Session 11. Fixed Exchange Rates and Currency Crisis

- The IS/LM Model for a Fixed Exchange Rate Regime
- The Impossible Trinity and capital controls.
- The 1994-95 Mexican Peso Crisis

Review: The IS/LM Model for a Small Open Economy (with a flexible exchange rate)

The key assumption is that if the domestic interest rate (i.e. the point where the IS and LM curves cross) is different from the world interest rate, then this difference will trigger immediate capital outflows or inflows, which in turn will depreciate or appreciate the currency. This leads to a change in NX and a shift in the IS curve.
Floating Exchange Rates

- Under **floating exchange rates**, the nominal exchange rate is endogenous. Assuming perfect capital mobility, we have two equations and two unknowns (Y and e):

\[ \frac{M}{P} = L(r, Y) \]

Remember that prices are constant and that capital mobility implies:

\[ r = r^* \]

Fiscal Policy and Flexible Exchange Rates

In a small open economy fiscal policy has no effect on output unless **monetary policy accommodates fiscal policy**. An increase in government spending or a tax cut shifts the IS curve to the right and pushes up interest rates leading to an appreciation of the currency. The appreciation of the currency leads to falling exports. **Unless the money supply increase**, the decrease in exports will perfectly offset the increase in output caused by government spending.
Under **fixed exchange rates**, the nominal exchange rate becomes exogenous (fixed). Assuming perfect capital mobility, we have two equations but only one unknown ($Y$)

$$Y = C(Y, Y_e, T, r, \text{wealth}) + I(r, \text{Profitability}) + G + NX(\varepsilon, Y, Y')$$

The system is **over-determined**. We need to find an endogenous variable: **Monetary policy**. The money supply cannot be exogenous if the exchange rate is to remain fixed. Money supply needs to ensure that monetary conditions (interest rate, money supply) are consistent with the announced fixed exchange rate.

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**IS/LM under Fixed Exchange Rates**

**Attempt to Boost the Economy with Standard Monetary Tools**

Monetary policy cannot influence the economy by simply increasing money supply (or lowering interest rate). Here is the same example:

1. The attempt to expand the economy by an increase in money supply leads to lower interest rates at home…

2. … which causes a capital outflow and a pressure on the currency to devalue.

3. To avoid devaluation, the central bank must reduce money supply to its original level.
The Impossible Trinity

**Key lesson:** In a world with high capital mobility a country cannot fix the exchange rate of its currency and run at the same time independent monetary policy.

- Independent monetary policy
- Fixed exchange rate
- Capital mobility

A country can select only two of these options.

Non-standard Expansionary Monetary Policy: Devaluation

Monetary policy can influence the economy only if it lets the currency devalue. Doing so is equivalent to an increase in the money supply. In this case, exports and output increase.
1. Expansionary fiscal policy (increase in govt. spending, cut in taxes) shifts the IS to the right. If the money supply was held constant, interest rates would increase (because of increasing money demand). This increase will trigger a capital inflow and pressure to appreciate the currency.

2. To avoid appreciation, the central bank is forced to increase in the money supply.

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**Summary of Policy Effects in the Open Economy Model**

<table>
<thead>
<tr>
<th>Exchange rate regime</th>
<th>Flexible</th>
<th>Fixed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Y</td>
<td>e</td>
</tr>
<tr>
<td><strong>Policy</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fiscal expansion</td>
<td>0</td>
<td>↑</td>
</tr>
<tr>
<td>Monetary expansion</td>
<td>↑</td>
<td>↓</td>
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</tbody>
</table>

This table shows the direction of impact of various economic policies on income (Y), the exchange rate (e), and the trade balance (NX).
The Mexican Peso Crisis in 1994: Background

An economy that had suffered recurrent exchange rate crises and debt default (in the early 80’s).
Going back to capital markets, hoping to increase trade, attract large inflows of foreign investment, grow faster.
Mexico sees stability of the exchange rate a requirement to provide reassurance to foreign investors.

The Mexican Crisis: A Perspective

After the debt crisis of the early 1980s Mexico was isolated from the world capital markets until the end of the decade. Then, in the years 1990-93 Mexico received $91 billion of net capital flows (about 20% of the total capital flows to developing countries). $61 billion took the form of portfolio investment. Interest rates declined to reach a low of about 9% in early 1994. The country ran an increasingly large current account deficit. The economy boomed during these years.
The Mexican Crisis: The Nominal Exchange Rate

From November 1991 Peso was “fixed” within a band that was slowly depreciating (less than 5% per year). In October 1992 the band allowed for a slightly faster depreciation. In January 1993 a new Peso was introduced and remained stable (around 3.1 Pesos per USD) for most of 1993.

The Mexican Crisis: Inflation and the Interest Rate

Despite the efforts from the Central Bank to bring inflation down to levels similar to the US, inflation remained higher than US levels even during the period of stability of the nominal exchange rate.
The Mexican Crisis: The Real Exchange Rate

A stable nominal exchange rate combined with high inflation meant an appreciating currency in real terms during the 1990-94 period.

The Mexican Crisis: A Perspective

As growth picked up (partly fueled by the capital inflows), the current account imbalance was getting bigger every year requiring additional capital inflows. Strong growth kept inflation high and therefore the real exchange rate kept appreciating leading to a loss of “competitiveness” and hurting the current account.
The Mexican Crisis: Imbalances

Despite a booming economy and record levels of capital inflows, imbalances were growing during the period 1991-1994.

1. Higher inflation and a constant nominal exchange rate leads to an overvalued real exchange rate.
2. The current account deficit increases and becomes unsustainable.

These imbalances in the case of an emerging market are risky because changes in the confidence of foreign investors can produce a fast reversal of capital flows and a crisis.

The Mexican Crisis

In addition to imbalances getting bigger we have in 1994:

1. Internal political turmoil as there is a peasant uprising in Chiapas as well as the assassination of leading presidential candidate (risk premium increases)
2. A change in international conditions as the Federal Reserve raised U.S. interest rates several times during 1994 to prevent U.S. inflation.
The Mexican Crisis: Monetary Policy

When the risk premium increases, the central bank must raise interest rates (and cut money supply) to maintain the exchange rate parity. Otherwise there will be continuous capital outflows.

But what do capital outflows do to reserves? Those investors who want to leave Mexico will take their peso holdings, go to the central bank and exchange them for dollars. The reserves of the central bank will go down and eventually could be exhausted.

Why are central banks reluctant to increase interest rates? If the growth in the economy is low, then higher interest rates will further reduce consumption and investment and generate a recession.

Understanding the Crisis

These events put downward pressure on the peso. Mexico’s central bank had repeatedly promised foreign investors that it would not allow the peso’s value to fall, so it bought pesos and sold dollars to maintain the peso exchange rate.

Is this enough? What happened to international reserves and to the money supply?
Mexico: The Crisis

The decline in reserves due to the foreign exchange interventions increases the perception that this is not a sustainable situation. As foreign reserves get close to zero, the crisis is unavoidable.

The Crisis

- Dec. 20: Mexico devalues the peso by 13%
  (fixes the exchange rate at 25 cents instead of 29 cents)

- This is a surprise to many investors. It is also revealed that the central bank is running out of reserves...

- Investors dump their Mexican assets and pull their capital out of Mexico.

- Dec. 22: central bank’s reserves nearly gone. It abandons the fixed rate and lets the currency float.

- In a week, the peso depreciates by another 30%.
Mexico: Real GDP Growth

The crisis led to a deep recession but with the help of the US and the IMF (who provided funds to avoid a bigger crisis), Mexico returned to growth in the years that followed.

Lessons from the Peso crisis

1. In a regime with fixed exchange rates monetary policy must be consistent with the regime.

2. One indicator of ‘inconsistency’ is the real exchange rate appreciation:

   \[
   \text{% change in RER} = \text{% change in NER} + \pi - \pi^* 
   \]

3. Business cycle synchronization: when the US starts raising interest rates, then Mexico must also raise interest rates.

4. The nature of capital inflows (hot money vs. FDI) may also make a difference because certain flows are easy to reverse and to put too much strain on the exchange rate regime.

5. The current account deficit \((S - I)\) is key to understand whether it can be potentially dangerous for the stability of the economy.
“Credibility is not a gift - it has to be earned. It is built up one step at a time and supported by facts, and by consistency. Even more, credibility is never owned; it is rented, because it can be taken away at any time”


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Session 11. Summary

- The IS/LM model for an open economy introduces **two modifications**:
  - **Demand** (Y) includes also **Net Exports**, which depend on the real exchange rate
  - **Perfect capital mobility** is assumed (r = r*).

- In an **open economy with a fixed exchange rate** regime, macroeconomic policies have the following effects:
  - **Fiscal policy** is very powerful. Fiscal expansions cause pressure on the currency to appreciate and to eliminate this pressure the central bank increases money supply.
  - **Monetary policy** is endogenous. In order to preserve the exchange rate, **the central bank must supply money according to money demand**. No independent monetary policy is possible.

- Fixed exchange rate regimes are **sustainable** only as long as fundamentals (monetary and real) are consistent with the exchange rate.
Appendix: Change in the World Interest Rate

1. The world interest rate goes up.

2. With the domestic rate at the old level, there are pressures on the currency to be devalued.

3. To avoid devaluation the home country raises interest rates to the world level. This shifts the LM curve to the left.