Chapter 12

Open-Economy Macroeconomics

Closed versus Open Economy

One of the Ten Principles of Economics from Chapter 1:
Trade can make everyone better off.

A **closed economy** does not interact with other economies in the world.

i.e. EX = 0 and IM = 0 so NX = 0

There are no financial flows.

An **open economy** interacts freely with other economies around the world.

i.e. EX > 0 and IM > 0 and NX can be > 0 or < 0 or = 0

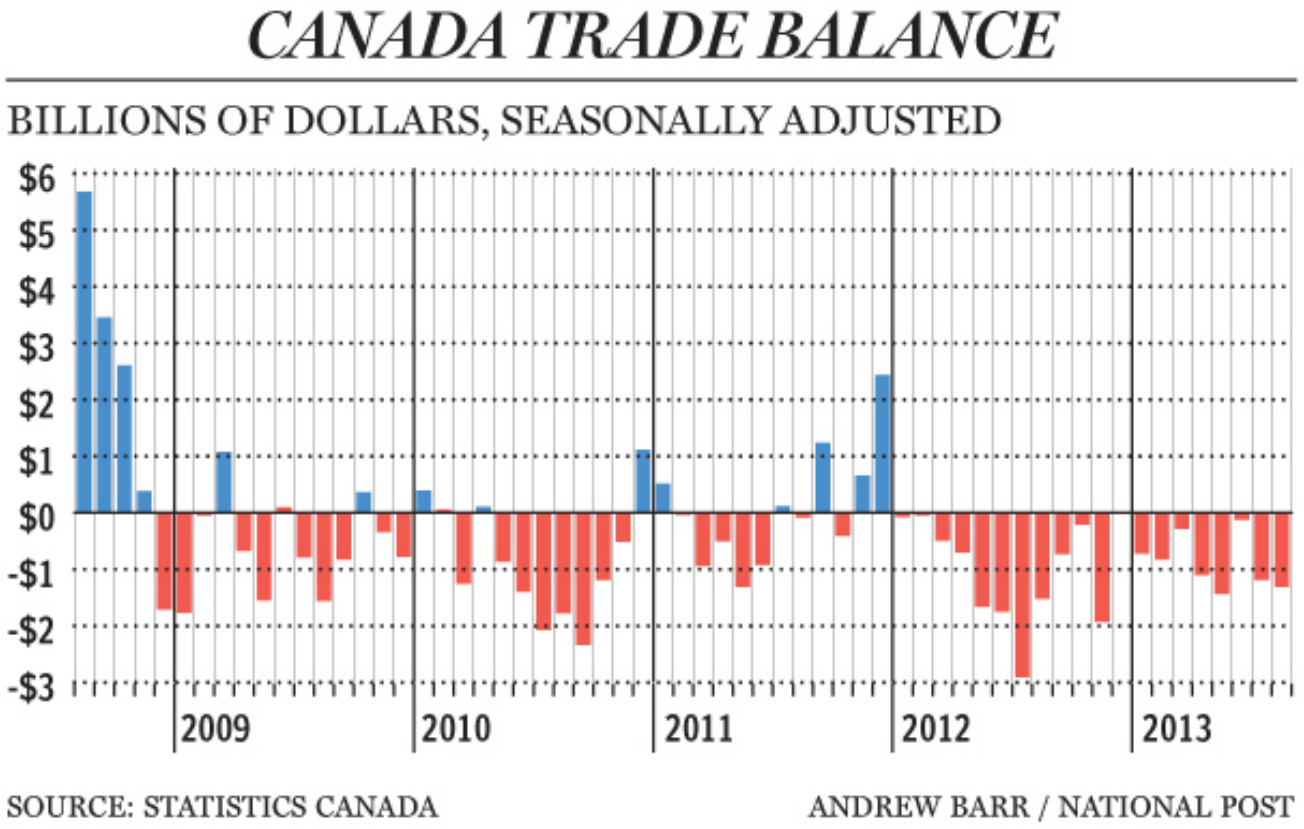
The country buys and sells assets in world financial markets.

International Flow of Goods and Services

Exports: **G&S that are produced domestically and sold abroad**

Imports: **G&S that are produced abroad and sold domestically**

- Trade surplus: **NX > 0**
- Trade deficit: **NX < 0**
- Balanced trade: **NX = 0**



Variables that Influence a Country's NX

1) Preferences of consumers for domestic and foreign goods
2) Prices of goods at home and abroad
3) Transporting costs
4) Government policies toward international trade
5) Income of consumers at home and abroad
6) Exchange rates

Income of Consumers at Home and Abroad

An increase in domestic income leads to **a decrease in NX.**

Why? As domestic income increases, domestic consumption increases. As a result, domestic demand for foreign goods increases. Imports increase, causing a decrease in NX.

An increase in foreign income leads to **an increase in NX.**

Why? As foreign income increases, foreign consumption increases. As a result, foreign demand for Canadian goods increases. Exports increases, causing an increase in NX.

What do you think would happen to Canadian net exports if:

A. The U.S. experiences a recession (falling incomes, rising unemployment)

B. Canadian consumers decide to be patriotic and buy more products “Made in Canada”

C. Prices of goods produced in Mexico rise faster than prices of goods produced in Canada.

International Flow of Capital

Capital outflow: **the purchase of foreign assets by domestic residents**

Capital inflow: **the purchase of domestic assets by foreigners**

Net capital outflow (NCO) = **capital outflow – capital inflow**

NCO is also called ***net foreign investment***.

Examples:

- 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.

International Flow of Capital

The flow of capital takes two forms (Ch. 8):

- Foreign direct investment: **Domestic residents actively manage the foreign investment.**

  E.g. Tim Hortons opens a fast food outlet in China

- Foreign portfolio investment: **Domestic residents purchase foreign stocks or bonds, supplying "loanable funds" to a foreign firm.**

In both cases, Canadian residents are buying assets located in another country, so both purchases increase Canadian net capital outflow.

International Flow of Capital

Factors that influence Net Capital Outflow:

1) Real interest rate being paid on foreign assets

   A higher foreign real interest rate will **increase the NCO.**

   Real interest rate being paid on domestic assets

   A higher domestic real interest rate will **decrease the NCO.**

2) Perceived economic and political risks of holding assets abroad

   Higher risks abroad will **decrease the NCO.**

3) Government policies that affect foreign ownership of domestic assets

   More restrictive policies will **increase the NCO.**

The Equality of NX and NCO

Income and expenditure identity: **Y = C + I + G + NX**

National savings:

Replace Y:

S – I = net foreign investment

S – I = **net capital outflow (NCO)**

→ NCO = NX

When ***S*** > ***I***, the excess loanable funds flow abroad and ***NCO*** > 0.

When ***S*** < ***I***, foreigners are financing some of the country's investment and ***NCO*** < 0.

The Equality of NX and NCO

Why does NCO = NX?

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 citizen buys foreign goods

- Canadian imports **increase** and ***NX*** **decrease.**
- The Canadian buyer pays with Canadian dollars or assets, so the other country acquires Canadian assets, causing Canadian ***NCO*** **to fall.**

International Flows of Goods and Capital

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: Exchange Rates

International prices help to coordinate the decisions of consumers and producers as they interact in world market.

The two most important international prices are the **nominal exchange rate and the real exchange rate.**

Nominal exchange rate: **the rate at which a person can trade the currency of one country for the currency of another → units of foreign currency per $1 CAD**

- **Appreciation** = the value of a currency as measured by the amount of foreign currency it can buy **increases.**
- **Depreciation** = the value of a currency as measured by the amount of foreign currency it can buy **decreases.**

Notes on Exchange Rate Quotations

Exchange rate is the price of one currency in terms of another currency. Depending on whether the home currency is the *price currency* or the *unit currency*, the exchange rate can be quoted in the following two ways:

1) Direct quotation: using a country's home currency as the price currency. For example, $0.21/yuan in Canada.
2) Indirect quotation: using a country's home currency as the unit currency. For example, 4.70 yuan/$ in Canada. The exchange rates in this text are indirect quotations.

Notes on Exchange Rate Quotations

- Using direct quotation, if the home currency appreciates then the exchange rate decreases.
- Using indirect quotation, if the home currency appreciates, the exchange rate increases.

Changes in the Exchange Rate and NX

As the Canadian dollar appreciates, Canadian goods are more expensive to foreigners and foreign goods become cheaper to Canadians.
As a result,

As the Canadian dollar depreciates, Canadian goods become cheaper to foreigners and foreign goods are more expensive to Canadians.
As a result,

Real Exchange Rate

Real exchange rate: **the rate at which the G&S of one country trade for the G&S of another**

If ***P*** = domestic price level (CPI or price of a basket of G&S)

P* = foreign price level (in foreign currency)

E = nominal exchange rate, *i.e.*, foreign currency per unit of domestic currency

Then the Real exchange rate = $\frac{E \times P}{P^*}$

Example

A Big Mac costs $2.50 in Canada but 400 yen in Japan

E = 120 yen per $

E x ***P*** = price in yen of a Canadian Big Mac

Compute the real exchange rate:

Exercise: Starbucks lattes

E = 10 pesos per $

P = $3 in CDA, ***P**** = 24 pesos in Mexico

A. What is the price of a Canadian latte measured in pesos?

B. Calculate the real exchange rate, measured as Mexican lattes per Canadian latte.

Changes in the Real Exchange Rate and NX

A depreciation in Canada's real exchange rate means Canadian goods become cheaper relative to foreign goods.
As a result,

An appreciation in Canada's real exchange rate means Canadian goods become more expensive relative to foreign goods.
As a result,

Purchasing-Power Parity

Purchasing-power parity (PPP) = **a unit of any given currency should be able to buy the same amount of G&S in all countries.**

PPP states that a unit of any currency must have the same *purchasing power* (same real value) in every country.

The logic of PPP is based on the **Law of one price:**
homogeneous products must sell for the same price in all locations.

Law of One Price

If a good is sold for less in one location (A) than another (B), then an *arbitrage opportunity* exists: People could make a profit by **buying the good in location A and selling it in location B.**
As a result, in location A the price would **rise in response to D↑**
And in location B the price would **fall in response to S↑**
This process will continue until the prices are the same in both locations.

The same logic should apply to currency. If a dollar could buy more goods in one country than another, then *arbitrage opportunities* exists.
In the end, the law of one price predicts that **a dollar must buy the same amount of goods in all countries.**

Implications of PPP

P = price in Canada (CAD) P* = price in US (USD)

E = nominal exchange rate (the amount of USD that each $1CAD can buy)

In Canada, the purchasing power of $1 CAD is

In US, $1 CAD can be exchanged into

which has the purchasing power of

PPP implies that

Or

Or

Limitations of PPP

According to PPP, the nominal exchange rate should be equal to the ratio of the foreign price over the domestic price, or, $E = (P*)/P$.

BUT PPP is not a prefect theory of exchange rate determination.

- **Many goods and services are not easily traded**
  E.g. Haircuts, burgers
- **Tradable goods are not always perfect substitutes**
  E.g.Soccer jerseys

No arbitrage opportunities

BUT over the long run, PPP is pretty good at predicting changes in the nominal exchange rate.

If the domestic inflation is lower than the foreign inflation, then over time the **domestic currency must appreciate against the foreign currency and vice versa.**

Interest Rate Parity

Interest rate parity is based on two assumptions:

(1) Small open economy = An economy that trades G&S with other economies and, by itself, has a *negligible effect on world prices and interest rates*.

(2) **Perfect capital mobility** = full access to world financial markets.

Interest rate parity = the real interest rate on comparable financial assets should be the same in all economies with full access to world financial markets.

$$r = r^w \Rightarrow \textit{domestic interest rate = world interest rate}$$

Why? If the domestic rate were higher then more money would flow into the country, increasing the supply of loanable funds and lowering interest rates (or vice versa).

Limitations of Interest Rate Parity

1) Default risk

   Financial assets are at risk of default. The higher the default risk, the higher the interest rate that savers demand from borrowers. Because of the difference in the default risk, **interest rate differences may persist.**

2) Differences in tax rates

   From savers' and investors' standpoint, what matters is the *after-tax real interest rate*. While the after-tax returns are equalized internationally, the **difference in pre-tax interest rates will persist.**

Interest Rate Parity

Interest rate parity is not a perfect theory of interest rate determination.

In the long run, domestic interest rate and foreign interest rate tend to **fluctuate together.**

Real interest rates in Canada tend to rise or fall with interest rates in the rest of the world.