The Open Economy

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Decomposing Demands

A country's expendable resources are GDP plus imports.

They are either consumed, invested, spent by the government, or exported to foreign countries.

Therefore, we have

$Y+IM=C+I+G+EX$, or equivalently,

$Y=C+I+G+NX$ where $NX=EX-IM$.

Decomposing Household Expenditures

- National Income is eventually distributed among all the households in a country.
- A representative household pays taxes, saves a fraction of its disposable income, and consumes the rest.
- Therefore, $Y=T+S+C$.
- Combining the two expressions of GDP, we have $C+I+G+NX=T+S+C$, which is equivalent to $S-I+T-G=NX=EX-IM$

$$\underbrace{S\text{-}I}_{\text{Excess Saving in Private Sector}} + \underbrace{T-G}_{\substack{\text{Excess Saving in government} \\ = \\ \text{government surplus}}} = \underbrace{NX}_{\text{Net Export = Current Account}} = \underbrace{EX\text{-}IM}_{\text{Export - Import}}$$

- A trade surplus of a country implies that the country *exports* capital to foreign countries.
- A trade deficit of a country implies that the country *imports* capital from foreign countries.

Balance of Payments

- The sheet of balance of payments of a country shows the IS balance identity: NX+I-S+G-T+FR+error=0.
- The following four terms are listed.
  - Current Account (NX)
  - Capital Account (I-S+G-T)
  - Foreign Reserves (FR)
  - Errors (Miscellaneous error)
- The error term is added to make the total sum of the above equal to zero.

Foreign Reserves

- The foreign currencies purchased by the government are reserved as foreign reserves and invested in foreign governments' bonds in most cases.
- Foreign reserve is recorded as a *negative* component of a country's balance of payments..
- A huge positive NX can be cancelled out by a huge negative FR as in China.

Real Exchange Rates

$$\underset{\text{Real Exchange Rate}}{\varepsilon} = \underset{\text{Nominal Exchange Rate}}{e} \times \underset{\text{Ratio of Price Levels}}{\frac{P_{US}}{P_J}}$$

$$= 120 \times \frac{10{,}000}{2{,}400{,}000} = 0.5$$

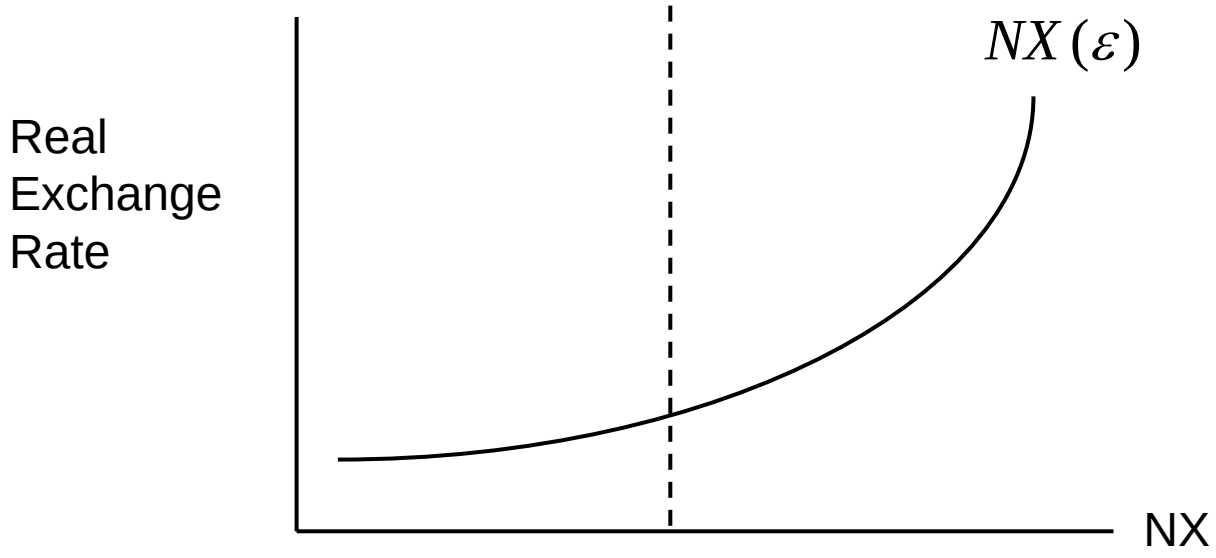
The lower the real exchange rate is,

the more expensive the domestic product is.

In this case, a US product is much less expensive than a Japanese product.

Net Exports

- The net export is an decreasing function of the real exchange rate, since the higher the latter is, the more expensive the domestic product is than the foreign product.



Nominal Exchange Rates

$$e = \varepsilon \times \frac{P_J}{P_{US}} = 0.5 \times \frac{2{,}400}{10} = 120 \ \frac{\text{yen}}{\text{dollar}}$$

In terms of growth rates,

$$\underset{\substack{\text{depreciation}\\ \text{rate of yen}}}{\hat{e}} = \underset{\substack{\text{growth rate of}\\ \text{real exchange rate}}}{\hat{\varepsilon}} + \underset{\substack{\text{inflation rate}\\ \text{of Japan}}}{\hat{P}_J} - \underset{\substack{\text{inflation rate}\\ \text{of US}}}{\hat{P}_{US}}$$

Purchasing Power Parity (PPP)

- In the long-run, a dollar must have the same purchasing power in every country, if consumers can buy all the goods and services at places where they are traded at the cheapest prices.
- That is, if all the possibility of international *arbitrage* is exploited, a PPP is held.

Big Mac Index

- The real exchange rate should converge to one, if purchasing power parity is held.
- Then the nominal exchange rate should be equal to the ratio of the nominal price levels of the two countries.
- However, the currencies of less developed countries tend to be undervalued than those of more developed countries, reflecting their countries' business risks.