Money, Interest Rates and Exchange Rates

Money and Prices in the Long Run

How does a change in money supply cause prices of output and inputs to change in the LR?

1. *Excess demand of goods and services*
    a. Higher quantity of money supplied means that there are more funds circulating the market, available to pay for G+S]
    b. To meet higher demand → increased hiring of workers → demand for labour → rise of wages to attract this labour → price of output increases to compensate for higher costs
2. *Inflationary Expectations*
    a. Expectations of price increase → expected money supply increase → willingness to raise wages due to prospect of higher prices and profits as a result of raised prices for produce → expectations feed into actual → inflation

Money, Prices, Exchange Rates and Expectations

- Inflationary expectations *will* have an effect on prices in foreign exchange markets in the long run
- The following diagram exhibits how expectations about inflation alter as consumers change their thoughts and behaviour, which eventually filters through to actual adjustment of prices with slight time delay (short run movements) → However, *this can lead to a permanent increase of domestic supply in both the short and long run.*

- Generally, inflation is much less volatile than the exchange rate → Why? Overshooting of the exchange rate

Overshooting of the Exchange Rate

Fig. 15-12: Short-Run and Long-Run Effects of an Increase in the U.S. Money Supply (Given Real Output, *Y*)

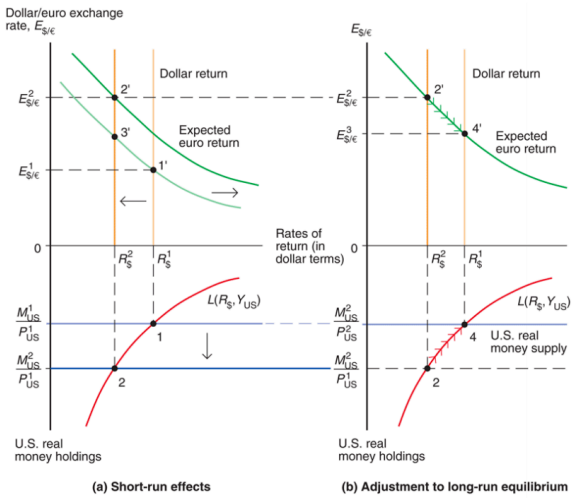


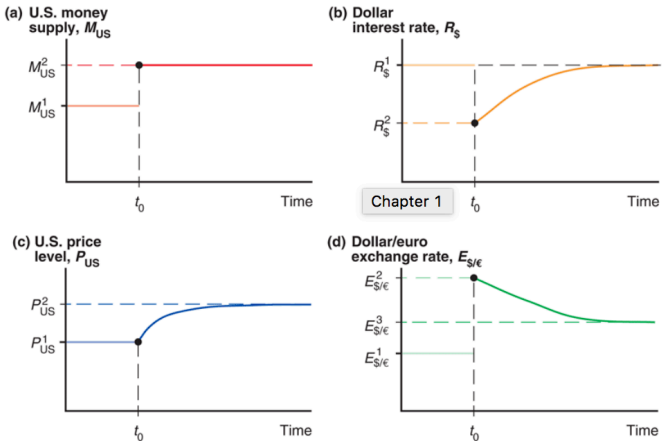
Figure 15.12 Movements:

1. Initial equilibrium is at point 1. In the short run, increase in the US money supply from 1 to 2 and IR falls to R_2. New *short run* equilibrium is now at point 3
2. *Long run effect:* assume that price level will adjust → change in price level is proportional to changes in money supply. Therefore, increase in money supply = inflation. How does this affect exchange rate in the long run?
3. Purchasing power of $1 has decreased → need more currency to purchase the same quantity of goods. Therefore, in the long run, $2 is now associated with $1 when assuming that euro price level

and quantity stays constant → US exchange rate has depreciated (euro appreciated), consistent with an increase in E^e

4. Now at E^2 → money supply and price level return E to initial (point 4), R goes back to original = R_1 → as R gradually moves up proportionally with price level, E adjusts back up which is consistent with an appreciation of $US at 4' to E_3. **New equilibrium is at 4' and E_3.**

In the short run, E will overshoot to a higher amount compared to its long run level. Movement in the exchange rate overshoots its long run value. Time series of overshooting phenomenon is as followed → ***overshooting is a large reason why the exchange rate is so volatile and fluctuant.***



Summary

1. Money demand for individuals and institutions are primarily determined by interest rates M^d (i) and the need for liquidity (transactional demand M^d (YP).
    - Need for liquidity is determined by prices (P) and income (Y)
2. *Aggregate* Money Demand is primarily determined by interest rates (i), level of average prices (P) and national income (GNP)
    - Where aggregate demand for real monetary assets depends negatively on the interest rate (higher interest rate = increase opportunity cost of holding money) and positively on national income
3. When the money market is in equilibrium Md = Ms which means no surpluses or shortages of monetary assets
4. Short run scenario: changes in the money supply affect domestic interest rates as well as the exchange rate. An increase in the domestic money supply will:
    1. Lower domestic interest rate
    2. Thus, will lower rate of return on domestic currency deposits
    3. Thus, causing the domestic currency to depreciate (shown by an increase in E)
5. Long Run Scenario: changes in the quantity of money supplied are matched by proportional changes in price level, and *do not affect real income and interest rates.* An increase in money supply will:
    1. Cause expectations about inflation to adjust (increase M^s = increase P)
    2. Thus, causing the domestic currency to depreciate due to lower purchasing power as prices tend upwards
    3. Prices will re-adjust proportionally in the long run
    4. Causing interest rates to return to their original level (real interest rates not affected in LR)
    5. **Therefore, causing a proportional long run depreciation of the domestic currency**
6. Interest rates adjust immediately to changes in monetary policy, but prices and (expected) inflation may adjust only in the long run, *which results in the overshooting of the exchange rate*
    - Overshooting occurs when the immediate response of the exchange rate due to a change Is greater than its long run response
    - Main economic explanation to exchange rate volatility

Optimum Currency Areas and the Euro

Theory of Optimum Currency Areas → developed by Robert Mundell 1961

- The theory of **optimum currency areas** argues that the optimum 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/labour (immigration and emigration)
- Sufficiently integrated in terms of the above factors = optimal to be apart of the monetary union

Practice Short Answer Response: What is the Theory of Optimum Currency Area?

The theory implies that countries will wish to join fixed exchange rate areas closely linked to their own economies through trade and factor mobility. This decision to join is, in turn, determined by the difference between the monetary efficiency gain from joining and the economic stability loss from joining. These factors are both related to the degree of economic integration between the joining country and the larger fixed exchange rate zone. Only when economic integration passes a critical level is it beneficial to join.

Costs and Benefits for countries to consider when deciding to adhere to fixed exchange rates:

Monetary Efficiency Gain

- Monetary efficiency gain defined as the gain derived from fixed exchange rates, primarily from decreased uncertainty and transaction costs
- The extent of the monetary efficiency gain 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
- Conclusion: as the degree of economic integration increases, the monetary efficiency gain increases – the following graph represents the monetary efficiency gain as a function of the degree of economic integration

When considering monetary efficiency gain:

1. Assumption that the members of the fixed exchange rate system would maintain stable prices
    - PPP → fixed exchange rate system has to have same inflation rate across countries
    - But when variable inflation exists among member countries, joining the system would not reduce uncertainty → GG curve would flatten or even invert
2. Assumption that a new member would be fully committed to fixed system
    - But if new member is likely to leave – then joining the system would not reduce uncertainty

Economic Stability Loss

- Defined as the loss that occurs from joining a fixed exchange rate system → usually derived from the loss of monetary policy as an instrument for stabilising output employment and loss of automatic adjustments of exchange rates to changes in AD
- After joining a fixed exchange rate system, *if* the new member faces a fall in AD
    1. relative prices will tend to fall, which will lead other members to increase AD greatly if economic integration is extensive, so the economic loss is not as great
        a. sufficient integration will mitigate some/all of the economic stability loss caused by the contraction in AD
    2. financial assets of labour will migrate to areas with higher returns of wages if economic integration is extensive
        a. excess supply of labour in one country will migrate to excess demand places
    3. loss of automatic adjustment of flexible exchange rates is not as great if goods and services markets are integrated

Conclusion: in general, as the degree of economic integration increases, the economic stability loss decreases

Practice Short Answer Response: Explain the operation of the LL/GG schedules

The GG curve has a positive slope since the monetary efficiency gain a country gets by joining a fixed exchange rate area rises as its economic integration with the area increases. The LL curve has a negative slope because the economic stability loss from pegging to the area's currencies falls as the degree of economic interdependence rises. The two curves cross at a point that determines the critical level of economic integration (1 between the fixed exchange rate area and the country considering joining. In other words, it is the minimum integration level at which the country will join.

Fig. 21-6: An Increase in Output Market Variability

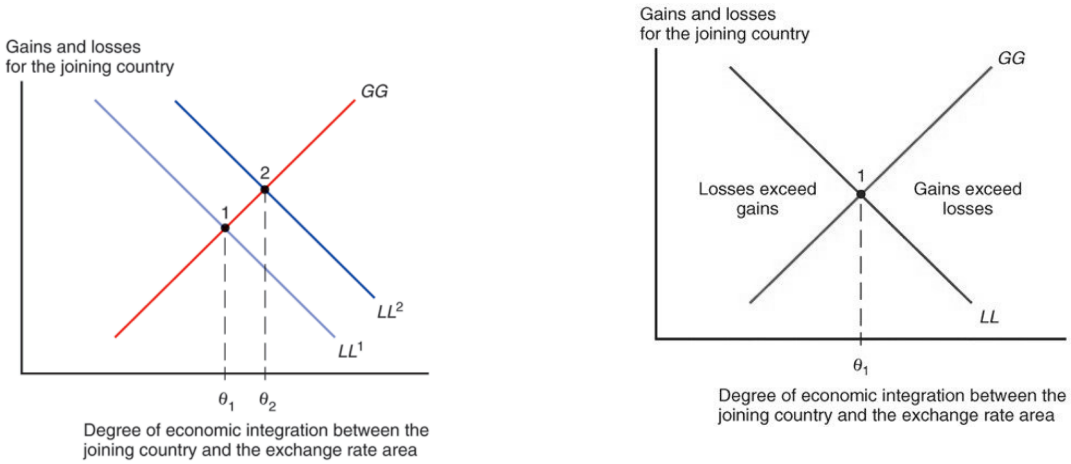


Figure 21.6

- suppose an event occurs which causes the frequency of changes in AD to increase → e.g effect of an increase volatility of oil price for a country who exports oil primarily
- Such a change pushes LL upward and to the right. Thus, the level of economic integration at which it becomes worthwhile to join the currency rises. In general, increased variability in the product markets makes countries less willing to enter fixed exchange rate areas. This prediction helps explain why the oil price shocks after 1973 made countries unwilling to revive the Bretton Woods system of fixed exchange rates.

Other important considerations (more similar these considerations are, the more optimal inclusion is)

1. **Similarity of economic structure:** e.g common shocks, high volume of intra-industry shock, similar types of products/outputs etc
2. **Fiscal Federalism** → Fiscal federalism in the euro zone involves establishing a larger centralized budget managed by a central fiscal authority with the capability to tax, spend, and issue euro bonds. More fiscal federalism shifts the LL curve downward
    - *Fiscal federalism* is one solution in which the EU transfers economic resources from members with healthy economies to those suffering economic setbacks. These transfer payments come in the form of welfare benefits, and they are usually financed by the taxes that other member states pay. Ultimately, the extent of fiscal federalism is limited by the EU's restricted taxation powers.
3. **Banking Union:** e.g single supervisory body for banks, a centralised resolution of insolvent banks and deposit insurance
    - Less area wide unification of banking policies shifts the LL schedule upward

Practice Extended Response Answer: Is EU an Optimum Currency Area?

This will depend on the level of economic integration, determined by factors such as trade, migration and economic structure:

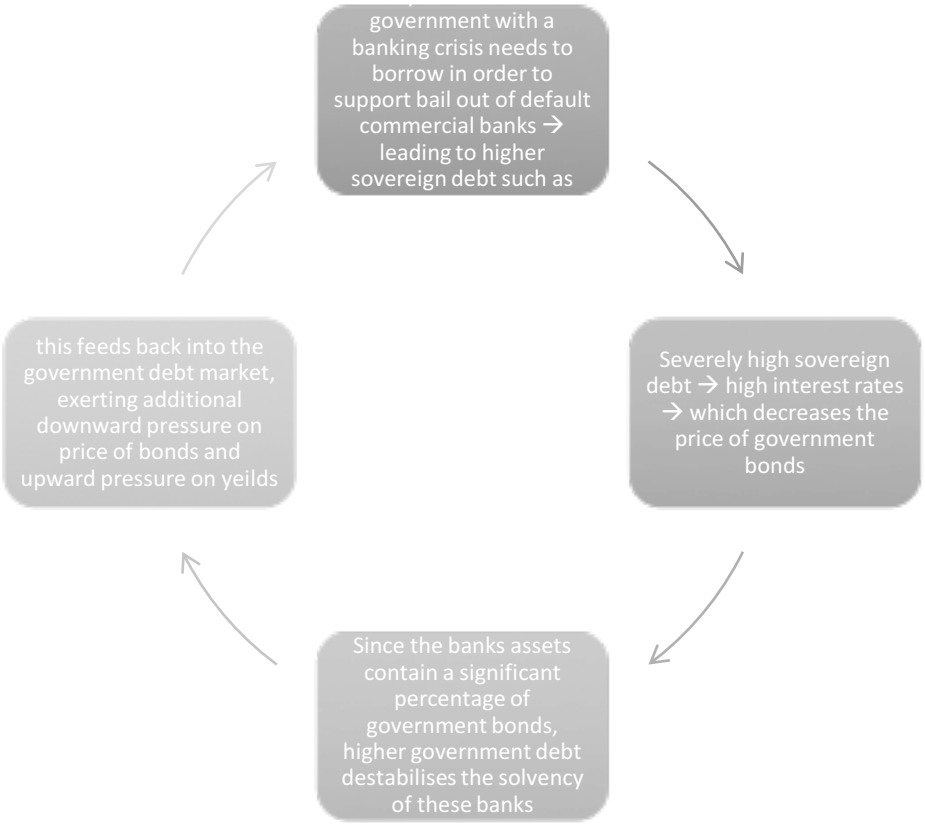
1. **Trade**: The Eurozone has minimal trade volume has not been that high (10-20% of GDP in 1999) → lower than US states/Australia. Recent research shows that the gain in terms of high trade volume from adopting euro is marginal (9% increase in trade volume). One study found that on average, two countries that are members of the same currency union trade *three times* as much with each other as countries that do not share a currency. Even if the euro were to raise trade within the euro zone by 50 percent, the positive effect on people's welfare could be immense, as another study has shown. However, some challenge the conclusion. Some claim the results would not be duplicated when applied to large countries such as the members of the EU; another study found out that leaving a common currency area as Ireland did has not caused reduction in UK-Ireland trade.

2. **Labour Migration:** Differences in language and cultural discourage labor movements between European countries. Differences in regional unemployment rates are smaller and less persistent in the United States than are differences between national unemployment rates in the European Union. Even, *within* European countries, labor mobility appears limited, partly because of government regulations. For example, the requirement in some countries that worker establish residence before receiving unemployment benefits makes it harder for unemployed workers to seek jobs in regions that are far from their current homes.

3. **Similarity in Economic Structure:** The GG-LL model shows that extensive trade with the rest of the euro zone makes it easier for a member to adjust to output market disturbances that affect it and its currency partners differently. A key element in minimizing such disturbances is similarity in economic structure, especially in the types of products produced. Euro zone countries are, in fact, not entirely dissimilar in the manufacturing structure, as evidenced by the very high volume of intraindustry trade. The hope is that any difference in EU member country factor endowments will be minimized by the completion of a single European market and the redistribution of capital and labor across Europe. This will bring about the desired similarity of economic structure.

So is the EU an optimum currency area? Europe is not an optimum currency area. Labor mobility is highly limited. Economic and political conflicts within the euro zone have been persistent and they continue to result in questions regarding the ability of the euro zone to survive going forward.

Doom Loop



Solution to the Doom Loop: a centralised body such as the Single Supervisory Mechanism (SSM) which has the ability to bail out failing banks → acts as a euro-wide lender of last resort or integration with banking union

Summary

1. The EMS was first a system of fixed exchange rates but later developed into a more extensive coordination of economy and monetary policy → economic and monetary union (EMU)
2. The Maastricht Treaty outlined 3 prerequisites needed for the official transition from EMS to EMU
    a. Exchange Rate Stability
    b. Price Stability
    c. Prudent Fiscal Policy
3. The new exchange rate mechanism was defined in 1999 → the Euro was implemented
4. An optimum currency area is a union of countries with high degree of economic integration among goods and services (trade), financial assets and labour markets (labour mobility)
    a. The area is defined as a critical point at which the monetary efficiency gain of joining a fixed exchange rate system is equal to or more than the economic stability loss
5. The EU does not have a large degree of economic integration due to difference in culture/ language barriers/ different labour policies/ lack of fiscal federalism and banking union → all of which has caused **divergence in labour mobility**
6. Based on economic indicators in isolation, the EU is **not an optimum currency area**
7. Future of euro and Eurozone is threatened by ongoing effects of European Debt Crisis and Brexit