Closed vs. 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.

- So far in this class, we have focused on analyzing the economy as if it is closed.

- However, the US economy is becoming increasingly open.
  - Though it is still one of the most closed in the world.
The Flow of Goods & Services

- **Exports**: domestically-produced goods & services sold abroad

- **Imports**: foreign-produced goods & services sold domestically

- **Net exports (NX)**, aka the trade balance
  \[ \text{value of exports} - \text{value of imports} \]
Trade Openness Around the World

http://www.google.com/publicdata/explore?ds=d5bncppjof8f9&_ctype=m&strail=false&bcs=d&nselm=s&met_s=ne_trd_gnf_s_zs&scale_s=lin&ind_s=false&ifdim=country&tunit=Y&pit=1259470800000&ind=false&xMax=180&xMin=-180&yMax=-68.97791803127897&yMin=82.5163856493906&mapType=t&icfg&iconSize=0.5
Export Levels Around the World

http://www.google.com/publicdata/explore?ds=d5bncppjof8f9&_ctype=m&strail=false&bcs=d&nselm=s&met_s=merchandise_trade_by_the_reporting_economy_current_us&fdim_s=direction_of_trade:1&scale_s=lin&ind_s=false&ifdim=country&hl=en&ind=false&xMax=180&xMin=-180&yMax=-68.97791803127897&yMin=82.5163856493906&mapType=t&icfg&iconSize=0.5
Import Levels Around the World

http://www.google.com/publicdata/explore?ds=d5bncppjof8f9&_ctype=m&strail=false&bcs=d&nselm=s&met_s=merchandise_trade_by_the_reporting_economy_current_us&fdim_s=direction_of_trade:2&scale_s=lin&ind_s=false&ifdim=country&hl=en&ind=false&xMax=180&xMin=-180&yMax=-68.97791803127897&yMin=82.5163856493906&mapType=t&icfg&iconSize=0.5
Composition of US Imports, Jan 2013

- Transportation Equipment: 13%
- Computer and Electronic Products: 15%
- Chemicals: 9%
- Petroleum and Coal Products: 4%
- Food and Kindred Products: 2%
- Textile Mill Products: 1%
- Apparel and Accessories: 4%
- Leather and Allied Products: 2%
- Paper: 1%
- Plastics and Rubber Products: 2%
- Primary Metal Manufacturing: 5%
- Fabricated Metal Products, Nesi: 3%
- Machinery, Except Electrical: 6%
- Electrical Equipment, Appliances, and Component: 4%
- Furniture and Fixtures: 1%
- Miscellaneous Manufactured Commodities: 5%
- Agricultural Products: 2%
- Oil And Gas: 14%
Variables that Influence Net Exports

- Consumers’ preferences for foreign and domestic goods
- Prices of goods at home and abroad
- Incomes of consumers at home and abroad
- The exchange rates at which foreign currency trades for domestic currency
- Government policies (tariffs, quotas, …)
The U.S. Economy’s Increasing Openness

Percent of GDP

Total Imports / GDP
Total Exports / GDP
Net Exports / GDP
Deficits and Surpluses around the World

http://www.google.com/publicdata/explore?ds=k3s92bru78li6_&ctype=m&strail=false&bcs=d&nselm=s&met_s=bca&scale_s=lin&ind_s=false&ifdim=country&ind=false&xMax=180&xMin=-180&yMax=-72.04336563901728&yMin=81.21657435735257&mapType=t&icfg&iconSize=0.5
Ratio of Imports to Exports

Major Trading Partners:
- Canada: 1.14
- Mexico: 1.34
- Germany: 2.04
- Japan: 2.00
- South Korea: 1.35
- United Kingdom: 0.93
- Brazil: 0.76
- … China: 4.02
What the US Sells to China, Jan 2013

- Agricultural Products: 25%
- Transportation Equipment: 13%
- Computer and Electronic Products: 12%
- Machinery, Except Electrical: 8%
- Fabricated Metal Products, Nesoi: 2%
- Primary Metal Manufacturing: 5%
- Chemicals: 10%
- Electrical Equipment, Appliances, and Component: 2%
- Forestry Products, Nesoi: 1%
- Minerals and Ores: 3%
- Food and Kindred Products: 4%
- Wood Products: 1%
- Paper: 2%
- Petroleum and Coal Products: 2%
- Miscellaneous Manufactured Commodities: 2%
- Waste and Scrap: 8%
What China Sells to the US, Jan 2013

- Apparel and Accessories: 8%
- Chemicals: 4%
- Leather and Allied Products: 7%
- Paper: 1%
- Printed Matter and Related Products, Nesoi: 1%
- Plastics and Rubber Products: 4%
- Nonmetallic Mineral Products: 2%
- Primary Metal Manufacturing: 1%
- Fabricated Metal Products, Nesoi: 4%
- Machinery, Except Electrical: 5%
- Transportation Equipment: 3%
- Miscellaneous Manufactured Commodities: 8%
- Textile Mill Products: 2%
- Furniture and Fixtures: 4%
- Electrical Equipment, Appliances, and Component: 7%
- Furniture and Fixtures: 4%

This product is greater than all US exports to China.
Maintaining Trade Deficits

Why would one country ever give more stuff to another country than it gets in return?

Two possibilities:

- Deficits with one country are balanced with surpluses with another

- If you give me goods today, I promise to pay you back with goods in the future
  - In the market economy, this shows up as trade in financial assets
The International Allocation Puzzle

- One puzzling feature of international capital flows:
  - Typically, capital flows from poor, fast growing countries to rich, slow growing countries
- This is a “puzzle” for macroeconomic models
  - Meaning it does not happen in our usual models, but it does in the data
- The reason we have trouble rationalizing this:
  - If you are going to be much richer in the future, you should prefer to borrow today to consume and pay it off in the future when you’re rich
Example: China

- China has an extremely high savings rate and very fast growth.
- They use their savings to buy low return US assets and send a lot of Chinese goods to the US.
- Normally we think of people wanting to “smooth” their consumption over time.
  - Would prefer constant consumption today and tomorrow to very low consumption today and very high consumption tomorrow.
- Yet this would predict that the US should be lending to China now.
Possible Explanations

Many possible explanations have been proposed:

- Unusual age structure in China from the one child policy (Modigliani and Gao, 2004)
  - In the near future, Chinese population will be very old so they are saving now to support consumption then

- Bad financial markets in China require entrepreneurs to save (Buera and Shin, 2011)

- Better insurance markets in the US make foreigners want to save here (Mendoza, Quadrini, Rios-Rull, 2009)
Possible Explanations

Many possible explanations have been proposed:

- Currency manipulation strategy:
  - Normally if trade deficits are large, currency prices adjust to balance trade
  - With high taxes and capital controls, the Chinese government uses dollars that enter the economy to purchase US government assets
  - Keeps the RMB from adjusting in value
  - Great example of a policy that maximizes Chinese GDP but is bad for Chinese welfare
The Flow of Capital

- **Net capital outflow (NCO):**
  - domestic residents’ purchases of foreign assets minus
  - foreigners’ purchases of domestic assets

- If domestic residents buy a lot of foreign assets, NCO>0 (e.g., China)

- If foreign residents buy a lot of domestic assets, NCO<0 (e.g., the USA)

- NCO is also called *net foreign investment*. 
The Flow of Capital

The flow of capital abroad takes two forms:

- **Foreign direct investment:**
  Domestic residents actively manage the foreign investment, e.g., McDonalds opens a fast-food outlet in Moscow.

- **Foreign portfolio investment:**
  Domestic residents purchase foreign stocks or bonds, supplying “loanable funds” to a foreign firm.
The Equality of NX and NCO

- An accounting identity: \( NCO = NX \)
  - arises because every transaction that affects \( NX \) also affects \( NCO \) by the same amount (and vice versa)

- When a foreigner purchases a good from the U.S.,
  - U.S. exports and \( NX \) increase
  - the foreigner pays with currency or assets, so the U.S. acquires some foreign assets, causing \( NCO \) to rise.
The Equality of NX and NCO

- An accounting identity: \[ NCO = NX \]
  - arises because every transaction that affects \( NX \) also affects \( NCO \) by the same amount (and vice versa)

- When a U.S. citizen buys foreign goods,
  - U.S. imports rise, \( NX \) falls
  - the U.S. buyer pays with U.S. dollars or assets, so the other country acquires U.S. assets, causing U.S. \( NCO \) to fall.
Saving, Investment, and International Flows of Goods & Assets

\[ Y = C + I + G + NX \]  accounting identity

\[ Y - C - G = I + NX \]  rearranging terms

\[ S = I + NX \]  since \( S = Y - C - G \)

\[ S = I + NCO \]  since \( NX = NCO \)

- 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 \( NCO < 0 \).
Case Study: The U.S. Trade Deficit

- The U.S. trade deficit reached record levels in 2006 and remained high in 2007-2008.

- Recall, $NX = S - I = NCO$. A trade deficit means $I > S$, so the nation borrows the difference from foreigners.

- In 2008, foreign purchases of U.S. assets exceeded U.S. purchases of foreign assets by $1 trillion.

- Such deficits have been the norm since 1980…
U.S. Saving, Investment, and NCO, 1950-2007

- **Saving** (% of GDP)
- **Investment** (% of GDP)
- **NCO** (% of GDP)
Case Study: The U.S. Trade Deficit

Why U.S. saving has been less than investment:

- In the 1980s and early 2000s, huge budget deficits and low private saving depressed national saving.

- In the 1990s, national saving increased as the economy grew, but domestic investment increased even faster due to the information technology boom.
Case Study: The U.S. Trade Deficit

- Is the U.S. trade deficit a problem?
  - The extra capital stock from the ’90s investment boom may well yield large returns.
  - The fall in saving of the ’80s and ’00s, while not desirable, at least did not depress domestic investment, as firms could borrow from abroad.

- A country, like a person, can go into debt for good reasons or bad ones. A trade deficit is not necessarily a problem, but might be a symptom of a problem.
Case Study: The U.S. Trade Deficit

as of 12-31-2011

People abroad owned $25.1 trillion in U.S. assets. U.S. residents owned $21.1 trillion in foreign assets. U.S.’ net indebtedness to other countries = $4 trillion. Higher than every other country’s net indebtedness. So, U.S. is “the world’s biggest debtor nation.”

- So far, the U.S. earns higher interest rates on foreign assets than it pays on its debts to foreigners.
- But if U.S. debt continues to grow, foreigners may demand higher interest rates, and servicing the debt would become a drain on U.S. income.
Why has the savings rate fallen?

- Increased international demand for US assets
  - Foreigners perceive US assets as being very low risk, and buy a lot of them
  - This drives down the return to domestic savings
- Historically low interest rates
  - Partially driven by loose Fed policy, though not completely
- Very high government deficits
  - Savings = Public + Private, and Public is negative