Summary

-International Financial Policy-

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KOM, 10th ed. Ch. 19 International Monetary Systems: a historical overview

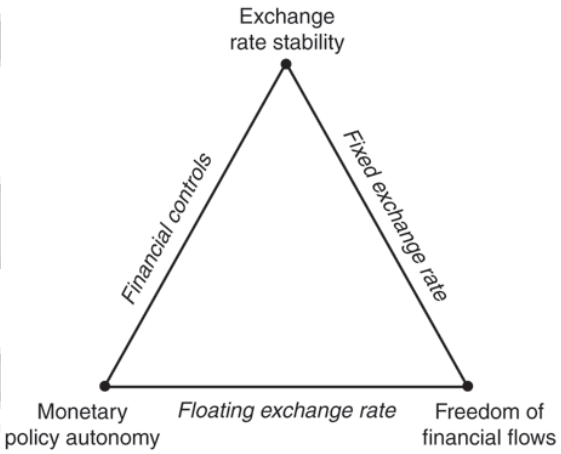
Macroeconomic Policy Goals in an Open Economy

In an open economy, policy makers try to maintain internal balance (full employment and a stable price level) and external balance (a current account level that is neither so negative that the country may be unable to repay its foreign debts nor so positive that foreigners are put in that position). An intertemporal budget constraint limits each country's spending over time, to level that it can repay (with interest). The definition of external balance depends on a number of factors, including the exchange rate regime and world economic conditions.

Because each country's macroeconomic policies have repercussions abroad, a country's ability to reach internal and external balance depends on the policies other countries choose to adopt. A country running large persistent deficits might appear to be violating its intertemporal budget constraint, putting it in danger of facing a sudden stop in foreign lending.

Classifying Monetary Systems: the Open-Economy Monetary Trilemma

The limitations of alternative exchange rate regimes can be understood in terms of the open-economy monetary trilemma, which states that countries must choose two of the following three features of a monetary policy system: exchange rate stability, freedom of cross-border financial flows, and monetary policy autonomy. Thus, you must choose between having capital controls, a freely floating system, or having a currency board / monetary union. A country that fixes its currency's exchange rate while allowing free international financial (capital) movements, gives up control over domestic monetary policy. A country that fixes its exchange rate can have control over domestic monetary policy if it restricts international financial capital flows, so that the interest parity need not hold. Last, a country can allow international capital to flow freely and have control over domestic monetary policy, if it allows the exchange rate to float.



International Macroeconomic Policy under the Gold Standard, 1870-1914

The gold standard system contained a powerful automatic mechanism for ensuring external balance, the price-specie-flow mechanism. The flows of gold accompanying deficits and surpluses caused price changes that reduced current account imbalances and therefore tended to return all countries to external balance. Another mechanism was 'rules of the game', where domestic assets were bought or sold by central banks to influence the flows of financial assets, so that the non-reserve part of the financial account matched the current account, in order to reduce gold out or inflows.

The system's performance in maintaining internal balance was mixed, however. With the eruption of WW1 in 1914, the gold standard was suspended.

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The Interwar Years, 1918-1939

Attempts to return to the prewar gold standard after 1918 were unsuccessful. As the world economy moved into general depression after 1929, the restored gold standard fell apart, and international economic integration weakened. In the turbulent economic conditions of the period, governments made internal balance their main concern and tried to avoid the external balance problem by partially shutting their economies off from the rest of the world. The result was a world economy in which all countries' situations could have been bettered through international cooperation.

The Bretton Woods System and the International Monetary Fund

The architects of the International Monetary Fund (IMF) hoped to design a fixed exchange rate system, Bretton Woods, that would encourage growth in international trade while making the demands of external balance sufficiently flexible that they could be met without sacrificing internal balance. To this end, the IMF charter provided financing facilities for deficit countries and allowed exchange rate adjustments under conditions of ''fundamental disequilibrium''. All countries pegged their currencies to the dollar. The US pegged to gold and agreed to exchange gold for dollar with foreign central banks at a price of $35 an ounce. They also established several institutions, such as:

- IMF
    - Constructed to lend to countries with persistent 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 certain quota, which determined its contribution to the fund and the maximum amount it could borrow
    - Large loans were made conditionally on the supervision of domestic policies by the IMF
    - Devaluations were allowed, if the IMF determined that an economy was experiencing a 'fundamental disequilibrium'
- World Bank
- The predecessor of the WTO.

Analysing Policy Options for Reaching Internal and External Balance

After currency convertibility was restored in Europe in 1958, countries' financial markets became more closely integrated, monetary policy became less effective, and movements in international reserve became more volatile. These changes revealed a key weakness in the system. To reach internal and external balance at the same time, expenditure-switching a well as expenditure-changing policies were needed. But the possibility of expenditure-switching would undermine fixed exchange rates. As the main reserve currency country, the US faced a unique external balance problem: the confidence problem, which would arise as a foreign official dollar holdings inevitably grew to exceed US gold holdings. A series of international crises led in stages to the abandonment by March 1973 of both the dollar's link to gold and fixed dollar exchange rates for the industrialized countries.

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The External Balance Problem of the US under Bretton Woods

Before 1973, the weaknesses of the Bretton Wood system led many economists to advocate floating exchange rates. They made four main arguments in favour of floating. First, they argued that floating rates would give national macroeconomic policy makers greater autonomy in managing their economies. Second, they predicted that floating exchange rates would remove the asymmetries of the Bretton Woods arrangements. Third, they pointed out that floating exchange rates would quickly eliminate the fundamental disequilibrium' that led to parity changes and speculative attacks under fixed rates. Fourth, they claimed that these same exchange rate movements would prevent large, persistent departures from external balance.

The Case for Floating Exchange Rates

In the early years of floating, floating rates seemed, on the whole, to function well. In particular, it is unlikely that industrial countries could have maintained fixed exchange rates in the face of stagflation, caused by two oil shocks. The dollar suffered a sharp depreciation after 1976, however, as the US had opted macroeconomic policies more expansionary than those of other industrial countries.

A sharp turn toward slower monetary growth in the US coupled with a rising US government budget deficit, contributed to massive dollar appreciation between 1980 and early 1985. Other industrial economies pursued disinflation along with the US, and the resulting worldwide monetary slowdown, coming soon after the second oil shock, led to a deep global recession. As the recovery from the recession slowed in late 1984 and the US current account began to register record deficits, political pressure for wide-ranging trade restrictions gathered momentum in Washington. At the Plaza Hotel in New York in September 1985, the US and four other major industrial countries agreed to take concerted action to bring down the dollar.

Macroeconomic Interdependence under a Floating Rate

Exchange rate stability was downplayed as a prime policy goal in the 1990s and 2000s. Instead, governments aimed to target low domestic inflation while maintaining economic growth. After 2000, global external imbalances are widened dramatically with rapidly increasing house prices. When these collapsed starting in 2006, the global financial system seized us op and the world economy went deep into recession.

What has been Learned since 1973?

One unambiguous lesson of these experiences seem to be that no exchange rate system functions well when international economic cooperation breaks down. Severe limits on exchange rate flexibility among the major currencies are unlikely to be reinstated in the near future. But increased consultation among international policy makers should improve the performance of the international monetary system.

Salvatore, 11th ed. Ch. 18

18.1 Introduction

The most important economic goals or objectives of nations are (1) internal balance, (2) external balance, (3) a *reasonable* rate of growth, (4) an *equitable (reasonable)* distribution of income and (5)

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adequate protection of the environment. **Internal balance** refers to full employment (approximately 4-5% unemployment due to frictional unemployment) and a stable price level (around 2% max). **External balance** refers to equilibrium in the balance of payments. In general, governments place a greater importance on the former.

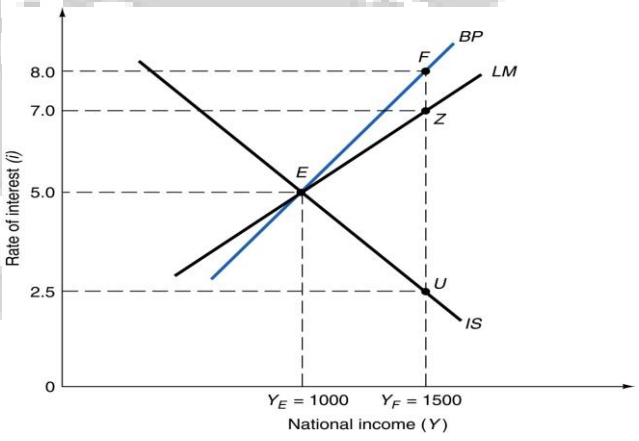
To achieve internal and external balance, governments have 3 policy instruments: (1) expenditure-changing policies, (2) expenditure-switching policies and (3) capital controls. *Expenditure-changing policies* aim to affect income and employment with the goal of equating domestic expenditure (absorption, C+I+G) and production and takes the form of fiscal or monetary policy. An expansionary fiscal policy will increase demand and through a multiplier process increase output/income by more. This will induce imports to rise, as people spend the increase in income partly on imported goods. A contractionary fiscal policy has an opposite effect. An easy monetary policy reduces the interest rate and through the multiplier process increases output, which induces imports to rise. On top of that, there is a capital outflow (due to the lower interest rate, people move their money out of this country is search for higher interest rates). A tight monetary policy works in the opposite direction. *Expenditure-switching policies* are macroeconomic policies that affect the composition of a country's expenditure on foreign and domestic goods and refer to changes in the exchange rate. A devaluation switches expenditure from foreign to domestic commodities (as foreign products are more expensive for domestic consumers) and a revaluation switches expenditure from domestic to foreign commodities (as foreign products are less expensive for domestic consumers). *Direct controls* consist of tariffs, quotas and other restrictions on the flow of international trade and capital. According to Tinbergen, a country needs as many instruments as it has independent objectives, thus as a government has three independent objectives (full employment, stable price level and a balance of payments) it needs three policy instruments to fulfill those goals.

18.3 Equilibrium in the Goods Market, in the Money market, and in the balance of payments

The IS curve shows all points at which the goods market is in equilibrium, the LM curve shows all points at which the money market is in equilibrium and the BP curve shows all points in which the balance of payments is in equilibrium, for a given exchange rate.

The IS curve is negatively sloped, because at lower interest rates, the level of investment is higher (because the interest someone has to pay is lower and thus it is cheaper to borrow) and thus, national income is higher.

There are two purposes to hold money, the *transaction motive* (which is positively related to national income) and the *speculation motive* (which is the desire to hold currency instead of interest bearing bonds and negatively related to the interest rate due to opportunity costs).



The LM curve then, is upward sloping, because at higher interest rates, the demand for money for speculative purposes is lower. Then, the money market is only in equilibrium if the fall in demand for speculative purposes is replaced by the demand for transactional purposes, which is the case when national income rises. Another way of explaining: When the national income rises and the money

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supply remains the same, people want more money than is supplied. At that moment, people bid for interest bearing assets, reducing the price of those assets. This in turn means that the interest rate increases.

The BP curve is positively sloped, because a higher interest rate means more net capital inflows (as money flows to the place where the return is higher). This is a surplus on the financial account. For the balance of payments to be in equilibrium, this must be matched to a current account deficit. This means that national income must increase, so imports increase (the higher national income, the larger imports usually are. Exports remains the same, because foreign national income does not change. To the left of the curve, a country has a balance of payments surplus (as there is more net capital inflow than there are imports). To the right of the curve, a country has a balance of payments deficit (as the interest rate is not high enough to cover the current account deficit). The flatter the BP curve is, the more capital mobility there is (money can flow more easy). A devaluation means an improvement of the trade balance (more exports and less imports) and thus the BP curve shifts downwards. A revaluation works in the opposite direction.

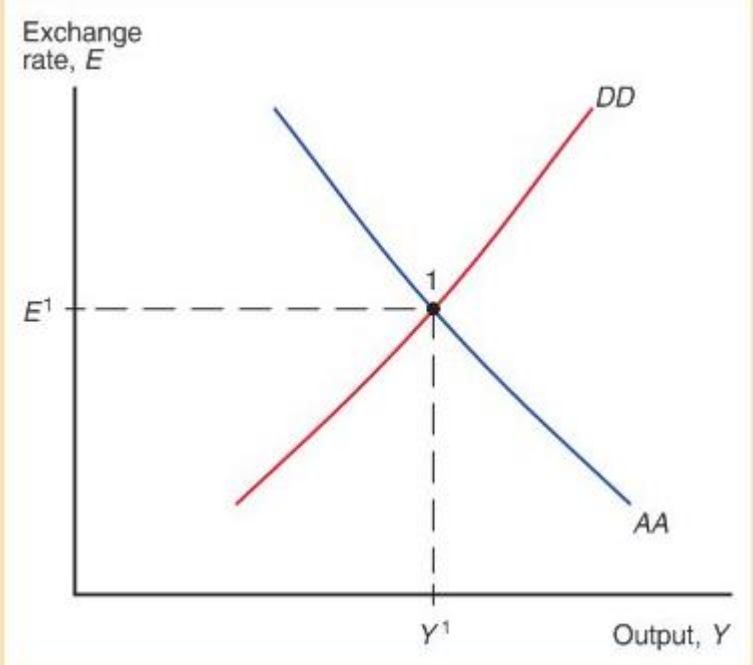
AA-DD model

The AA-DD model is similar to the IS-LM model, however, the axis are labelled different and thus there is a different way of explanation (they do however both analyse the same things).

The DD curve shows all combinations of output and the exchange rate for which the output market is in short-run equilibrium (aggregate demand = aggregate output). All other variables fixed (price levels, government spending, taxes, etc.) a rise in the nominal exchange rate makes foreign goods and services more expensive relative to domestic goods and services (or, vice-versa, it makes domestic goods and services less expensive compared to foreign goods and services). As a result, the demand for domestic production increases. Therefore, output (Y) increases when the exchange rate increases (a depreciation of the domestic currency). Similarly, when the exchange rate decreases (and the domestic currency thus appreciates), foreign goods and services become less expensive relative to domestic goods and services. This leads to a reduction in demand for domestic production and consequently, domestic output (Y) will be reduced. *For these reasons, the DD curve is upward sloping, because a higher exchange rate (depreciation) means higher output.*

There can be exogenous shocks to the model that can shift the curve:

- **A change in government spending** (positive effect, thus increase in G means DD to the right)
- **A change in Taxes** (T, negative effect),
- **A change in domestic price level** (P, negative effect: a rise in the domestic price level makes domestic products more expensive relative to foreign goods which leads to a reduction in demand for every level of the exchange rate and thus a leftward shift of the DD curve).
- **A change in the foreign price level** (P*, a positive effect. Higher foreign price level, means more expensive foreign products, which means more demand for domestic production for every level of the exchange rate).
- **A change in the consumption function** (positive, when consumers decide to spend a larger portion of their money on consumption, the demand for domestic production will increase, shifting DD rightwards).
- **A shift in demand between foreign and domestic goods** (if the preference shifts to foreign goods this is negative, if the preference shifts to domestic goods, this is positive).



The AA curve represents all combinations of the exchange rate and output that are consistent with equilibrium in the domestic money market and the foreign exchange market. In this model, we assume the interest parity to hold. Furthermore, real money supply is equal to the real money demand: Ms / P = L(R, Y). An increase in the interest rate decreases real money demand, whereas a rise in output increases the real money demand. When we keep the foreign interest rate, the domestic price level, the nominal money supply and the expected future exchange rate constant, we can derive the AA curve. A rise in output leads to a higher real money demand (as people make more transactions). As a result, the demand for money is greater than the supply of money. So, people try to obtain extra liquidity by selling bonds. Therefore, the price of bonds decreases and the interest rate increases (as they are inversely related). For a constant foreign interest rate, the domestic interest rate is now thus higher. Therefore, investors want to invest in the domestic currency, for they can obtain a higher return and there will be more demand for the domestic currency. In the end, the domestic currency will appreciate. Hence, an increase in output will lead to an appreciation of the domestic currency (a decrease in the exchange rate) and thus the AA curve is downward sloping.
There are exogenous factors that can shift the AA curve.

- **A change in the nominal money supply** (Ms: an increase in the nominal money supply lowers the interest rate, because people want to buy bonds to get rid of excess liquidity. Therefore, investing in the domestic currency is unattractive and the demand for the domestic currency falls. This leads to a depreciation of the currency and the AA curve shifts rightwards. For every level of output, the exchange rate will be higher).
- **A change in the domestic price level** (P, an increase in P reduces the real money supply. As a result, the interest rate increases leading to an appreciation of the currency and hence a leftward shift of the AA curve).
- **A change in the expected future exchange rate** (Ee: when people suddenly expect the exchange rate to be higher next year, they immediately revise the current exchange rate *(I do not have an explanation for this, the book does not really give one).* When the expected exchange rate rises, this leads to a depreciation of the currency and thus a rightward shift of the AA curve).
- **A change in the foreign interest rate** (R*: a rise in the foreign interest rate makes investing in the foreign currency more attractive, as a result the demand for that currency increases, which leads to a deprecation of the domestic currency (the exchange rate increases). This leads to a rightward shift of the AA curve).

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- **A change in the real money demand** (If the domestic real money demand suddenly increases for each level of output, the interest rate will be higher for each level of output. As a result, the domestic currency will appreciate due to the increase in demand for it (due to the higher interest rate). This will cause the AA curve to shift downward).

18.4 Fiscal and Monetary Policies for Internal and External Balance with Fixed Exchange Rates

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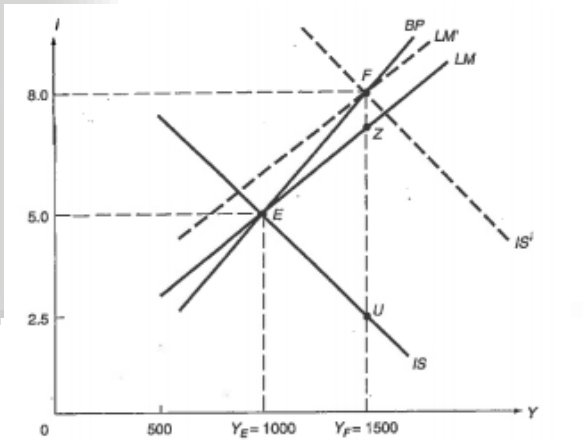

The exchange rate is fixed, thus the BP curve cannot shift (as there cannot be a change in the terms of trade), furthermore, for now, the changes in fiscal and monetary policy do not directly affect the Balance of Payments. Hence, the BP curve remains the same.

Suppose the initial equilibrium is at point E, where the economy is in external balance, but not in full employment. In order to stay in external equilibrium, but go to a situation of full employment, the government should use an expansionary fiscal policy and a tight (contractionary) monetary policy. An increase in government expenditures or a decrease in taxes (fiscal policy) shifts the IS curve to the right to IS', as demand increases.

Doing this, without an expansionary monetary policy would mean that the country is to the right of the BP curve and that it has a huge balance of payments deficit. This is due to the fact that due to the increase in national income residents of the domestic country import more. This leads to a deterioration of the current account. The interest rate does increase, but not enough to induce enough capital inflow to match the deterioration of the current account (the change in the financial account due to the increase in the interest rate can thus not make up for the change in the current account due to the increased imports due to the increase in national income).

Therefore, the country also needs a contractionary (tight) monetary policy that shifts the LM curve up to LM' (a smaller money supply means that people want to hold more money than is possible, therefore, they start to bid up for money in exchange for bonds. This decrease the price of bonds (supply increases) and thus, interest rates rise). As the interest rate rises, more capital flows into the country and investment decreases (shift along the IS' curve) and thus national income declines, up to a point where the country is in external balance once again. At that point (F) the country is at full employment and there is a balance in the balance of payments. That is, the increase in the interest rate (and accompanying the increase in net capital inflow) makes up for the increase in the national income (and the accompanying deteriorating current account).

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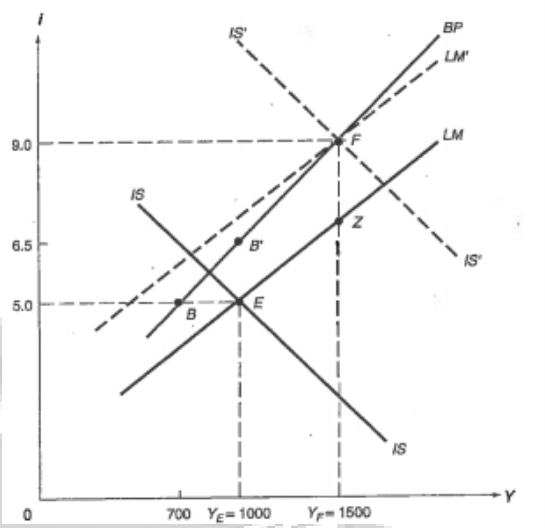
18.4B



Now, the country is not in full employment and it has a balance of payments deficit (point E is to the right of the BP curve).

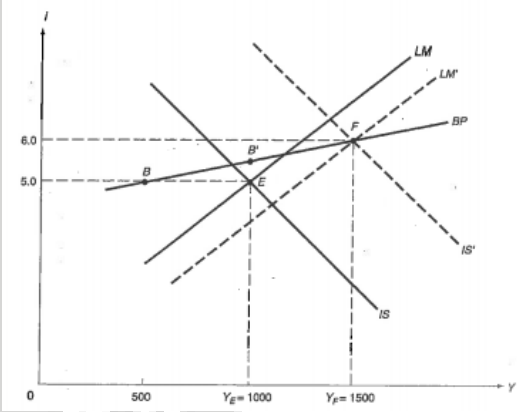
Now, the government can use a combination of an expansionary fiscal policy and a tight monetary policy again.

First, the government can increase spending/lower taxes to increase demand and shift the IS curve to IS'. This increases output and the interest rate. Now, however, the increase in the interest rate and thus the net capital inflow increase does not cover the current account deficit entirely (as imports increase along with the national income). Thus, there still is a balance of payments deficit.

The central bank can follow a contractionary monetary policy to increase the interest rate and shift the LM curve up to LM'. A decrease in the money supply induces people to bid for money by selling bonds, which drives the price of bonds down and thus, increases the interest rate.

This gets us at the intersection at point F, where the net capital inflow is equal to the current account deficit (thus, the financial account – current account = 0).

18.4C



Now, the economy is at point E, with a balance of payments deficit, and where it is not at full employment. The difference with the previous example is, however, that the BP curve is much flatter, this is due to the fact that there are fewer restrictions on capital flows and the capital mobility is higher. A small increase in the interest rate now can induce a large increase in the net capital inflow (as money can more easily move to the higher interest rate). Therefore, a small increase in the interest rate makes it possible to have a much higher national income, as a small increase in the interest rate (and the accompanying large increase in net capital inflows) already makes up for the deterioration of the current account (due to the higher imports obtained through the higher national income).

The difference between last examples and this example is that after the shift of the IS curve to IS', the central bank should not follow a contractionary monetary policy. In this case namely, after the increase in spending and the rise of national income and the interest rate, the country is actually in a balance of payments surplus. That is, the net capital inflow increase is greater than the current account deterioration (thus, financial account surplus became bigger than the current account deficit). Therefore, the central bank should follow an expansionary monetary policy, which will lower the interest rate (as people bid for bonds instead of money, increasing the price of bonds, decreasing the interest rate). As the interest rate is lowered, output will rise to the level of full employment (due to an increase in Investment, shift along the IS' curve) and the balance of payments will deteriorate up to a point where it is balanced, because the net capital inflow decreases as the interest rate is lowered

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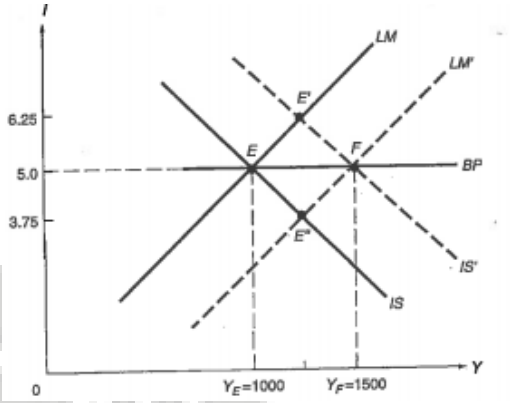
and the current account deteriorates as national income increases. Both mechanisms work to get rid of the balance of payments surplus and internal and external balance is reached in point F.

18.4D



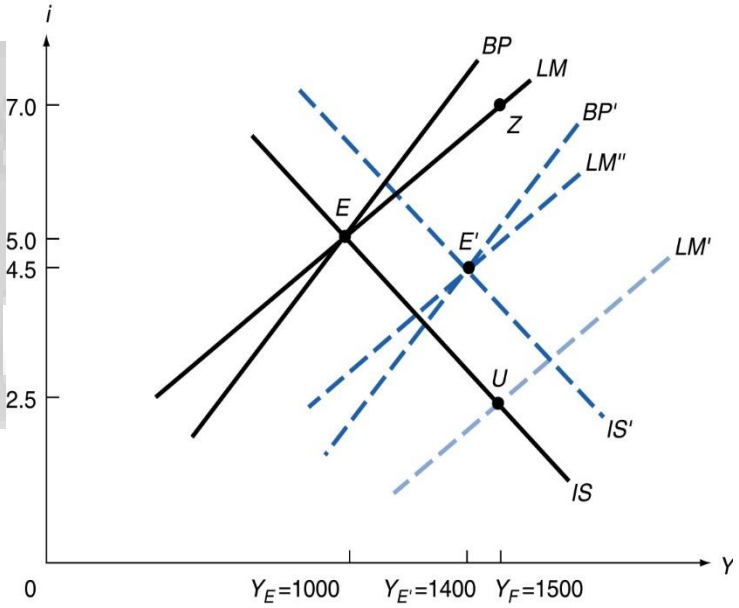
We are at a simultaneous equilibrium at point E again (BP is balanced and IS = LM). However, the country is not at full employment. The special case is that there is perfect capital mobility (represented by the horizontal BP curve).

The government can again increase demand by reducing taxes or increasing spending. This will shift the IS curve to IS'. The remarkable feature of perfect capital mobility is the following: the central bank does not have to intervene to get to balance of payments equilibrium. Due to the higher interest rate (6.25%) there is capital inflow into the country, this increases the money supply, as the foreign currency is exchanged for the domestic currency. As a result, the interest rate decreases again, up to point F, where there is internal and external equilibrium.

Another special feature about this perfect capital mobility is that an easy monetary policy followed by an expansionary fiscal policy is of no use. If the central bank first increases the money supply for instance, the LM curve would shift to LM' (the interest rate would decrease and investment would increase). However, due to the lower interest rate, there will be a capital outflow (people do not want this lower interest rate), the domestic currency would be exchanged for foreign currency. This has a contractionary effect on the money supply. This would in turn increase the interest rate again, shifting up the LM' curve up to LM again. Thus, nothing has happened in the end and the economy is in point E again. Hence, an easy monetary policy has no effect when there is perfect capital mobility.

18.5 The IS-LM-BP Model with Flexible Exchange Rates and Imperfect capital mobility

18.5A



We will start this analysis in point E, where the IS-LM curve intersects both the IS curve, but also the BP curve (thus, there is a balance in the balance of payments). However, once again, employment is not at its full employment level. In this case, there is no perfect capital mobility (as is represented by the upward sloping BP curve).

Now, the central bank can make use of easy monetary policy to lower the interest rates and to boost investment and subsequently output (which shifts the Lm curve to LM'). Now, the intersection is at point U, where there is an equilibrium in the goods market and money market, but we are far to the right of the Balance of Payments curve. This means that we are importing too much for the level of interest rate (capital inflow) that we have, and thus we are running a balance of payments deficit (that is, the current account is more in deficit than the financial account is in surplus). As a result, under a flexible exchange rate, the currency depreciates

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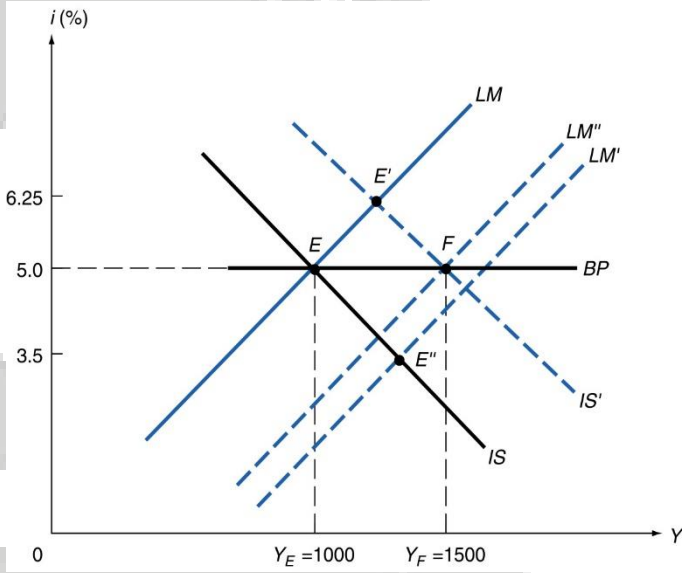
(too much supply of the currency (import) with respect to demand for the currency (capital inflow)). Therefore, the trade balance improves, because as the currency depreciates, there will be more exports and there will be less imports (domestic goods become less expensive for foreigners and foreign goods become more expensive for domestic residents). This will shift the BP curve to the right (as now a lower interest rate is sufficient to equal the amount exports-imports (due to the lower amount of imports and higher amount of exports). Furthermore, due to the decrease in the value of the domestic currency the IS curve shifts to the right to IS' (more exports demand and less imports demand). On top of this, the price of imports that will still be conducted increases and thus the general price level increases, which decreases the real money supply (which is Ms/P). Therefore, the monetary supply is contracted, and the LM' curve shifts leftwards towards LM". At that point, equilibrium is found at point E' where all three markets are in equilibrium again (which is a condition that should always be fulfilled in a situation where there is a flexible exchange rate in the end).

18.5B



We will start our analysis at point E again. However, now we have flexible exchange rates and perfect capital mobility.

Suppose now we want to try to increase our output by means of fiscal policy (increase government spending or reduce taxes). This will increase demand and output and shift the IS curve to IS' (to point E'). At that point, however, the interest rate is higher than it was initially. Under free capital mobility this will lead to immense inflow of capital. This will lead to a surplus on the balance of payments and the currency will appreciate. As the currency appreciates, exports decrease (as products become more expensive for foreigners) and imports increase (as foreign products become less expensive). All this leads to a decrease in demand for domestic production, thus the IS' curve shifts to the left again, until it is at IS again. So, we can conclude that with perfect capital mobility and a flexible exchange rate, fiscal policy is useless.

We can however use an easy monetary policy to decrease the interest rate to boost the economy. This will increase investment and output and shift the LM curve to LM'. Now, however, we are at Point E" where the interest rate is lower than it was initially and this leads to large capital outflows and we have a balance of payments deficit. This will lead the currency to depreciate immediately. Due to this depreciation of the currency, products will become cheaper for foreigners (increase in exports) and foreign products become more expensive (fall in imports). Thus, there will be more demand for domestic production, shifting the IS curve outwards to IS'. However, this is not the end of the story. Due to the decrease in the value of the currency, the imports will become more expensive, which raises the general price level in the domestic nation. This price increase decreases the real money supply (as the real money supply is the nominal supply over the price level), this will shift the LM' curve up to LM" and we will find a stable equilibrium in point F again (where all three markets are in equilibrium).

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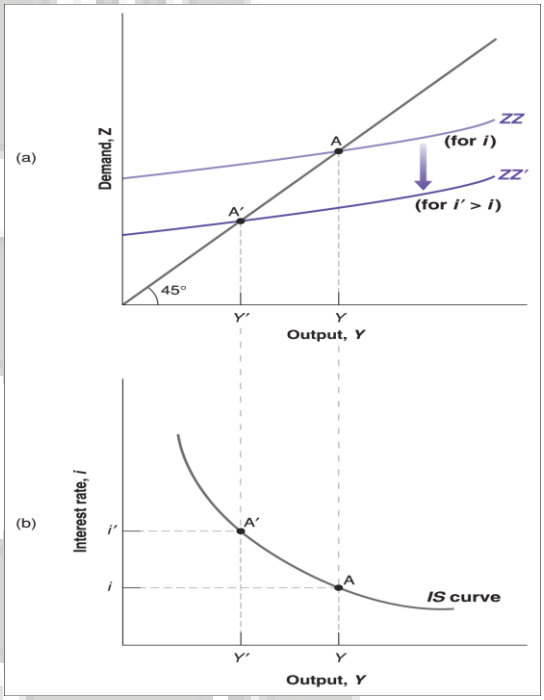
Blanchard, Giavazzi, Amighini, Macroecon.: A Europ. Persp., 2nd ed., Ch. 5-6

Chapter 5 – Goods and financial markets: IS – LM

- The goods market and the IS relation
  - Summary
    - Equilibrium and IS relation: Y = C (Y-T) + I + G
    - Now, we will look at the effect of the interest rate on investment.
  - Investment, sales and the interest rate
    - Investment depends on
      - The level of sales (output). If sales go up, production goes up and I needs to go up
      - The interest rate. If a firm must borrow to buy, the higher i, the less attractive. If i is high enough, additional profits won't cover payments.
    - So, I = I (Y, i) and I = S
  - A new equilibrium
    - Y = C (Y – T) + I (Y, i) + G
    - Upward sloping, but a curve rather than a line
  - Deriving the IS curve
    - Suppose: i goes up, investment then goes down, so demand goes down. Then, ZZ shifts downwards, lowering Y to a new equilibrium.
    - IS curve shows all points of equilibria in the goods market. Changes in either T or G will shift the IS curve (or consumer confidence).



- Financial markets and the LM relation
  - Equilibrium: M = €YL(i), but what if we look at the real state? → M / P = YL(i)
  - Deriving the LM curve
    - Suppose: Y goes up, so Md shifts to the right, so i goes up in order to establish a new equilibrium (upward sloping)

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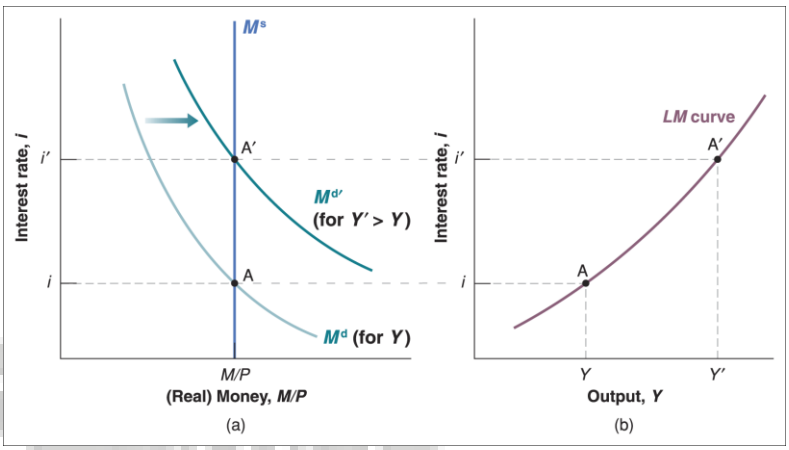
- The LM curve represents all points of equilibria in the money market. Changes in M / P will shift the LM curve (short run: P doesn't change).



- Putting the IS and LM relations together
  - Overall equilibrium
    - Equilibrium in both markets.
    - Where IS and LM intersect.
    - The relations together determine the level of output and the interest rate.
  - Fiscal policy, activity and the interest rate
    - Fiscal contraction or consolidation: change in G or T
    - Fiscal expansion: increase in (G-T) (budget deficit)
    - Assume T goes up → IS shifts leftwards → lower output due to the multiplier. There is no effect on LM → lower overall equilibrium.
  - Monetary policy, activity and the interest rate
    - Monetary contraction or tightening: decrease in money supply.
    - Monetary expansion: increase in money supply.
    - IS is not affected by a change in the money supply, only LM is.

- Using a policy mix
  - Combination of monetary and fiscal policies, principle remains the same.

- IS-LM and the liquidity trap
  - The CB can't decrease the interest rate below zero.
    - If the interest rate goes down, the demand for money goes up.
    - If the interest rate is zero, people want a certain proportion in currency for transactions, after that, they are indifferent about holding money or bonds.
    - If the money supply goes up, the CB buys bonds, so the demand for bonds goes up, increasing the price for bonds and lowering the interest rate. If the interest rate is already zero, an increase in Ms cannot decrease the interest rate below zero, so a monetary expansion becomes powerless.
    - Liquidity trap: people are willing to hold more money at the same interest rate.

- How does IS-LM fit the facts

- The ISLM model appears to describe well the behaviour of the economy in the short run. In particular, the effects of a monetary policy that one observes in data appears to be similar to those implied by the ISLM model, once dynamics are introduced.
- Dynamics: it all takes some time to adjust.

De Grauwe, Ch. 3 Why fixed exchange rate systems collapse

3.1 Introduction

A fixed exchange rate system, if successful could have major advantages. Residents would not have any uncertainty regarding the value of their currency in the future. Thus, there were significant advantages for a fixed exchange rate, why then did they collapse? When a country commits itself to fix its exchange rate, it makes a promise: it promises to keep the exchange rate fixed today and in the future. There is however the problem that people may start to doubt the promise, this leads to a credibility problem. Countries may have an incentive to break their initial promise if there are certain circumstances in which it is better for them to break their promise instead of keeping them (adverse shocks in demand for example). Then, investors may lose confidence in the promise and start selling/buying the currency and this can turn into a speculative crisis. There are two main underlying problems, the N-1 problem and the adjustment problem.

3.2 The (n-1) problem

When you have a fixed exchange rate system between n countries, you only have n-1 independent exchange rates. Assume there are 2 countries (n=2), then there is only 1 (2-1) independent exchange rates (so for example US and EU, only USD/EUR exchange rate). Therefore, only n-1 countries have to use their monetary policies to keep the exchange rate fixed. Thus, there is one country that can pursue its own strategy with regard to monetary policy and the other countries will have to follow. This is good news for the one that can follow its own strategy (as it can boost employment by monetary policy), however, it is likely that it would lead to a conflict between the countries.

The interest rate parity tells us that $R_a = R_B + \mu$, where μ represents the expected depreciation. Now consider the case of a fixed exchange rate, in which agents fully believe the commitment of the government. Thus, they do not expect the value of the currencies to change (as the value remains fixed). This means that the rate of depreciation is 0 ($\mu = 0$, as there is no change expected). Therefore, IRP tells us that the interest rates in both countries have to be the same ($R_a = R_B$).

There are (indefinitely) many levels of monetary policy that satisfy the condition that the fixed exchange rate can be held. Basically any level of monetary policy can be sustained, as long as both countries have the same level and thus the interest rate is the same in both countries. If one country thus changes the level of monetary supply (that country can choose its own money supply, due to the n-1 problem), the other country will have to follow the same level to keep the interest rates equal to one another.

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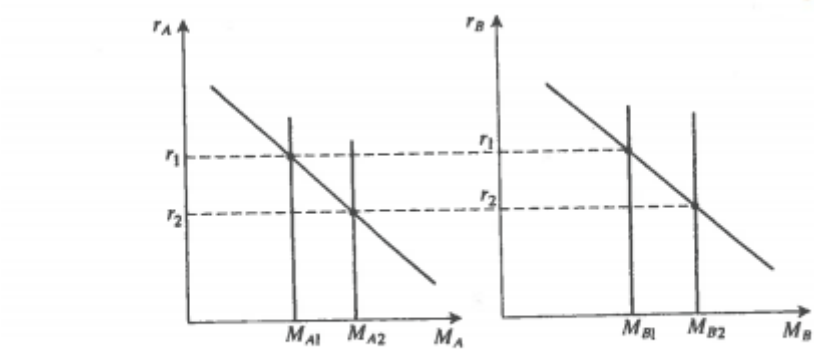

FIG. 3.1. The n – 1 problem in a two-country monetary model

3.2.1 The (n-1) problem in the Bretton Woods system

The gold convertibility under the Bretton Woods system was designed to restrained the United States from printing too much dollars, for those dollars could be converted to gold at the spot. In this case, all currencies were pegged to the dollar and thus, the US had a free monetary policy (n-1 exchange rates). In practice, the United States did in fact pursuit very expansionary monetary policies in order to stimulate the economy. This led to inflation and in the rest of the world, the countries had to follow this policy and thus they also imported inflation. Several countries tried to stop this rise in inflation by imposing capital controls. Speculators became aware of this and they started to speculate against the dollar (selling dollars). This led central banks to accumulate an incredible amount of US dollars (they had to exchange their own currency to obtain dollar to increase the demand for dollars and increase supply for their own currency, in order to keep the peg).

3.2.2 The (n-1) problem in the EMS

The EMS system was very flexible at first, with a lot of revaluations and devaluations, this contributed to the fact that the n-1 problem was never a great problem, for asymmetries were corrected with revaluations and devaluations. After the mid 1980's the system became a lot more rigid and the n-1 problem could start to have effect. The system started to look like Bretton Woods, with the difference that Germany was now the center country, for two reasons: It was the largest economic power and it had a strong reputation of low inflation. Other countries were okay with Germany being the leader, for they hoped to import low-German inflation. In the early 1990's there was a recession in a lot of countries in Europe, but not in Germany. Thus, Germany had a different monetary policy than other countries wanted. If France for example was hit by a negative demand shock, its money demand was decreased (as that is a function of output/demand). This would have led to a lower interest rate for a given money supply, as people purchase bonds in order to get rid of their liquidity, which drives up the price of bonds, reducing the interest rate. This causes money to flow to Germany (as the interest rate is higher there). Under a fixed exchange rate this is obviously not possible. Thus, the French Central Bank had to decrease their money supply, in order to raise the interest rate (to level it to the German interest rate again). This would have caused the recession to become worse even. Speculators then suspected that countries might not be willing to keep their peg with Germany, because the economies suffered too much, this led to a credibility problem and speculative crises.

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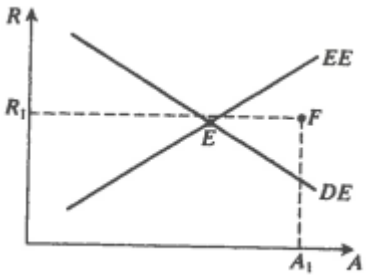
3.3 The adjustment problem

This problem begins as follows: suppose a country with a fixed exchange rate is hit by an adverse shock that produces a balance of payments deficit. This country will then need to eliminate this balance of payments deficit, for a country cannot sustain a balance of payments deficit indefinitely (as the central bank will then run out of international reserves). In order to eliminate this deficit (while keeping the exchange rate fixed) this country will have to reduce aggregate demand. This will lead to lower imports, which can eliminate the balance of payments deficit. This will significantly hurt the economy, as there will be lower output and more unemployment. The other way that the country can solve this problem is by means of the exchange rate (this is however not possible when the rate is fixed). This way is much less painful, but as said, not possible under a fixed exchange rate regime. Private agents realize the exchange rate adjustment way is much less painful and might question the government's promise to keep the exchange rate fixed.

3.3.2 The adjustment problem: the theory



A way to represent the adjustment problem is a Swan Diagram. Where R is the real exchange rate (which can also be considered as competitiveness, R = S P*/P with P* as the foreign price level and P the domestic price level). A rise in R, due to perhaps a devaluation (thus the domestic currency becomes less expensive), makes the domestic economy more competitive, as exports become cheaper and imports more expensive. This will in turn lead to an improvement of the BoP. On the horizontal axis the total level of spending in the domestic economy is represented (which is often called "absorption", hence the A). Y – A = X –M (where A = C + I + G) is the equation. This equation makes clear that when absorption is bigger than output, import exceeds export and thus there is a current account deficit. In the figure, there are two equilibrium conditions.

The first is the EE curve, this line represent external equilibrium (current account in balance). This line is upward sloping, for if the competitiveness improves, the current account improves (as exports becomes less expensive and imports more expensive). In order to be in equilibrium, absorption must then increase in order to have more imports and let exports equal imports again. Thus, any point under the EE curve represents a current account deficit (take F). At that point, the level of absorption is too high for the level of competiveness (R1). That is, there is too much import due to the high level of absorption for this level of competitiveness.

The second line is the DE curve, this line represents domestic equilibrium (level of natural employment). An unemployment rate under the natural rate will have inflationary pressure and above will have disinflationary pressure. This has the following reason: As there is little unemployment, workers can negotiate higher wages, which will then have to be incorporated in prices and this leads to prices that rise. The DE curve then is downward sloping, because when the real exchange rate increases (thus R increases, competitiveness increases) exports and thus output increases. This leads to a lower level of unemployment than the natural rate, which has inflationary pressure on the economy. Thus, the level of absorption must decline (which is domestic spending) in order to reduce demand and increase unemployment to the level of natural unemployment. Points above (to the right of) the DE curve represent inflationary pressure areas, for at those points the level of absorption is too

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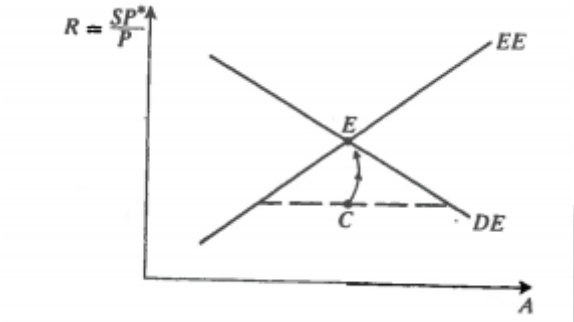
high for the level of absorption at those points is still too high and therefore unemployment is below the natural level of unemployment (so workers can demand higher wages and this leads to inflation).

3.3.3 A domestic inflationary shock



Suppose now we start at equilibrium (point E). Suppose also that there is a sudden increase in the price level due to some reason. This will shift R down (competitiveness decreases) and we end up in point C. There are now two mechanism that will work ***if there is wage flexibility and price level flexibility***. The unemployment rate is above the natural rate of unemployment, thus the workers will have to accept a lower wage, as they have lost a lot of bargaining power. This happens quickly if there is wage flexibility. Furthermore, there is a current account deficit (under the EE curve and thus there are more imports than exports). The monetary authorities will have to buy domestic currency and sell foreign currency in order to keep the exchange rate fixed (the demand for domestic currency was low (as exports are lower than imports)). This will lead to a decrease in the money supply, which in turn leads to an increase in the interest rate. This slows down the economy (as Investment decreases, because it is more expensive to borrow) and leads to a decrease in the price level (disinflationary pressure). This way, R will return to its original level again.

However, ***in the real world it is not very likely that there is wage flexibility and price level flexibility***. Suppose again we are at point C again (due to the shocks). Now, there is no mechanism that moves us towards equilibrium, because both the price level and the wages will not change. The government can now choose to increase spending, which can shift the economy towards the DE curve along the dotted line (as absorption increases Y = C + I + G). This does however cost the economy in terms of the current account, increasing absorption leads to more imports and thus a deterioration of the current account. If they want to move to the EE curve (where the current account is in balance), the government will have to decrease spending (which will lead to more unemployment), which will decrease imports and lead to an improvement of the current account.

We have now reached the essence of the adjustment problem in a world of price and wage flexibility. The government can spend more to obtain domestic equilibrium, but they will have a constant current account deficit, which is unsustainable (as the government will continuously have to buy domestic currency to keep the exchange rate fixed) or it can decrease spending to reach external equilibrium, but this will come at huge costs in terms of unemployment. They will however never reach internal and external equilibrium. Therefore, governments have the incentive to use the exchange rate (a devaluation will improve competitiveness) to improve the economy. Speculators will now this, and might doubt the commitment of the government when a country is trapped along the dotted line with point C.

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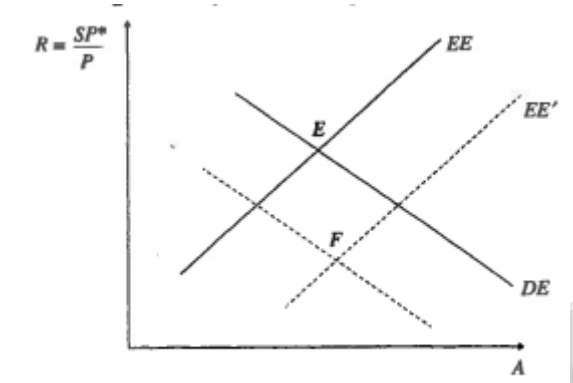
3.3.4 An improvement in the terms of trade



Now we will examine when there is a terms of trade improvement (which may happen due to an increase in say for example Dutch Cheese). Due to this, the EE curve shifts to the right, because an improvement of the terms of trade improves the current account (it leads to a surplus initially, because exports increase). There is more absorption (which will lead to more imports) necessary in order to balance the current account again. The DE curve will shift leftwards, due to the fact that the increase in demand leads to inflationary pressure (as demand increases, output increases, unemployment decreases and workers can demand higher wages). In order to prevent this from happening, a lower level of absorption (spending) is necessary. Thus, the economy will move to point F. The only way this is able to happen with a fixed exchange rate is that the price level in the economy will have to increase (P will become bigger reducing R). There is another way that the economy can move to F however. Letting the nominal exchange rate decrease (a nominal appreciation of the currency, S) will also decrease R, but this is not possible under a fixed exchange rate regime. Therefore, when there is an improvement in the terms of trade, speculators may doubt whether the government will let inflation rise in the domestic country in order to keep the exchange rate fixed. This might lead to speculative crises and problems with credibility.
Many economists argue that n-1 and adjustment problems are interrelated.

3.4 Conclusion

Firstly, exchange rate systems after the second world war were advantageous, if they worked well. When there was confidence in the system, international trade increased, because people were certain what the exchange rate would be in the future. However, the system was also very fragile. Credibility was a very important issue with fixed exchange rate regimes. Furthermore, time inconsistency played a role in the decisions regarding the n-1 and adjustment problems. Policymakers might want to stimulate the economy (and thus lose the peg) in the short term, whereas it would have been better for the long term to keep the peg (and suffer from a temporary recession). There are two solutions for these problems: 1. Make fixed exchange rates truly binding (but this also makes credibility problems arise, how credible is the binding agreement). 2. Eliminate fixed exchange rates and allow for more flexible exchange rates.

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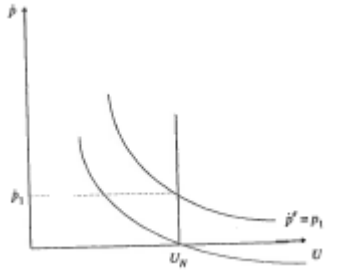
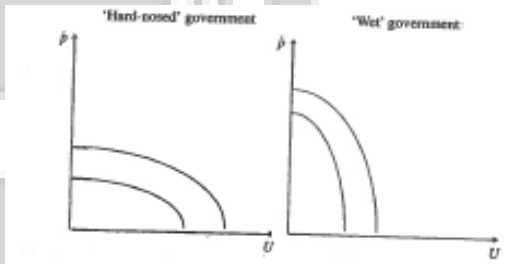
Ch. 4. Modelling the collapse of fixed exchange rate systems (sections 5-7 only)

4.1 Credibility of fixed exchange rates: a formal analysis

The first model is based upon the Barro-Gordon analysis extended to an open economy. We will take the Phillips curve as our starting point: $U = U_n + a(p^e - p)$, where U is the unemployment rate, U_n is the natural rate of unemployment and $p(^e)$ is the (expected) price level. Thus, if inflation is higher than the expected level of inflation, the unemployment rate is lower than the natural rate of unemployment. The vertical line on the right shows the natural rate of unemployment, the sloped curves are the Philips curves.

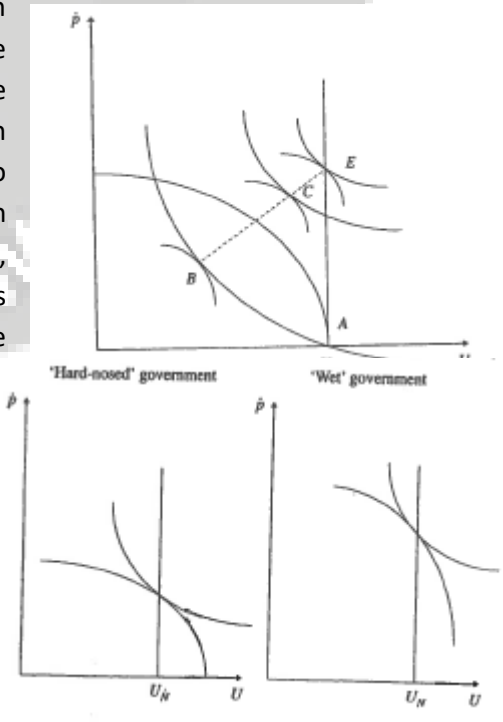


Next, the governments of countries are important, more importantly the preferences of the monetary authorities. They namely have the option to choose between inflation and unemployment (more or less). There are two sorts of monetary authorities: 'Hard-Nosed' authorities and 'Wet' authorities. Hard-nosed authorities care a lot about inflation and less about unemployment, whereas wet ones are the other way around, this can be seen in indifference curves of those authorities. As you can see, the hard-nosed governments indifference curve is much flatter, as they are not willing to trade a lot of inflation for a lower unemployment level. The wet governments indifference curve is very steep on the other hand, they are willing to increase the price level significantly, even for a small reduction in unemployment (note that indifference curves closer to the origin are considered better, for there is a smaller loss to society, due to the fact that there is less unemployment for each price level then).



When we put the two together, we obtain our analysis figure:

If monetary authorities announce that they will have an inflation level of 0% and if private agents believe this announcement, the economy will end up in point A. However, at that point, the government has an incentive to increase the price level, for it can then move to point B, which is on an indifference curve closer to the origin. When it does so unexpectedly, private agents are taken by surprise and the point will indeed be B. However, the next time, people will anticipate a higher level of inflation, and thus the Philips curve will move up. At that point again, the government has the incentive to cheat and unexpectedly increase the inflation rate to get to point C. Then, in the next period agents will again expect a higher level of inflation, and thus the Philips curve will move up even further. This process will continue until point E is reached, because there, the government no longer has the incentive to cheat, for a movement along the Philips curve at E will lead to a higher indifference curve, which does not make any sense (as the loss of welfare would be even bigger then).



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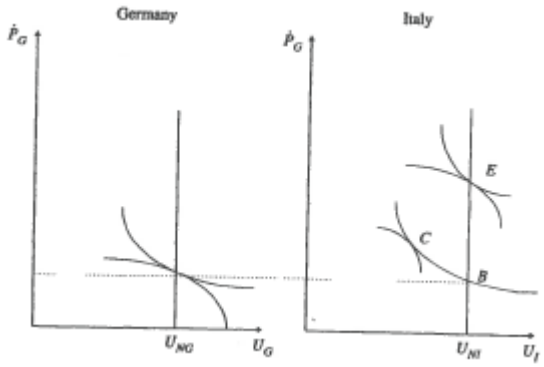
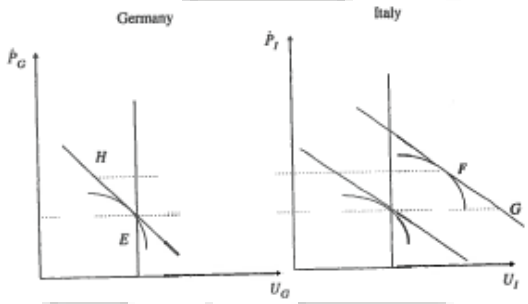
In the Barro-Gordon model, it becomes clear that a hard-nosed government can have a lower inflation rate than a wet government, as you can see.

Now, we have two countries, Germany (hard-nosed) and Italy (wet). Assume the two fix their exchange rates, is this agreement credible (when we assume PPP to hold, thus the exchange rate will change when the levels of inflation are different). The inflation rate chosen will probably be Germany's inflation rate, for Germany will never accept a higher inflation rate (as this leads to a welfare loss for them) and Italy will benefit from a lower inflation rate. To make the peg work, Italy's government will set the inflation rate at the level of point B. Private agents, however, know that the government has an incentive to cheat and move to point C (which is on a lower indifference curve) and thus, this system can never be credible (if it only occurs once, if it happens multiple times, the government can establish a reputation of keeping its promise).



If we assume the two countries to have the same preferences with respect to inflation and unemployment (both hard-nosed). Now, there is a negative shock in Italy, which moves the Philips curve to the right and nothing happens in Germany. Germany will want to keep the level of inflation at point E. This would mean for Italy, that they will end up in point G. The government of Italy now however has an incentive to increase inflation, so as to reach point F (with slightly higher inflation, but less unemployment). Thus, even with equal preferences, this system is still not credible in the event of shocks.



4.2 Disinflation by pegging to a low inflation currency

A country with a high level of inflation (such as Italy) might want to peg to a low inflation currency, to obtain a lower level of inflation themselves, they can do so by changing their own preferences (thus care more about inflation in the future). Private agents are then unsure about the commitment of the government to those new preferences. The adjustment from wet to hard-nosed will probably be accompanied by an increase in the unemployment rate. Private agents can imagine this increase in the unemployment rate not as a switch too more contractionary monetary policy, but to a negative shock which might induce the monetary authorities to do the contrary (follow an expansionary monetary policy). Thus, there are some problems with changing preferences.

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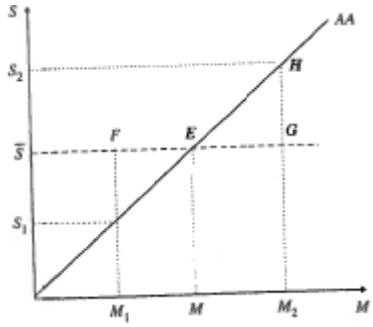
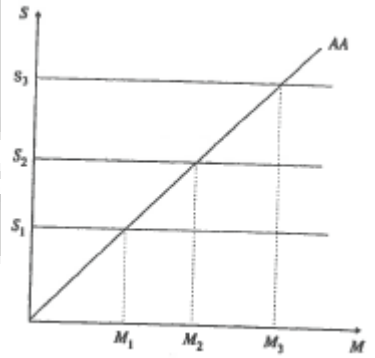
4.3 The Krugman model



The Krugman model tries to explain when a system will collapse. To do this, we look at one country facing the rest of the world. M indicates the level of money stock and S the exchange rate. The equation is defined the following: S = k(m/m*)M/M*, where k, m and m* are considered to be stable over time and M is domestic money stock and M* the foreign money stock (in the figure also not changing). Thus, if the domestic money stock is increased by 10%, the exchange rate also increases by 10%. Suppose the government fixes the exchange rate at Sbar, and the money stock is M1 at the moment. This means that the currency is too cheap (for it should have been S1 based on the money stock, but it is Sbar at the moment) and thus, that exports are higher than imports (as exports are too cheap and imports expensive). Therefore, the government will have to sell the currency and buy the foreign currency and it will gain international reserves. If the money stock is bigger than M (which is accompanied by Sbar), the country will lose international reserves (currency too expensive, exports < imports, country buys currency in the market and sells foreign currency). Thus, when the fixed exchange rate is above the AA curve, the country gains international reserves (as in point F) and when the exchange rate is below the AA curve, the country loses international reserves (as in point G).

Consider the economy is in point F at the start, but increases the money stock by a certain percentage each year, to stimulate the economy. The country will accumulate international reserves as it moves to point E (for at those points, the currency is still too cheap as compared to the fundamental values). After point E, when we move to G, however, the country starts losing international reserves (under the AA curve). At point G, the international reserves are depleted and the country will no longer be able to keep the peg (and the exchange rate will be free and jump to point H (based on a money stock of M2). Speculators however, know that this will happen and will speculate seconds before. This is also known, so they speculate minutes before. This process continues until point E. If we move to point E, speculators will already anticipate that the country will not be able to keep the peg at point G and will already speculate.

4.4 The Obstfeld model



The Obstfeld model uses the same graph, but is somewhat different from the Krugman model. In Obstfelds model, speculators realize that there are different equilibrium values of S and M that are all equally stable (thus fixing the exchange rate at S1, means M1 and S2 means M2). He argues that even when the monetary policy is correct, the system can collapse due to a speculative attack. When the monetary authorities fix the exchange rate at S2 and the accompanying money stock of M2, they can suddenly start to buy immense amounts of the currency. If the monetary authorities are unwilling to hold the exchange rate fixed at S2, they can simply move the fixed rate to S3 and the money supply to M3, speculators can then make a huge profit, even though the monetary authorities did everything right at first. This indicates the self-fulfilling prophecy, because speculators expect the exchange rate to switch to s3, it will happen.

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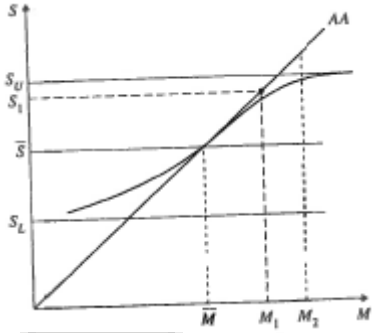
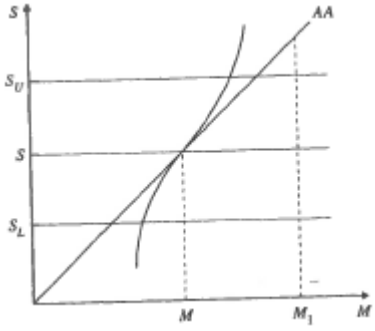
In Krugmans model thus the exchange rate system collapses due to monetary policy that does not work, whereas in Obstfelds model the monetary policy is fine, but there is just a speculative attack on the currency. Note that speculators usually do not just take any currency to attack, they usually have some concern about underlying values (such as the willingness of the central bank to keep the exchange rate fixed at the same point)

4.5 Target zone models

In the real world, the exchange rate is never entirely fixed to a certain value, but it is allowed to fluctuate within a band (in the figure, these bands are represented by Su (upper band) and Sl (lower band). Thus, we need target zone models to analyze them. In this example, the authorities are expected to be completely credible with their fix and fully committed to maintain it. We start at point Mbar, but let us suppose there is a shock that takes the monetary supply to point M1. At that point, speculators expect the exchange rate to decrease, rather than to increase over time. Thus, they are willing to buy the currency instead of sell it and thus, the exchange rate will be below the AA curve (so, on the S shaped curve, which represents how the exchange rate moves in a target zone model, when the commitment is fully credible). The exchange rate will never be Su either. If it would be, speculators would be certain that the exchange rate would decrease at some point, for it cannot increase above Su, this would guarantee a profit, which is not possible. Thus, it will never touch Su and thus, it is S shaped. If the shock leads to a lower money stock, speculators will expect the currency to depreciate over time (exchange rate will increase) which would lead speculators to sell the currency forcing the exchange rate to be higher than the AA curve (for speculators think it is more likely to depreciate than to appreciate, which is why the exchange rate will be higher than it is expected to be based on the money stock (the AA curve)). When the monetary authorities are completely credible, speculating is thus stabilizing, it helps keep the peg.





When the authorities are not fully credible, it is a different story. If the money stock at once increases to M1, speculators are unsure whether it is a random disturbance or a change in the monetary policy of the country. Due to this insecurity, they will sell the currency instead of buying it, which is why the exchange rate will be above the AA curve (or buy it, instead of selling it and it will be below the AA curve, if the shock decreases the money stock). Thus, speculating is de-stabilizing when the monetary authorities are not fully credible. Speculators sort of panic, because they do not know whether the monetary authorities will do everything it can to keep the exchange rate within the bands. Therefore, they are more likely to sell when the money stock increases (or buy when the money stock decreases) for they do not want to be too late when the central bank in fact does not keep the exchange rate within the bands).

4.6. Capital controls and fixed exchange rates

Some economists have argued for re-imposing capital controls, for there have been more cases of speculative crises since the liberalization of the international capital movements. However, de Grauwe

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argues that capital controls do not solve the credibility issues regarding the fixed exchange rate models and that they are not efficient enough, nor can they be made efficient enough to help.

Koen van der Veer (Lecture topic 6)

Balance of payments (BoP) and exchange rates (floating vs fixed):

Money flows in (+) Credit	*Money flows out (-) Debit*
Exports	*Imports*
Decrease private net foreign wealth (assets)	*Increase private net foreign wealth (assets)*
Decrease in reserves	*Increase in reserves*

A **floating** exchange rate will ensure that there is a balance in the in- and outflow of money; no change in reserves.
If the exchange rate is **fixed,** quantities have to adjust (change in reserves)

For example, if a country wants to stop their currency from depreciating, they will have to:

Foreign exchange market interventions
- buy their own currency & sell foreign currency→ decrease in reserves. (problem of limited monetary reserves)
- In order to attract foreigners to invest in your currency, **interest rates** have to **increase**.

Exchange rate adjustment

Capital controls
- Stop importing/exporting from the country that the currency is depreciating to

Monetary expansion
- The country of the appreciating currency increases the money supply. Never actually used because this could lead to high inflation.

How does this work within the euro area? TARGET2
The TARGET system automatically enables cross-border financial transactions.

All the transactions between inhabitants of different member countries go through this system: Inhabitants have accounts with commercial banks, which have accounts with their national banks, which have an account at the Euro system.

The national banks have accounts, which have to be balanced at the end of the day.
If the money flows are not balanced in a country (for example imports>exports), this countries' target2 claims increase to end up in a balance on the BoP. There is no distinction about from which country was imported, only the fact that the <u>total</u> inflows & outflows have to be balanced.

Money flows in (+) Credit	*Money flows out (-) Debit*
Exports	*Imports*
Decrease private net foreign wealth (assets)	*Increase private net foreign wealth (assets)*

Target2 claims behave as monetary reserves.

2011/2012: Lack of trust in Southern countries
Money flowed from Italy to Germany

- Italian interest rate increased (lack of liquidity)
- Italian commercial banks had to borrow
- German interest rates declined
- German commercial banks did need extra money → low interest rate

This resulted in "interest rate tension" within Europe. Can the Euro survive this? → Rumors, lack of trust.

What should the ECB do now?

- Implement capital control in this case (not favored)
- Let the currency union collapse (not favored)
- Expansionary monetary policy (favored more by Italians, less by Germans) ← **2012 solution**

To "swap" balances the ECB could also decide to allow central banks with a liability to 'pay' by means of the acquired bonds of the NCB's government. So, in the Germany-Italy example, the Bundesbank would have to accept Italian bonds → risk sharing.

Eelke de Jong – History of international economics and models (2019's lecture)

1950s

During the 1950s, many exchange rates were fixed to the dollar, currencies were not freely convertible and European economies had to rebuild their economies. Economics regarded capital flows as unimportant (as it was restricted) and so it focused on trade flows. Theories are: the elasticity approach (under what conditions will a depreciation of the currency improve the current account, this had to do with the reaction of imports and exports on changes in the exchange rate (thus, the elasticity of imports and exports)), the absorption approach (this considers the current account as the difference between national income and national expenditure) and the monetary approach to the balance of payments (this focuses on the change in official reserves, and thus focuses on the monetary aspects regarding the balance of payments).

1960s

At the end of the 1950s the currencies were made freely convertible in Europe. Restrictions on the international movement of capital were still in place however. Market forces first tested the fixed exchange rate system. There were several topics of issue in the sixties: The IMF tried to create one supranational currency (they became the special drawing rights, a basket of currencies), balance of payments disequilibria lasted longer than expected (because politicians found it hard to devalue their currency) and politics was dominated by the view that long-run growth was certain. Therefore, economic theory was concerned with short-run, demand side analysis (e.g. Mundell-Fleming model).

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1970s

The Bretton Woods system collapsed in the early 1970s. The value of the dollar decreased significantly, making the US a lot more competitive, which was hard for the European countries. Furthermore, the US monetary policy was aimed at its own interest, without thinking about the consequences it had for the rest of the world. As a result, European leaders wanted to create a counterweight for the dollar. Also, oil producing countries decided to quadruple the price of oil, which led to large current account deficits in oil importing countries. Due to this, the economy slowed down (as oil is important for production), while the price level rose (due to the higher price of imported oil), which is known as stagflation, a decreasing economy with inflation. During the seventies, exchange rate models were most popular, such as the PPP theory, the portfolio balance approach (explained later in De Grauwe) and the monetary approach to the exchange rate.

1980s

In the early eighties, the FED pursued a very contractionary monetary policy (to reduce inflation), which increased the interest rate and led to a huge appreciation of the dollar. As a lot of debt was denominated in dollars, the debt of other countries rose tremendously. Furthermore, the US economy became a lot less competitive and asked for protectionary measures (which was denied by Ronald Reagan, POTUS). However, he did intervene in the foreign exchange market to reduce the value of the dollar. The current account of the United States jumped into deficits in the eighties and the current account has been negative ever since. Economic theory was concerned with the fact that the exchange rate changed way more than fundamental values (and theories) would predict. One searched for alternative reasons, and came with so-called pricing to market models (developed by Krugman).

1990s

In the late nineties, the Economic and Monetary Union was established. Before that, we had the ERM, which had a lot of crises, which were mostly due to speculative attacks. Uncertainty entered the equation, what if a country was not willing to defend the fixed rate? This led to the Obstfeld model of speculative attacks. Furthermore, there was the reunification of Germany, growth in developing countries and an increasingly greying population.

Eelke de Jong – Exchange rate determination

The oldest theory on exchange rate determination is the Purchasing Power Parity theory. This theory states that that exchange rate is determined by the relative price level of two countries ($E = P / P^*$). This is called the absolute version of PPP and has some major problems: There is no common price level index, consumption patterns are different in nations and which year to choose as base year is unclear. Therefore, the relative version of PPP was designed, which equates the change in the exchange rate with the difference in the change in price level ($\Delta E = \Delta P - \Delta P^*$). The idea behind the theory is that in a world without transaction costs, an identical good should cost the same in the two countries. Of course, this theory rests on the assumption that there are no trading costs and transaction costs.

Another traditional model is the elasticity approach. This theory assumes that the exchange rate is determined by the demand for foreign currencies resulting from current account transactions (thus importing something sparks demand for foreign currency, as you will have to pay for it). However

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whether a change in prices will lead to a change in demand for foreign currency depends upon the effect of this change in prices on the demand for imports and exports (thus, whether an increase in the price of domestic goods will lead to a huge increase in imports or not). The latter is measured by the price elasticity.

The final traditional approach is the absorption approach. From Y = C + I + G + EX – IM you can deduce that the current account is equal to national income, minus national expenditures (EX – IM = Y – A (where A = C + I + G, or national expenditure)). Thus, if a country has a current account deficit, thus, there is more demand for foreign currency than for domestic currency and the currency is hence depreciating. There are two things it can do to improve this, increase income (Y) or decrease national expenditure (A). The latter is usually easier, for a government can reduce government spending (G).

Next up, we have asset market approaches to the exchange rate (in the short-term). The first one is the portfolio balance approach. In this approach, domestic residents are assumed to have a portfolio consisting of domestic currency, domestic bonds and foreign bonds. If for any reason there is a disturbance in the exchange rate, which depreciates the domestic currency, the proportion of foreign bonds in the portfolio of domestic residents increases (as they become more valuable measured in the domestic currency). The optimal distribution between domestic and foreign bonds is not altered. Thus, domestic agents try to sell foreign bonds, so as to obtain the optimal portfolio distribution again, which will lead to an appreciation of the domestic currency (and a depreciation of the foreign currency). Note that this is the case if they net foreign assets are positive and the other way around if the net foreign assets position is negative (thus that there is more foreign debt than assets). If people have more foreign debt than assets and the currency depreciates, the debt becomes more expensive and thus they want to increase their foreign assets (as to close the gap between foreign debt and foreign assets). This will reinforce the initial depreciation.

The monetary approach to the exchange rate is another approach to determine the exchange rate. The difference with the portfolio balance model is that residents do not care what bonds to hold (foreign or domestic). The exchange rate is based upon the real demand for money and the real supply of money and thus it is ultimately determined by the monetary authorities, also relative PPP holds. Thus, if the real money supply increases and the real money demand remains the same, the price level will increase and thus the currency will depreciate.

Last, there is the currency substitution model. This model has been designed, but it concludes that the results are almost always comparable with the portfolio balance approach.

In the asset market models, the current account (which was very prominent in the traditional approaches) is still important, but less visible. In particular the portfolio the balance method the CA is important. The level of net foreign assets is namely changed by the current account, if the current account is in surplus (exports > imports), domestic residents acquire foreign assets (they get more than what they have to pay). This is important for the analysis, for when the net foreign position switches from negative to positive, the result of the analysis is different (as described earlier).

de Grauwe, Ch. 5

5.1.1 Excessive exchange rate variability

Since major currencies have become floating, exchange rates have become much more variable. If we assume the IRP to hold, the forward premium is a good estimate of future exchange rates. Most observed changes in the past 30 years (1960-1990) were not incorporated in the forward

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premiums/discounts. Furthermore, not even the direction of the premium/discount was accurate most of the time.

5.1.2 Exchange rate variability and price variability

Another way to look at the exchange rate variability is by means of the Purchasing Power Parity, instead of IRP. Evidence shows that the movements in the exchange rate are much bigger than PPP would suggest. On top of that, PPP can move in the opposite direction for several years in a row. Thus, exchange rate movements are larger than expected to be by the fundamental values of interest rate differentials and price level differentials and that they move in opposite directions even. Nominal and real exchange rates have been highly correlated over those years (1960-1990)

5.1.3 Long-run exchange rate variability

The PPP theory is essentially a long run theory and the evidence presented earlier was typically short term. Therefore, it might be the case that the exchange rate might follow PPP in the long run. Most of the time, this is not the case, the exchange rate describes the PPP better, but there are very long periods where the exchange rate deviates. Thus, also in the long run, PPP does not accurately describe the exchange rate.

5.2 The purchasing power parity theory and real disturbances

The purchasing power theory only holds if the sources of the price disturbances are monetary. Thus, only when the money stock growth leads to inflation. It might also be the case that there is more demand for some domestic output (say Dutch Cheese) which increase inflation. PPP will not take this into account, whereas the exchange rate obviously will. This is called a real disturbance (for it is not monetary).

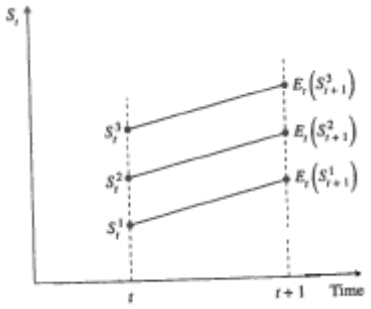
5.3 Real exchange rates and productivity differentials

A prominent type of real disturbance are changing levels of productivity. Generally, productivity growth is higher in the tradable goods sector than in the non-tradable goods sector (manufacturing as compared to services). This was important for the Japanese Yen and US dollar, Japans tradable goods sector had huge productivity growth, which led to inflation in Japan that was bigger than in the US. Due to the growth in productivity, the inflation rate did not have to change the nominal Yen/USdollar exchange rate however (products remained the same in price, because people could produce more in one hour, thus they could be paid more per hour). Thus, the real exchange rate (exchange rate/ price level differential) could appreciate in Japan relative to the US. If we implement the productivity growth in the exchange rate analysis, we obtain a path that is much closer to the actual exchange rate. In the future, productivity growth differences are likely to be small between Western countries such as the US, Germany and Japan. Thus, an important reason for differences in the exchange rate is not there anymore. If the monetary authorities keep the inflation rates almost comparable to one another, the exchange rate should not change that much anymore. (note that this is all about the middle 1990's.)

Ch. 6 Modelling nominal and real exchange rate variability Sections 1-3 and 5-7 only

6.1. Why are exchange rates so volatile?

If we consider IRP to hold, there are indefinitely many current exchange rates that are possible. If for example we expect the dollar to depreciate by 10% this year, an exchange rate of 1, 2 and 3 are all possible, as long as the accompanying future exchange rate is 1.1, 2.2 or 3.3. This is known as indeterminacy. The path thus is determined by what agents expect to be the future level of the exchange rate. Thus, it is important to know how the private agents form those expectations about the future level of the exchange rate.



6.2. The fixed exchange rate solution: providing an anchor

The easiest way to prevent such indeterminacy is to provide an anchor, which is done with a fixed exchange rate. The start of the path is clear, for it is fixed by the monetary authorities. It went further than that still, the future level of the exchange rate is also fixed (if the commitment is credible). Thus, the path is just a horizontal path, it will not change.

6.3. Floating exchange rates: no fixed point

With floating rates, the problem of indeterminacy is great. The value of the exchange rate today is mostly determined by the expectations about the future exchange rate. There are several theories regarding the forming of expectations, one stream assumes rational behavior, the other assumes limited rational behavior.

6.5.3 The portfolio balance model

This model starts with the assumption that changes in the net foreign asset position are equal to the current account of the country. Thus, if exports are bigger than imports, the net foreign assets position increases (foreigners owe domestic residents more than domestic residents owe foreigners) and there is a current account surplus. If imports are bigger than exports, the net foreign assets position deteriorates. Thus $NF_t - NF_{t-1} = CA_t$ (where $NF_t - NF_{t-1}$ is the change in net foreign assets). NF consists of two parts, the private foreign asset position and the monetary authorities' foreign asset position. Thus, NF = NFP + NFO. If we substitute this into the previous equation, we obtain: $NFO_t - NFO_{t-1} = CA_t - (NFP_t - NFP_{t-1})$. This shows the difference between fixed and flexible exchange rates. The left hand side will adjust to whichever is left on the right side of the equation, as the monetary authorities will need to conduct open market transactions to keep the exchange rate fixed. Therefore, individuals will choose how much to import and to export and the monetary authorities will decide how much they will have to do. As already mentioned, the CA determines the net foreign assets position of a country, thus as domestic residents can decide the amount they choose to import and export, they can also determine the change in net foreign assets they wish (thus they decide how much wealth they put in domestic and in foreign assets). In a pure flexible exchange rate, the government cannot intervene in the market, and thus: $NFO_t - NFO_{t-1} = CA_t$.

Then the model assumes that the Current account is sluggish, that is imports and exports cannot change right away. At a very short time period, the agents can namely not change their spending and production. This has important implications, because the change in net foreign assets is

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already pre-determined then (by the CA). As a result, the exchange rate will have to adjust instantaneously so as to make sure that agents are willing to hold the existing stock of net foreign assets.

Now there is a monetary disturbance, the monetary base is increased. This lowers the interest rate in the domestic market. Domestic residents now hold domestic assets with a low interest rate and they will want to obtain more foreign assets that pay a higher return (interest rate) and thus the current account must show a surplus (as this is a positive change in the net foreign asset position). In the very short run, this is not possible, for the current account is essentially fixed in the very short run (and thus they cannot change their net foreign asset position). As a result, the exchange rate must jump up, to make the purchase of foreign assets less attractive (they will become more expensive due to the fact that the value of the domestic currency decreases). Due to the depreciation of the currency, the current account will improve, as exports will grow and imports will decrease. Eventually thus, the net foreign asset position is changed.

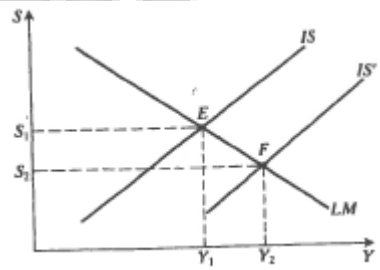
This model then gives an explanation for the fact that a current account surplus leads to an appreciation of the domestic currency. If there is a current account surplus, domestic residents' net foreign asset position increases. If residents previously had an optimal portfolio, they are unwilling to hold the extra foreign assets unless they are compensated for this. This compensation is called a risk premium, which comes in the form of an appreciation of the currency. This, namely, makes the purchase of foreign assets more attractive (as they are cheaper).

Evidence suggests that this theory can explain the short-term variability of the exchange rate and the fact that nominal and real exchange rates are highly correlated rather well.

6.5.4 The portfolio balance model and risk premiums

Empirical testing of the portfolio balance model with a particular function of risk premiums that is based upon the supply of domestic and foreign assets has proven to be unsuccessful. In general, risk premiums tend to be important, but testing it has been proven difficult.

6.6 The Mundell-Fleming model



The IS curve represents the combinations of exchange rate and output for which the domestic goods market is in equilibrium. The LM curve shows the combinations of the exchange rate and output for which the domestic money market is in equilibrium. The IS curve is positively sloped, because an increase in the exchange rate makes exports less expensive and imports more expensive, which leads to an increase in demand for domestic goods. An increase in output is then necessary to maintain equilibrium (note that this curve has another slope than the original IS-LM model due to the fact that the exchange rate is on the vertical axis instead of the interest rate. The interest rate and the exchange rate are inversely related, the higher the interest rate, the lower the exchange rate). The LM curve is downward sloping, because a lower exchange rate means that imports become less expensive. As imports become less expensive, the overall price level in the economy decreases, which leads to an increase in the real money supply (M_s / P). Therefore, an increase in output, which increases the real money demand, is necessary to equilibrate real money supply with real money demand again.

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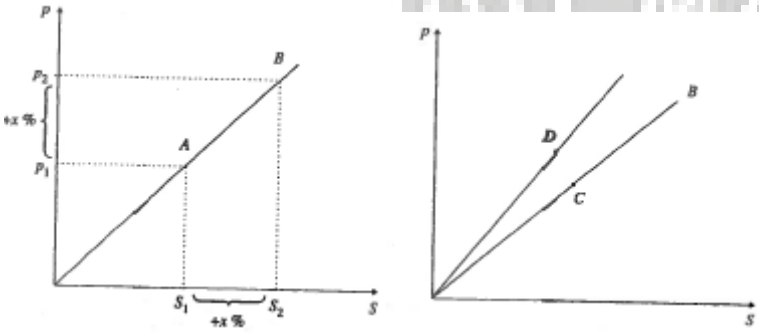
In the figure you see that a fiscal expansion (without the use of a monetary stimulus) will lead to a real appreciation of the currency. This is so, because a fiscal expansion increase demand for domestic goods and an increase in output is necessary to make sure there is an equilibrium in the domestic goods market again. The economy moves from point E to point F and the exchange rate is lower, thus there is an appreciation of the domestic currency. A change in the monetary base shifts the LM curve.

6.7 Equilibrium models of exchange rate determination

An equilibrium model assumes that markets always clear. One of these models is the monetarist model, an important feature of this model is that when the money stock increases by x percent, the price level changes by x percent and then the exchange rate increases by x percent as well.



The first figure represent a nominal change in the monetary supply. The second figure represents a real shock in the economy. Suppose for example that the there is an increase in demand for a domestic product (say Dutch cheese), this will improve the terms of trade of the domestic country. This will lead to steeper curve (as for every exchange rate a higher domestic price level is necessary to equate the domestic goods market(?)) and to the fact that the price level and exchange rate need not have to change in the same proportion. This thus can lead to a real appreciation (or a depreciation if it is a negative shock), as the real exchange rate is the nominal exchange rate divided by the price level.

An important implication is that changes in the real exchange rate can only occur due to changes in real factors, not due to changes in the money supply. Empirically this model cannot explain the short-term variance and even in the long-run it can only explain general tendencies.

John B. Taylor - Discretion versus policy rules in practice (1993)

Semantic issues

In Taylor's view, a policy rule need not be a mechanical formula. A policy rule can be implemented and operated more informally by policymakers who recognize the general instrument responses that underlie the policy rule, but who also recognize the fact that the rule cannot blindly be followed, but needs judgement. The advantage of rules over discretion is like the advantage of a cooperative (low inflation rate, $U = U_{natural}$) over a non-cooperative (high inflation rate, $U = U_{natural}$) solution in game theory. A policy rules is a contingency plan (nood plan) that last forever (several business cycles would be sufficient) unless there is a cancellation. Policymakers need to stay committed to the rule to obtain the advantages of the rule.

Policy design: the search for a good monetary policy rule

- Policy rules that focus on the exchange rate or the money supply generally do not deliver as good a performance (measured in output and price variability) as policies that focus directly

on the price level and real output. So, monetary policy rules in which the short-term interest rate instrument is raised by the monetary authorities if the price level and real income are above target (to decrease investment) and lowered when below target (to increase investment) seem to work well. According to Taylors own research, fluctuations in output are much larger when there is a fixed exchange rate as compared to a flexible exchange rate. Furthermore, price stability is also better maintained under a flexible exchange rate regime. The Taylor rule: r= p + 0.5y + 0.5(p-2) + 2, where r is the short term interest rate, p is the price level and y is the percent deviation of real GDP from target (trend level of output). Thus, Y is the difference between real GDP and trend level of real GDP. This rule fits the US' monetary policy in the 1980's/1990's rather well.

Discretion versus transitions between policy rules

In general, economists have been better at determining what type of system works best than at determining how to make a transition to that system. However, this is in fact very important. First of all, rational behavior is assumed to hold in these models (also the Taylor rule). This makes sense when the policy has been in place for a long time, but when a government makes a transition to a new rule, agents are still uncertain about what it will mean. On top of that, not everyone believes the government is serious about maintaining the new rules (credibility). Secondly, there are rigidities in the economy that prevent economic agents from changing their behavior right away (long-term wage setting for example).

Discretion in the operation of policy rules

A possible approach to making a policy rule operational does not try to use the details of any particular algebraic formulation. Instead, it requires a characterization of the fundamental properties of the rule. Thus, policymakers should not use the rule as a machine, feed it with a lot of numbers and implement that policy. They should take the general characteristics of the rule, think about it and then implement a policy that they deem fit. An example is the United States' Fed. It generally increases the interest rate when there is inflationary pressure and the other way around (as stated by the Taylor rule). This does not mean, the formula is followed, the only thing one can say is that the sign of the policy is the same as predicted by the model.

K. Alec Chrystal and Paul Mizen (2001) -Goodhart's Law: Its Origins, Meaning and implications for Monetary Policy

Introduction

The Lucas critique differs from Goodharts law in the way that Goodhart's law has been more influential in monetary policy design, whereas the Lucas Critique has affected macroeconomic methods in general.

What is Goodhart's Law and how did it arise?

Goodhart's law states that any observed statistical regularity will tend to collapse once pressure is placed upon it for control purposes. In the early 1970's bank economists thought that they could achieve a particular rate of growth of the money stock by inverting the money demand equation that had existed under a different regime. This turned out not to work, because the old relationship had broken down. The law states this will always happen when policy makers use such statistically-

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estimated relationship as the basis for policy rules. In the period between 1974 and 1979 the labor government introduced monetary targets, but they still used a system called the "corset". In the beginning of the eighties, the capital controls and the "corset" were removed. This led to a fundamental change in the money demand function. Later, in the eighties and nineties, there was more financial liberalization and rapid growth in the demand for money in the UK. The link between the policy interest rate to the demand for money had become unstable, but also the link from money to aggregate demand itself. Later on, monetary stability seemed (in some people's view) to be achievable by a fixed exchange rate in which the money was endogenous, rather than by a monetary targeting policy. In recent years, the lanchmoney demand function has become more stable than it was in the 70s – 90s. This is due to the fact that policymakers do not attempt to control the money demand function anymore (they are not using the statistical relationship anymore). The focus is now on inflation targeting.

Goodhart's Law and the Lucas Critique

In the field of economics, decisions of the private sector determine the state of the economic system, but the public sector, in the process of choosing and implementing policy actions, has an effect on the system itself such that the system is not invariant under different policy actions (or rules). Thus, the private sector merely determine whether the economic system is in a growth period or a recessionary period, the public sector (government and central bank a.o. do not only help determine what state the economy is in, they also change the economic system with their policy actions and rules). Different policymaking behavior influences the expectations of private agents and this changes behavior in a rational-expectations behavior. In a sense, Goodhart's law is an application of the invariance problem to a particular institutional, monetary phenomenon. It indicates that because the monetary authorities target the statistical regularity, their actions change the economic system in a way that the statistical regularity breaks down.

The long arm of the law

The Taylor rule is one of the rules that could be used as a guide line for policy makers. Note that I used the phrase guideline, for any ex ante (before) use of the statistical regularity will cause the Taylor rule to lose its power. As the statistical regularity is liable to break down when used by the Central bank for policy purposes. Thus, policy makers can make use of it as a guideline, but can never implement it. The Taylor rule is advantageous, because it is simple, requires easily attainable data and provides a good indicator on which policy to use.

Wider implications for monetary policymaking

Recent monetary thinking has taken the short term interest rate as the instrument and the forecast of future inflation as the final objective. This may be good, for the short term interest rate has a lot of different channels of transmission through which the it can influence future inflation and the economy.

KOM Ch. 21 Optimum currency areas and the euro

How the European single currency evolved

There were two (three) motives that inspired the adoption of the single currency, the euro.

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1. To enhance Europe's role in the world monetary system. By making Europe able to speak with one voice on the monetary issues of the world, European nations were hoping to defend their own interests better at the world stage.
2. To turn the European Union into a truly unified market. European officials felt the different exchange rates in Europe were a major barrier to free trade in Europe.

The first step to more monetary cooperation was the European Monetary System (EMS, 1979-1998). A complex set of intervention arrangements worked to restrict the exchange rates of participating currencies within specified fluctuation margins. Thus, the participating currencies were somewhat fixed with one another. It worked pretty well, but there were some issues as well, for example the reunification of Germany led to high interest rates in Germany, which had to be matched by other countries (where the economy was not booming). This led to large speculative attacks (because speculator figured the Italian and France governments for example were unwilling to keep the peg. It resulted in the fact that the bands were widened. During the early years of the EMS, capital controls were in place to reduce the international flow of capital (to make the transition to fixed rates more controllable).

There were several important treaties, most notably the Single European Act of 1986 where EU members took the crucial political steps to remove the remaining internal barriers to trade, capital movements and labor migration. Most importantly, they dropped the unanimous (that everyone had to agree on everything) clause, so a single member state could no longer block the entire plan, just because it was not entirely in their interest. The Maastricht treaty wanted to establish an economic and monetary union. It called for a single European currency (the euro) and a European central bank. There were four reasons why the EU members wanted a single currency instead of the EMS:

1. They felt a single currency **would increase market integration**, for there would **no** longer be **realignments** anymore (devaluations and revaluations).
2. EU members felt Germany had too important a role in the monetary policy, by establishing a single currency (and thus monetary policy) they thought they would get **more influence on the decision making with regard to the monetary policy.**
3. With freedom of capital movement, policy makers were afraid there would be enormous amounts of **speculative attacks** if there were fixed rates. **A single currency would fix** this.
4. There was consensus that working together in the economic realm would mean that people would work together on the **political** realm as well. **This would lead to a more stable Europe**.
5.

The euro and economic policy in the Eurozone

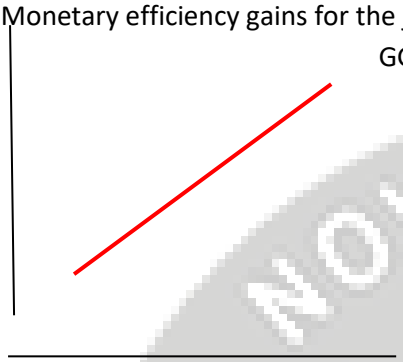
There were some rules to which countries had to adhere: Inflation rate no more than 1.5% above the average rate of the three best performing EU member states, a stable exchange rate without devaluing, a deficit of no more than 3% of GDP and the debt to gdp ratio could not exceed 60%. These rules were chosen by politicians, there are no economic reasons behind them. These rules were mostly required by low-inflation countries such as Germany who were afraid the euro would become a weak currency due to countries such as Italy, Greece and Spain, etc.

The theory of optimum currency areas

Benefits: The benefits of joining a fixed exchange rate area (which is what the Eurozone is) depends on the extent to which the joining country is integrated with the fixed exchange rate area it is joining. The

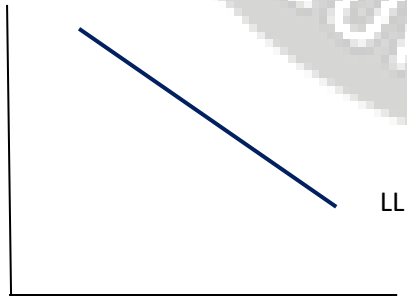
more integrated it is (the more it trades with the area, the more capital flows, the more people migrate between the countries), the larger are the benefits of joining the area, because it reduces uncertainty and transaction costs. Furthermore, if a high-inflation country joins a low-inflation area, it can import the low inflation, as it gains credibility. All these benefits are called monetary efficiency gains and can be measured in a GG schedule.

Monetary efficiency gains for the joining country



Costs: The losses that occur from joining a fixed exchange rate area are called economic stability losses. When there is a disturbance in the economy, under a floating exchange rate system the currency can adjust in value, which will cushion the effect of the disturbance on output and unemployment. Under a fixed exchange rate, this adjustment of the currency is not possible and thus, the disturbance is fully transmitted to output and unemployment. Furthermore, when you fix the exchange rate, you lose all monetary power. With economic stability loss, the more integrated the joining country is with the exchange rate area the smaller then economic stability is (for workers and factors of production can move across borders, which hampers the effect of a negative shock in the joining country and a small reduction in the price level in the joining country increases the demand in the area that it joins immensely, which also hampers the effect of a negative shock.). The economic stability loss can also be represented in a graph, the so called LL schedule.

Economic stability loss for the joining country



We can put both graphs together in a LL-GG schedule.

Monetary efficiency gains/economic stability loss for the joining country

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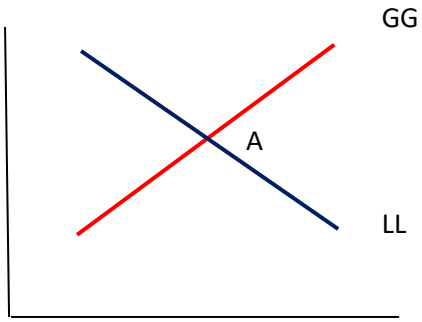

Degree of economic integration between
the joining country and the fixed exchange rate area

Any place to the right of point A means that there are net gains of joining a fixed exchange rate area, thus the benefits outweigh the costs. When economic integration is lower than the level at point A, there are net losses of joining the fixed exchange rate area. The losses outweigh the costs.

There are more important considerations with regard to optimum currency areas. First, there must be a **similarity in economic structure**. This significantly reduces asymmetric shocks (asymmetric shocks are dangerous, for countries that are hit by it cannot use monetary policy to get out of the recession triggered by the negative shock.). If economies closely resemble one another, it is likely that the state of the economy in all countries will be the same (they are hit by market shocks at the same time). In Europe there is a large amount of intra-industry trade (trade in similar goods), thus the economies are more or less similar. However, the northern countries mostly produce high skilled goods, whereas southern countries mostly produce low skilled goods. Greater dissimilarity between economies can be regarded as an upward shift of the LL schedule, as more economic integration is necessary to make joining the currency area beneficial.

Another important element is **fiscal federalism**. This mostly means fiscal transfers. If there is a lot of fiscal federalism and a country is hit by an adverse shock, other countries can contribute to the country that is hit by the shock. This will smooth out the shock in that country. In Europe, we do not have a high level of fiscal federalism.

A **banking union** is also important, for this can regulate the banking sector, it can have supervision and resolution but at the same time allow freedom of financial transactions across borders. This is important, for there cannot be different regulation with regard to the banking sector between member states.

The euro crisis and the future of the EMU

Before the crisis, the banking sector grew immensely due to increased financial liberalization and more free movement of capital. Banks became too big to fail (for example, the value of ING's assets is 2.1 times the Dutch economy (GDP)). On top of that, markets seemed convinced that no advanced (European) country would default on its debts. Therefore, the interest rates on government bonds were extremely low. This led to massive spending and borrowing by countries (for example, Greece, Portugal and Spain). Most centre countries (the Netherlands and Germany a.o.) had large current account surpluses (they exported more than they imported), whereas the peripheral countries (Spain, Greece, Ireland, Italy) had large current account deficits (they imported more than they imported, thus they had to borrow).

In 2007 the US real estate markets collapsed, which introduced the global economic crisis. Some banks were in trouble, but it was not yet about the sovereign debt crisis. In Europe too, there were concerns about the real estate markets in especially Ireland and Spain (bubbles induced by the low interest rates). The crisis started when the Greek government announced that the previous government had continuously mispresented the Government figures (deficit of 12% and debt of more than 100% of GDP). The financial markets became wary of loaning to the Greeks, for they were afraid Greece could not repay the debt. This increased the interest rate on Greek bonds, making it even harder for the Greeks to repay their debt. Several funds were established to lend to the Greek government at a relatively low interest rate to make sure the Greek government would not default.

These crises are usually a self-fulfilling government default, for the financial markets are afraid that the government will default. As a result, they will charge higher interest rates, to be compensated for the increased risk. This makes it harder for the government to repay debt, for borrowing is more expensive. Therefore, the country has an even larger chance to default. On top of that, the governments possible default hurts the domestic banks, which then come into trouble themselves and have to be rescued by the government in expensive bailouts, which further weakens the government's finances.

There are two difficulties that the EMU will have to overcome to become a success:

1. Europe is not an optimum currency area. Therefore, asymmetric shocks occur and need to be dealt with. At this moment, economic integration is much greater than political integration. A higher degree of political integration is necessary in order to deal with these asymmetric shocks.
2. Labor markets in Europe are highly rigid (due to labor unions for example). European nations need to become more flexible with regard to their labor markets in order to get to full employment and competitive real exchange rates (as flexible as the US preferably).

Four stories of Quantitative easing; Brett W. Fawley and Christopher J. Neely

Introduction

Central banks typically conduct monetary policy through control of short-term nominal interest rates. The assumption is that the short-term interest rate can influence the economy (output and employment) due to the fact that investment is negatively related to the interest rate (as is consumption, because consumers also borrow to buy large things, such as cars and houses). However, there are concerns about the effectiveness of monetary policy when the interest rate is zero (Keynes also argued this), for it cannot go any lower. There are some economist that monetary policy is still effective (Krugman among others), as long as it is focused on the long, rather than the short-term. In this article, there will be no determining whether the programs have had effect on the economy, as that would require counterfactual model and empirical work well beyond the scope of this article. Instead, it focuses on describing and comparing several programs by different central banks.

The details of the QE programs varied across central banks and depended on the particular structures of their respective economies and the specific motivations for each of the QE actions. The ECB and the Bank of Japan (BOJ) lent large sums of money to build up reserves. This is due to the fact that the European and Japanese economies are largely bank-based. Whereas the bank of England (BOE) and Federal Reserve (Fed) injected reserves into their respective economies by the purchase of bonds (immediately through the financial markets thus).

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Monetary Transmission Mechanisms at the zero lower bound

Normally, central banks purchase or sell short-term debt in order to affect the short-term nominal interest rates. These purchases/sales affect the short-term interest rates and the monetary base (the quantity of currency and reserves in the economy). If it purchases bonds, the interest rate will decrease (more demand for bonds, price of bonds increases, interest rate decreases) and the monetary base is expanded (as there is now more money in the economy (and less bonds)). This conventional method can stimulate the economy through two channels: asset price channels (interest rate (negative relation with bond purchases), exchange rate (positive relationship, thus if bonds are bought, currency depreciates (as the monetary base is expanded) and stock market (more bonds bought drives up the price of stock markets) and credit channels (lending by banks). The credit channels are important, for borrowing is important to make the economy function. In a recession, creditworthy borrowers might feel they have an expectation of low profitability, and are reluctant to borrow. But, fraudulent borrowers, who do not plan on repaying the loan, are not discouraged by poor economic circumstances. Thus, in a recession you have a large pool of fraudulent borrowers. Due to an easy monetary policy (bonds are bought), the interest rate decreases and stock prices increase. This reduces the moral hazard and adverse selection problems (as creditworthy borrowers do not have to pay a high interest and are therefore more willing to borrow even at a low-profitability). The problem is that the short-term interest rates cannot be lowered, for it already is nearly at 0%. Therefore, monetary policy (in the form of expanding the monetary base by purchasing bonds) is ineffective at the zero lower bound (liquidity trap).

By focusing on other activities, rather than purchasing short term bonds, the central bank can

$$y_{t,t+n}(\text{real}) = y_{t,t+n}(\text{nominal}) + TP_{t,n} - E_t\pi_n$$

potentially affect long-term interest rates. In which the expected real interest rate depends on the expected nominal interest rate, the term premium and the expected average rate of inflation (during time n, thus how many years the bond will run). The expected long-term yield can decline (thus making investment more attractive) if the expected inflation rate increases, the expected policy rate path can fall (thus nominal interest rates) and the term premium can fall.

The central bank can "**commit to be irresponsible**" (commit to zero interest rate for an extended period of time, beyond what is actually necessary) in order to cause real interest rates to fall (so it influences one or more of the above mentioned variables that determine the expected yield). This method is time-inconsistent, for the central bank has an incentive to renege on this commitment when regular monetary policy can be done again (thus, when the economic conditions are better again). The central bank can also use **Asset purchases and bank lending** in order to lower the expected real interest rate. As the central bank purchases long term bonds, the price of long term bonds increases, causing the interest rate on long-term assets to decrease.

Quantitative Easing versus Credit Easing

The difference between Quantitative easing and credit easing is that credit easing policies are intended to reduce specific interest rates/restore market function, while QE describes any policy that unusually increases the magnitude of central bank liabilities (particularly when the interest rate is zero). Thus,

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credit easing is always quantitative easing, but quantitative easing does not necessarily have to be credit easing.

Program descriptions and motivations

After the Lehman Brothers were bankrupt, the initial response (2008-2009) by central banks was different. The Fed and BoE concentrated on bond purchases, whereas the BoJ and ECB focused on lending directly to banks. During 2010, the market conditions improved slightly and the central banks felt no new measures were required to stimulate the economy. Since the end of 2010, however, the Fed has started with quantitative easing 2, followed by QE3 and QE4 still runs at this time. The numbering does not matter, they are all just programs to stimulate the economy. The BoE has followed a similar strategy with buying large quantities of bonds. The hard part now is to sell those bonds back to the financial markets without creating panic.

The bank of Japan was not very successful in creating inflation up until 2012, when Abe was elected prime minister, he advocated a 2% inflation target (rather than the 1% they had at that time). It worked rather well for a while, but later there were speculations that the independence of the central bank is at risk.

The ECB has not acquired large quantities of bonds up until 2012, while they were in fact stimulating the economy since 2009 (thus not through bond purchases).

Conclusion

The initial reason for the central banks to intervene in the market was to reduce the panic in the financial markets, for there was a lot of panic which led to a malfunctioning financial market. However, later, there were a lot of reasons for central banks to intervene in the market. Inflation targets had to be achieved through QE (did not really work still), the economy was stimulated with QE and the European debt crisis was soaring.

The BoJ and the ECB chose their programs that best suited the economies and mostly focused on banks, whereas the Fed and BoE focused their attention on bond purchases and the financial market directly. All four central banks had a large increase in the monetary base.

Is Quantitative Easing a panacea?; Niels de Sonnaville

Niels compared three countries where QE was applied and he compared it with to similar countries in the euro area. He used Sweden (compared to Finland), where loans were auctioned to the private sector directly (for low interest rates), the UK (compared to the Netherlands), where there were a lot of programs, including asset purchases and Switzerland (compared to Austria), who among other things intervened in the foreign exchange market. He found out that there was hardly any positive influence on GDP and inflation, but that there was a significant influence on the stock prices.

KOM chapter 22 Developing Countries: growth, crisis and reform

Income, Wealth, and Growth in the world economy

There are vast differences in per capita income and in well-being among countries at different stages of economic development. Furthermore, developing countries have not shown a uniform tendency of convergence to the income levels of industrial countries. However, some developing countries, notably several in East Asia, have seen dramatic increase in living standards since the 1960's, and thus are rapidly closing the gap in income levels with advanced countries. Explaining why some countries

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remain poor and which policies can promote economic growth remains one of the most important challenges in economics.

Structural Features of Developing Countries

Developing countries form a heterogeneous group, especially since many have embarked on wide-ranging economic reform in recent years. Many have at least some of the following features: heavy government involvement in the economy, including a large share of public spending in GNP (and thus unsustainable macroeconomic policies); a track record of high inflation, usually reflecting government attempts to extract seigniorage (it prints money and then spends it on real resources) from the economy in the face of ineffective tax collection. Furthermore, there are weak credit institutions and undeveloped capital markets; pegged exchange rates and exchange or capital controls, including crawling peg exchange rates regimes aimed at either controlling inflation or preventing real appreciation; a heavy reliance on primary commodity exports. Corruption seems to increase as a country's relative poverty rises. There is a large shadow economy (that does not pay any taxes) and low measure of literacy rates (people are generally not highly educated). Many of the preceding developing-country features date from the Great Depression of the 1930s, when industrialized countries turned inward and world markets collapsed.

Developing-country borrowing and debt

Because many developing economies offer potentially rich opportunities for investment, it is natural for them to have current account deficits and to borrow from richer countries (as they need money to get resources out of the ground for example). In principle, developing-country borrowing can cause gains from trade that make both borrowers and lenders better off. In practice, however, borrowing by developing countries has sometimes led to default crises that generally cause currency and banking crises. Default crises can have self-fulfilling elements even though their occurrence depends on fundamental weaknesses in the borrowing country. Often default crises begin with a sudden stop of financial flows, thus lenders suddenly realise that the country is in problems and they are unwilling to lend any more money to the country.

In the 1970s, as the Bretton woods system collapsed, countries in Latin America entered a time period of inferior macroeconomic performance with respect to growth and inflation (slow growth and high inflation). Uncontrolled external borrowing led, in the eighties, to a generalized developing-country debt crisis, its greatest impact being in South-America and Africa. Countries had to reform immensely and came up with disinflation, privatization (sale of government assets), deregulation and trade policy reforms. Some countries were successful, other not so much (Argentina).

East Asia: Success and Crisis and Lessons of developing-country crises

East Asia has a record of low inflation and very high output growth, however, some key countries in East Asia were hit by severe panics in 1997. In retrospect, the affected countries had several weaknesses, most of them related to moral hazard in domestic banking and finance and linked to the original sin of foreign currency denominated debt. Original sin has to do with the fact that developing countries find it hard to raise money by issuing bonds in their own currency, for developing countries have a history of government intervention and devaluations. Investors are therefore unwilling to hold bonds denominated in the developing countries' currency. As a result, the interest rates will be high.

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Consequently, developing countries have the incentive to borrow their money by issuing bonds denominated in dollars, a currency of which the value is not dependent on the actions of the developing countries' government. However, when the developing countries' currency depreciates, the debt becomes bigger in terms of the domestic currency. A key feature of this crisis was the contagion effect, seemingly healthy countries got into trouble because investors also thought they were going to have difficulties. After this crisis, there were demands for rethinking the international financial "architecture". This became again so after the 2007-2009 financial crisis.

Reforming the world's financial "architecture"

Proposals to reform the international architecture can be grouped as preventive measures or as ex post (after the fact) measures, with the latter applied once safeguards have failed to stop a crisis. Among preventive measures are greater transparency concerning countries' policies and financial positions; enhanced regulation of domestic banking; and more extensive credit lines, either from privates sources or from the IMF. Ex post measures that have been suggested include more extensive and flexible lending by the IMF. Some observers suggest more extensive use of capital controls, both to prevent and manage crises, but in general not too many countries have taken this route. In the years to come, developing countries will no doubt experiment with capital controls, dollarization, floating exchange rates and other regimes.

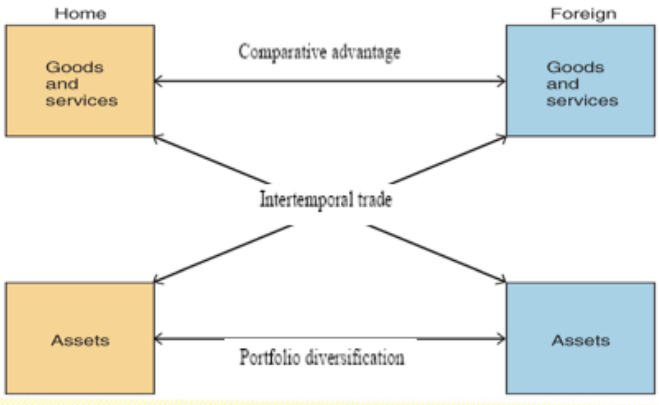
Understanding global capital flows and the global distribution of income: is geography destiny?

Recent research on the ultimate determinants of economic growth in developing countries has focused on geographical issues such as the disease environment, institutional features such as government protection of property rights, and human capital endowments. The flow of capital from rich to poor countries also depends on these factors. While economists agree that all of these determinants are important, it is less clear where policy would focus first in its attempts to lift poor countries out of their poverty. For example, institutional reform might be an appropriate first step if human capital accumulation depends on the protection of property rights and personal security. On the other hand, it makes little sense to create an institutional framework for government if there is insufficient human capital to run government effectively. In that case, education should come first.

KOM Chapter 20. Financial Globalization: Opportunity and crisis

The international capital market and the gains from trade

One can define three types of gains from trade through international transactions. There are *transactions that comprise of goods and services for goods and services* in which the gains from trade can be regarded as comparative advantage.



There are transactions that comprise *assets for assets,* where the gains from trade occur because risk averse agents can reduce the riskiness of their assets by diversifying. Thus portfolio diversification is a gain from trade that emerges with asset for asset transactions. The third set of gains from trade occur due to the exchange of assets for goods and services. This enables

borrowers to spend money on goods and services with income they do not have now, but will obtain in the future (and pay a small compensation for this, known as interest), and it enables savers to put away money now to be able to consume goods and services later (and they get a little compensation for it, interest). This kind of trade is called intertemporal trade.

The Feldstein-Horioka puzzle is concerned with the level of intertemporal trade in the international market. They argue that national savings and national investment should not be highly correlated (thus, when national savings is high, national investment should not be high). They argue this, because some countries have large investment projects they want to build, from which they obtain money from other countries that will lend it to them. As a result of the identity S – I = CA (saving – investment = current account balance) it follows that some countries should have large CA surpluses and others should have large CA deficits. In reality it seems to be the case that national investment and national savings are in fact high correlated. This means that when national savings is high, usually, national investment is also high (and this thus contradicts with what Feldstein and Horioka argued and thus, it is a puzzle). Feldstein and horioka concluded that as this is not the case, international financial markets are not efficient. Other economists have given other reasons (S and I may correlate for different reasons, S and I are influenced by the same factors and disturbances, etc.), but there is no concensus.

International Banking and the international capital market

The international capital market is the market in which residents of different countries trade assets. One of its important components is the foreign exchange market. Banks are at the center of the international capital market, and many operate off-shore, that is, outside the countries where their head offices are based. Regulatory and political factors have encouraged offshore banking. The same factors have encouraged offshore currency trading, that is, trade in bank deposits denominated in currencies of countries other than the one in which the bank is located (for instance dollars that are traded in the UK or in Europe). So called Eurocurrency (this has nothing to do with the euro, they came up with the term eurocurrency, for this phenomenon happened first in Europe) trading received a major stimulus from the absence of reserve requirements on deposits in Eurobanks. All in all, there were three major reasons that helped make offshore banking this big: Political factors, growth in international trade and business and a lack of regulation (banks try to evade taxes and requirements).

Banking and financial fragility and the challenge of regulating international banking

Offshore banking is largely unprotected by the safeguards that national governments have imposed to prevent domestic bank failures. In addition, the opportunity that banks have to shift operations offshore, thereby profiting from regulatory arbitrage, has undermined the effectiveness of national bank supervision. These problems create a financial trilemma that international policymakers have tried to mitigate through increasingly ambitious cross-border collaboration. Since 1974, the Basel Committee of industrial-country bank supervisors has worked to enhance global regulatory cooperation, including international standards for bank capital. A third generation of proposed prudential regulations was released in 2010 and is in process of implementation by national regulators. There is still uncertainty, however, about a central bank's obligation as an international lender of last resort. That uncertainty may reflect an attempt by international authorities to reduce moral hazard. The trend towards securitization (bundling certain assets with low risk with assets with very high risk

to reduce overall risk) has increased the need for international cooperation in monitoring and regulating nonbank financial institutions.

How well have international financial markets allocated capital and risk?

Feldstein and Horioka argued that financial markets are not very efficient, but there are other ways to test this. One of these ways is based upon the difference between offshore and onshore interest rates. We should namely expect them to be approximately the same if 1. Assets can flow freely across borders (capital market mobility) and 2. International financial markets are able to quickly and easily transmit information about difference in interest rates. In reality, we observe that the onshore and offshore interest rates are almost identical. The only period in the last 25 years that they deviated significantly was right after the collapse of Lehman Brothers (as there was large uncertainty about the safety of dollars outside the US border). Now they have converged again. This thus indicate that financial markets are efficient. However, a second test of efficiency regarding the exchange rate does not hold. The difference in interest rates among nations should namely be the same as the change in the exchange rate over a particular period (say a year) with IRP. In practice, this does not seem to be the case, even the direction is not always accurately predictable. This might indicate that financial markets are in fact not very efficient. In this analysis it is assumed that assets are perfectly substitutable, the financial markets might in the end be efficient if we make the assumption that assets are not perfectly substitutable (some may have more risk than others) and that there is a risk premium involved in holding the more risky asset.

Furthermore, the losses caused by financial crises must be evaluated against the gains that international capital markets potentially offer. The international capital market has contributed to an increase in international portfolio diversification since 1970, but the extent of diversification still appears incomplete compared with what economic theory would predict. Similarly, some observers have claimed that the extent of intertemporal trade, as measured by countries' current account balances, has been too small. Such claims are hard to evaluate without more detailed information about the functioning of the world economy than is yet available. Less ambiguous evidence comes from international interest ate comparisons, and this evidence points to a well-functioning market. Rates of returns on similar deposits issued in the major financial centers are normally quite close.

Developing country borrowing

There is no straightforward answer to the question whether developing countries are very different from industrialized countries. Mostly due to the fact that DC's are very different among themselves. However, most developing countries have a history of extensive direct control of the government on the economy. They have for instance placed restrictions on international trade, government ownership of large industries, government control of financial transaction and a high level of government consumption. Furthermore, they have a reputation of high inflation (due to tax evasion, high level of public expenditures and seigniorage) and weak credit institutions (for example banks that allocate funds on the basis of personal connections instead of expected returns. On top of this, there has been limited exchange rate flexibility (as they figured this would stabilize imports and exports) and there was a one-sided composition of exports (mostly natural resources of agricultural commodities).

As developing countries have little capital stock and large investment opportunities it makes sense for industrial countries to invest in developing countries. The developing countries therefore will have

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large current account deficits, for their domestic saving is not enough (due to poverty and bad financial institutions) to cover investment. Therefore, they borrow from industrialized countries. This is thus intertemporal trade, DC's invest and consume goods now and have to repay later to industrial countries that save now and consume later. In theory, both countries should gain. However, in developing countries the gains from this intertemporal trade tend to go to rich people (government) instead of to everyone (poor people). Since 1999 it is surprising that DCs actually have CA surpluses and industrial countries have CA deficits. This is caused by a couple of reasons: developing countries have been more cautious with spending and borrowing. China has accumulated a large amount of international reserves (as did oil exporters) and lenders (industrial countries) have been more cautious with regard to default risk.

Default risk refers to the chance that private companies or the government (sovereign default) go into bankruptcy and are unable to repay the debt. When this happens, there will be a sudden stop of the economy. A current account deficit is no longer possible (for nobody is willing to lend to the country anymore), so if S is unchanged, investment will have to go down (S – I = CA), which will lead to a sharp contraction of the economy (as output will fall). This can also be caused by a self-fulfilling prophecy. Namely, when everybody thinks a country can no longer repay its debt, it will only lend to it for a very high interest rate, or not at all. When that happens, the country is indeed unable to repay its debt and it will default.

Something called the original sin is very common with developing countries. It means that developing countries borrow in a foreign currency. Then, when there is a depreciation of the domestic currency, the relative debt increases a lot (for more of domestic currency is needed to repay the debt). However, Barry Eichengreen and Ricardo Hausman referred to it as the original sin, because it is not something the developing countries opted for. It is the history of ill-advised economic policies that made industrialized countries unwilling to lend developing countries in their own currencies.

At the end of the course, you are able to:

- analyse and interpret mechanisms (for instance, of exchange rate determination or crisis evolution) on the basis of theories (and, possibly, against the background of historical developments);
- critically assess (monetary, fiscal, exchange rate, etc.) policies in both a real world context (for instance, current crises or the situation of developing countries) and theoretical models (for instance, under rational expectations, the Mundell-Fleming model or currency crisis models);
- justify policy choices on the basis of empirical developments as well as theories presented during lectures.

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