National Accounts

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[1]I wish to acknowledge Battista Severgnini for providing last year's slides to me. His generosity saved me much time, and these slides are partially based on his. Any errors are of course my own.

Plan for Today

1. Quick review of International Trade
2. Chapter 13:
   - National income accounts
   - National saving, investment, and the current account
3. Chapter 14:
   - Exchange rate
   - The foreign exchange market
   - The demand of currency deposits

Chapter 13: National Income Accounting and the Balance of Payments

Goodbye micro foundations

- Our first trade models
  - Stark and simple
  - General equilibrium
  - A real economy – no money!
- Models in the remainder of course
  - Partial equilibrium
  - Equilibrium conditions:
    1. Interest rate parity
    2. Law of one price
- Text: Micro vs Macro
  - A little more complicated than that...

Why partial equilibrium?

- Easier to analyze some important topics
- Our general equilibrium models abstracted from
  1. Unemployment
  2. Saving
  3. Trade imbalances
  4. Money
- Fiat money very tricky to put in 'microfounded' model!
  - International finance about exchange rates!
- Minnesota macro vs. New Keynsian macro

Chapter 13 split

1. National income accounting
   - Measuring value of a nation's annual production
2. Balance of payments accounting
   - Measuring a nation's debt to other countries at a point in time

National income accounting

- Focus on *Gross National Product* or GNP
- Definition from textbook:
  - The value of all final goods and services produced by the country's factors of production and sold on the market in a given time period
- Let's parse this

Gross National Product

- Definition from textbook:
  - The value of all final goods and services produced by the country's factors of production and sold on the market in a given time period
- The value in common terms – often current national currency

Gross National Product

- Definition from textbook:
  - The valueof all final goods and services produced by the country's factors of production and sold on the market in a given time period
- Only final goods are counted, not intermediates
- Count only the sale of the textbook, not the sale of the paper to the bookmaker
- Final goods can also be "investment" like production machines

Gross National Product

- Definition from textbook:
  - The value of all final goods and services produced by the country's factors of production and sold on the market in a given time period
- The final goods must have been produced using factors of production owned by nationals
  1. Land (resources)
  2. Labor (human capital)
  3. Capital (machines, buildings, etc)
- Production does not have to take place within the country

Gross National Product

- Definition from textbook:
  - The value of all final goods and services produced by the country's factors of production and sold on the market in a given time period
- Only count final goods that are sold in the relevant year
- Do not count sale of used textbooks!
- Sale of previously manufactured stuff is just exchange, not production

Gross National Product

- Definition from textbook:
  - The value of all final goods and services produced by the country's factors of production and sold on the market in a given time period
- Ex: Fish caught in Oresund and sold in a Nyhavn restaurant
  - Restaurant buys fish from fisherman – *not* part of GNP
  - Consumer buys fish from restaurant – part of GNP
- Ex: Danish company goes public
  - Investors buy stocks from firm – *not* part of GNP
  - Investors buy stocks from each other – *not* part of GNP
- Ex: Danish-owned company opens pharmaceutical factory in Poland
  - Sales of factory are part of GNP (less the wages paid to Polish labor)

Gross National Product (GNP)

- Often separate GNP by ultimate use of production

$$GNP = C + I + G + CA$$

where

- C is consumption
- I is investment
- G is government purchases
- CA is current account balance (exports minus imports)
- Let's talk about these categories

Gross National Product, ultimate use categories

$$GNP = C + I + G + CA$$

- Consumption
  - Portion of production expended in satisfying current wants
  - Examples: Movie tickets, food, dental work, and washing machines
  - Largest share of production, 60-70%

Gross National Product, ultimate use categories

$$GNP = C + I + G + CA$$

- Investment
  - Any good or service which is used for future production
  - Examples: Machinery for a factory, the newest word processor
  - *Does not* include household "investment", or purchases of bonds or shares
  - If company sells bond and uses cash to buy machinery, it is counted as investment
  - The sale of a bond between two people is just an exchange, not production

Gross National Product, ultimate use categories

$$GNP = C + I + G + CA$$

- Government purchases
  - Any good or service ultimately used by the government
  - Examples: new fighter jet, highway repair, basic research
  - Some countries (Denmark) divide this into:
    - Government consumption (ex: military)
    - Government investment (ex: highway repair)

Gross National Product, ultimate use categories

$$GNP = C + I + G + CA$$

- Current account balance
  - $CA = EX - IM$
  - EX = goods and services produced by Danish factors and used abroad
  - IM = goods and services produced by Foreign factors and used in Denmark

Gross National Product, ultimate use categories

$$GNP = C + I + G + CA$$

- Current account balance difference between exports and imports
- > 0 is *current account surplus*, < 0 is *current account deficit*
- Surplus means a country is lending, deficit means borrowing
- Current account balance is change in net foreign wealth

Gross National Product, ultimate use categories

$$GNP = C + I + G + CA$$

- Takeaway
  - GNP is (the value of) stuff produced in a country in a year

Gross National Product, three details

- Three more details from the textbook
  1. National product vs national income
  2. Capital depreciation and international transfers
  3. GNP vs GDP

National Product vs. National Income

- The value of production ulimately reaches owners of a factor
- Thus national income should equal national product
- Almost. . .

National Product vs. National Income

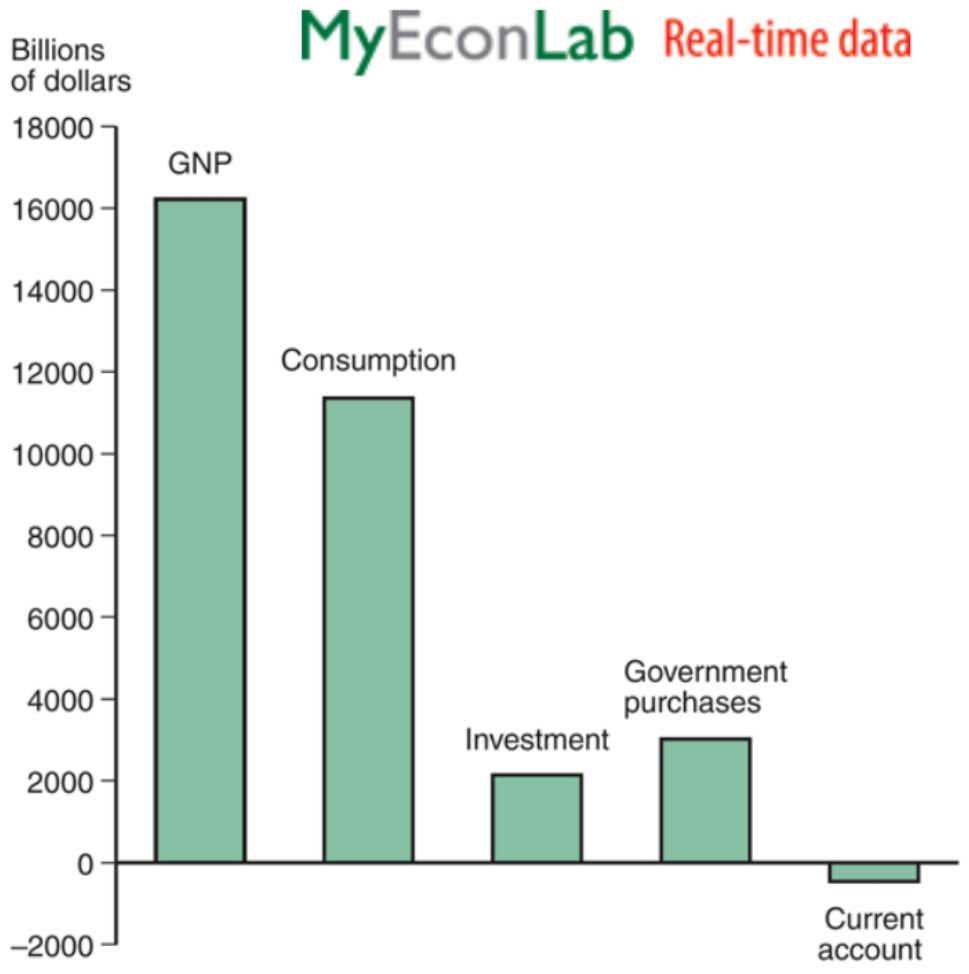
1. Capital depreciation like a reduction in the wealth of owners of capital
   - Needs to be subtracted from production to get income
   - GNP net of depreciation is called Net National Product (NNP)
2. Unilateral transfers
   - Sometimes a country gives goods or services to another country
   - Needs to be added to production to get national income

Gross Domestic Product

- GDP has replaced GNP as the most common headline figure in national accounts
- Only one difference
  - GDP is the product of all factors in a country, regardless of the owners
  - GNP is the product of all factors owned by people from a country, regardless of production location
- Ex: If a British firm owns a factory in Denmark
  - The product is part of Denmarks GDP, but not GNP

U.S. GNP by use

- How would Denmark be different?



Source: U.S. Department of Commerce, Bureau of Economic Analysis. The figure shows 2013:QI GNP and its components at an annual rate, seasonally adjusted.

More on the Current Account

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

When production $>$ domestic expenditure, exports $>$ imports: current account > 0 and trade balance > 0

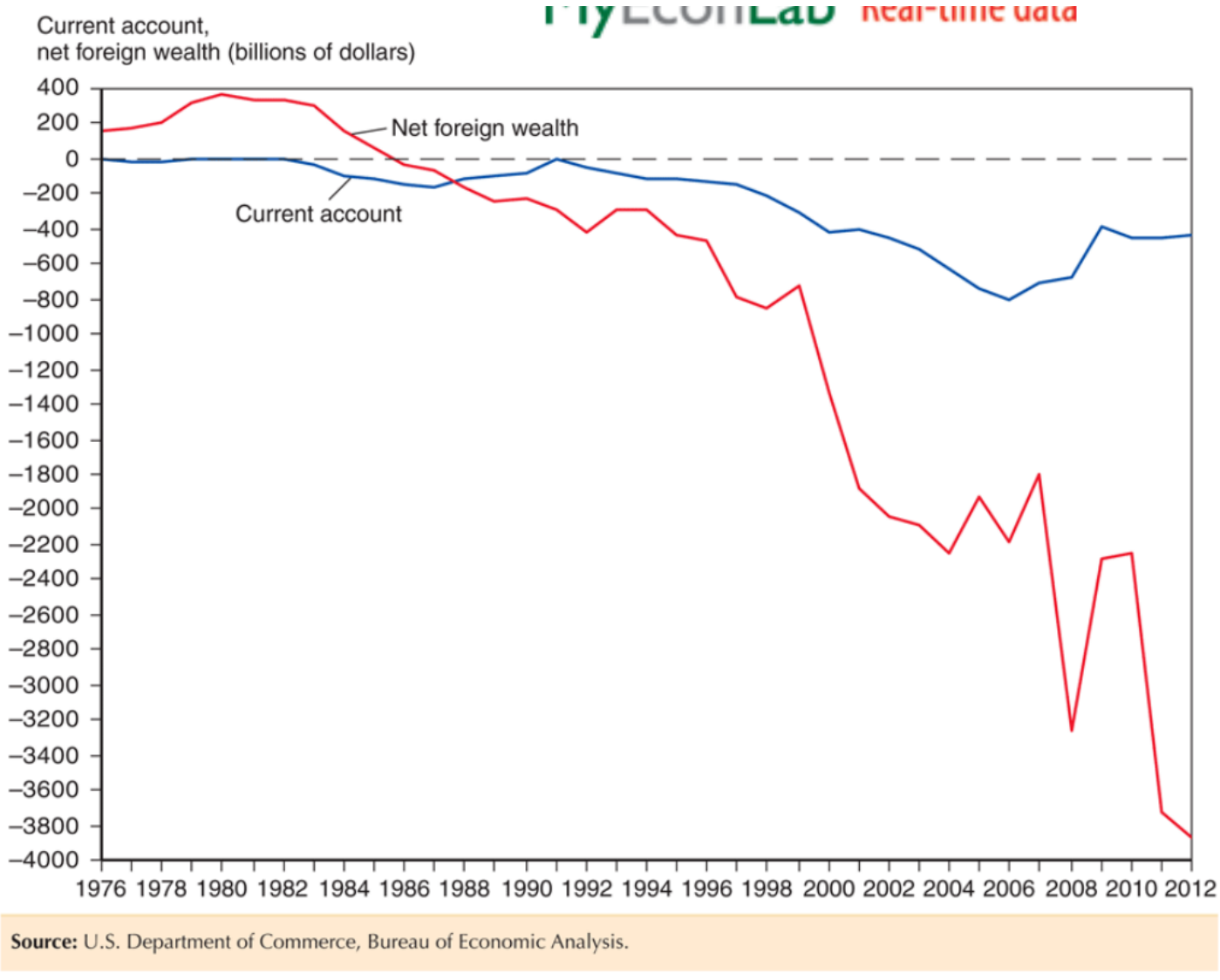
- if $Y > (C + I + G) \Rightarrow EX > IM \Rightarrow CA > 0$ (surplus)
- if $Y < (C + I + G) \Rightarrow EX < IM \Rightarrow CA < 0$ (deficit)

World production must equal world consumption, investment, and government purchases

- Globally, deficits and surpluses must balance
- Some countries often borrowers, others often lenders: **global imbalances**

International Investment Position

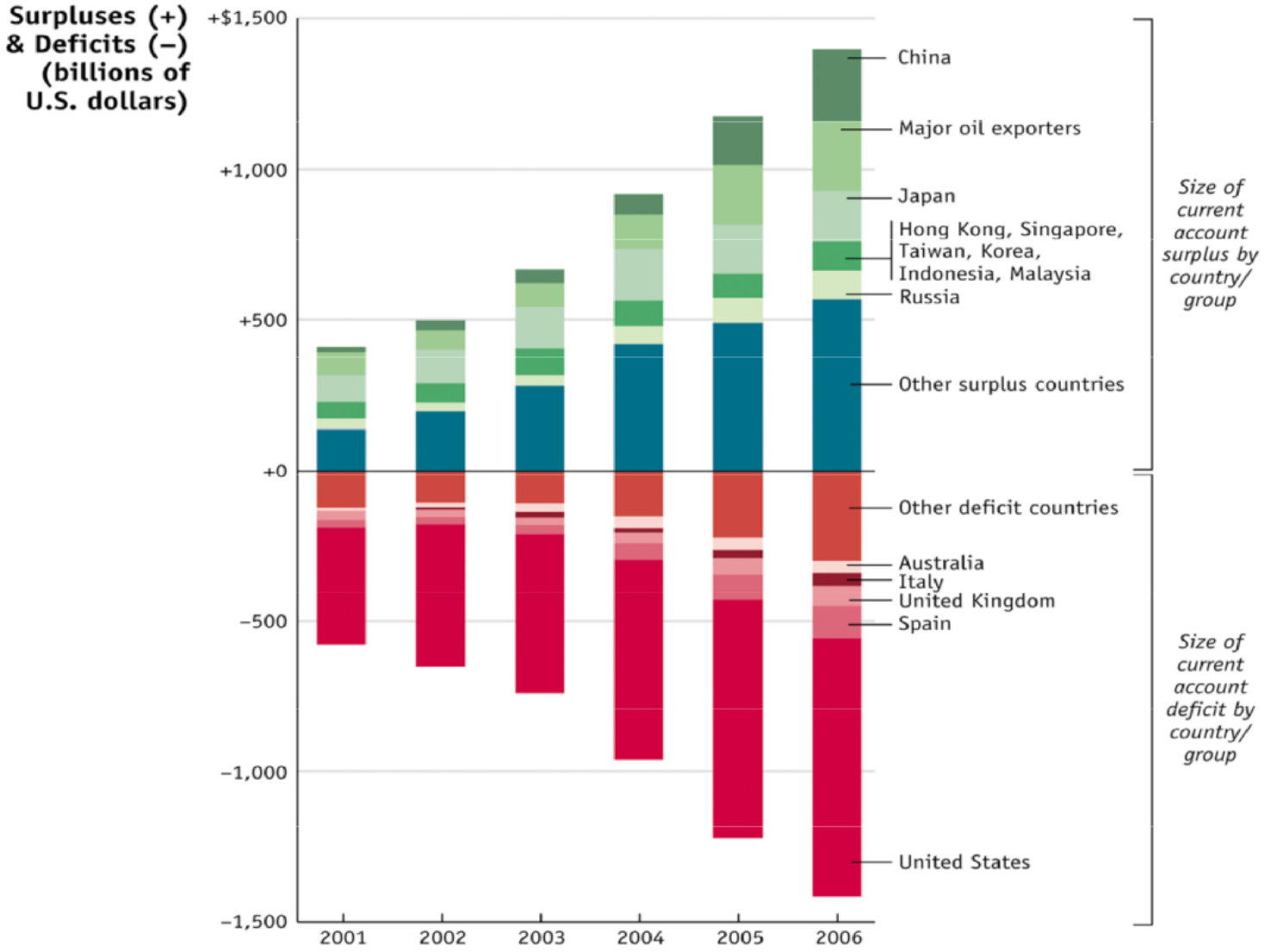
- The stock of net foreign wealth



Source: U.S. Department of Commerce, Bureau of Economic Analysis.

- Why is net foreign wealth so volatile?

Figure; Deficits and Surpluses: The Balance of Payments (Source: IMF, International Financial Statistics)



National Saving

- Define national savings as:

$$S = Y - C - G$$

- GNP identity:

$$Y = C + I + G + CA$$

- Combine the two:

$$\implies S - CA = I$$

- Investment can be financed by:
  1. Putting off consumption (pay today)
  2. Borrowing from abroad (pay tomorrow)
  3. Current account sometimes called *net foreign investment*

National Saving: Private vs government

$$S = Y - C - G$$

$$S = (Y - C - T) + (T - G)$$

$$S = S^p + S^g$$

National Saving: Private vs government

- Combining our two definitions of saving:

$$S = I + CA = S^p + S^g$$

$$S^p = I + CA - S^g$$

$$S^p = I + CA + (G - T)$$

- Private saving is used for:
  1. Investment at home
  2. Investment abroad
  3. Purchasing government debt

Pause

- National Income Accounts
  - $GNP : Y = C + I + G + CA$
  - Only count stuff produced by factors owned by nationals
  - Investment can be funded by foreign borrowing
- Next: Balance of Payment Account
  - Tracks credits and liabilities between countries
  - Similar to a balance sheet from accounting

Balance of Payments Accounts

- Two types of transactions:
  1. Credit if a foreigner pays a native
  2. Debit if a native pays a foreigner
- A *Financial Asset* holds wealth: stocks, bonds, debt, etc
- current account + financial account + capital account = 0
  1. **current account**: tracks flows of goods and services (imports and exports)
  2. **financial account**: tracks flows of financial assets (financial capital)
  3. **capital account**: flows of special categories of assets: typically intangible assets like debt forgiveness, copyrights and trademarks.

Example 1: US imports fax machine

- US imports fax machine from Italy
- Italian firm deposits USD in US bank

Fax machine (*current account, U.S. good import*)	−$80
Bank deposit (*financial account, U.S. asset sale*)	+$80

Example 2: US tourist buys French lunch

- US tourist buys lunch in Paris
- Pays with US credit card

Meal purchase (*current account, U.S. service import*)
−$30
Sale of credit card claim (*financial account, U.S. asset sale*)
+$30

Example 3: American buys share of British Petroleum

- American buys a share of BP
- BP deposits money in American bank

Stock purchase (*financial account, U.S. asset purchase*)	–$90
Bank deposit (*financial account, U.S. asset sale*)	+$90

U.S. Balance of Payments Accounts for 2012 (billions of dollars)

Current Account	
(1) Exports	**2,986.9**
Of which:	
Goods	1,561.2
Services	649.3
Income receipts (primary income)	776.3
(2) Imports	**3,297.7**
Of which:	
Goods	2,302.7
Services	442.5
Income payments (primary income)	552.4
(3) Net unilateral transfers (secondary income)	−129.7
Balance on current account [(1) − (2) + (3)]	**−440.4**
Capital Account	
(4)	**7.0**
Financial Account	
(5) Net U.S. acquisition of financial assets, excluding financial derivatives	**97.5**
Of which:	
Official reserve assets	4.5
Other assets	93.0
(6) Net U.S. incurrence of liabilities, excluding financial derivatives	**543.9**
Of which:	
Official reserve assets	393.9
Other assets	150.0
(7) Financial derivatives, net	**7.1**
Net financial flows [(5) − (6) + (7)]	**−439.4**
Net errors and omissions [Net financial flows less sum of current and capital accounts]	−6.0

Source: U.S. Department of Commerce, Bureau of Economic Analysis, June 14, 2013, release. Totals may differ from sums because of rounding.

Official reserve assets

- Central banks hold foreign currency reserves
  - Purpose: Insure against macroeconomic fluctuations
- These are often American Treasury bills (promises that the American government will pay a dollar tomorrow)
- Buying and selling these bills locally allows central banks to affect money supply