

International Monetary Systems

- *These slides draw on Husted/Melvin: International Economics; and Krugman/Obstfeld/Melitz: International Economics; adapted by Guido Baldi.*

Preview

- Gold standard era 1870–1914
- International monetary system during interwar period 1918–1939
- Bretton Woods system of fixed exchange rates 1944–1973

Preview

- Collapse of the Bretton Woods system
- Arguments for floating exchange rates
- Macroeconomic interdependence under a floating exchange rate
- Foreign exchange markets since 1973
- The euro
- The theory of optimal currency areas

The Gold Standard: 1880–1914

- Under a **gold standard**, currencies are valued in terms of a gold equivalent, or mint parity price. An ounce of gold was worth \$20.67.
- Since each currency is defined in terms of its gold value, all currencies are linked in a **fixed exchange rate system**.
- Each participating country must be willing and ready to buy and sell gold to anyone at the fixed price.

Gold Standard (cont.)

- Gold is used as a monetary standard because it is a homogenous good, easily storable, portable, and divisible into standardized units, such as ounces. Another important feature of gold is that governments cannot easily increase its supply.
- A gold standard is a **commodity money standard**.

Gold Standard (cont.)

- A money standard based on a commodity such as gold with a relatively fixed supply will lead to long run price stability. This is because a country's supply of money is limited by its supply of gold.

Macroeconomic Policy Under the Gold Standard

- **Price-specie-flow mechanism** is the adjustment of prices as gold (“specie”) flows into or out of a country, causing an adjustment in the flow of goods.
 - An inflow of gold tends to inflate prices.
 - An outflow of gold tends to deflate prices.
 - If a domestic country has a current account surplus in excess of the nonreserve financial account, gold earned from exports flows into the country—raising prices in that country and lowering prices in foreign countries.
 - Goods from the domestic country become expensive and goods from foreign countries become cheap, reducing the current account surplus of the domestic country and the deficits of the foreign countries.

Macroeconomic Policy Under the Gold Standard (cont.)

- Thus, price-specie-flow mechanism of the gold standard could automatically reduce current account surpluses and deficits, achieving a measure of external balance for all countries.

Interwar Years: 1918–1939

- The gold standard was stopped in 1914 due to war, but after 1918 it was attempted again.
 - The U.S. reinstated the gold standard from 1919 to 1933 at \$20.67 per ounce and from 1934 to 1944 at \$35.00 per ounce (a devaluation of the dollar).
 - The U.K. reinstated the gold standard from 1925 to 1931.
- But countries that adhered to the gold standard for the longest time, without devaluing their currencies, suffered most from reduced output and employment during the 1930s.

Bretton Woods System 1944–1973

- In July 1944, 44 countries met in Bretton Woods, NH, to design the Bretton Woods system:
 - a fixed exchange rate against the U.S. dollar and a fixed dollar price of gold (\$35 per ounce).
- They also established other institutions:
 1. The International Monetary Fund
 2. The World Bank
 3. General Agreement on Trade and Tariffs (GATT), the predecessor to the World Trade Organization (WTO).

International Monetary Fund

- The IMF was constructed to lend to countries with persistent balance of payments deficits (or current account deficits), and to approve of devaluations.
 - Loans were made from a fund paid for by members in gold and currencies.
 - Each country had a quota, which determined its contribution to the fund and the maximum amount it could borrow.
 - Large loans were made conditional on the supervision of domestic policies by the IMF: **IMF conditionality**.
 - Devaluations could occur if the IMF determined that the economy was experiencing a “fundamental disequilibrium.”

International Monetary Fund (cont.)

- Due to borrowing and occasional devaluations, the IMF was believed to give countries enough flexibility to attain an external balance, yet allow them to maintain an internal balance and stable exchange rates.
 - The volatility of exchange rates during 1918–1939, caused by devaluations and the vagaries of the gold standard, was viewed as a source of economic instability.

Bretton Woods System

- In order to avoid sudden changes in the financial account (possibly causing a balance of payments crisis), countries in the Bretton Woods system often prevented flows of financial assets across countries.
- Yet they encouraged flows of goods and services because of the view that trade benefits all economies.
 - Currencies were gradually made convertible (exchangeable) between member countries to encourage trade in goods and services valued in different currencies.

U.S. External Balance Problems Under Bretton Woods

- The collapse of the Bretton Woods system was caused primarily by imbalances of the U.S. during the 1960s and 1970s.
- Another problem was that as foreign economies grew, their need for official international reserves to maintain fixed exchange rates grew as well.
- But this rate of growth was faster than the growth rate of the gold reserves that central banks held.
 - Supply of gold from new discoveries was growing slowly.
 - Holding dollar-denominated assets was the alternative.
- At some point, dollar-denominated assets held by foreign central banks would be greater than the amount of gold held by the Federal Reserve.

U.S. External Balance Problems under Bretton Woods (cont.)

- The Federal Reserve would eventually not have enough gold: foreigners would *lose confidence* in the ability of the Federal Reserve to maintain the fixed price of gold at \$35/ounce, and therefore would rush to redeem their dollar assets before the gold ran out.
 - This problem is similar to what any central bank may face when it tries to maintain a fixed exchange rate.
 - If markets perceive that the central bank does not have enough official international reserve assets to maintain a fixed rate, a balance of payments crisis is inevitable.

Collapse of the Bretton Woods System

- The Bretton Woods system collapsed in 1973 because central banks were unwilling to continue to buy overvalued dollar-denominated assets and to sell undervalued foreign currency-denominated assets.
- In 1973, central banks thought they would temporarily stop trading in the foreign exchange market and would let exchange rates adjust to supply and demand, and then would reimpose fixed exchange rates soon.
- But no new global system of fixed rates was started again.

Case for Floating Exchange Rates

1. Monetary policy autonomy

- Without a need to trade currency in foreign exchange markets, central banks are more free to influence the domestic money supply, interest rates, and inflation.
- Central banks can more freely react to changes in aggregate demand, output, and prices in order to achieve internal balance.

Case for Floating Exchange Rates (cont.)

2. Automatic stabilization

- Flexible exchange rates change the prices of a country's products and help reduce "fundamental disequilibria."
- Flexible exchange rates would automatically adjust to stabilize high or low aggregate demand and output, thereby keeping output closer to its normal level and also stabilizing price changes in the long run.

Case for Floating Exchange Rates (cont.)

- Fixed exchange rates cannot survive for long in a world with divergent macroeconomic policies and other changes that affect national aggregate demand and national income differently.

Types of Exchange Rate Arrangements

- **Crawling peg**—the rate is adjusted periodically in small amounts.
- **Crawling band**—the rate is maintained within fluctuation margins around a central rate which is adjusted periodically.
- **Managed floating**—the central bank intervenes in the foreign exchange market with no pre-announced path for the exchange rate.
- **Independently floating**—the rate is market-determined.

Types of XR Arrangements (cont.)

- **No separate legal tender**— another country's currency circulates as legal tender.
- **Currency board**—a fixed rate is established by legislative commitment to exchange domestic currency for foreign currency at a fixed rate.
- **Other conventional pegged arrangement**—the rate is fixed against a major currency or market basket of currencies.
- **Horizontal band**—the rate fluctuates around a fixed central target rate.

TABLE 19.2 Exchange Rate Regime and Monetary Policy Framework

Exchange rate arrangement (number of countries)	Exchange rate anchor				Monetary aggregate target (22)	Inflation-targeting framework (43)	Other ¹ (12)
	U.S. dollar (66)	Euro (27)	Composite (15)	Other (7)			
Exchange arrangement with no separate legal tender (10 countries)	Ecuador El Salvador Marshall Islands Micronesia, Fed. States of	Palau Panama Timor-Leste	Montenegro San Marino	Kiribati			
Currency board arrangement (13 countries)	Antigua and Barbuda ² Djibouti Dominica ² Grenada ² Hong Kong SAR St. Kitts and Nevis ²	St. Lucia ² St. Vincent and the Grenadines ²	Bosnia and Herzegovina Bulgaria Estonia ³ Lithuania ³	Brunei Darussalam			
Other conventional pegged arrangement (68 countries)	Angola Argentina Aruba Bahamas, The Bahrain Bangladesh Barbados Belarus Belize Eritrea Guyana Honduras Jordan Kazakhstan Lebanon Malawi Maldives Mongolia Netherlands Antilles	Seychelles Sierra Leone Solomon Islands Sri Lanka Suriname Tajikistan Trinidad and Tobago Turkmenistan United Arab Emirates Venezuela, Rep. Bolivariana de Vietnam Yemen, Rep. of Zimbabwe	Benin ⁴ Burkina Faso ⁴ Cameroon ⁵ Cape Verde Central African Rep. ⁵ Chad ⁵ Comoros Congo, Rep. of ⁵ Côte d'Ivoire ⁴ Croatia Denmark ³ Equatorial Guinea ⁵ Gabon ⁵ Guinea-Bissau ⁴ Latvia ³ Macedonia, FYR Mali ⁴ Niger ⁴	Fiji Kuwait Libya Morocco Russian Federation Samoa Tunisia	Bhutan Lesotho Namibia Nepal Swaziland	Argentina Malawi Rwanda Sierra Leone	

TABLE 19.2 Exchange Rate Regime and Monetary Policy Framework (*cont.*)

Exchange rate arrangement (number of countries)	Exchange rate anchor				Monetary aggregate target (22)	Inflation-targeting framework (43)	Other ¹ (12)
	U.S. dollar (66)	Euro (27)	Composite (15)	Other (7)			
	Oman Qatar Rwanda Saudi Arabia	Senegal ⁴ Togo ⁴					
Pegged exchange rate within horizontal bands (3 countries)		Slovak Rep. ³	Syria Tonga				
Crawling peg (8 countries)	Bolivia China Ethiopia	Iraq Nicaragua Uzbekistan	Botswana Iran, I.R. of				
Crawling band (2 countries)	Costa Rica		Azerbaijan				
Managed floating with no predetermined path for the exchange rate (44 countries)	Cambodia Kyrgyz Rep. Lao P.D.R. Liberia Mauritania Mauritius Myanmar Ukraine		Algeria Singapore Vanuatu		Afghanistan, I.R. of Burundi Gambia, The Georgia Guinea Haiti Jamaica Kenya Madagascar Moldova Mozambique Nigeria Papua New Guinea São Tomé and Príncipe Sudan Tanzania Uganda	Armenia ⁶ Colombia Ghana Guatemala Indonesia Peru Romania Serbia ⁶ Uruguay	Dominican Rep. Egypt India Malaysia Pakistan Paraguay Thailand

(Continued)

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	U.S. dollar (66)	Euro (27)	Composite (15)	Other (7)				
Independently floating (40 countries)					Zambia	Albania Australia Austria ⁷ Belgium ⁷ Brazil Canada Chile Cyprus ⁷ Czech Rep. Finland ⁷ France ⁷ Germany ⁷ Greece ⁷ Hungary Iceland Ireland ⁷ Israel	Italy ⁷ Korea, Rep. of Luxembourg ⁷ Malta ⁷ Mexico Netherlands ⁷ New Zealand Norway Philippines Poland Portugal ⁷ Slovenia ⁷ South Africa Spain ⁷ Sweden Turkey United Kingdom	Congo, Dem. Rep. of Japan Somalia ⁸ Switzerland United States

¹Includes countries that have no explicitly stated nominal anchor, but rather monitor various indicators in conducting monetary policy.

²The member participates in the Eastern Caribbean Currency Union.

³The member participates in ERM II.

⁴The member participates in the West African Economic and Monetary Union.

⁵The member participates in the Central African Economic and Monetary Community.

⁶The central bank has taken preliminary step toward inflation targeting and is preparing the transition to full-fledged inflation targeting.

⁷The member participates in the European Economic and Monetary Union.

⁸As of end-December 1989.

SOURCES: IMF staff reports.

Since 1973 (cont.)

- Many fixed exchange rate systems have developed since 1973.
 - For instance, European monetary system and euro zone
- No system is right for all countries at all times.

Optimum Currency Areas and the European Experience

What Is the EU?

- The European Union is a system of international institutions, the first of which originated in 1957, which now represents 28 European countries through the following bodies:
 - **European Parliament:** elected by citizens of member countries
 - **Council of the European Union:** appointed by governments of the member countries
 - **European Commission:** executive body
 - **Court of Justice:** interprets EU law
 - **European Central Bank,** which conducts monetary policy through a system of member country banks called the **European System of Central Banks**

Table 20-1: A Brief Glossary of Euronyms

TABLE 20-1	A Brief Glossary of Euronyms
ECB	European Central Bank
EFSF	European Financial Stability Facility
EMS	European Monetary System
EMU	Economic and Monetary Union
ERM	Exchange Rate Mechanism
ESCB	European System of Central Banks
EU	European Union
SGP	Stability and Growth Pact

What Is the EMS?

- The **European Monetary System** was originally a system of fixed exchange rates implemented in 1979 through an **exchange rate mechanism** (ERM).
- The EMS has since developed into an **economic and monetary union** (EMU), a more extensive system of coordinated economic and monetary policies.
 - The EMS has replaced the exchange rate mechanism for most members with a common currency under the economic and monetary union.

Membership of the Economic and Monetary Union

- To be part of the economic and monetary union, EMS members must
 1. adhere to the ERM: exchange rates were fixed in specified bands around a target exchange rate.
 2. follow restrained fiscal and monetary policies as determined by Council of the European Union and the European Central Bank.
 3. replace the national currency with the euro, whose circulation is determined by the European System of Central Banks.

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**.

Why the Euro (EMU)?

EU members adopted the euro for 4 main reasons:

- 1. Unified market:** the belief that greater market integration and economic growth would occur.
- 2. Political stability:** the belief that a common currency would make political interests more uniform.
- 3. The belief that German influence** under the EMS **would be moderated** under a European System of Central Banks.
- 4. Elimination of the possibility of devaluations/ revaluations:** with free flows of financial assets, capital flight and speculation could occur in an EMS with separate currencies, but it would be more difficult for them to occur in an EMS with a single currency.

The EMS 1979–1998

- From 1979 to 1993, the EMS defined the exchange rate mechanism to allow most currencies to fluctuate $\pm 2.25\%$ around target exchange rates.
- Because of differences in monetary and fiscal policies across the EMS after German reunification, market participants began buying German assets (because of high German interest rates) and selling other EMS assets.
- As a result, Britain left the EMS in 1992 and allowed the pound to float against other European currencies.
- As a result, the exchange rate mechanism was redefined in 1993 to allow for bands of $\pm 15\%$ of the target value in order devalue many currencies relative to the deutschemark.

Policies of the EU and EMS (cont.)

- The Maastricht Treaty (1991) 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%.

Policies of the EU and EMS (cont.)

- The Maastricht Treaty requires that members that want to *remain* in the economic and monetary union
 1. 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%.
 - Financial penalties are imposed on countries with “excessive” deficits or debt.
- The *Stability and Growth Pact*, negotiated in 1997 (revised 2005 and 2011), also allows for financial penalties on countries with “excessive” deficits or debt.

Policies of the EU and EMS (cont.)

- The euro was adopted in 1999, and the previous exchange rate mechanism became obsolete.
- But a new exchange rate mechanism—ERM 2—was established between the economic and monetary union and outside countries.
 - It allowed countries (either within or outside of the EU) that wanted to enter the economic and monetary union in the future to maintain stable exchange rates before doing so.
 - It allowed EU members outside of the economic and monetary union to maintain fixed exchange rates if desired.

Theory of Optimum Currency Areas

- 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)
- The theory was developed by Robert Mundell in 1961.

Theory of Optimum Currency Areas (cont.)

- The monetary efficiency gain of joining a fixed exchange rate system depends on the amount of economic integration.
- Joining fixed exchange rate system would be beneficial for a country if
 1. trade is extensive between it and member countries, because transaction costs would be greatly reduced.
 2. financial assets flow freely between it and member countries, because the uncertainty about rates of return would be greatly reduced.
 3. people migrate freely between it and member countries, because the uncertainty about the purchasing power of wages would be greatly reduced.

Theory of Optimum Currency Areas (cont.)

- Costs of fixed exchange rates are that they require the loss of monetary policy for stabilizing output and employment, and the loss of automatic adjustment of exchange rates to changes in aggregate demand.
- Define this loss that would occur if a country joined a fixed exchange rate system as the **economic stability loss**.

Theory of Optimum Currency Areas (cont.)

- At some critical point measuring the degree of integration, the monetary efficiency gain will exceed the economic stability loss for a member considering whether to join a fixed exchange rate system.

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? (cont.)

- Most EU members export from 10% to 20% of GDP to other EU members
 - This compares with exports of less than 2% of EU GDP to the U.S.
 - But trade between regions in the U.S. is a larger fraction of regional GDP.

Cross-country capital holdings in Europe

Cross-country capital holdings in Europe (2001-2012)

(in percent of total investment in each category)

<i>Country of Origin</i>						
<i>Destination</i>	Germany		France		Netherlands	
	Equity	Debt	Equity	Debt	Equity	Debt
Greece	0.3	2.3	0.3	2.5	0.3	1.8
Portugal	0.5	1.9	0.5	2.5	0.4	1.2
Spain	3.0	11.2	4.2	9.9	4.0	6.4
Italy	3.7	11.3	4.3	13.6	3.0	10.0
Poland	1.9	0.7	1.5	0.2	1.4	0.3
Czech Republic	1.6	0.2	0.7	0.1	0.7	0.1
Hungary	1.7	0.7	0.3	0.1	0.7	0.2
France	6.0	11.2			6.2	14.5
Netherlands	12.3	11.5	11.9	11.8		
Germany			8.0	12.6	9.3	21.5

Quelle: IMF, OECD, own calculations

Is the EU an Optimum Currency Area? (cont.)

- 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.

Other Considerations for 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.
 - Should Europe have more fiscal transfers? A version of a common unemployment system?