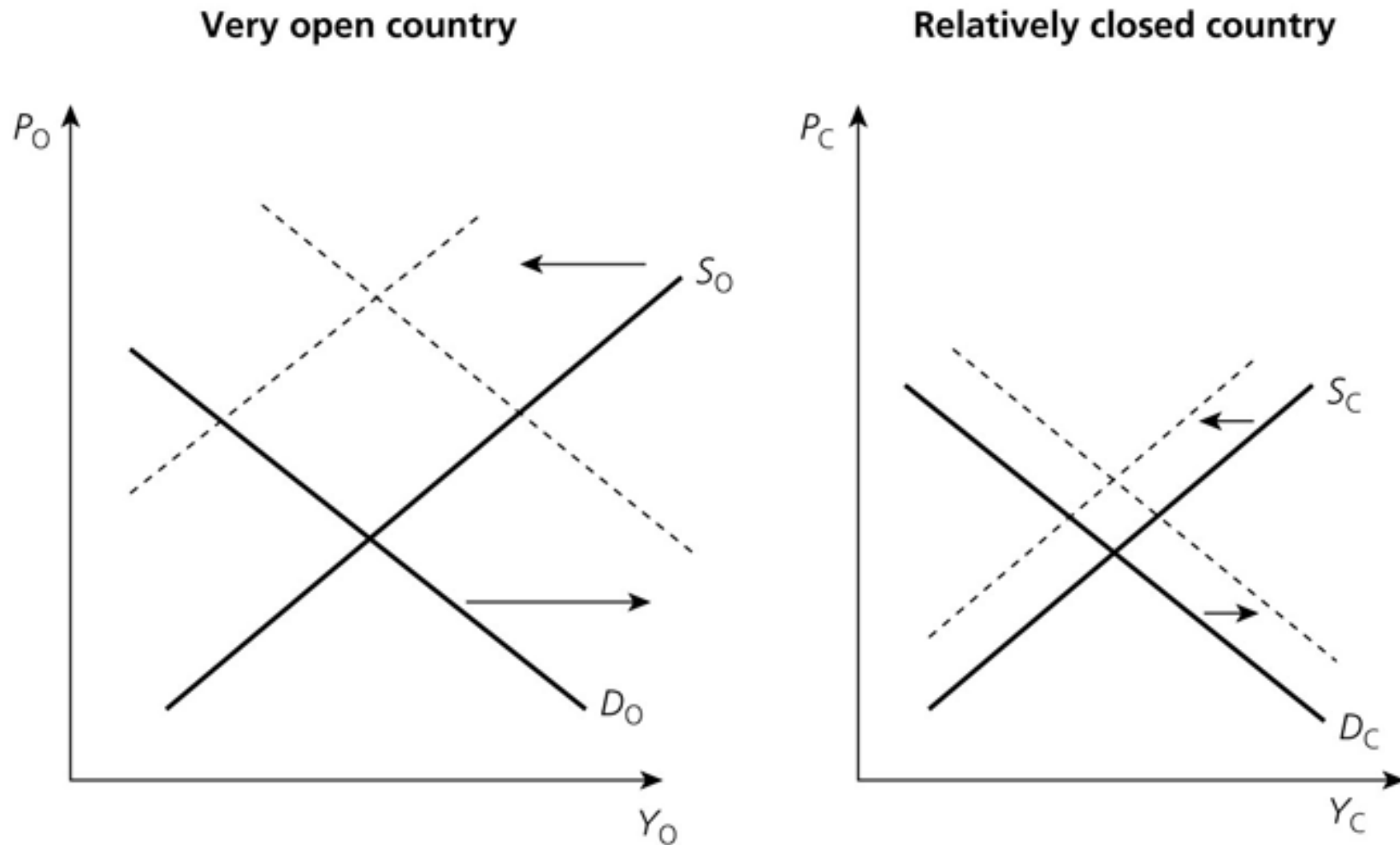
Take logs and then the time derivative

$$\dot{p}_C = (1 - s) \dot{p}_E + s(\dot{p}_{M\$} - \dot{e})$$

Effect on consumer price inflation through $\dot{e}$

Note: a depreciation is a reduction of E , hence $\dot{e} < 0$

The larger s (share of imports in the basket) the larger P_C , ceteris paribus



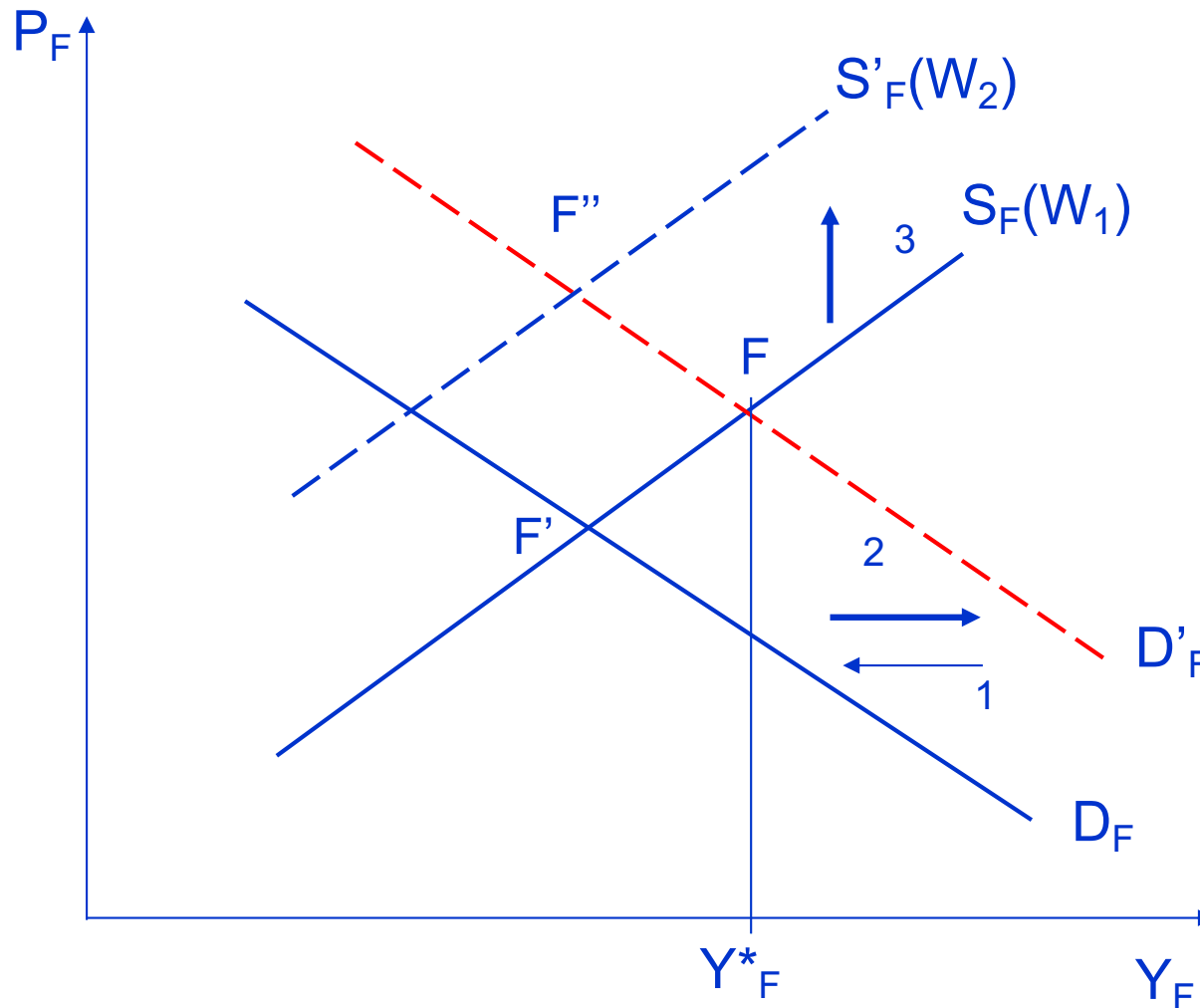
For European countries, the evidence shows that the erosion of the initial advantage in competitiveness obtained from the depreciation, is very large.

A further note

- As consumer prices rise due to depreciation, consumption (real) wage W/P_C declines (as W is initially fixed) and this implies a loss in wage purchasing power
- Historically, important role of trade unions and wage bargaining to resist loss in consumption wage
- **Indexation mechanisms** may come into force creating, however, a vicious circle that leads to higher inflation
- Example of devaluation of the Italian Lira in September 1992 and abolition of wage indexation (scala mobile) in July 1992

Hystorical case

Adjustment through monetary policy (devaluation or depreciation) in independent countries



Say F is the initial equilibrium

After a negative demand shock that moves the economy from F to F' (1) demand returns to F through depreciation (2). Prices rise and real consumption wage declines

Workers will want to be compensated by higher nominal wage

Supply curve then shifts upwards (3) thereby reducing output effect of monetary expansion (F'')

Effectiveness of monetary (exchange rate) policy is reduced

In the medium run, the use of exchange rate is ineffective: it does not increase competitiveness permanently but it increases inflation

Adjustment through internal devaluation in a MU member countries

Recall that competitiveness of a member country vis à vis another member countries is simply the price ratio:

$$E_R = P_E^B / P_E^A$$

A MU member country can react to asymmetric negative shock through cut in wages in order to reduce prices and increase competitiveness (**internal devaluation**). Prices of domestic goods decline.

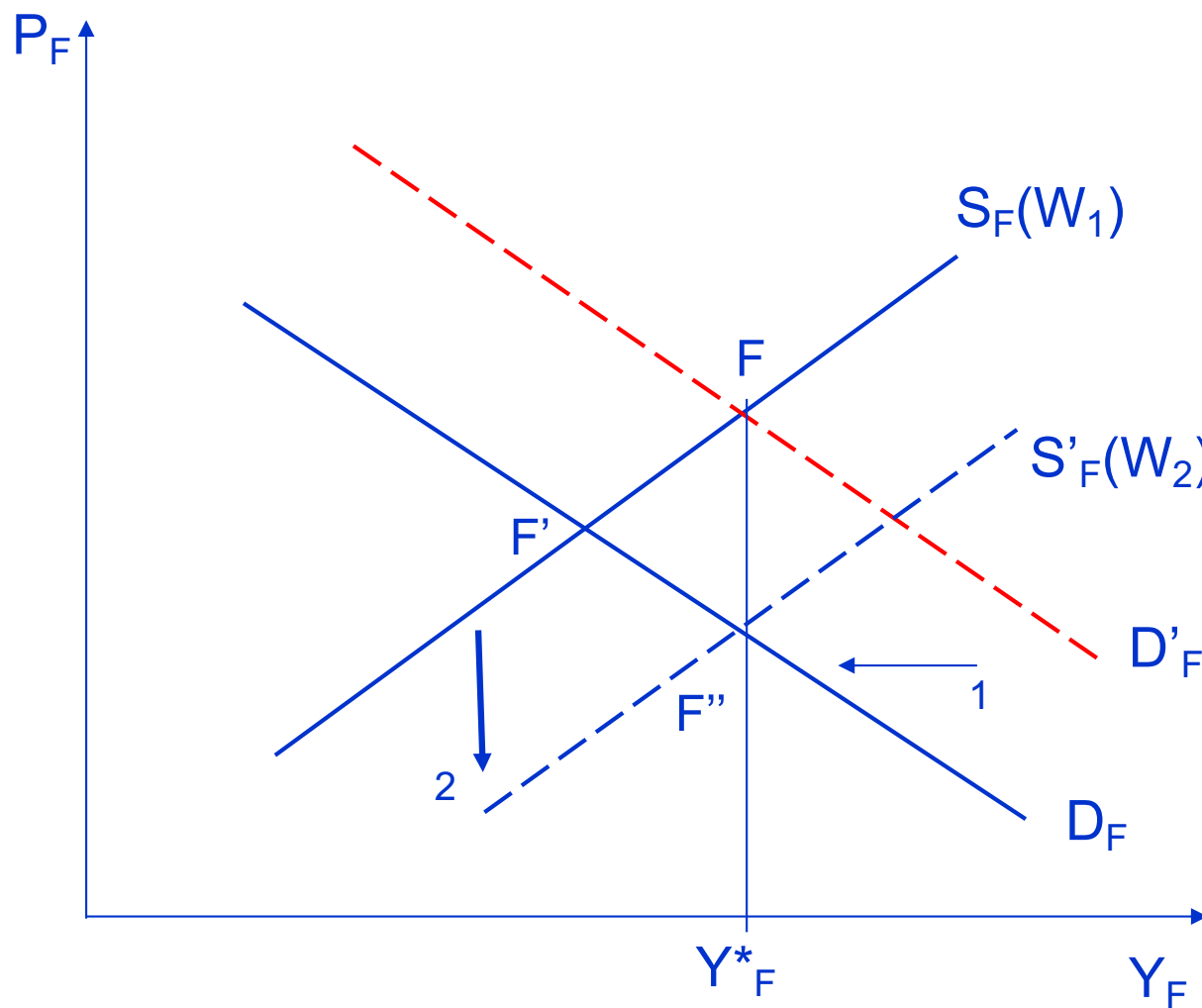
With internal devaluation consumption wage (W/P_C) bears two effects:

- Nominal wage cuts (W declines)
- Consumption prices P_C decline but only through domestic prices
- Consumption wage declines (the nominal wage cut is higher than the fall in consumer prices) → likely wage resistance

Remember: effect on consumer prices through domestic prices

$$\dot{p}_c = (1 - s) \dot{p} + s(\dot{p}_{M\$} - \dot{e})$$

Adjustment through internal devaluation



Say F is the initial equilibrium

A negative demand shock that takes the economy from F to F' (1)

To gain competitiveness cuts in wages are pursued

Supply shifts downwards (2) and the new equilibrium moves along the demand curve to F''

Cut in wages have brought about an increase in export-led demand

Differences between the two policies

- For both **internal devaluations** (in MU) and **exchange rate devaluations** (in stand-alone countries) to **have long-lasting effects**, consumption wages must decline in the country that suffered a negative shock
- Difference in how the consumption (or real) wage decline comes about:
 - Main cuts of W in member countries pursuing internal devaluation
 - Essentially rise in P_c in independent countries pursuing exchange rate depreciation
- Nominal wage cuts are socially and politically difficult to implement
- Internal devaluation is typically more deflationary and leads to larger output losses
- ‘Money illusion’ does not work with wage cuts
- Monetary expansion can sometimes make the dynamics towards new equilibrium easier and less costly than alternative policy strategies.

Further notes

On internal devaluation

In principle, in a monetary union competitiveness of a member state vis à vis another one (or others) could also be obtained by letting the price of member states in good economic condition rise

$$E_R = P^B_E / P^A_E$$

E_R may decline by letting P^A_E rise

(a point we have read in Mundell's original article)

Historically, devaluations are much more widespread than internal devaluations and the latter are more widespread during periods of high inflation or when the inflation of the countries towards which we want to recover competitiveness is higher.

(Shambaugh, "The Euro's three crises" Brookings Papers on Economic Activity, 2012)

Example (from Shambaugh, 2012)

Suppose that 1/3 of the EZ countries (Periphery countries) have to recover competitiveness through an internal devaluation, which we define as a 3% reduction in their prices compared to the prices of the rest of the EZ (Core countries)

$$\dot{p}_{\text{Periph}} - \dot{p}_{\text{core}} = -0.03$$

Suppose:

$$\dot{p}_{\text{Periph}} = 1\% \text{ e } \dot{p}_{\text{core}} = 2.5\%$$

Then, inflation in EZ is: $1/3 \cdot 0.01 + 2/3 \cdot 0.025 = 0.02$ (objective of ECB).

However, the inflation differential between peripheral and core countries in this case is only 1.5 p.p., too limited to ensure recovery of competitiveness.

How can you get an inflation differential close to 3 p.p. it?

$$\dot{p}_{\text{Periph}} = 0\% \text{ e } \dot{p}_{\text{core}} = 3\% \quad (\text{inflation in EZ} = 2\%)$$

Or, for example:

$$\dot{p}_{\text{Periph}} = 1\% \text{ e } \dot{p}_{\text{core}} = 4\% \quad (\text{inflation in EZ} = 3\%)$$

Higher inflation in the monetary area (in the short run) facilitates the adjustment of relative prices

Hystorical case

Greece internal devaluation

Issue: can permanent shocks be corrected by (repeated) exchange rate depreciations?

Since the exchange rate adjustment has only temporary effects, in face of a permanent shock or a structural weakness, can an independent country repeat the depreciation once its effect is exhausted?

$$\dot{p}_c = (1 - s) \dot{p} + s(\dot{p}_{M\$} - \dot{e})$$

Consumer price inflation increases

What kind of reactions are likely to take place?

- We expect workers to prevent or resist a decline in wages purchasing power
→ They will ask for wage increases
- Wage increases will impact on producers' costs → output price increases → inflation rises
- The benefit of competitiveness is lost
- Further depreciation
- Further rise in prices and inflation may eventually impact on inflation expectations

Price inflation and inflation expectations

$$\begin{cases} \dot{w} = a - bu + \dot{p}^e & \longleftarrow \text{Expectation augmented Phillips curve} \\ \dot{p} = \dot{w} - \dot{q} + \Delta m & \longleftarrow \text{Price determination} \end{cases}$$

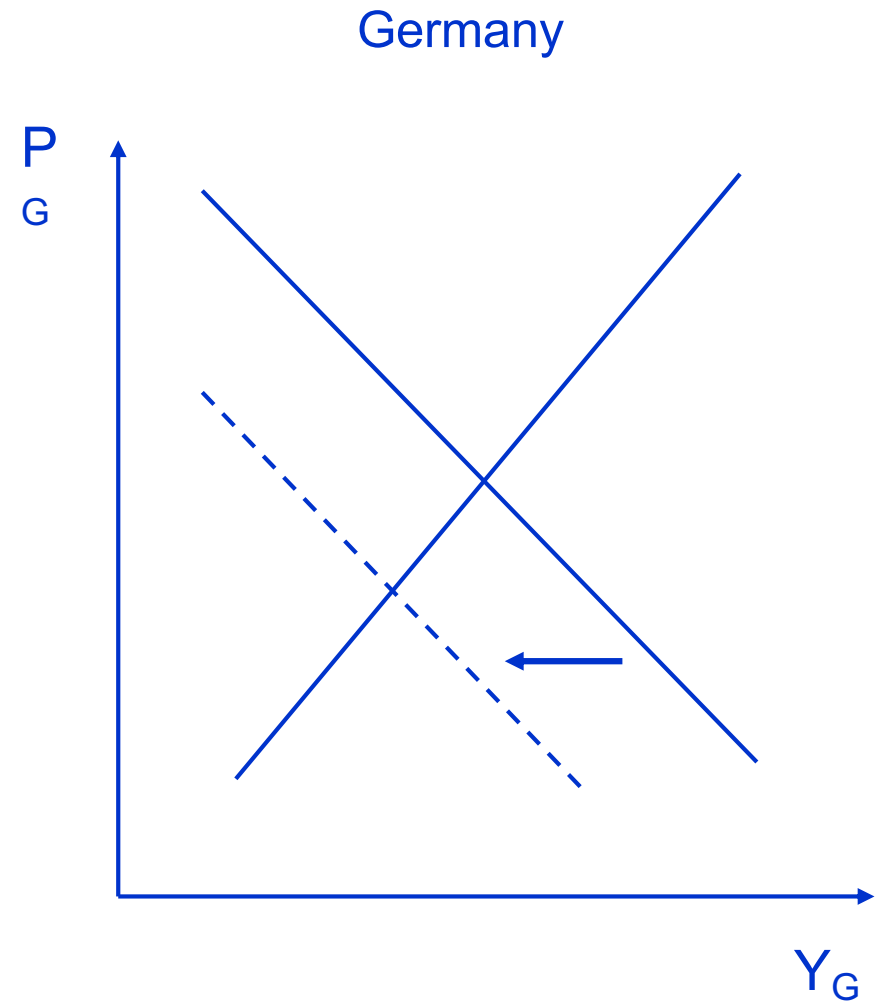
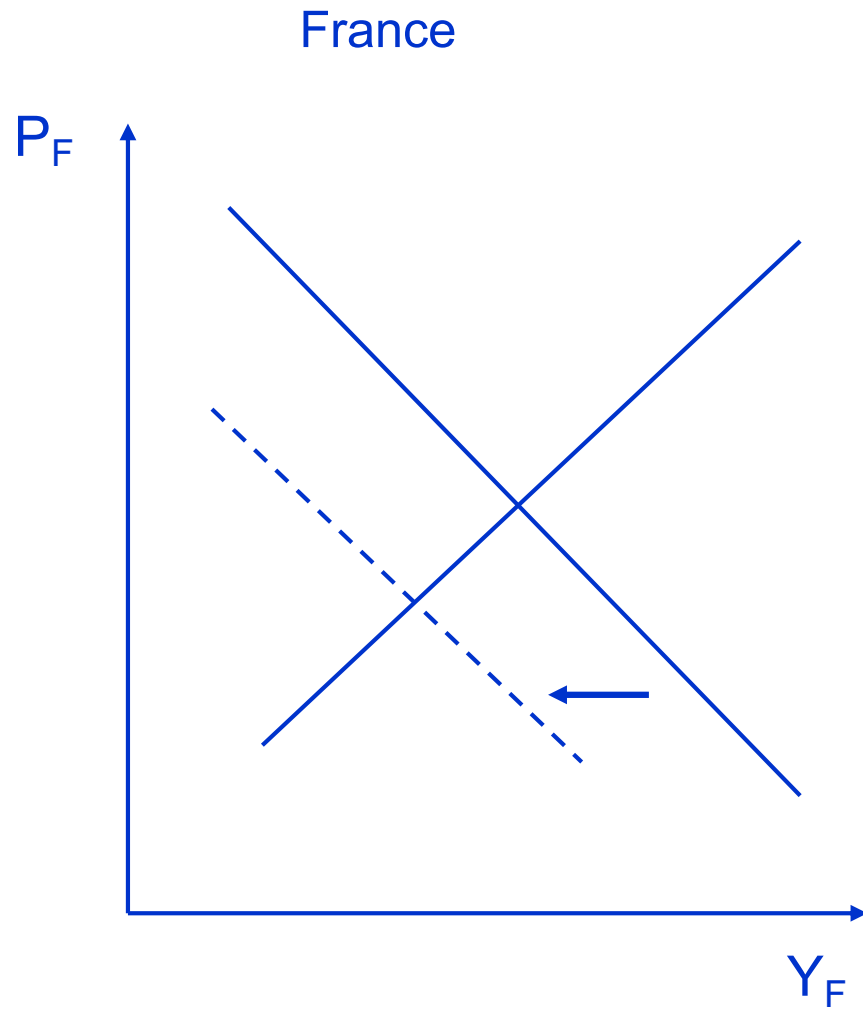
$$\dot{p} = (a - \dot{q} + \Delta m) - bu + \dot{p}^e$$

- **Vicious circle** between price inflation and wage inflation; this may trigger an impact on inflation expectations that become rooted in the economy.
- Repeated depreciations then increase inflation and eventually inflation expectations
- Frequent use of depreciation in pre-euro Europe

Can a **monetary policy** that aims at price stability but follows this policy be **credible**?

The case of symmetric shocks

Symmetric shocks



Symmetric and asymmetric shocks compared

- When shocks are asymmetric
 - Monetary union creates costs compared to monetary independence
 - Common central bank cannot easily deal with these shocks
- When shocks are symmetric:
 - Monetary union becomes more attractive compared to monetary independence
 - Common central bank can deal with these shocks
 - Monetary independence can instead lead to conflicts and ‘**beggar-thy-neighbour**’ policies
 - one country attempts to remedy its economic problems by means that worsen the economic problems of other countries.
- In the face of symmetric shocks, using the exchange rate as policy instrument ‘solves’ the problem of one country by worsening the economic condition of the other country.

Review questions

- How do you measure a country's competitiveness?
- If the nominal exchange rate depreciates, competitiveness is sure to improve. Do you agree with this statement?
- What are the automatic adjustment mechanisms that should work in a MU, according to Mundell?
- What kind of shocks could be satisfactorily solved by an exchange rate policy?
- How do you expect consumption real wages to change after a devaluation?
- In the presence of a centralized budget, would it make sense to manage permanent asymmetric shocks with fiscal policy? Why?
- What are competitive devaluations? When were they widespread in Europe? do you expect them to be effective?
- When do countries adopt so-called internal devaluations?