Chapter 12 - *Open-Economy Macroeconomics*

- *Trade Can Make Everybody Better Off*
  - Basic concepts of international macroeconomics
    - The trade balance (trade deficits, surpluses)
    - International flow of assets
    - Exchange rates

- *Closed Versus Open Economies*
  - A **closed economy** does not interact with other economies in the world
  - An **open economy** interacts freely with other economies around the world
    - It buys and sells goods and services in world product markets
    - It buys and sells capital assets in world financial markets

- *The Flow of Goods and Services*
  - **Exports**
    - Domestically-produced goods sold abroad
  - **Imports**
    - Foreign-produced goods sold domestically
  - **Net Exports** (**NX**)

$$\text{NX} = \text{Value of Exports} - \text{Value of Imports}$$

    - Another name for NX is **trade balance**

- *Variables the Influence Net Exports*
  - Consumers' preferences for foreign and domestic goods
  - Prices of good at home and abroad
  - Incomes of consumers at home and abroad
  - The exchange rates at which foreign currency trades for domestic currency
  - Transportation costs
  - Government policies

- *Trade Surpluses and Deficits*
  - NX measures the imbalance in a country's trade in goods and services
    - **Trade Deficit**
      - An excess of imports over exports
    - **Trade Surplus**
      - An excess of exports over imports
    - **Balanced Trade**
      - Exports = Imports

- *The Flow of Capital*
  - **Net Capital Outflow** (**NCO**)
    - Domestic residents' purchases of foreign assets - foreigner's purchases of domestic assets
  - **NCO** is also called **Net Foreign Investment**

        - When a Canadian resident buys stock in Telmex, the Mexican phone company, the purchase raises Canadian net capital outflow
        - When a Japanese resident buys a bond issued by the Canadian government, the purchase reduces Canadian net capital outflow
    - The flow of capital abroad takes two forms
        - **Foreign Direct Investment**
            - If Tim Hortons opens a fast food outlet in Russia, that is an example of *foreign direct investment*
        - **Foreign Portfolio Investmen**t
            - If a Canadian buys stock in a Russian corporation, that is an example of *foreign portfolio investment*, supplying "loanable funds" to a foreign firm
    - NCO measures the imbalance in a country's trade in assets
        - When NCO > 0, "**capital outflow**"
            - Domestic purchases of foreign assets exceed foreign purchases of domestic assets
        - When NCO < 0, "**capital inflow**"
            - Foreign purchases of domestic assets exceed domestic purchases of foreign assets

- *Variables that Influence NCO*
    - Real interest rates paid on foreign assets
    - Real interest rates paid on domestic assets
    - Perceived economic and political risks of holding assets abroad
    - Government policies affecting foreign ownership of domestic assets

- *Equality of NX and NCO*

$$NCO = NX$$

    - Every transaction that affects NX also affects NCO by the same amount (and vice versa)
    - When a foreigner purchases a good from Canada,
        - Canadian exports and NX increase
        - The foreigner pays with currency or assets, so the Canadian acquires some foreign assets, causing NCO to rise
    - When a Canadian buys a foreign good,
        - Canadian imports rise and NX falls
        - The Canadian pays with Canadian dollars or assets, so the other countries acquire Canadian assets, causing NCO to fall

- *Saving, Investment, and International Flow of Goods and Assets*

$$\begin{aligned} Y &= C + I + G + NX \\ Y - C - G &= I + NX \\ S &= I + NX \\ S &= I + NCO \end{aligned}$$

    - When **S > I**, the excess loanable funds flow abroad in the form of positive net capital outflow
    - When **S < I**, foreigners are financing some of the country's investment, and **NCO < 0**

- *International Flows of Goods and Capital-Summary*

Trade Deficit	Balanced Trade	Trade Surplus
Exports < Imports	Exports = Imports	Exports > Imports
Net exports < 0	Net exports = 0	Net exports > 0
$Y < C + I + G$	$Y = C + I + G$	$Y > C + I + G$
Saving < Investment	Saving = Investment	Saving > Investment
Net capital outflow < 0	Net capital outflow = 0	Net capital outflow > 0

- *Prices for International Transactions: Real and Nominal Exchange Rates*
  - International transactions are influenced by international prices
  - The two most important international prices are the nominal exchange rate and the real exchange rate

- *The Nominal Exchange Rate*
  - **Nominal Exchange Rate**
    - The rate at which a person can trade the currency of one country for the currency of another
  - Nominal exchange rate is expressed in two ways
    - In units of foreign currency per one Canadian dollar
    - In units of Canadian dollars per one unit of the foreign currency

- *Appreciation and Depreciation*
  - **Appreciation** (*or "strengthening"*)
    - An increase in the value of a currency as measured by the amount of foreign currency it can buy
      - e.g. if a dollar buys more foreign currency, there is an appreciation of the dollar
  - **Depreciation** (*or "weakening"*)
    - A decrease in the value of a currency as measured by the amount of foreign currency it can buy
      - e.g. if a dollar buys less foreign currency, there is a depreciation of the dollar

- *Real Exchange Rate*
  - **Real Exchange Rate**
    - The rate at which the goods and services of one country trade for the goods and services of another

$$\text{Real Exchange Rate} = \frac{e \times P}{P^*}$$

  - Where
    - **P** = Domestic Price
    - **P*** = Foreign Price (in foreign currency)
    - **e** = nominal exchange rate
      - i.e. foreign currency per unit of domestic currency

- *Real Exchange Rate With One Good*
    - A Big Mac costs $2.50 but 400 yen in Japan
        - e = 120 yen per $

$$\begin{aligned} e \times P &= \text{price in yen of a Canadian Big Mac} \\ &= (120 \text{ yen per \$}) \times (\$2.50 \text{ per Big Mac}) \\ &= 300 \text{ yen per Canadian Big Mac} \end{aligned}$$

        - Compute real exchange rate

$$\begin{aligned} \frac{e \times P}{P^*} &= \frac{300 \text{ yen per Canadian Big Mac}}{400 \text{ yen per Japanese Big Mac}} \\ &= 0.75 \text{ Japanese Big Macs per Canadian Big Mac} \end{aligned}$$

    - Interpreting the Real Exchange Rate
        - To buy a Big Mac in Canada, a Japanese citizen must sacrifice an amount that could purchase 0.75 Big Macs in Japan

- *Real Exchange Rate with Many Goods*
    - Real Exchange Rate
        - Price of a domestic basket of goods relative to the price of a foreign basket of goods

$$\text{Real Exchange Rate} = \frac{e \times P}{P^*}$$

    - Where
        - **P** = CDA price level
            - e.g. Consumer Price Index, which measures the price of a basket of goods
        - **P*** = Foreign Price Level (in foreign currency)
        - **e** = nominal exchange rate
            - i.e. foreign currency per unit of domestic currency

    - An appreciation of the CDA real exchange rate means CDA goods are becoming more expensive relative to foreign goods

- *Exchange Rate Determination: Purchasing-Power Parity*
    - **Purchasing-Power Parity**
        - Most widely accepted theory explaining the variation of currency exchange rates
    - According to PPP, a unit of any given currency should be able to buy the same quantity of goods in all countries

- *The Basic Logic of PPP*
  - According to the purchasing-power parity theory, a unit of any given currency should be able to buy the same quantity of goods in all countries
  - PPP is based off **the law of one price**
    - According to the law of one price, a good must sell at the same price in all locations

- *Purchasing-Power Parity*
  - Implies that nominal exchange rates adjust to equalize the price of a basket of goods in all countries
  - Example
    - The basket contains a Big Mac
      - P = Price of Big Mac (in dollars)
      - P^* = Price of Japanese Big Mac (in yen)
      - e = Exchange rate (yen per dollar)
    - According to PPP,

$$\underbrace{e \times P}_{\text{price of CDA Big Mac, in yen}} = \underbrace{P^*}_{\text{price of Japanese Big Mac, in yen}}$$

    - Solve for e

$$e = \frac{P^*}{P}$$

- *PPP and its Implications*
  - PPP implies that the nominal exchange rate between two countries should equal the ratio of the price level
  - If the two countries have different inflation rates, then e will change over time
    - If inflation is higher in Mexico than in Canada, than P^* rises faster that P, so e rises
      - The dollar appreciates against the peso
    - If inflation is higher in Canada than in Japan, the P rises faster than P^*, so e falls
      - The dollar depreciates against the yen

- *Limitations of the PPP Theory*
  - Two reasons why exchange rates do not always adjust to equalize prices across countries
    - Many goods cannot easily be traded
    - Foreign and domestic goods are not perfect substitutes
  - Nonetheless, PPP works well in many cases, especially as an explanation for long-run trends

- *Interest Rate Determination in a Small Open Economy with Perfect Capital Mobility*
  - Interest rates in Canada and the United States tend to move up and down together
    - Why?

    - '**Small**' means a small part of the world's economy
    - Canada is an economy with perfect capital mobility because
        - Canadians have full access to world financial markets
        - The rest of the world has full access to the Canadian financial market
    - This means that the real interest rate in Canada should equal the real interest rate prevailing in the world

- *Perfect Capital Mobility*
    - The theory that the real interest rate in Canada should equal that in the rest of the world, is known as **interest rate parity**