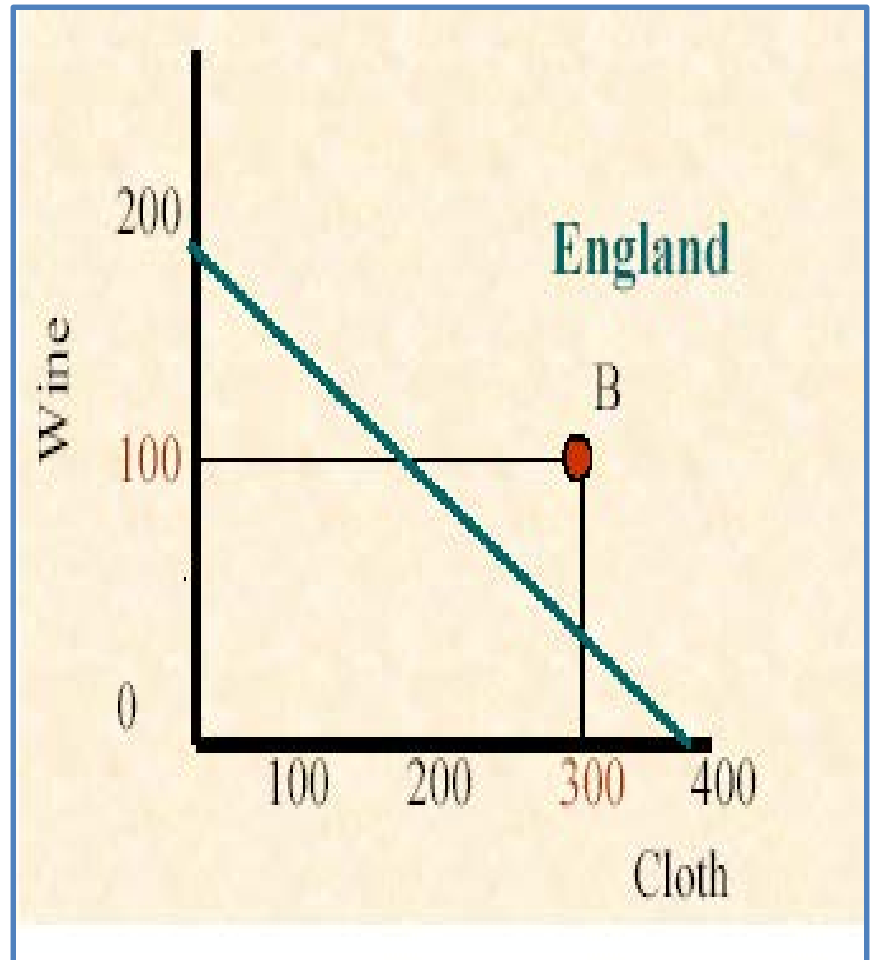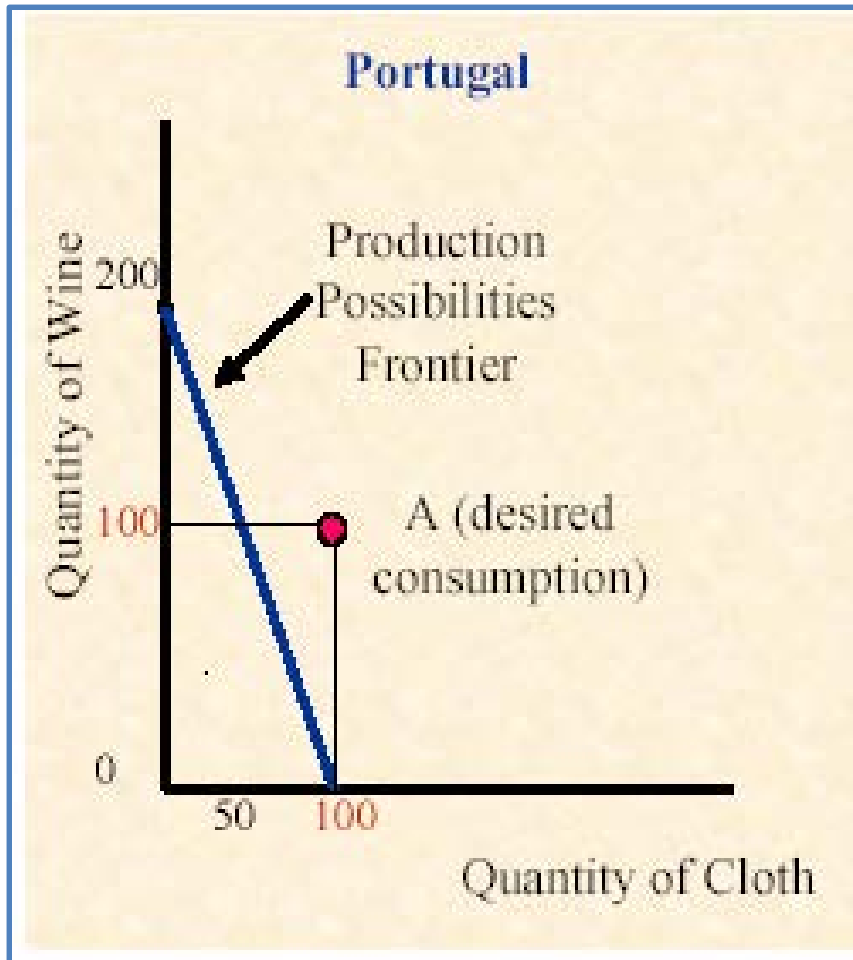# Macro Week 3

International Trade & Finance

The Gains from Trade

Do you believe in magic ... The Gains from Trade

Leave the England-Portugal rivalry for the soccer field

Specialization

Portugal produces 200 wine, no cloth.

England produces 400 cloth, no wine.

↓

They trade 100 wine for 100 cloth.

↓

Portugal can consume 100 wine and 100 cloth

England can consume 100 wine and 300 cloth

"Gains from Trade"

Criticism of the free trade fable
(Julie Nelson)

The Fable Demonstrates:

- Choice
- Efficiency
- Positive role of markets (specialization and exchange)
- Precise results from mathematical modeling

The Fable Leaves Out:

- History, constraints and institutions
- Distribution, power, and fairness
- Interdependence, needs, and vulnerability
- Actual observation of real-world results over time

Types of International Transactions
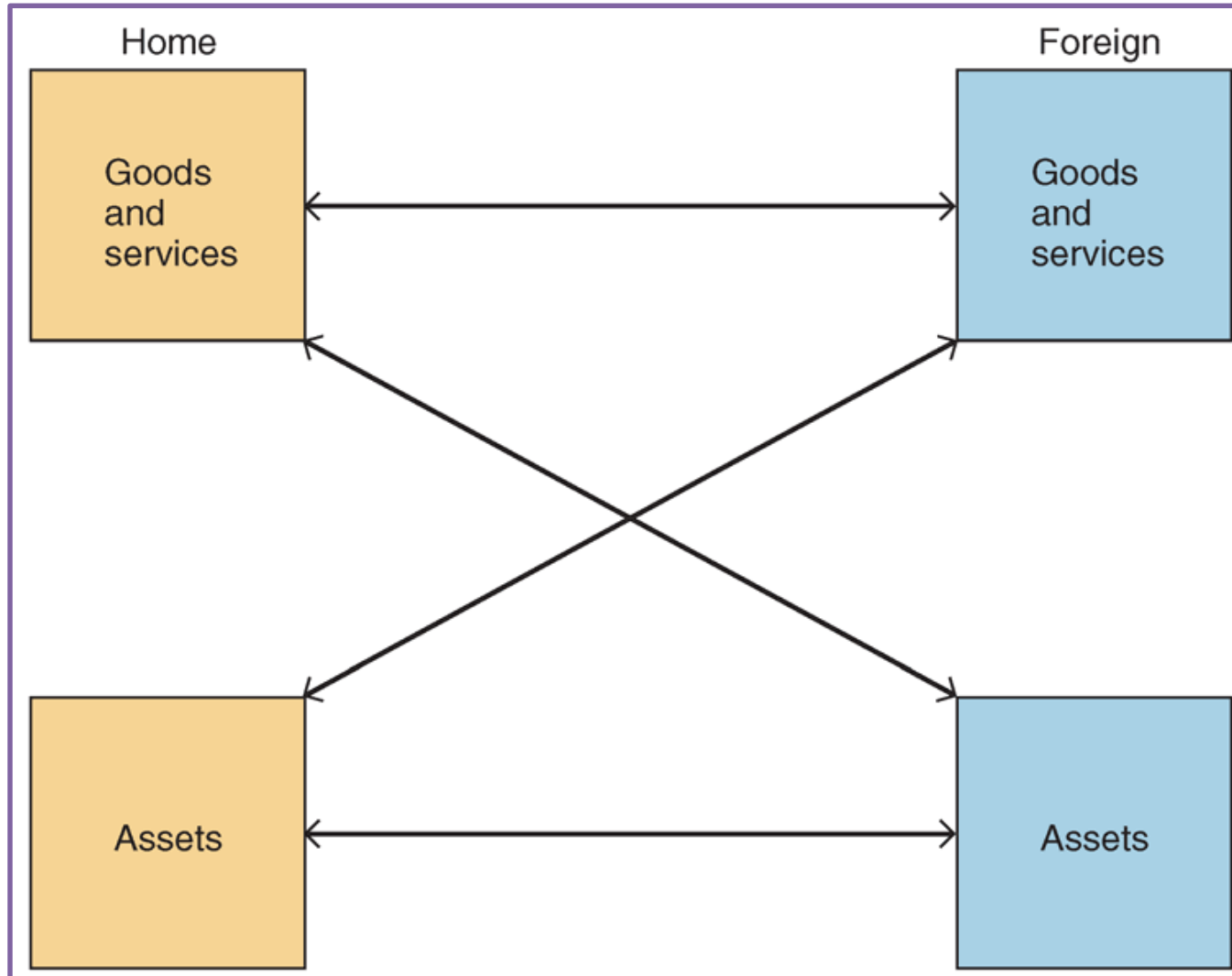
Gains from Trade

- The theory of **comparative advantage** describes the gains from trade of goods and services for other goods and services:

  - with a finite amount of resources and time, use those resources and time to produce what you are most productive at (compared to alternatives), then trade those products for goods and services that you want.

  - be a specialist in production, while enjoying many goods and services as a consumer through trade.

Gains from Trade (cont.)

- The theory of **intertemporal trade** describes the gains from trade of goods and services for assets, of goods and services today for claims to goods and services in the future (today's assets).

  - Savers want to buy assets (claims to future goods and services) and borrowers want to use assets to consume or invest in more goods and services than they can buy with current income.

  - Savers earn a rate of return on their assets, while borrowers are able to use goods and services when they want to use them: they both can be made better off.

- The theory of **portfolio diversification** describes the gains from trade of assets for assets, of assets with one type of risk with assets of another type of risk.

  - Investing in a diverse set, or portfolio, of assets that includes foreign assets is a way for investors to avoid or reduce risk. But investors often tend to display "home bias" (preference for domestic assets)

Interest Rate Parity

- If domestic and foreign assets are considered perfect substitutes, then we expect interest parity to hold on average:
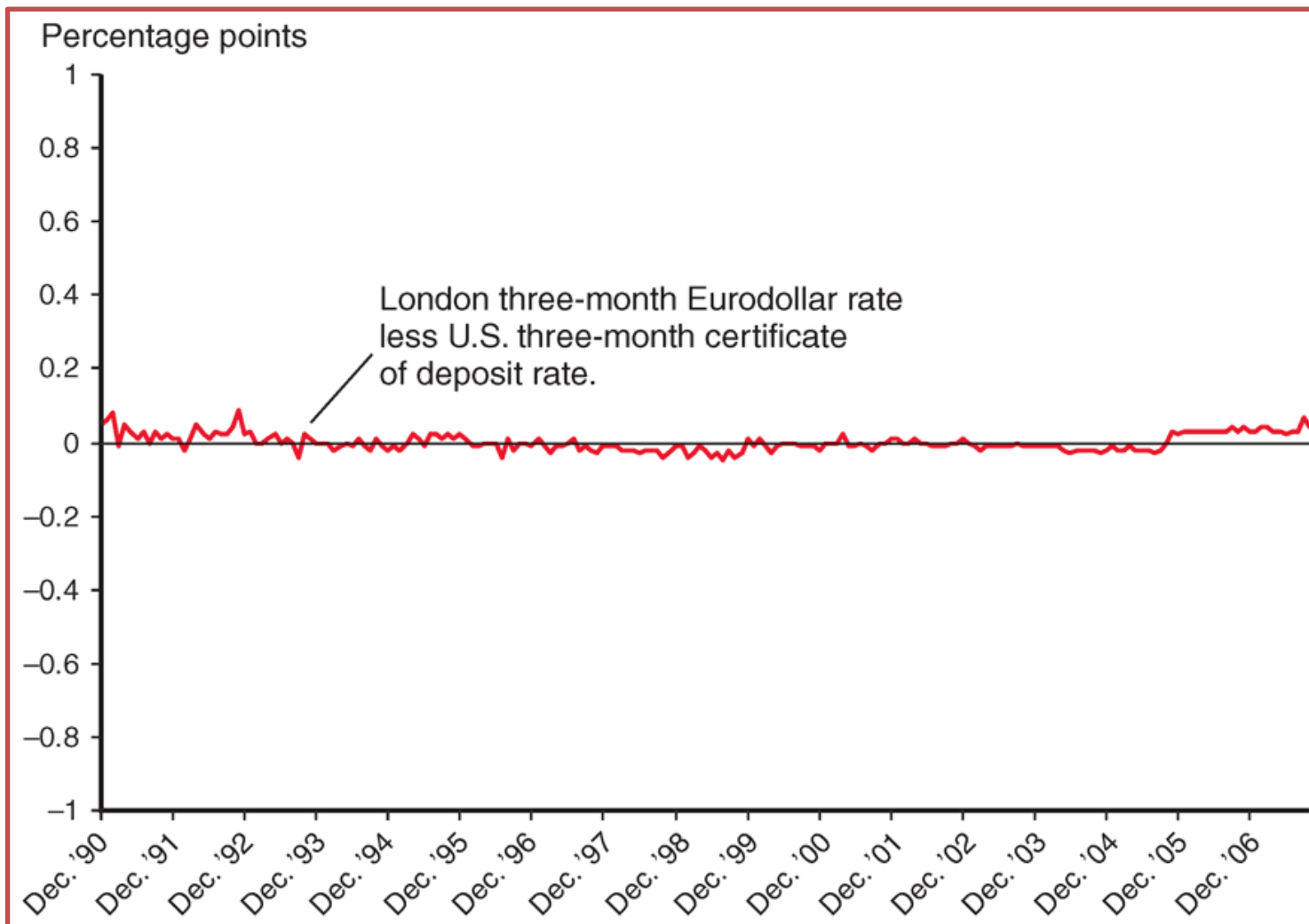
  $r_t - r^w_t = (X^e_{t+1} - X_t)/X_t$

- That is, the interest rate differential between the domestic (R_t) and foreign interest rate (r^w_t) should be zero, unless the market expects changes in the exchange rate.

  – In practice, interest rate differentials fail to predict large swings in actual exchange rates and even fail to predict which direction actual exchange rates change. Why?

- It could be because domestic and foreign assets are imperfect substitutes. Changes in risk premiums (ρ_t) may drive deviations from interest rate parity

  $r_t - r^w_t = (X^e_{t+1} - X_t)/X_t + \rho_t$

Example of Interest Rate Parity
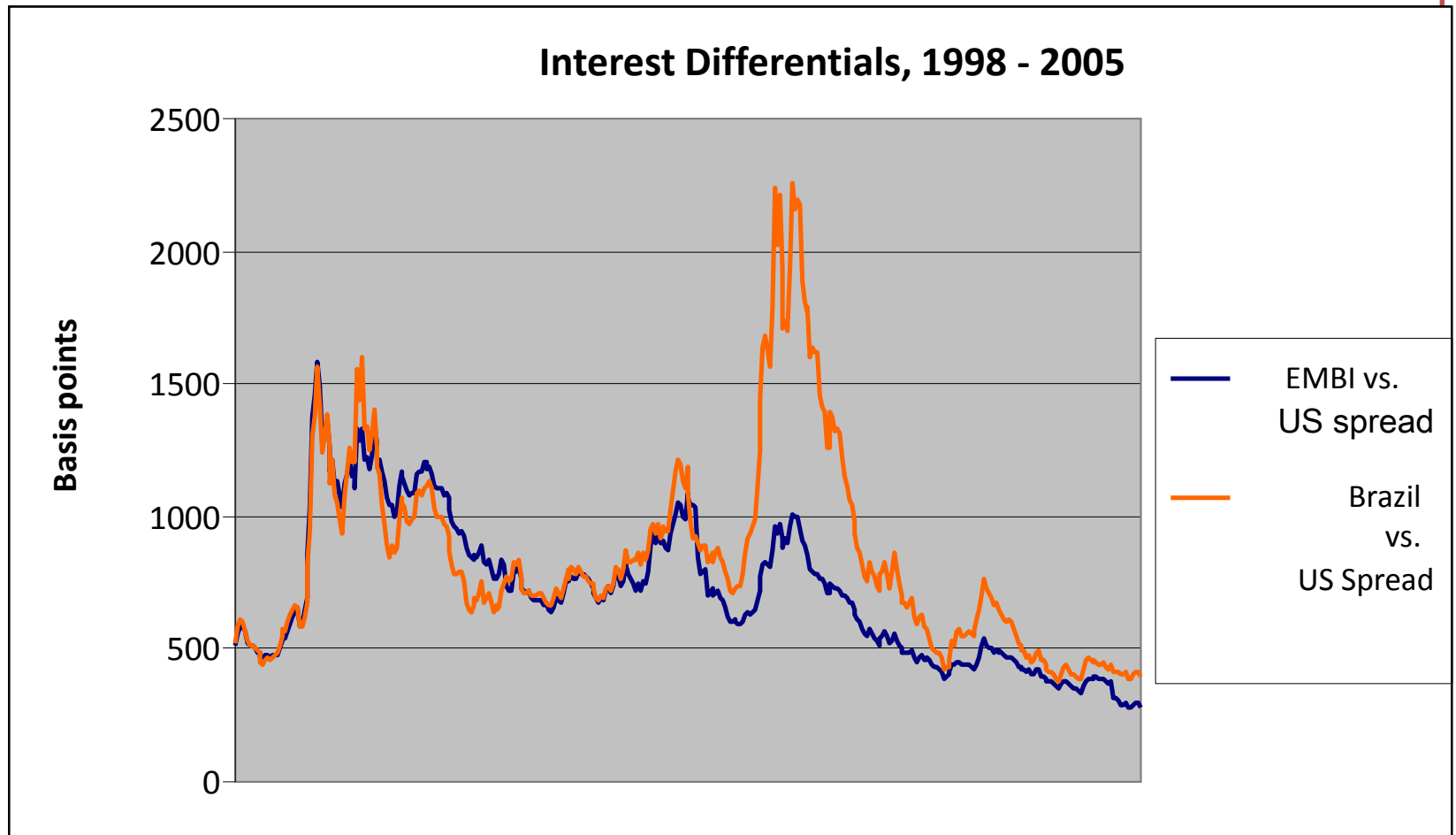
- We should expect that interest rates on offshore currency deposits and those on domestic currency deposits within a country should be the same if

  - the two types of deposits are treated as perfect substitutes,

  - assets can flow freely across borders and

  - international capital markets are able to quickly and easily transmit information about any differences in rates.

Comparing Onshore and Offshore Interest Rates for the Dollar

Percentage points

London three-month Eurodollar rate less U.S. three-month certificate of deposit rate.

Risk premium: illustration

Interest Differentials, 1998 - 2005

IMPOSSIBLE TRINITY

Interest Rate Parity (IRP) and Monetary Policy Choices

IRP imposes limits on central bank's monetary independence.

Why?

- Assume capital can flow in unlimited amounts between domestic and foreign country.

- Suppose now the domestic central bank were to try to keep exchange rates steady.

- At the same time, suppose also that it tries to adjust interest rates (say upwards) in order to attain a separate inflation target.

- Under fully-integrated capital markets, higher domestic interest rates $\Rightarrow$ large capital inflow into the domestic economy.

- Capital flows in $\Rightarrow$ the value of the domestic currency will have to go up versus the foreign currency—i.e., appreciation of the domestic currency.

- So the exchange rate cannot be held steady if the interest rate objective takes primacy.

IRP and Monetary Policy Choices (continued)

- Suppose now the central bank wants to keep its currency from appreciating.

- To prevent appreciation it must either inject more domestic currency into the market directly, or buy up foreign currency with domestic currency.

- Either way, the domestic currency it issues or pays out is new money $\Rightarrow$ expansion in domestic liquidity

- Expansion in domestic liquidity $\Rightarrow$ interest rate falls

- So the interest rate target cannot be achieved if the fixed exchange rate takes primacy.

Conclusion: One of the three must go. Either

- A central bank must give up trying to defend a fixed peg for e and allow the currency to be determined by the market forces that work through arbitrage, *or*

- A central bank must give up its independence in setting domestic interest rates, or what is the same thing it must align its domestic objectives with the objective of keeping e steady, *or*

- Something has to be done to limit capital flows and break the arbitrage that ties together exchange rates and interest rates.

Breaking the Arbitrage that Ties Interest Rates and Exchange Rates:

- The ability to conduct full arbitrage between local and global capital markets depends on the degree to which capital is allowed to flow between the two sets of markets—the **degree of capital market integration** or linkage between domestic and global markets.

- The degree of capital market integration often depends on the level of development and sophistication of local financial markets and institutions. But it can also be a policy choice

Degree of Capital Market Integration:

● "Full" or complete capital market integration: Few or no legal restrictions or natural market barriers on capital flows between domestic and global capital markets, particularly on currency-related transactions.

⇒No limit on volume of capital flows between markets. Convertibility of currency on capital account (not just current account).

⇒Feasible to conduct unlimited arbitrage whenever it makes sense to.

Degree of Capital Market Integration:

● Less than complete capital market integration: Significant capital or exchange controls limit the volume of capital that can flow between domestic and global markets.

⇒ Capital markets are segmented and arbitrage between from one market to another is expensive or impossible.

"Impossible Trinity"

"Impossible Trinity" or Policy Trilemma–The following three things are incompatible:

● Fully integrated capital markets (this is implicit in the IRP relationship)

● Independent monetary policy (i.e., CB can target interest rates **i**)

● Fixed *e*

The Impossible Trinity
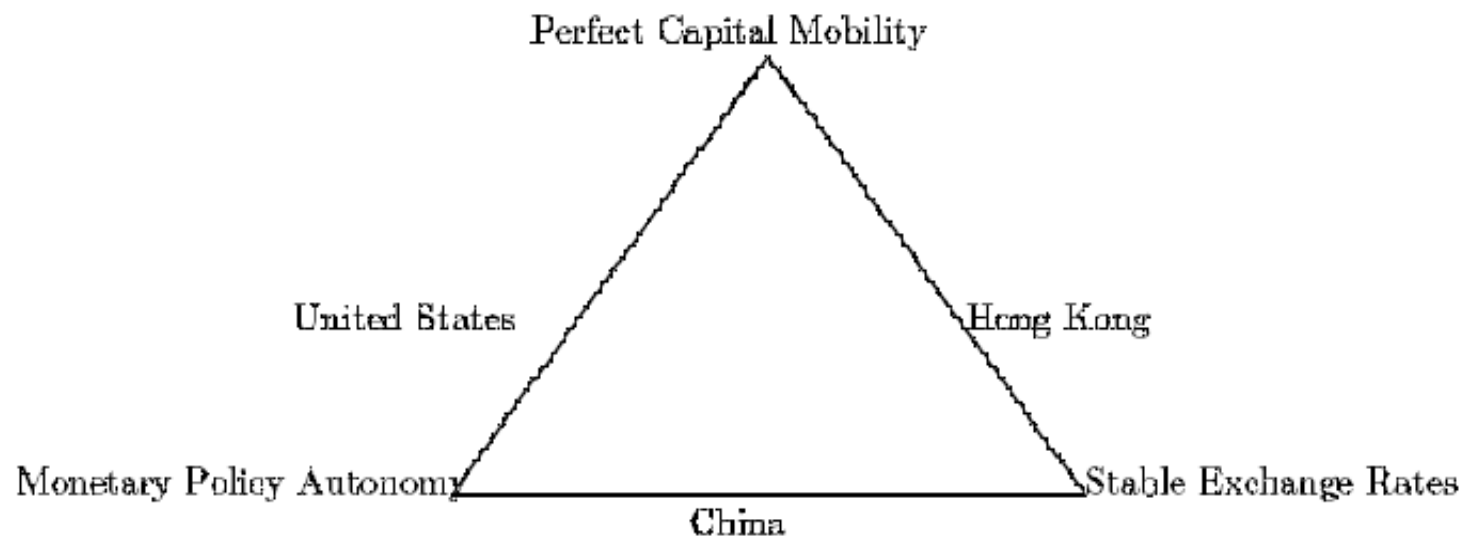
When domestic capital markets become fully integrated with global capital markets there arises the famous "**Impossible Trinity**" or "**Policy Trilemma**" (a result attributed by many to Robert Mundell and Marcus Fleming, but the idea is also in the earlier writings of James Meade):

● **Fully-integrated Capital Markets**: Capital can flow between domestic and world capital markets with few restrictions and minimal transaction costs.

● **Independent Monetary Policy**: Central bank is free to set interest rates at levels it deems appropriate for its domestic (inflation and output) targets.

● **Fixed Exchange Rate**: Nominal exchange rate e is held steady by central bank action.

Choice of Exchange Rate Regime

OPTION I: Adopt Firmly Fixed Exchange Rate Regime

- Monetary or Currency Union: Adopt a common currency and common monetary policy for the area. Examples: *a country within* the EU (not the EU as a whole), CFA Zone

- Dollarization: Adopt a foreign currency as legal tender for domestic transactions, accepting that the foreign central bank will have ultimate control over the supply of such currency. Examples: Panama, Ecuador

- Currency Board: Fully back domestic money aggregate (M0, M1, or even M2) with foreign currency. Central bank must exchange backed domestic money with foreign currency on demand. Examples: Hong Kong, Estonia, Argentina.

OPTION II: Go Flexible

- Pure Float: No market intervention directed at influencing the value of the domestic currency. Example: USA (since around 1997), EU?

- Managed Floating: Occasional market intervention to smooth exchange rate fluctuations but no commitment to a fixed parity. "Managed Floating-Plus" concept suggested by Morris Goldstein imposes, in addition: (i) inflation targeting and (ii) regulatory framework to limit exchange rate exposures of financial sector. Examples: Mexico, Thailand, New Zealand, many others

- Crawling Bands: Central bank intervenes to maintain exchange rate within a flexible and frequently updated range determined by past or forecast values of market variables (e.g. interest rate differentials). However rigid forms of this are harder to support. Example: Israel (prior to 2005).

OPTION III: Limit Capital Flow

- As Deliberate Policy: Introduce quantitative limits, or taxes on either capital inflows or outflows ("Tobin taxes"). Example: Chile (Tobin-like tax until 1995)

- As Long-standing Policy: China (controls on outflows, surrender requirements), India (FDI and portfolio restrictions until 1992, restrictions on S-T borrowing)

- As Crisis Response: Malaysia (outlawed capital movements to Singapore market and blocked repatriation of portfolio capital over 1998-99)

TRADE DEFICITS

$$Y = C + I + G + NX$$

or, $$NX = Y - (C + I + G)$$

net exports

output

domestic spending

Trade surpluses and deficits

$$NX = EX - IM = Y - (C + I + G)$$

- **trade surplus:**
  output > spending   and   exports > imports
  Size of the trade surplus = NX

- **trade deficit:**
  spending > output   and   imports > exports
  Size of the trade deficit = $-NX$

Link between trade & capital flows

- $NX = Y - (C + I + G)$
- *implies*
- $NX = (Y - C - G) - I$
- $= S - I$
- *trade balance = net capital outflow*

Thus,

a country with a trade deficit ($NX < 0$)

is a net borrower ($S < I$).

International capital flows

- Net capital outflow

  $= S - I$

  $=$ net outflow of "loanable funds"

  $=$ net purchases of foreign assets

  the country's purchases of foreign assets
  minus foreign purchases of domestic assets

- When $S > I$, country is a <u>net lender</u>

- When $S < I$, country is a <u>net borrower</u>

How Is the Current Account Related to Government Saving

- $NX \quad = S^p + S^g - I$

  $= S^p - I - \text{government deficit}$

- Government deficit is negative government saving (equal to G – T)

- A high government deficit causes a negative trade balance, all other things equal.

U.S. net exports, 1950-2007