HL IB Economics

Your notes

4.5 Exchange Rates

Contents

4.5.1 Types of Exchange Rate Systems

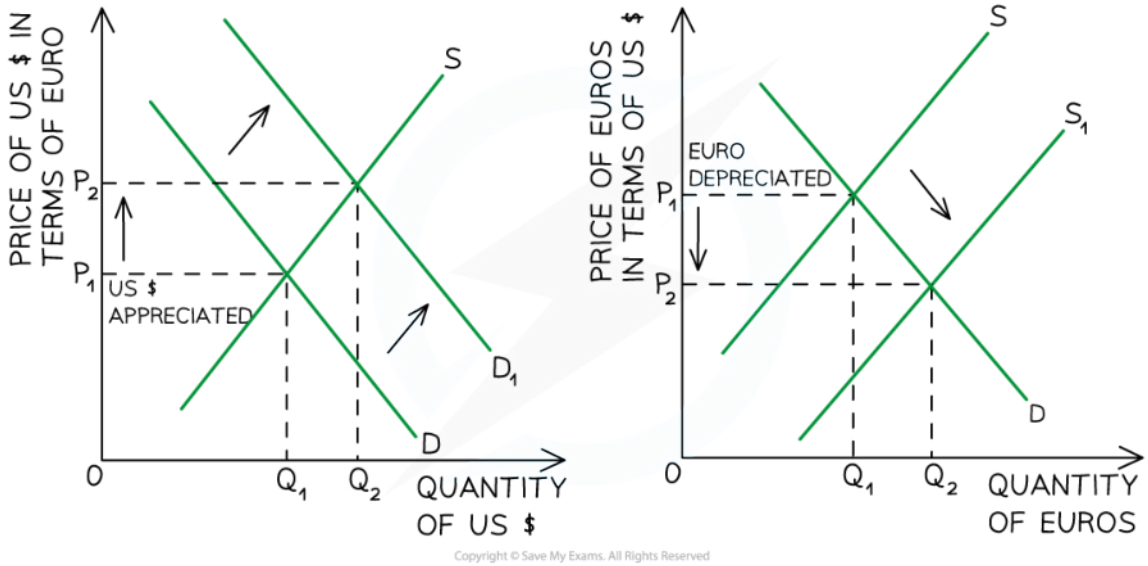
Your notes

Foreign Exchange Rates

- An **exchange rate** is the price of one currency in terms of another e.g. £1 = €1.18
  - International currencies are essentially **products** that can be bought & sold on the **foreign exchange market** (forex)
- The Central Bank of a country controls the **exchange rate system** that is used in determining the value of a nation's currency
- Three of the main **exchange rate systems** are
  - A **floating exchange rate**
  - A **fixed exchange rate**
  - A **managed exchange rate**

1. A Floating Exchange Rate System

- Different currencies can be bought and sold, just like any other product
- The forces of **demand and supply** determine the rate at which one currency exchanges for another
- As with any market, if there is **excess demand** for the currency on the forex market, then prices rise (the currency **appreciates**)
- If there is an **excess supply** of the currency on the forex market, then prices fall (the currency **depreciates**)



The relationship between the US$ and the Euro shows that as Europeans demand the $ it appreciates but by supplying their own currency it depreciates

Diagram Analysis

- The Euro/US$ market is shown by **two market diagrams** - one for the USD market on the left and one for the Euro market on the right
- The initial **exchange rate equilibrium** is found at P_1Q_1 in both markets
- When Europeans visit the USA, they demand US$ and supply Euros
  - The **increased demand for the US$** shifts the demand curve to the right which results in the value of the $ **appreciating** from $P_1 \rightarrow P_2$ in the USD market and a new market equilibrium forms at P_2Q_2
  - The **increased supply of the Euro** shifts the supply curve to the right which results in the value of the Euro **depreciating** from $P_1 \rightarrow P_2$ and a new market equilibrium forms at P_2Q_2

Floating Exchange Rate Calculations

- As the value of a currency appreciates or depreciates, the value of any international transaction changes
- These changes can be significant for firms during times of exchange rate volatility

Your notes

Your notes

WORKED EXAMPLE

Marsha is a currency trader who buys and sells currency in order to make a profit. Currently, she is holding €200,000 and expects that the Pound will appreciate against the € in the next few months.

At present £1 = €1.10

1. Marsha exchanges her Euros for Pounds. Calculate the quantity of Pounds she will receive for €200,000 [1]
2. The Pound depreciates against the Euro by 10%. Fearing further depreciation, Marsha changes her Pounds back to Euros. Calculate the loss she has made. [3]

Answer:

Step 1: Calculate the quantity of Pounds received for 200,000

$$\frac{200,000}{1.1} = £181,818.18$$

(1 mark for the correct answer)

Step 2: Calculate the new exchange rate

£1= (€1.10 x 0.9) = €0.99

(1 mark for the correct answer)

Step 3: Use the above value to calculate the new amount of Euros

£181,818.18 x 0.99 = £179,999,9982

Step 4: Round to two decimal places

£180,000

(2 marks for the correct answer rounded to 2 decimal places)

Step 5: Calculate the loss

£200,000 - £180,000 = £20,000 loss

(1 mark for the correct answer)

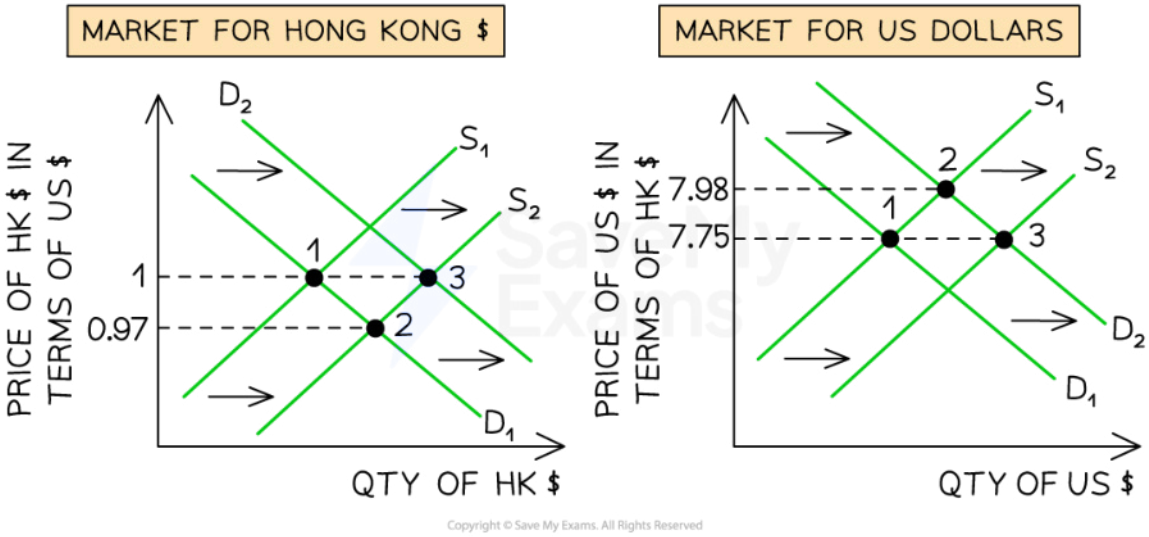
2. A Fixed Exchange Rate System

- A system in which the country's **Central Bank intervenes** in the currency market to **fix (peg) the exchange rate** in relation to another currency e.g US$

Your notes

- When they want their currency to appreciate, they buy it on forex markets using their **foreign reserves**, thus increasing its demand
- When they want their currency to depreciate, they sell it on forex markets, thus increasing its supply

- Sometimes the peg is at **parity** e.g. 1 Brunei Dollar = 1 Singapore Dollar
- Often the peg is not at parity e.g. Hong Kong has pegged its currency to the US$ at a rate of HK$ 7.75 = US$ 1
- A **revaluation** occurs if the Central Bank decides to change the peg and increase the strength of its currency
- A **devaluation** occurs if the Central Bank decides to change the peg and decrease the strength of its currency



The Hong Kong Monetary Authority intervenes to maintain the exchange rate of HK$ 7.75 = US$ 1

Diagram Analysis

- The HK$/US$ market is shown by **two market diagrams** - one for the HK$ market on the left and one for the US$ market on the right
- The initial **exchange rate equilibrium** is found at ***HK$ 7.75 = US$ 1*** **–** *represented by point 1*
- When Hong Kong firms import goods from the USA, they demand US$ to pay for them and supply HK$
- This impacts the market for each currency - the US$ appreciates and the HK$ depreciates

- To maintain the fixed exchange rate at ***HK$ 7.75 = US$ 1***, the Hong Kong Monetary Authority intervenes in the forex market by **using US$ from its foreign reserves to buy HK$**


Your notes

Left Diagram - HK$

- The **increased supply of the HK$** shifts the supply curve to the right which results in the value of the HK$ **depreciating** from (HK$7.75 = $1) → (HK$7.75 = $0.97) and a new market equilibrium forms at point 2
- The Monetary Authority intervenes by buying HK$ which shifts the demand curve right from $D_1 \rightarrow D_2$
- The HK$ has now been moved **back to its target value** of K$ 7.75 = US$ 1 - point 3

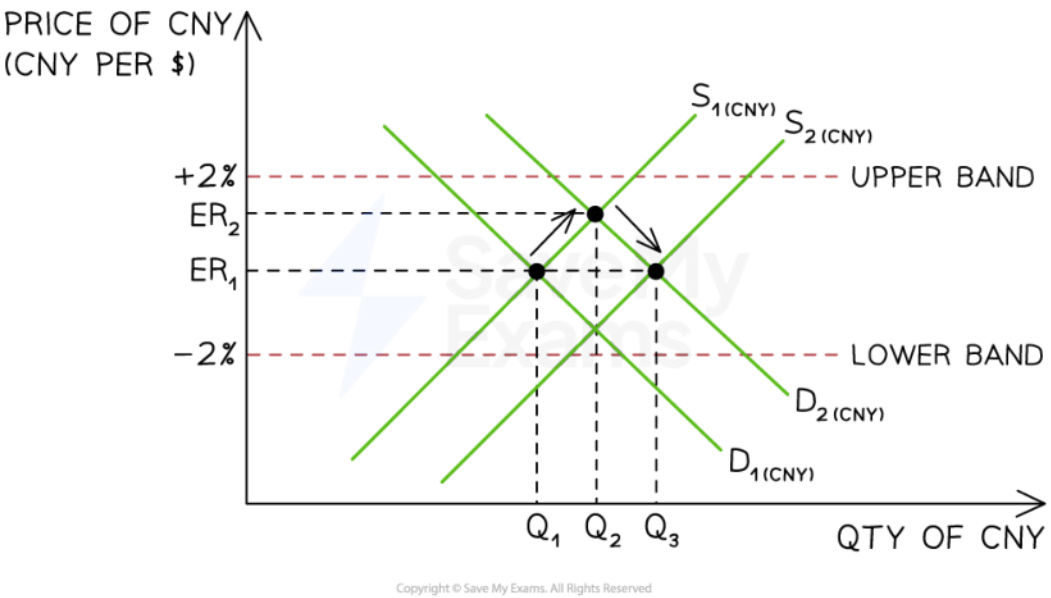
Right Diagram - US$

- The **increased demand for the US$** shifts the demand curve to the right which results in the value of the US$ **appreciating** from ($1 = HK$7.75) → ($1 = HK$7.98) and a **new market equilibrium** forms at point 2
- The Monetary Authority intervenes by buying HK$ using UD$ which increases their supply shifting the supply curve right from $S_1 \rightarrow S_2$
- The HK$ has now been **moved back to its target value** of K$ 7.75 = US$ 1 - point 3

3. A Managed Exchange Rate System

- The exchange rate is allowed to **fluctuate within a specified band** around a desired valuation. If it goes outside of this band then the Central Bank will intervene to bring it back within the band
  - When they want their currency to **appreciate to back within the band**, they buy it on forex markets using their **foreign reserves**, thus increasing its demand
  - When they want their currency to **depreciate back into the band**, they sell it on forex markets, thus increasing its supply
- Currently, almost all currencies are **managed currencies**
  - The width of the band varies from country to country
  - These bands are not published as it would help currency **speculators** to know when **currency reversals** would be initiated by the Central bank and they would seek to profit from that knowledge

Your notes



The Peoples Bank of China intervenes to maintain the exchange rate within a specified band of trading and is in the region of 2% around a value of 1US$ = 6.75 CNY

Diagram Analysis

- China has not released their currency bands, however, the value seems to fluctuate up to 2% ***around a value of 1US$ = 6.75 CNY***
- The initial market equilibrium is found at ER_1 Q_1

Action to correct currency appreciation

- **Increased demand** for the Chinese Yuan leads to a rightward shift of demand $D_1 \rightarrow D_2$ leading to an **appreciation** from $ER_1 \rightarrow ER_2$
- The currency is approaching the upper band so the Peoples Bank of China intervenes by selling their own currency (and buying foreign reserves)
  - This increases the **supply of the Yuan** causing a rightward shift from $S_1 \rightarrow S_2$
  - A new equilibrium is established at ER_1Q_3, well within the band

Action to correct currency depreciation

- **Increased supply** of the Chinese Yuan on world markets leads to a rightward shift of supply from $S_1 \rightarrow S_2$ leading to a **depreciation** from ER_1 towards the bottom currency band
- The currency is approaching the bottom band so the Peoples Bank of China intervenes by buying their own currency (and selling foreign reserves)
  - This increases the **demand of the Yuan** causing a rightward shift from $D_1 \rightarrow D_2$
  - A new equilibrium is established at ER_1Q_3, well within the band

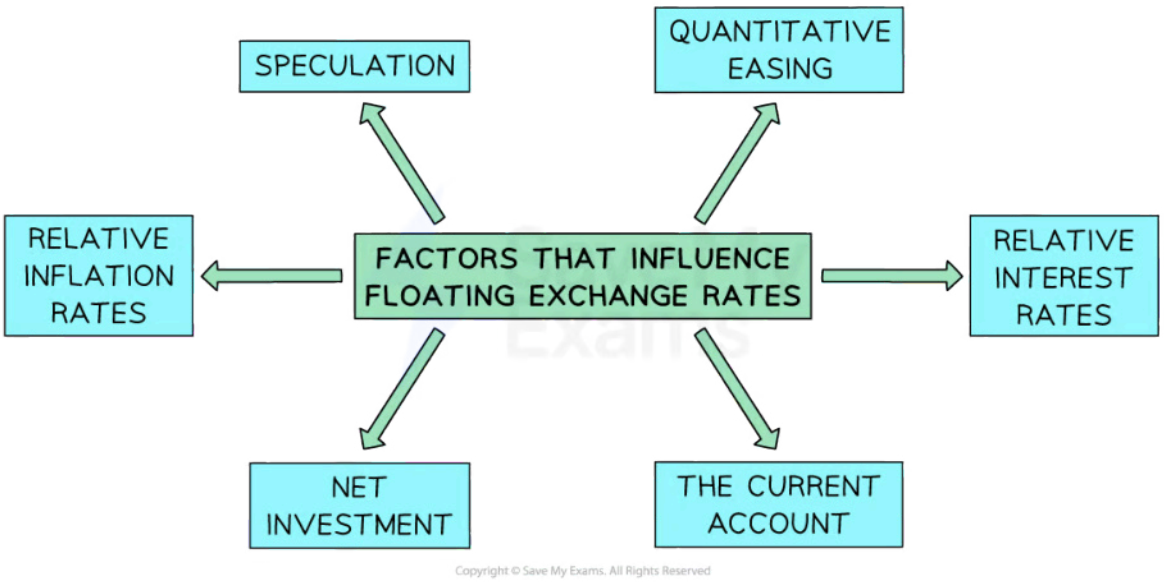

Your notes

4.5.2 Causes & Consequences of Exchange Rate Fluctuations

Your notes

Causes of Exchange Rate Fluctuations

- Numerous factors influence floating exchange rates, resulting in an **appreciation** or **depreciation** of a currency



Factors influencing floating exchange rates

1. **Relative interest rates:** influence the flow of **hot money** between countries. If the UK increases its interest rate, then demand for £'s by foreign investors increases and the £ appreciates. If the UK decreases its interest rate, then the supply of £'s increases as investors sell their £'s in favour of other currencies and the £ depreciates
2. **Relative inflation rates:** as inflation in the UK rises **relative** to other countries, its exports become more expensive so there is **less demand** for UK products by foreigners, which means there is less demand for £s and so the **£ depreciates**
3. **Net foreign direct investment (FDI)**: FDI into the UK creates a **demand for the £** which leads to the **£ appreciating**. FDI by UK firms abroad creates a supply of £'s which leads to the £ depreciating
4. **The current account:** EU exports have to be paid for in €'s. EU imports have to be paid for in local currencies, which requires €'s to be supplied to the forex market. Due to this, an increasing **net exports**

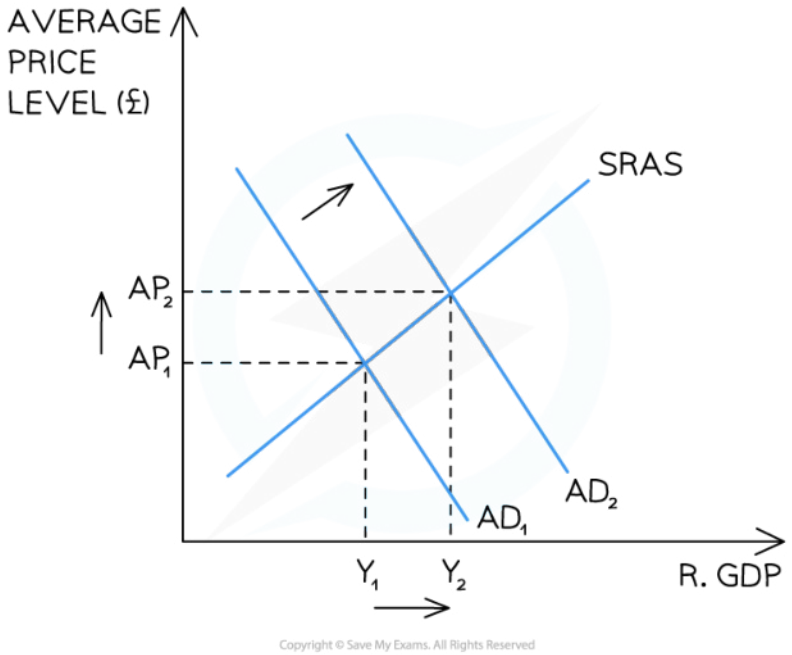
will result in an appreciation of the € and falling **net exports** will result in a depreciation of the €

5. **Changes in tastes/preferences:** As global demand for **quinoa** increased as it b**ecame fashionable**, Bolivia's exports of quinoa increased dramatically which put **upward pressure on their currency**. Foreigners demanded the Boliviano in order to pay for the quinoa
6. **Speculation:** the vast majority of currency trades are speculative. Speculation occurs when **traders buy a currency** in the expectation that it will be worth more in the short to medium term, at which point they will sell it to **realise a profit**
7. **Net Portfolio Investment**: Portfolio investment into the UK creates a **demand for the £** which leads to the **£ appreciating**. Portfolio investment by UK firms abroad creates a supply of £'s which leads to the £ depreciating
8. **Remittances**: Some countries receive high levels of remittances which help to keep the demand for their currency strong e.g. the Philippines
9. **Relative growth rates:** Countries with stronger economic growth rates will attract higher levels of FDI resulting in an appreciation of their currency
10. **Central Bank intervention:** Any form of monetary policy is likely to influence exchange rates e.g. higher interest rates will increase the hot money flows. Direct intervention using foreign reserves will also influence the exchange rate

Consequences of Foreign Exchange Rate Fluctuations

- Changes to exchange rates may have far-reaching impacts on an economy

1. Likely impact on the macro economy of a currency depreciation

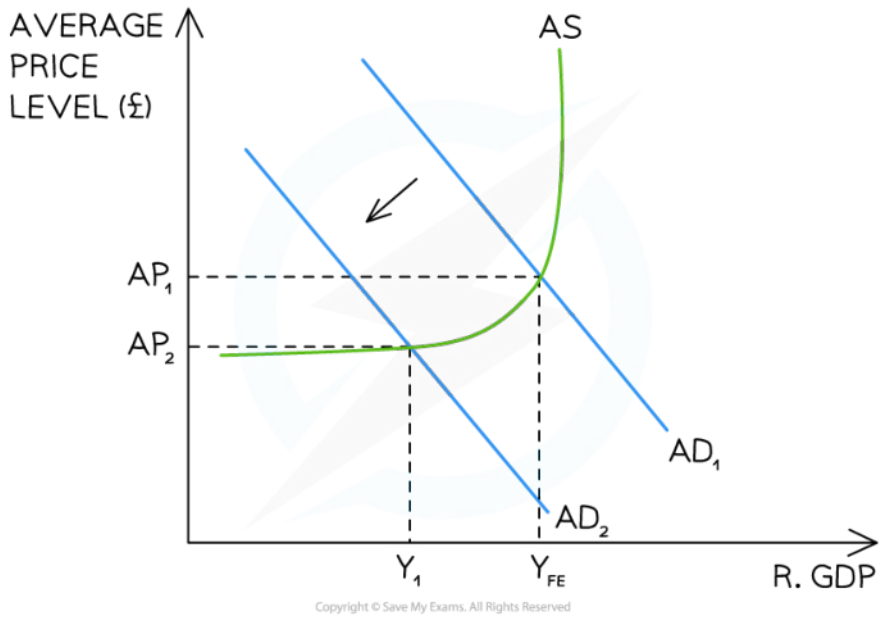


A depreciation means that imports are more expensive and exports are cheaper. Net exports should rise leading to an increase in AD from $AD_1 \rightarrow AD_2$

2. Likely impact on the macro economy of a currency appreciation

Your notes

Your notes



An appreciation means that imports are cheaper and exports are more expensive. Net exports should fall leading to a decrease in AD from $AD_1 \rightarrow AD_2$

Impact of an Appreciation or Depreciation on the Economic Indicators

Economic Indicator	Explanation

The Current Account	▪ From a UK perspective, **the depreciation** of the £ causes **exports** to be cheaper for foreigners to buy and **imports** to the UK are more expensive
	▪ The **extent** to which a currency depreciation improves the **current account balance** depends on the **price elasticity of demand for exports and imports**
	  ▪ This follows the **revenue rule** which states that in order to increase revenue, firms should **lower prices** for products that are price elastic in demand
	  ▪ If the **price elasticity of demand for UK exports is elastic,** then depreciation of the currency will result in a larger than proportional increase in demand for UK exports, which will rapidly improve any **current account deficit**

Economic growth	▪ Net exports are a component of **aggregate demand** ▪ A depreciation that results in an **increase in net exports** will lead to economic growth

Inflation	▪ **Cost-push inflation** can be caused by a **depreciating currency** as the price of **imported raw materials** increases with a weaker currency
	▪ Net exports are a component of **aggregate demand**
	  ▪ A **depreciation** that results in an **increase in net exports** will lead to an increase in aggregate demand
	  ▪ This may lead to an increase in **demand-pull inflation**
	▪ An **appreciation** of the currency will have the opposite effect

Unemployment	▪ If **depreciation** leads to an increase in exports, **unemployment is likely to fall** as more workers are required to produce the additional products demanded ▪ An **appreciation** of the currency will have the opposite effect

Living standards	▪ The impact of **depreciation** on **living standards** can be muted
	  ▪ As imports are more expensive, households face **higher prices and less choice,** which detracts from living standards
	  ▪ Rising exports can decrease unemployment and **increase wages/income** which means an improved standard of living for some households
	▪ The impact of an **appreciation** of living standards will be the opposite

Your notes

4.5.3 Fixed Versus Floating Exchange rate Systems

Your notes

Comparing Fixed & Floating Exchange Rate Systems

- Many countries have attempted to **use fixed exchange rate systems at some point** in their history
- Changes to the **global or national equilibrium** may cause Central Banks to consider **which system may be most beneficial** to achieving their macroeconomic goals at a **specific point in time**
  - A fixed exchange rate system offers stability, reduces speculative activities, but limits monetary policy autonomy
  - A floating exchange rate system allows for flexibility in **monetary policy**, automatic adjustments to economic conditions, but introduces greater exchange rate volatility
- The choice between the two systems depends on a country's **macroeconomic goals**, stability objectives, and the external economic environment

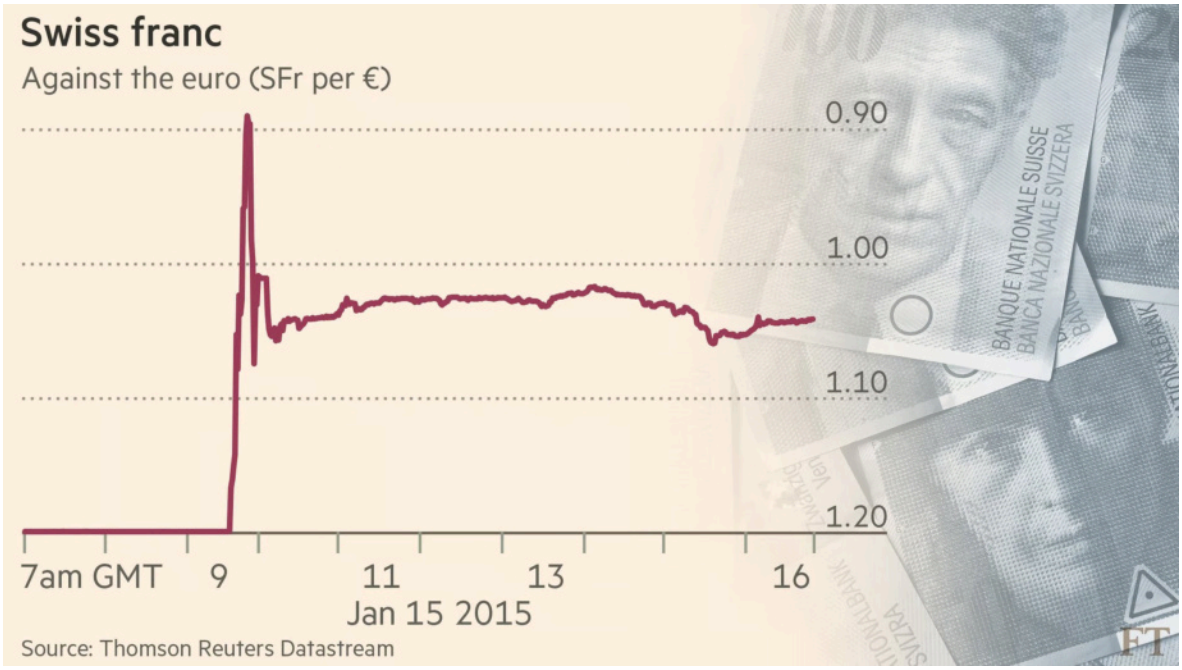
A Comparison of a Fixed and Floating Exchange Rate System

Fixed Exchange Rate System	Floating Exchange Rate System
▪ The central bank actively **intervenes to maintain the fixed rate**	▪ The currency's value is determined by **market forces of supply and demand**
▪ Provides **stability and predictability** for international trade and investment	▪ Allows for **greater flexibility** in conducting independent monetary policy as interest rates and the money supply can be **more easily manipulated**
▪ Limits a country's ability to independently conduct monetary policy as the **focus is on exchange rate and not the interest rate**	▪ Allows for **automatic adjustments** to external shocks and changes in economic fundamentals ▪ Markets respond to changing fundamentals without the need for central bank intervention
▪ Lowers **speculative trading and currency volatility**	

Changing from one System to the Other

- Central Banks have to consider the **impact of changing from one exchange rate system to another**

Your notes



Within a few minutes of removing the PEG, €1 = 0.90 CHF – the Swiss Franc had appreciated (Source: FT.Com)

- In January 2015 the **Swiss Central Bank** removed the fixed exchange rate (peg) of €1 = 1.2 CHF and allowed the currency to float freely
- They did this because:
  - In the face of ongoing significant demand for their own currency, the Central Bank was **using enormous reserves** to **supply more CHF** to the market in order to maintain the peg
  - They could **no longer afford to supply** their own currency
  - The demand for their currency was **partly driven by deteriorating conditions in Russia** as Russia had taken over the Crimea, which caused investors to seek safe haven for their money in Switzerland

The Implications of Changing from one System to Another – Real World Example

Impact	Explanation
Currency Appreciation	▪ The Swiss Franc (CHF) experienced a **significant increase in value** against the Euro (EUR) as investors demanded it
Export Challenges	▪ Swiss exporters faced difficulties as the **stronger Swiss Franc made their products more expensive** and less competitive in international markets
Impact on Tourism	▪ The higher Swiss Franc made Switzerland a more expensive destination for foreign tourists, leading to a **decrease in tourism revenue**
Financial Market Turmoil	▪ The **sudden and unexpected appreciation** of the Swiss Franc caused market turbulence and financial losses for investors holding Swiss Franc-denominated assets
Deflationary Pressure	▪ The currency appreciation **increased deflationary pressures** in Switzerland, as imported goods became cheaper and domestic producers faced greater competition
Monetary Policy Challenges	▪ The Swiss National Bank faced challenges in managing the exchange rate and **preventing excessive appreciation** while implementing independent monetary policy measures
Global Implications	▪ The Swiss Franc's appreciation had repercussions beyond Switzerland, **putting pressure on neighbouring countries and trading partners** and affecting their exports and competitiveness


Your notes