Lecture 5: Foreign Exchange Market and International Financial System

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Foreign Exchange Market

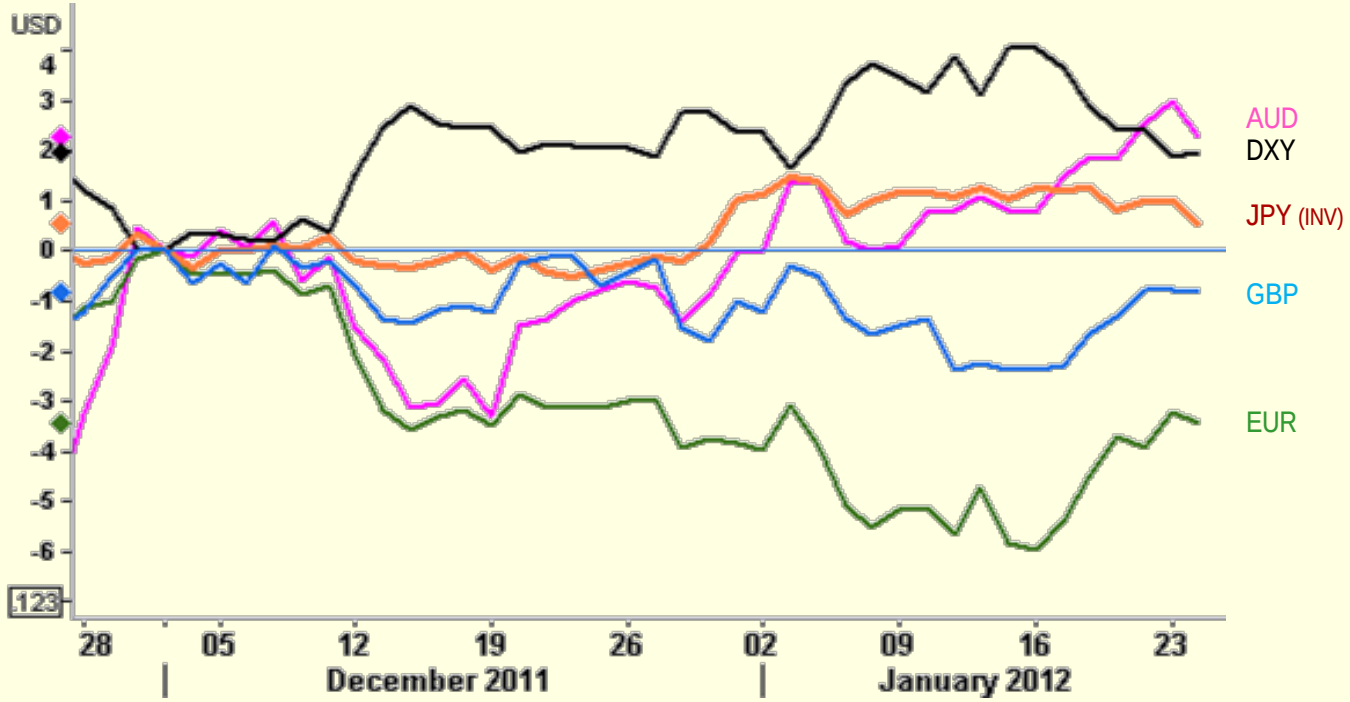
Foreign Exchange I

- Exchange rate—price of one currency in terms of another
- Foreign exchange market—the financial market where exchange rates are determined
- Spot transaction—immediate (two-day) exchange of bank deposits
  - Spot exchange rate
- Forward transaction—the exchange of bank deposits at some specified future date
  - Forward exchange rate

Foreign Exchange II

- Appreciation—a currency rises in value relative to another currency
- Depreciation—a currency falls in value relative to another currency
- When a country's currency appreciates, the country's goods abroad become more expensive and foreign goods in that country become less expensive and vice versa
- Over-the-counter market mainly banks

Major Currencies vis-à-vis USD



Source: Reuters

Exchange Rates in the Long Run

- Law of one price

$$E_{USDperTHB} = \frac{P_{US}}{P_{TH}}$$

- Theory of Purchasing Power Parity

Absolute PPP

$$E_{USDperTHB} = \frac{CPI_{US}}{CPI_{TH}}$$

Relative PPP

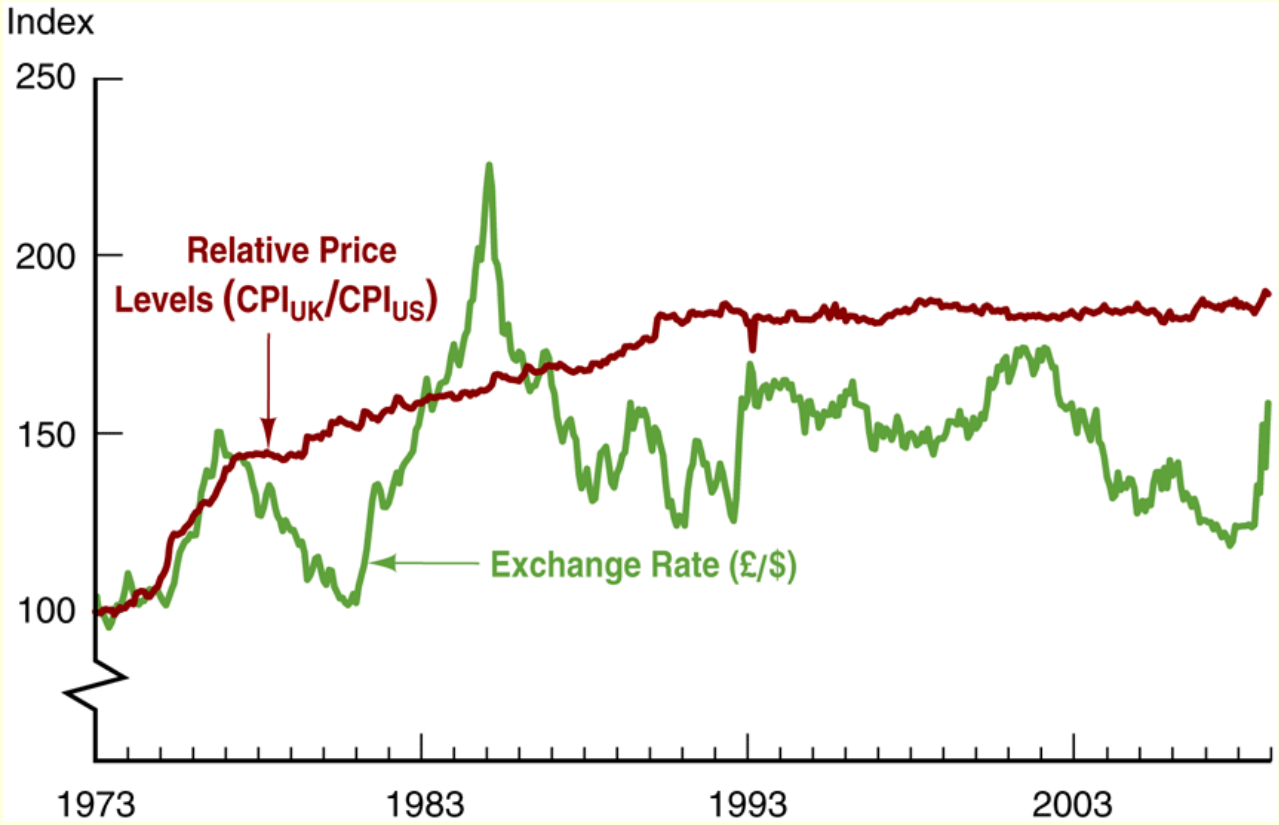
$$\Delta E_{USDperTHB,t} = \pi_{US,t} - \pi_{TH,t}$$

  - Assumes all goods are identical in both countries
  - Trade barriers and transportation costs are low

Factors that Affect Exchange Rates in the Long Run

- Relative price levels
- Trade barriers
- Preferences for domestic versus foreign goods
- Productivity

Purchasing Power Parity US/UK (Index March 1973 = 100)



Source: ftp.bls.gov/pub/special/requests/cpi/cpiai.txt.

Factors that affect exchange rates in the long run

Factor	Change in Factor	Response of ER (+ app.)
Domestic price level	+	-
Trade barriers	+	+
Import demand	+	-
Export demand	+	+
Productivity	+	+

Exchange Rates in the Short Run

- An exchange rate is the price of domestic assets in terms of foreign assets
- Using the theory of asset demand—the most important factor affecting the demand for domestic (dollar) assets and foreign (euro) assets is the expected return on these assets relative to each other

Comparing Expected Returns I

Dollar assets pay an interest rate of i^D and do not have any capital gain

Foreign assets have an interest rate of i^F and there is no capital gain

To compare the expected returns on dollar assets and foreign assets the returns must be converted into the currency unit used

E_t = the spot exchange rate

E_{t+1} = the exchange rate for the next period

$\frac{E^e_{t+1} - E_t}{E_t}$ = the expected rate of appreciation for the dollar

Comparing Expected Returns II

The expected return on dollar assets R^D in terms of foreign currency is the sum of the interest rate on dollar assets plus the expected appreciation of the dollar

$$R^D \text{ in term of euros} = i^D + \frac{E^e_{t+1} - E_t}{E_t}$$

The expected return on foreign assets R^F is i^F

$$\text{Relative } R^D = i^D - i^F + \frac{E^e_{t+1} - E_t}{E_t}$$

As the relative expected return on dollar assets increases, foreigners will want to hold more dollar assets

Comparing Expected Returns III

The expected return on foreign assets R^F in terms of dollars is the interest rate on foreign assets i^F plus the expected appreciation of the foreign currency, equal to minus the expected appreciation of the dollar

$$R^F \text{ in terms of dollars} = i^F - \frac{E^e_{t+1} - E_t}{E_t}$$

The expected return on the dollar assets R^D is i^D

$$\text{Relative } R^D = i^D - (i^F - \frac{E^e_{t+1} - E_t}{E_t}) = i^D - i^F + \frac{E^e_{t+1} - E_t}{E_t}$$

Which is the same as previously

Relative expected return on dollar assets is the same whether it is calculated in terms of euros or in terms of dollars

As the relative expected return on dollar assets increases, both foreigners and domestic residents will want to hold more dollar assets

Interest Parity Condition

$$i^D = i^F - \frac{E^e_{t+1} - E_t}{E_t}$$

- Capital mobility with similar risk and liquidity $\Rightarrow$ the assets are perfect substitutes
- The domestic interest rate equals the foreign interest rate minus the expected appreciation of the domestic currency
- Expected returns are the same on both domestic and foreign assets
- An equilibrium condition

Example

Given capital mobility, and E falls means baht depreciates, i.e. if exchange rate is now 40 bahts per USD, E = 0.025 USD per baht.

- We have 100 bahts to invest over 1 year:

1. in Thai deposits at 2% , at the end of 1 year we will have <u>102 bahts</u>

2. in US deposits at 12%, the process is a little more complicated

   - First, convert 100 bahts into USD at current exchange rate (40 bahts per USD), that gives 2.5 USD (Et = 1/40 = 0.025)
   - Then, if we hold this deposit for a year, we'll get 2.5 x (1.12) = 2.8 USD

Example (continued)

o To compare 2.8 USD against 102 bahts, we need to convert 2.8 USD back into bahts. However, we do not know what the exchange rate will be in a year's time, we need to form expectations. E^e_{t+1}

o The E^e_{t+1} which makes us indifferent between investing in Thai and US deposits is: $102 = 2.8/ E^e_{t+1}$, $E^e_{t+1} = 0.0275$ USD per baht (or 36 bahts per USD) or an expected appreciation of around 10%

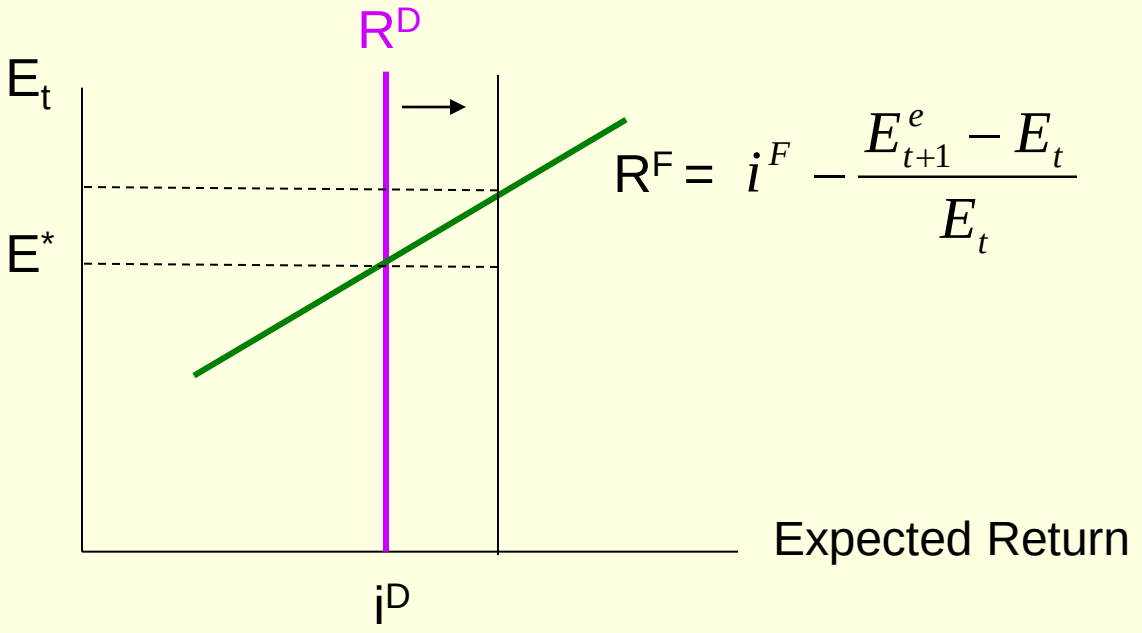
o $i^D = 2\%$, $i^F = 12\%$, $(E^e_{t+1} - E_t)/E_t = 10\%$ from

$$i^D = i^F - \frac{E^e_{t+1} - E_t}{E_t}$$

$$2\% = 12\% - 10\%$$

UIP (Uncovered Interest Parity) condition

Given E^e_{t+1}, R^F or returns on foreign investments in terms of local currency increases with E, and given RD or domestic returns independent of E, there is an equilibrium E*



If i^F increases ceteris paribus, E* falls (depreciation of the baht)
If i^D increases ceteris paribus, E* rises.
Simple logic – capital flows to where the return is higher.

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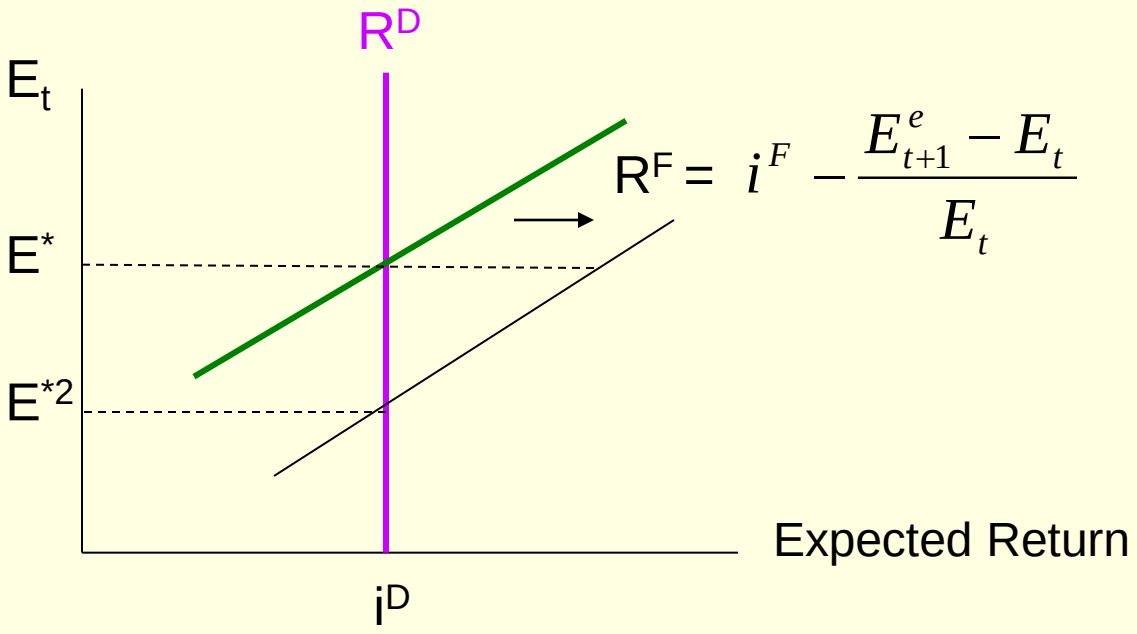

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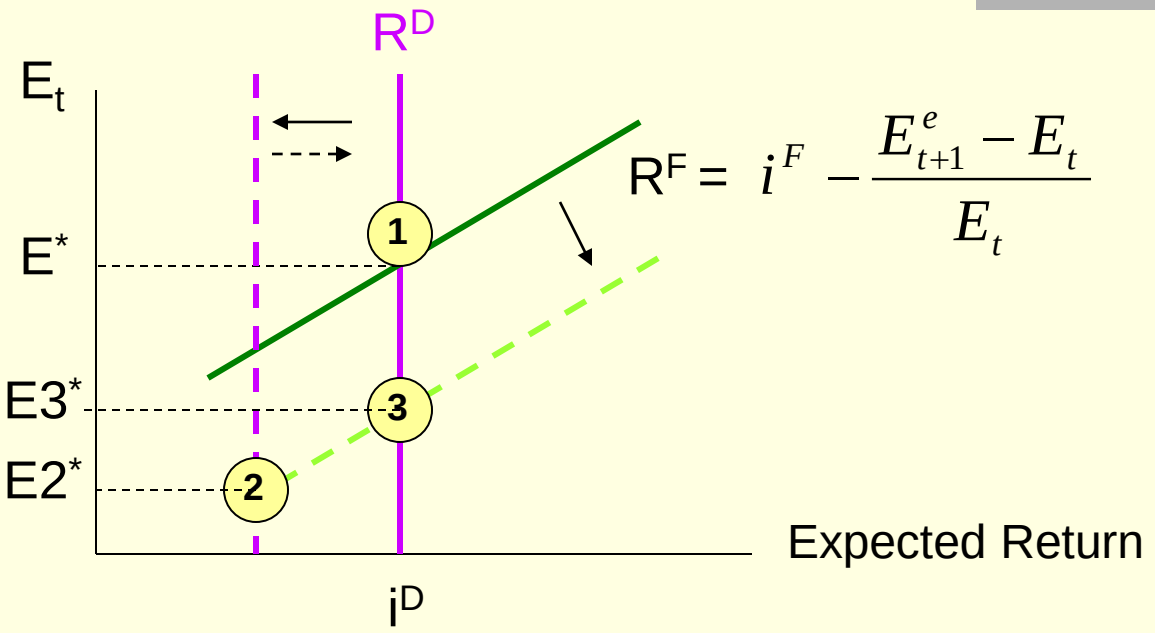
Exchange rate overshooting

exchange rate falls (or rises) by more in the short run than it does in the long run



combine short-run UIP and long-run PPP

An increase in the money supply

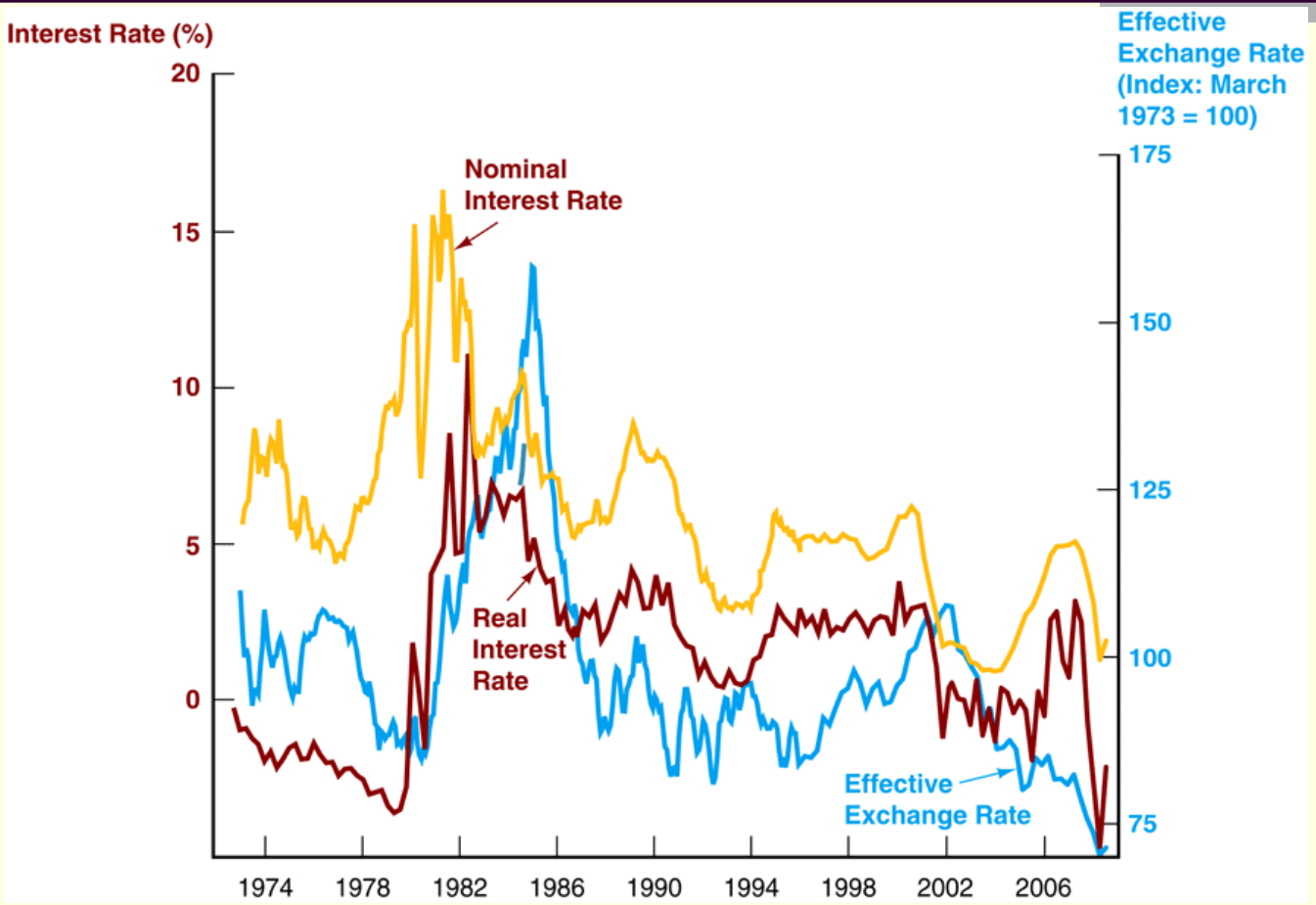
1. Causes domestic interest rates (i^D) to drop at the same time raises expectation of higher future domestic prices relative to foreign causing E^e_{t+1} to fall (PPP) – pushing up R^F

2. Over time, i^D returns to its original level (as price increases), but R^F stays high

Factors that affect exchange rates in the short run

Factor	Change in Factor	Shift	Response of ER (+ app.)
Domestic interest rate	+	R^D right	+
Foreign interest rate	+	R^F right	-
Expected future exchange rate	+	R^F left	+
Expected future domestic price level	+	R^F right	-
Expected export demand	+	R^F left	+
Expected import demand	+	R^F right	-

Value of the Dollar and Interest Rates, 1973–2008



Sources: Federal Reserve: www.federalreserve.gov/releases/h10/summary/indexn_m.txt; real interest rate from Figure 1 in Chapter 4.

Application: The Subprime Crisis and the Dollar

- During 2007 interest rates fell in the United States and remained unchanged in Europe.
  - The dollar depreciated
- Starting in the summer of 2008 interest rated fell in Europe.
- Increased demand for U.S. Treasuries “flight to quality”
  - The dollar appreciated

The International Financial System

Unsterilized Foreign Exchange Intervention

Central Bank (CB)	
Assets	Liabilities
Foreign Assets -$1B (International Reserves)	Deposits with CB -$1B (reserves)

- A central bank's purchase of domestic currency and corresponding sale of foreign assets in the foreign exchange market leads to an equal decline in its international reserves and the monetary base
- A central bank's sale of domestic currency to purchase foreign assets in the foreign exchange market results in an equal rise in its international reserves and the monetary base

Unsterilized Intervention

- An unsterilized intervention in which domestic currency is sold to purchase foreign assets leads to a gain in international reserves, an increase in the money supply, and a depreciation of the domestic currency

Sterilized Foreign Exchange Intervention

Central Bank			
Assets		**Liabilities**	
Foreign Assets (International Reserves)	 -$1B	Monetary Base (reserves)	 0
Government Bonds	+$1B		

- To counter the effect of the foreign exchange intervention, conduct an offsetting open market operation
- There is no effect on the monetary base and no effect on the exchange rate

Balance of Payments

- Current Account
  - International transactions that involve currently produced goods and services
- Trade Balance
- Capital Account
  - Net receipts from capital transactions
- Sum of these two is the official reserve transactions balance

Exchange Rate Regimes

- Fixed exchange rate regime
  - Value of a currency is pegged relative to the value of one other currency (anchor currency)
- Floating exchange rate regime
  - Value of a currency is allowed to fluctuate against all other currencies
- Managed float regime (dirty float)
  - Attempt to influence exchange rates by buying and selling currencies

Past Exchange Rate Regimes

- Gold standard
  - Fixed exchange rates
  - No control over monetary policy
  - Influenced heavily by production of gold and gold discoveries
- Bretton Woods System
  - Fixed exchange rates using U.S. dollar as reserve currency
  - International Monetary Fund (IMF)

Past Exchange Rate Regimes (cont'd)

- Bretton Woods System (cont'd)
  - World Bank
  - General Agreement on Tariffs and Trade (GATT)
    - World Trade Organization
- European Monetary System
  - Exchange rate mechanism

How a Fixed Exchange Rate Regime Works

- When the domestic currency is overvalued, the central bank must purchase domestic currency to keep the exchange rate fixed, but as a result, it loses international reserves
- When the domestic currency is undervalued, the central bank must sell domestic currency to keep the exchange rate fixed, but as a result, it gains international reserves

How Bretton Woods Worked

- Exchange rates adjusted only when experiencing a ‘fundamental disequilibrium’ (large persistent deficits in balance of payments)
- Loans from IMF to cover loss in international reserves
- IMF encourages contractionary monetary policies
- Devaluation only if IMF loans are not sufficient
- No tools for surplus countries
- U.S. could not devalue currency

Managed Float

- Hybrid of fixed and flexible
  - Small daily changes in response to market
  - Interventions to prevent large fluctuations
- Appreciation hurts exporters and employment
- Depreciation hurts imports and stimulates inflation
- Special drawing rights as substitute for gold

European Monetary System

- 8 members of EEC fixed exchange rates with one another and floated against the U.S. dollar
- ECU value was tied to a basket of specified amounts of European currencies
- Fluctuated within limits
- Led to foreign exchange crises involving speculative attack

Capital Controls

- Outflows
  - Promote financial instability by forcing a devaluation
  - Controls are seldom effective and may increase capital flight
  - Lead to corruption
  - Lose opportunity to improve the economy
  - Example: Malaysia in 1998

Capital Controls (cont'd)

- Inflows
  - Lead to a lending boom and excessive risk taking by financial intermediaries
  - Controls may block funds for productions uses
  - Produce substantial distortion and misallocation
  - Lead to corruption
  - Example: Thailand (URR, 2007)
- Strong case for improving bank regulation and supervision

The IMF: Lender of Last Resort

- Emerging market countries with poor central bank credibility and short-run debt contracts denominated in foreign currencies have limited ability to engage in this function
- May be able to prevent contagion
- The safety net may lead to excessive risk taking (moral hazard problem)
- Example: Mexico (1994-5), East Asia (1997-8)

How Should the IMF Operate?

- May not be tough enough
- Austerity programs focus on tight macroeconomic policies rather than financial reform
- Too slow, which worsens crisis and increases costs
- Countries were restricting borrowing from the IMF until the recent subprime financial crisis

Direct Effects of the Foreign Exchange Market on the Money Supply

- Intervention in the foreign exchange market affects the monetary base
- U.S. dollar has been a reserve currency: monetary base and money supply is less affected by foreign exchange market

Balance-of-Payments Considerations

- Current account deficits in the U.S. suggest that American businesses may be losing ability to compete because the dollar is too strong
- U.S. deficits mean surpluses in other countries$\Rightarrow$ large increases in their international reserve holdings$\Rightarrow$ world inflation

Exchange Rate Considerations

- A contractionary monetary policy will raise the domestic interest rate and strengthen the currency
- An expansionary monetary policy will lower interest rates and weaken currency

Advantages of Exchange-Rate Targeting

- Contributes to keeping inflation under control
- Automatic rule for conduct of monetary policy
- Simplicity and clarity

Disadvantages of Exchange-Rate Targeting

- Cannot respond to domestic shocks and shocks to anchor country are transmitted
- Open to speculative attacks on currency
- Weakens the accountability of policymakers as the exchange rate loses value as signal

Exchange-Rate Targeting for Industrialized Countries

- Domestic monetary and political institutions are not conducive to good policy making
- Other important benefits such as integration

Exchange-Rate Targeting for Emerging Market Countries

- Political and monetary institutions are weak
- Stabilization policy of last resort

Currency Boards

- Solution to lack of transparency and commitment to target
- Domestic currency is backed 100% by a foreign currency
- Note issuing authority establishes a fixed exchange rate and stands ready to exchange currency at this rate
- Money supply can expand only when foreign currency is exchanged for domestic currency

Currency Boards (cont'd)

- Stronger commitment by central bank
- Loss of independent monetary policy and increased exposure to shock from anchor country
- Loss of ability to create money and act as lender of last resort

Dollarization

- Another solution to lack of transparency and commitment
- Adoption of another country's money
- Even stronger commitment mechanism
- Completely avoids possibility of speculative attack on domestic currency
- Lost of independent monetary policy and increased exposure to shocks from anchor country

Dollarization (cont'd)

- Inability to create money and act as lender of last resort
- Loss of seignorage

References

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- Bank of Thailand (www.bot.or.th)