European monetary union and the theory of optimum currency area

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Agenda for today

• What is a monetary union?
• When should we create a monetary union? → theory of OCA
• History of the European Monetary Union
• Is EMU an OCA?
### Stages of economic integration

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**DIFFERENT STAGES OF ECONOMIC INTEGRATION**
Monetary union

- Monetary union - an agreement between two or more states creating a **single currency area**.
- A monetary union involves the **irrevocable fixation of the exchange rates** of the national currencies existing before the formation of a monetary union.
- Historically, monetary unions have been formed on the basis of **both economic and political considerations**.
- A monetary union is accompanied by setting up a single monetary policy and establishing a **single central bank** or by making the already existing national central banks the integrative units of a common central banking system.
- **Usually**, a monetary union involves the introduction of common banknotes and coins.
Theory of an optimum currency area (OCA), 1961

Robert Mundell

The Bank of Sweden Prize in Economic Sciences in Memory of Alfred Nobel 1999

“for his analysis of monetary and fiscal policy under different exchange rate regimes and his analysis of optimum currency areas”
Optimum currency area

- An **optimum currency area (OCA)** can be defined as the **optimal geographical area** for a single currency, or for several currencies, whose exchange rates are irrevocably pegged.
- Countries forming a currency area **expect benefits to exceed costs**
- The single currency, or the pegged currencies, fluctuate jointly vis-à-vis other currencies.
- The borders of an OCA are defined by the sovereign countries choosing to participate in the currency area.
Theory of Optimum Currency Areas

- The main message of the theory of optimum currency areas argues that the optimal area for a system of fixed exchange rates, or a common currency, is one that is highly economically integrated.

- Economic integration means free flows of:
  - goods and services (trade)
  - financial capital (assets) and physical capital
  - workers/labor (immigration and emigration)
Benefits of joining monetary union

- Fixed exchange rates have costs and benefits for countries deciding whether to adhere to them.

- **Benefits of fixed exchange rates or a monetary union** are that they avoid the uncertainty and international transaction costs that floating exchange rates involve.

- Benefits (generally of microeconomic nature):
  - Reduction of transaction costs
  - Reduction of exchange rate risk
  - Bigger price transparency (you can immediately see that the same product in one country costs 1200 €, and in another - 1500 €)

- The gain that would occur if a country joined a fixed exchange rate system is called the **monetary efficiency gain**.
Determinants of benefits of joining monetary union

• In general, as the degree of economic integration increases, the monetary efficiency gain increases.

• Why?

• Compare monetary union between Germany and France and Germany and Madagascar!
The *GG* Schedule

- **Monetary efficiency gain for the joining country**
- **Degree of economic integration between the joining country and the exchange rate area**
The costs of joining a monetary union

- **Short-run costs** (introduction of new coins and banknotes, menu costs)
- Joining a MU means renouncing an instrument of economic policy; i.e. **each country give up an independent monetary policy**
- Why? Recall Mundell-Fleming model for a fixed-exchange rate system
- **Use of the exchange rate** as a policy instrument is not possible any more
- But is it really a problem?
- As long as general economic situation is identical (similar) in all countries, it is not a problem
- It is a threat in the event of an **asymmetric macroeconomic shock**
Asymmetric macroeconomic shock

• What is the basic problem when we eliminate independent national economic policies?
• We still have one common monetary policy!
• When we have similar problems in all MU countries economy (e.g. unemployment increases everywhere) → there is simple solution: expansive fiscal and monetary policy
• But what to do if in one country we observe a growth of unemployment and, while in the other country we observe a growth of inflation? What monetary policy should we run?
• So structural differences between countries could make it costly to give up these instruments
Mundell’s model: a brief description

• 2 countries (France and Germany) form a monetary union
• Starting point: asymmetric shock in aggregate demand (change in consumers’ preferences)
• Upward movement of an aggregate demand curve in DE and downward movement of a demand curve in FR
• Result: output declines and unemployment increases in FR and opposite happens in DE
• Crucial question: are there mechanisms leading automatically back to equilibrium? What policy should we implement?
The adjustment mechanisms

- Automatic adjustment through **wage flexibility**: wages decrease in FR and increase in DE (shifting the supply curves) (and causing second-order effects of wage and price changes on aggregate demand)
- Automatic adjustment through **labour mobility**: unemployed workers move from FR to DE (removing pressures on labour markets: no change in wages)
- Price adjustments: **inflation in DE**, make French goods more competitive
- Adjustment through **devaluation/revaluation** in case FR and DE are not possible in MU
- Problems with a single monetary policy – it is impossible to apply different policies in FR and DE
Stability losses from shared currency

• In a country that has its own currency, automatic changes in the exchange value of its currency can act as a cushion in rough times

• If there’s a sudden decrease in the demand for ‘Made in USA’ goods, the US dollar automatically becomes cheaper, thereby boosting net exports and cushioning the fall in demand

• Without a currency of its own, this flexibility would not be available to a country
Why economic integration is a key prerequisite for MU?

The loss of the automatic adjustment of flexible exchange rates is not as great if **goods and services markets are integrated**.

- Financial assets or labour will migrate to areas with higher returns or wages if economic integration is extensive, so that the economic loss is not as great.

- Smaller risk of asymmetric shocks (trade acts as a channel of transmission of the business cycle)

- How about structural differences: does trade make economic structures more or less similar? Paul Krugman’s view versus European Commission’s view?

- **Conclusion: higher degree of integration makes the costs of common currency smaller**
Stability losses from shared currency

- When countries share a common currency, the stability losses are *smaller* the more economically interconnected the countries are:
  - If they trade a lot in goods and services
  - If they borrow from and lend to each other on a large scale
  - If there is a great deal of migration among them
  - If they have a unified government budget
The Loss Schedule

Economic stability loss for the joining country

Degree of economic integration between the joining country and the exchange rate area
OCA: Deciding When to Peg the Exchange Rate

Gains and losses for the joining country

Losses exceed gains

Gains exceed losses

Degree of economic integration between the joining country and the exchange rate area
Theory of Optimum Currency Areas

• There could be an event that causes the frequency or magnitude of changes in aggregate demand to increase for a country.

• If so, the economic stability loss would be greater for every measure of economic integration between a new member and members of a fixed exchange rate system.

• How would this affect the critical point where the monetary efficiency gain equals economic stability loss?
An Increase in Output Market Variability

Gains and losses for the joining country

Degree of economic integration between the joining country and the exchange rate area
When is a common currency a good idea?

• To summarize, countries/states would have large efficiency gains and small stability losses from having a common currency if they are highly integrated:
  – Lots of trade in goods and services
  – Lots of borrowing and lending
  – Lots of migration
  – A unified government budget

• In these cases, a common currency can be a blessing
When is a common currency a good idea?

• The 50 states of the USA satisfy most or all the requirements for benefiting from having a common currency
  – Lots of trade in goods and services
  – Lots of borrowing and lending
  – Lots of migration
  – A unified government budget
Cost – Benefit Analysis: Conclusions

Costs
- Loss of exchange rate as adjustment mechanism
- Loss of monetary policy independence
- (Partial) loss of fiscal independence
- Conversion costs

Benefits
- Elimination of exchange rate risk
- More price transparency
- Price stability
- More trade
- Lower interest rates
- Stronger position in international policy negotiations
OCA properties (critieria)

• **Price and wage flexibility.** When nominal prices and wages are flexible between and within countries contemplating a single currency, the transition towards adjustment following a shock is less likely to be associated with sustained unemployment in one country and/or inflation in another.

• **Mobility of factors of production including labour.** High factor market integration within a group of partner countries can reduce the need to alter real factor prices and the nominal exchange rate between countries in response to disturbances. Such mobility is likely to be modest in the very short run and could display its effect over time. Mobility, however, may increase in the medium and long run, easing the adjustment to permanent shocks.
OCA properties (criteria)

- **Financial market integration.** Financial integration may cushion temporary adverse disturbances through capital inflows – e.g. by borrowing from surplus areas. Countries can mitigate the effects of asymmetric shocks by diversifying their income sources.
  - This can operate through *income insurance when a country’s residents hold claims to dividends, interests and rental revenue from* other countries or income transfers (common budget!)

- **The diversification in production and consumption.** High diversification in production and consumption, and correspondingly in imports and exports, dilutes the possible impact of shocks specific to any particular sector.
OCA properties (criteria)

- **Similarities of inflation rates.** External imbalances can arise also from persistent differences in national inflation rates resulting from differences in: structural developments, labour market, economic policies, and social preferences.

- **Fiscal integration.** Countries sharing a supranational fiscal transfer system to redistribute funds to a member country affected by an adverse asymmetric shock would also be facilitated in the adjustment to such shocks and might require less nominal exchange rate adjustments.

- **Political integration.** The political will to integrate is regarded by some as among the most important condition for sharing a single currency. Political will fosters compliance with joint commitments, sustains cooperation on various economic policies, and encourages more institutional linkages.
Endogenous OCA

• The hypothesis of an „endogenous OCA”
• By studying the effects of several monetary unions that occurred in the past, Andrew Rose and Jeffrey Frankel (see Rose (2000 and 2004) and Frankel and Rose (1997 and 2001)) showed that monetary integration leads to a very significant deepening of reciprocal trade.
Endogenous OCA

• **Endogenous OCA** (Frankel and Rose, 1998): in general, potential members of a monetary union would be expected to meet the OCA criteria better ex post than ex ante.

• Therefore, it makes sense to apply the standard ex ante OCA criteria somewhat less stringently.

• If a country comes close but does not quite fully meet the criteria ex ante, it should likely go ahead and join a currency union since the odds are high that it would satisfy the criteria ex post.
Trade and OCA

• The work on currency unions by Andy Rose found huge effects; his initial estimates suggested a doubling or tripling of trade from joining a currency union [Rose, Lockwood, and Quah (2000)].

• Later, Baldwin (2006) reported that the initial intra trade effect of euro, adoption of a common currency by large countries, was only five to ten percent with the caution that the figure may change with the new data.
Trade and OCA

• Rose and Stanley (2005) study trade effects using meta-regression analysis in which they evaluate 34 previous studies.
• They report **overall positive trade effects**, some very large, in the interval 30-90%.
• Adjusting for publication bias they arrive at a lower estimate, 20-80%, but still indeed very large.
• They acknowledge that their analysis has weaknesses
• They believe, however, that their results are valid, but their extent might be limited
Endogenous OCA

• As Coeure (2004) argues “the endogenous OCA” has been at the very heart of the political debate on EMU”. 
The long story of European currency integration

- **1952**: European Community of Carbon and Steel
  - A common market in the mining and metallurgy sectors: free flow of goods, services, labour and capital
- **1957**: European Economic Community and Euroatom → the Common Market
- **1968**: customs union
- **Geographic Enlargements**: The UK, Ireland, Greece, Spain, Portugal, Austria, Finland, Sweden, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, Slovenia, Malta, Cyprus, Romania, Bulgaria, Croatia
  - Plan to create a monetary union by 1980
- **Currency crisis**: 1971/1973
- **The oil crisis of 1973**
- "Snake in the tunnel" mechanism (ERM): the exchange rate could deviate by +/- 2.25%
Why the EU?

- Countries that established the EU and EMS had several goals

1. To enhance Europe’s **power in international affairs**: as a union of countries, the EU could represent more economic and political power in the world.

2. To make Europe a **unified market**: a large market with free trade, free flows of financial assets, and free migration of people—in addition to fixed exchange rates or a common currency—was believed to foster economic growth and economic well-being.

3. To make Europe **politically stable and peaceful** (!!!!).
European Monetary System (EMS)

- The **European Monetary System (EMS)** was initiated in 1979, by an arrangement of the Member States of the European Economic Community (EEC) to foster closer monetary policy co-operation between the Central Banks to manage intra-community exchange rates and finance exchange market interventions.

- The EMS was setup to adjust exchange rate, (both the nominal and the real exchange rate) in order to establish closer monetary cooperation.

- The aim was to foster closer monetary cooperation and lead to a zone of monetary stability which was commencement in 1979 and worked until 1992; after that, the European monetary policy replaced the EMU.

- European Monetary System and attribution policy existed from 1 March 1979 and worked until at the year 1999 where exchange rates for Euro area countries were fixed by Euro in the new policy of EMU.
The euro

• The euro was launched on **1 January 1999**, when it became the currency of more than 300 million people in Europe.

• For the first three years it was an invisible currency, only used for accounting purposes, e.g. in electronic payments. Euro cash was not introduced until **1 January 2002**, when it replaced, at fixed conversion rates, the banknotes and coins of the national currencies.
The Maastricht Treaty

• The euro was established by the provisions in the 1992 Maastricht Treaty.

• In the Maastricht Treaty, the United Kingdom and Denmark were granted exemptions per their request from moving to the stage of monetary union which would result in the introduction of the euro.
The Maastricht Treaty requires that members that want to **enter** the economic and monetary union

1. attain exchange rate stability defined by the ERM before adopting the euro.

2. attain price stability: a maximum inflation rate of 1.5% above the average of the three lowest national inflation rates among EU members.

3. maintain a restrictive fiscal policy:
   - a maximum ratio of government deficit to GDP of 3%.
   - a maximum ratio of government debt to GDP of 60%.
Stability and Growth Pact

• The Maastricht criteria were amended by the Stability and Growth Pact

• The purpose of the pact was to ensure that fiscal discipline would be maintained and enforced in the EMU

• The Pact was a limited success (at best)
Members of the Euro Zone

- Presently, 19 countries have adopted the euro
Is the EU an Optimum Currency Area?

• If the EU/EMS/economic and monetary union can be expected to benefit members, we expect that its members have a high degree of economic integration:
  – large trade volumes as a fraction of GDP
  – a large amount of foreign financial investment and foreign direct investment relative to total investment
  – a large amount of migration across borders as a fraction of total labor force
Is the EU an Optimum Currency Area?

- Regional migration is not extensive in the EU.
- Europe has many languages and cultures, which hinder migration and labor mobility.
- Unions and regulations also impede labor movements between industries and countries.
- Differences of U.S. unemployment rates across regions are smaller and less persistent than differences of national unemployment rates in the EU, indicating a lack of EU labor mobility.
Is the EU an Optimum Currency Area?

- Deviations from the law of one price also occur in many EU markets.
  - If EU markets were greatly integrated, then the (currency-adjusted) prices of goods and services should be nearly the same across markets.
Other Considerations for an EMU

• The *structure of the economies* in the EU’s economic and monetary union is important for determining how members respond to aggregate demand shocks.

  – The economies of EU members are similar in the sense that there is a high volume of *intra-industry trade* relative to the total volume.

  – They are different in the sense that Northern European countries have *high levels of physical capital per worker and more skilled labor*, compared with Southern European countries.
Is EMU and OCA?

– Krugman & Obstfeld: „Europe is not an optimum currency area. Therefore, asymmetric economic developments within different countries of the euro zone - developments that might well call for different national interest rates under a regime of individual national currencies - will remain hard to handle through common monetary policy”
Other Considerations for an EMU

• The *amount of transfers* among the EU members may also affect how EU economies respond to aggregate demand shocks.

  – Fiscal payments between countries in the EU’s federal system, or *fiscal federalism*, may help offset the economic stability loss from joining an economic and monetary union.

  – But relative to interregional transfers in the U.S., little fiscal federalism occurs among EU members.