

International Money and Banking:

17. Exchange Rate Regimes and the Euro

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Part I

Exchange Rates and Interest Rates

Exchange Rates

- We have talked a lot about interest rates but have not yet focused on another important aspect of monetary policy: Exchange rates.
- Why do exchange rates matter? Consider the Euro-Pound exchange rate, so that $\text{€}1 = \text{£}X$.
- Suppose X goes up, so the Euro is worth more. What happens to exports and imports?
 - 1 **Exports:** For each pound in sterling revenues that an Irish firm earns, they now get less revenue in euros unless they increase their UK price. Exporting will be less profitable and total exports will decline. Alternatively, if they decide to try to maintain profit by increasing their price in the UK, this will reduce demand, so exports will still decline.
 - 2 **Imports:** UK firms will get more euro revenues from exporting to Ireland at the same prices, so they may decide to do more of this. Alternatively, they may decide to lower their euro-denominated prices in Ireland and increase their market share while still getting the same sterling revenue per unit. Either way, imports will increase.

Exchange Rates and Economic Growth

- So while an increase in the value of the Euro may sound like a good thing for Ireland, it tends to reduce exports, increase imports, and thus reduce Irish GDP.
- In contrast, a depreciation of the currency boosts exports and has a positive effect on economic growth.
- For these reasons, a depreciation of the currency is often welcome in a recession and the absence of this tool when the exchange rate is fixed is often pointed to as a downside of such regimes.
- That said, exchange rate depreciation has its downsides also:
 - ① **Inflation:** Depreciation tends to make imports more expensive and so add to inflation. This is one reason why central bankers tend to say they favour a strong currency. For small open economies that import a lot, the inflationary effects of depreciation are much bigger.
 - ② **Temporary Boost:** The boost to growth is temporary. Over time, the increase in import prices may feed through to higher wages. This gradually erodes the competitive benefits from devaluation.

Exchange Rates and Bond Yields

- Suppose money can flow easily between the US and the Euro area.
- Suppose also that investors can buy either US or European risk-free one-period bonds. European bonds have an interest rate of i_t^E and US bonds have an interest rate of i_t^{US} .
- By this, we mean an investment of \$1 in the US bond period t returns $\$ (1 + i_t^{US})$ in period $t + 1$. For example, if the bond has a 4 percent interest rate, then an investment of \$1 in period t returns \$1.04 in period $t + 1$, so $i_t^{US} = 0.04$.
- Let e_t represent the amount of dollars that can be obtained for one Euro.
- A risk-neutral US investor has two possible investment options
 - ① Keep the money invested in US bonds and obtain $\$ (1 + i_t^{US})$ next period.
 - ② Change the dollars into euro, purchase a European bond, then convert the proceeds back into dollars at next period's exchange rate. This gives a payoff of $\$ (1 + i_t^E) \frac{e_{t+1}}{e_t}$ next period.
- Which one does she pick?

Uncovered Interest Parity

- Risk-neutral investors care only about the expected return, so they will buy the euro-denominated bond if

$$(1 + i_t^E) \frac{E_t e_{t+1}}{e_t} > 1 + i_t^{US}$$

where $E_t e_{t+1}$ denotes investors expected value for next period's euro-to-dollar exchange rate.

- They will buy the dollar-denominated bond if

$$(1 + i_t^E) \frac{E_t e_{t+1}}{e_t} < 1 + i_t^{US}$$

- The **uncovered interest parity** (UIP) theory says bond yields should adjust so that investors are indifferent between foreign and domestic bonds and thus are willing both of them at these yields. Like the expectations theory of long-term interest rates, it relies on the idea of arbitrage in financial markets: Financial prices adjust so there is no easy way to outperform other investors.
- In other words, UIP predicts

$$(1 + i_t^E) \frac{E_t e_{t+1}}{e_t} = 1 + i_t^{US}$$

Uncovered Interest Parity and Expected Exchange Rates

- The UIP equation

$$(1 + i_t^E) \frac{E_t e_{t+1}}{e_t} = 1 + i_t^{US}$$

tells us that if European interest rates are lower than US rates, then the Euro must be expected to appreciate.

- To get a sense of the magnitudes here, note that

$$\frac{E_t e_{t+1}}{e_t} = \frac{1 + i_t^{US}}{1 + i_t^E}$$

- For relatively small values of i_t^{US} and i_t^E , this can be well approximated as

$$\frac{E_t e_{t+1}}{e_t} = 1 + i_t^{US} - i_t^E$$

- So if US interest rates are 1 percent higher than Euro Area interest rates, then the dollar is expected to decline by 1 percent.

Section 3 Examples: Uncovered Interest Parity

Assume the uncovered interest parity (UIP) theory is true, there is no default risk on government bonds and free movement of capital. The return on US one-year government bonds is 4 percent. The return on German one-year government bonds is 2 percent. What does the UIP predict will happen to the euro-dollar exchange rate over the next year?

- Using the approximated UIP equation

$$\frac{E_t e_{t+1}}{e_t} = 1 + i_t^{US} - i_t^E \Rightarrow \frac{E_t e_{t+1}}{e_t} = 1 + 0.04 - 0.02 = 1.02$$

So the euro is expected to go up in value by about 2 percent over the next year.

- Some of you answer this question by saying “the US bond has a higher rate and is more attractive, so the dollar will go up as people try to buy more dollars.” This is exactly the wrong answer. If people thought the dollar was going up as well as the dollar bond having a higher interest rate, there would be even less reason for anyone to hold the European bond yielding only 2 percent.

Section 3 Examples: Uncovered Interest Parity

Assume the uncovered interest parity (UIP) theory is true, there is no default risk on government bonds and free movement of capital. The return on US one-year government bonds is 5 percent and the euro is expected to appreciate against the dollar by 2 percent. What does the UIP predict the current interest rates on euro-denominated bonds should be?

- Using the approximated UIP equation

$$\frac{E_t e_{t+1}}{e_t} = 1 + i_t^{US} - i_t^E \Rightarrow 1.02 = 1 + 0.05 - i_t^E \Rightarrow i_t^E = 0.03$$

So the euro-denominated bond has an interest rate of 3 percent.

The Trilemma of International Finance

- UIP holds pretty well in the real world and it implies that it is not possible to have all three of the following:
 - 1 Free capital mobility (money moving freely in and out of the country).
 - 2 A fixed exchange rate.
 - 3 Independent monetary policy.
- You can have any two, but not the third:
 - 1 You can have free capital mobility and a fixed exchange rate (so that $E_t e_{t+1} = e_t$) but then your interest rates must equal those of the area you have fixed exchange against ($i_t^{US} = i_t^E$) e.g. Ireland.
 - 2 You can have free capital mobility and set your own monetary policy ($i_t^{US} \neq i_t^E$) but then your exchange rate must fluctuate freely (so that $E_t e_{t+1} \neq e_t$) e.g. the UK.
 - 3 You can set your own monetary policy and fix your exchange rate against another country, but then you must intervene in capital markets to prevent people taking advantage of investment arbitrage opportunities, e.g. China.
- See the paper by Obstfeld, Shambaugh and Taylor.

Part II

Exchange Rate Pegs

Exchange Rate Pegs

- Exchange rate pegs—where one country promises to keep exchanging its currency at a fixed value against another currency—are a common policy. Usually, they involve smaller countries pegging their exchange rate against an “anchor currency”, most often the US dollar.
- In practice, exchange rate pegs can only work when you have a sufficient supply of whatever asset you had promised to swap your currency for.
- For example, the gold standard that prevailed prior to and after the First World War saw all the currencies “pegged” to gold but if countries ran trade deficits their supply of gold would decline and they may not be able to honour the promised pegged rate.
- After the second world war, under the **Bretton Woods** system the key reserve asset needed to maintain pegs was US dollars. But a similar logic applied: If a country ran trade deficits, their supply of US dollars or other foreign currencies could dry up.
- One option for a deficit country is to abandon this value for the peg and devalue the currency. This can restore competitiveness of exports and turn trade deficits into surpluses.

Exchange Rate Pegs and Speculation

- Exchange rate pegs are often unstable.
- Macroeconomic conditions in countries change over time and the level of an exchange rate that may once have been consistent with an equal balance of imports and exports may no longer apply.
- Pegs also provide an opportunity for **speculation**. Suppose you see the UK is pegging sterling to the dollar but you see that it is running a persistent trade deficit. From this you may anticipate a possible devaluation.
- You can withdraw sterling from the UK, changing it into dollars and then change it back into sterling at its new lower rate. If you borrowed the sterling, you can pay back your original loan and still make a tidy profit.
- These incentives meant that we could see **self-fulfilling exchange rate crises** in which investors speculate that there will be a devaluation, withdraw their money from the country and then the currency has to devalue because the central bank is running out of foreign exchange reserves.
- These pressures are asymmetric. Countries running large trade surpluses at their pegged exchange rate can choose to accumulate large supplies of foreign currency reserves without having to adjust their currency upwards.

Bretton Woods and the IMF

- There was no free movement of capital during the Bretton Woods era—the system was designed to foster stable exchange rates while still allowing countries to pursue their own independent macroeconomic policies.
- However, from 1958 onwards, there was current account convertibility, meaning freedom to engage in foreign currency transactions for the purpose of buying goods.
- This was considered a compromise so that international trade could be promoted while avoiding self-fulfilling currency crises.
- The IMF could provide loans to countries if trade deficits had left their supply of gold or dollars low to help them support their fixed exchange rate.
- If a temporary loan was not going to fix the situation, a country could apply to the IMF to devalue its exchange rate. The IMF would analyse the sustainability of the trade deficit and make a decision on whether the pegged should be maintained at the current rate or moved to a lower rate.
- This didn't always work well in practice—large countries often notified the IMF they were devaluing without seeking approval.

European Monetary Arrangements From the 1970s

- In the early 1970s, the Bretton Woods system collapsed and from March 1973, the world's major currencies began freely floating with prices set by financial markets.
- Many of the restrictions on movements of capital around the world were gradually eased in the subsequent decades.
- In Europe, however, there was still a strong desire to maintain exchange rate stability and promote trade within the EU.
- From 1979 onwards, the EU introduced the **European Monetary System (EMS)**. This was effectively a European version of Bretton Woods, with the German Deutsche Mark replacing the dollar and German monetary conditions influencing the rest of the system. Currencies were allowed to fluctuate but only within relatively narrow bands.
- Between 1979 and 1987, the EMS was often unstable and there were many devaluations within it.
- However, the system remained in place, partly because significant capital controls limited speculative attacks.

Realignments Within the EMS

Table 1. Exchange-Rate Realignments within the EMS, 1979–87^a

Percent

<i>Date of realignment</i>	<i>Deutsche mark</i>	<i>Dutch guilder</i>	<i>French franc</i>	<i>Bel./Lux. franc</i>	<i>Italian lira</i>	<i>Danish krone</i>	<i>Irish punt</i>
September 24, 1979	2.0	...	...	...	...	–2.9	...
November 30, 1979	...	...	...	...	...	–4.8	...
March 23, 1981	...	...	...	...	–6.0	...	...
October 5, 1981	5.5	5.5	–3.0	...	–3.0	...	...
February 22, 1982	...	...	...	–8.5	...	–3.0	...
June 14, 1982	4.3	4.3	–5.8	...	–2.8	...	...
March 21, 1983	5.5	3.5	–2.5	1.5	–2.5	2.5	–3.5
July 22, 1985	2.0	2.0	2.0	2.0	–6.0	2.0	2.0
April 7, 1986	3.0	3.0	–3.0	1.0	...	1.0	...
August 4, 1986	...	...	...	...	...	...	–8.0
January 12, 1987	3.0	3.0	...	2.0	...	...	...

Source: Fratianni and von Hagen (1992, p. 22).

a. The numbers are percentage changes of a given currency's bilateral central rate against those currencies whose bilateral parities were not realigned. A positive number denotes an appreciation, a negative number a depreciation. On March 21, 1983, and on July 22, 1985, all parities were realigned.

Source: Barry Eichengreen and Charles Wyplosz (1993).

Capital Controls in Place in 1988

Table 2. Capital Controls for EMS Countries by Type of Transaction, 1988

Type of control^a

Country	Securities		Loans		Other	
	Primary market	Secondary market	Trade related	Other	Deposit accounts	Other ^b
Belgium ^c	F/A	F	F	F	F	F
Denmark	F	F	A	A	A	A
France	R/A	F	R	R	F/R	F
Germany	F	F	F	F	F	F
Ireland	A	F/R	F/A	F/A	F/P	F/P
Italy	A/P	F/R	F/A	A	F/P	F/P
Luxembourg ^c	F/A	F	F	F	F	F
Netherlands	F	F	F	F	F	F
United Kingdom	F	F	F	F	F	F
Greece	A/P	A/P	A	A	R/P	R/P
Portugal	R/A	R/A	A	A	A	A
Spain	A	F/R	A	R/A	F/A	A

Source: Morgan Guaranty Trust Co. (1988, p. 5).

a. The first code refers to capital inflows, while the second code refers to outflows. If only one code is listed, we infer that the code applies to both inflows and outflows. The controls are coded as follows:

F = Free of controls.

A = Subject to authorization.

R = Subject to various restrictions as to maturity, size, and use of funds.

P = Prohibited, or subject to authorization that was usually not granted.

b. Includes money market instruments such as treasury bills.

c. A dual exchange market was maintained.

Source: Barry Eichengreen and Charles Wyplosz (1993).

The “Hard EMS” Years: 1987-92

- After many re-alignments, the EMS members decided to take actions to make the system less prone to instability.
- The Basle-Nyborg of 1987 saw agreements that central banks would do more active intervention in foreign exchange markets to keep exchange rates near their targets, that credit facilities for deficit countries would be improved and there would be more macroeconomic policy co-ordination to discourage significant trade deficits or surpluses.
- This worked well for a while. There were no realignments for five years and the UK joined the system in 1990, marking out a broad area of planned exchange rate stability across Europe
- Many believed Europe was on the path to a relatively quick move towards a full economic and monetary union (EMU) and that there would be no further realignments within the EMS.
- The Delors report in 1989 launched the plan for EMU and the Maastricht Treaty agreed in February 1992 formalised this intention.

Doubts Grow About EMU

Three events ended the period of stability

- 1 **German Reunification:** This led to large amounts of public spending in Germany and a consumer boom in Eastern Europe. German monetary policy needed to be tighter than was appropriate for other EMS members. In Summer 1992, markets began to speculate the other countries would need to devalue.
- 2 **Doubts about EMU:** On 2 June 1992, Danish voters rejected the Maastricht treaty in a referendum. Investors began to doubt whether there was sufficient political agreement for monetary union to happen.
- 3 **Freer Movement of Capital:** The Single European Act, which laid the foundation for the single market, required most controls to be lifted by July 1990. Capital flows were now large enough to force devaluations: The quantity of daily foreign exchange transactions exceeded the total foreign exchange holdings of the central banks.

Eichengreen and Wyplosz (1993) surveyed foreign exchange investors, asking them why the EMS 1992/93 crisis happened.

Why Was There an EMS Crisis in 1992? A Survey of Foreign Exchange Traders

Table 3. Reasons for the Crisis

Percent

<i>Question and response</i>	<i>Very important</i>	<i>Important</i>	<i>Not important</i>
<i>What in your opinion was the most important factor in making changes in ERM currencies likely?</i>			
Lack of public support for the Maastricht treaty	33.1	44.4	15.0
Persistent inflation in:			
Italy	27.8	39.1	22.6
Spain	21.8	37.6	28.6
UK	15.0	40.6	32.3
Germany	38.3	35.3	18.0
High German interest rates	68.4	21.1	6.0
Realignment was overdue anyway	39.8	27.1	24.1
Instability of Swedish and Finnish currencies	10.5	33.8	42.9

Source: Authors' calculations based on their February 1993 survey of European foreign-exchange traders.

Source: Barry Eichengreen and Charles Wyplosz (1993).

When Did Traders Think There Would Be a Realignment?

Table 5. Expectation of Imminent Changes in ERM Parities
Percent

<i>Question and response</i>	
<i>When did you first begin to think that changes in ERM exchange rates were imminent?</i>	
Before the Danish referendum in June	21.8
Just after the Danish referendum	46.6
Upon hearing about public opinion polls in France during the run-up to the referendum	15.1
Around the time of the Finnish crisis and devaluation	6.8
Around the time of the Swedish crisis in September	6.8
Other	9.1

Source: Authors' calculations based on their February 1993 survey of European foreign-exchange traders.

Source: Barry Eichengreen and Charles Wyplosz (1993).

Hard EMS Falls Apart and the Road to EMU

- After the Danish referendum in June 1992, investors began to bet there would be a realignment with devaluations against the DM. The countries that had a wider “band” (UK, Spain and Italy) saw their currencies drop in value.
- By September, the sterling was under severe pressure. Comments from the Bundesbank President that devaluations could not be ruled out didn't help.
- The UK raised interest rates to 15 percent to attract capital inflows and spent \$20 billion in foreign exchange reserves (half their holdings) in a vain effort to support the pound.
- On September 16, 1992 (known as Black Wednesday) the UK withdrew from the EMS and never rejoined efforts towards monetary union. Italy also pulled out that day.
- Other countries also devalued subsequently (Ireland by 10 percent in January 1993) and by summer 1993, the hard EMS was over with currencies trading against each other on much wider bands.
- This event convinced most EU governments that pegged exchange rates could not be combined with free movement of capital and the best option for stability was a full monetary union.

Part III

Deciding to Join the Euro

When To Share a Currency?

- What do governments consider when deciding whether or not to have their own currency that floats freely against other currencies?
- Small countries in which most of GDP is exported place a lot of value on stability of their exchange rate, particularly if they are selling most of their goods and services to one economic area.
- For these countries, it is perhaps best to have a fixed exchange rate against their main trading partner. Indeed, they may decide to simply adopt the same currency as their partner.
- These small currencies are generally considered be too small to be “optimal currency areas”.
- For larger countries, trade may not be as important, so exchange rate stability is not key.
- If these countries are less open, they may have their own distinct economic cyclical pattern and may not be happy with the macroeconomic policy that stems from having the same level of interest rates as their trading partners.
- In this case, they may decide it is best to have their own currency.

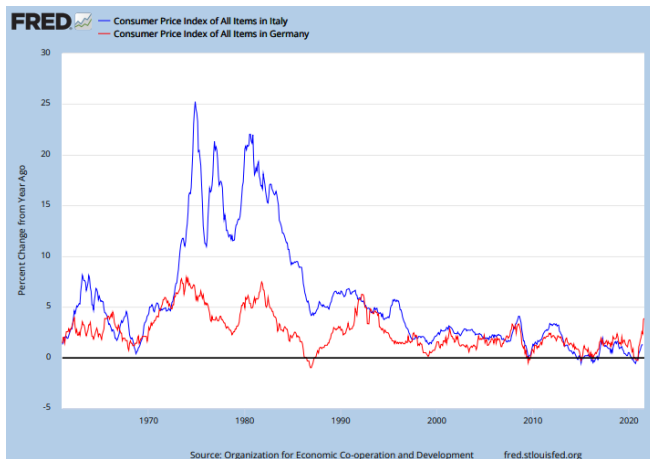
Arguments for a Common European Currency

- 1 Many countries in the EU had wanted to have a stable exchange rate relative to the German mark.
- 2 EMS members largely had to follow Germany's monetary policies but did not get a say in setting policy. A common currency would give every member a say.
- 3 Devaluation risk raised the cost of borrowing for governments, firms and households in many EMS member states.
- 4 Fixed exchange rate regimes had been subject to self-fulfilling speculative crises. Full EMU was seen as an alternative to “fixed” exchange rates with regular crises.
- 5 Countries such as Italy, which historically had a poor inflation performance, hoped to benefit from the Bundesbank's credibility by joining a new “hard” common currency.
- 6 The common currency was seen as reinforcing the microeconomic gains from the single European market project.
- 7 There was also a **political** element, with the single currency something that would help deepening the process of European integration in other areas.

Complications for the Euro as a Common Currency

- 1 **Size and Asymmetries:** Across such a large economic area as the Eurozone, it is inevitable that various member states may be going through very different phases of the economic cycle. For instance, at the moment, the monetary policy that suits Germany is not the policy that would suit Ireland or Spain.
- 2 **Lack of Fiscal Integration:** When regions inside common currency areas that are doing badly can pay less tax and receive extra transfer payments, the inability to pursue a regional monetary policy is less likely to be a problem.
- 3 **Lack of Labour Mobility:** There is relatively little labour mobility between EU countries, so unemployment will not be reduced by out migration in the way it is in US states, for example.
- 4 **Lack of Central Backstop for Banking:** In the US, deposit insurance and resolution of insolvent banks is done on a centralised basis. The Euro area now has a common bank supervisor but deposit insurance and resolution is still likely to remain a largely national responsibility.

Inflation in Italy and Germany



Currency Choice for Ireland

- All EU members must maintain full capital mobility as part of the Single Market. So the choice is between having a flexible exchange rate or giving up control of their own monetary policy.
- For Ireland, the decision to join the Euro was a complex one and Euro membership was a decidedly mixed blessing:
 - ① Ireland is a small open economy so it could be argued that it is not an optimal currency area.
 - ② But it has no single dominant trading partner currency. Ireland trades a lot with the Euro area, the UK and the US, so there was no clear choice of currency to peg against and perhaps a floating rate might still have made sense.
 - ③ However, a floating exchange rate may mean that investors may demand a risk premium for investing in a country's debt if there is a chance that it may devalue its currency. With this risk premium eliminated, membership of the Euro led to lower interest rates.
 - ④ These low interest rates boosted Irish economic growth. But at a time of exceptional growth, this wasn't helpful for maintaining stability and helped to fuel the housing bubble and subsequent banking crash.

Key Points

- 1 How do changes in exchange rates affect the economy?
- 2 Effects over time of devaluations.
- 3 Uncovered interest parity.
- 4 The Trilemma.
- 5 How exchange rate pegs operate and why they can be unstable.
- 6 How the EMS worked and how it collapsed in 1992.
- 7 Arguments for and against a common European currency.
- 8 Why the decision to join the euro was a complex one for Ireland.