

# International Finance 4832

## Part 2 - Balance of Payments

### Lecture 5: National Income Accounting and The Balance of Payments

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GDP      GNI      GNE

the same  
in Closed  
Economies

But different in Open Economies

( because: Trade Balance  $\neq 0$   
Other international resources emerge )

# Outline

$$\begin{array}{ccc} \text{GNE} & \text{GDP} & \text{GNI} \\ \uparrow & \uparrow & \uparrow \\ \end{array} \quad \left. \begin{array}{l} \rightarrow \text{all equal in a closed economy} \\ \text{"different" in an open " } \end{array} \right\}$$

National Income Accounts → Expenditure, Production and Income (GNE, GDP and GNI/GNDI)

National Income and Product accounting in an open economy

Key ingredient: Borrowing and lending with the rest of the world (ROW)

(Otherwise, i.e., for closed economies, it's not relevant to distinguish between GNE, GDP and GNI/GNDI)

$$\text{Closed: } \text{GNE} = \text{GDP} = \text{GNI}$$

$$\text{Open: } \text{GNE} \neq \text{GDP} \neq \text{GNI}$$

The Balance of Payments: Measure of flows of transactions with the ROW

- ▶ Current Account (CA): Goods-services trade + factor income flows (+ transfers)
- ▶ Financial Account (FA): Assets trade

External Wealth: Measure of stock of foreign (net) assets

Net: foreign assets owned by home (e.g., the US) - home assets owned by ROW

[Read: Chapter 16 FT]

# The NIPAs

National Income and Product Accounts (NIPAs) track aggregate income, production, and expenditure

In the USA: constructed by the Bureau of Economic Analysis (BEA) [bea.gov/data/gdp]

The main three measures:

- ▶ Gross National Expenditure (GNE) → Resources for Spending
- ▶ Gross Domestic Product (GDP) → Value of production
- ▶ Gross National Income (GNI) → Income resources

In a Closed Economy: these three are equal ( $GNE = GDP = GNI$ )

In an Open Economy: they are different

Gross National Expenditure: Resources for spending on final goods and services

$$\underline{\underline{GNE = C + I + G}}$$

C: private consumption

I: Investment

G: government spending

(these measures refers to expenditure in final goods and services and not on intermediate ones)

[Key: GDE → Expenditure]

# GDP

Gross Domestic Product: value of production of final goods and services

Sum of the value added by every firm in the economy      (sales minus intermediate goods)

$$GDP = \sum_f \left( \underbrace{p_f y_f}_{\text{sales of firm } f} - \underbrace{\text{int goods}_f}_{\text{intermediate goods of } f} \right)$$

A firm has three kinds of expenditures:

1. Intermediate goods and services (inputs going into final product)
2. Payments to labor (wages, salaries benefits)
3. Payments to capital holders (profits, rents for capital goods, equipment investments)

Value  
added

value added: 2 and 3

Thus:

$$\text{sum of value added} = \text{sum of incomes} \quad (\text{of labor and capital})$$

note: incomes in GDP → made by home firms. In open economies income payments may come from ROW

# GNI

Gross National Income: total income of the economy

$$GNI = \underbrace{\text{labor income} + \text{capital income}}_{\text{Factor owners' income}}$$

*Wages*      *(from production)*

Note: Capital gains (changes in assets' valuation) → not part of GNI. GNI ≡ income from production

# NIPAs in the Closed Economy

In a closed economy there are no flow of resources from abroad:

no exports, no imports, no expatriate workers, no cross border sales of assets, etc.

⇒ all resources available for expenditure coincide with the local production and local income:

$$\underline{GNE = GDP = GNI}$$

value of everything purchased *equals* value of everything produced

value of everything produced *equals* value of labor and capital incomes (producing it)

value of labor and capital income *equals* value of everything purchased

Open Economy :

Trade Balance ≠ 0

Net Factors Income ≠ 0

Net Unilateral Transfers ≠ 0

In an Open Economy these equalities are modified

# NIPAs in an Open Economy: from GNE to GDP

Gross national expenditure (GNE): spending on final goods and services

- ▶ some goods (spent on) are not made at home (Imports)
- ▶ some goods made at home are sold abroad (Exports)

To give account of the production we must subtract the Imports and add the Exports

Then, we get the GDP by adding the trade balance (TB):

$$GDP = \underbrace{C + I + G}_{\text{GNE}} + \boxed{\underbrace{X - M}_{\text{trade balance(TB)}}} \xrightarrow{\text{TB} = NX = X - M \text{ (Net Exports)}}$$

X: exports of goods and services; M: Imports of goods and services

Trade balance (TB) and Net Exports (NX) are both the Exports minus Imports ( $X - M$ )

- ▶  $TB < 0$ : trade deficit and  $TB > 0$ : trade surplus

For measuring total production TB refers to trade with ROW (including many bilateral transactions)

↳ Typical US TB

↳ Typical Emerging Markets TB

# NIPAs in an Open Economy: from GDP to GNI

Gross domestic product (GDP): value of domestic production

- ▶ Some labor or capital is from abroad (e.g., rent equipment from foreign company; pay a consultant that lives abroad)
- ▶ Some domestic labor and capital is used abroad (e.g., rent office space to a foreign company, provide consulting services to an Italian firm)

To give account of the income of home agents:

Must subtract income payments to foreign residents and include (ROW) payments to home agents

Then, to get the GNI we must adjust the GDP by adding the Net Factor Income:

$$GNI = \underbrace{C + I + G + X - M}_{GDP} +$$

$$\boxed{X_{FS} - M_{FS}}$$

net factor income  
from abroad (NFI<sub>A</sub>)

$X_{FS}$ : exports of factor services;  $M_{FS}$ : imports of factor services

# From GNI to GNDI

"D" in GNDI stands for disposable: Part of income a country can actually dispose of (for spending)

GNI: Income from production

In an open economy, may also have "gifts" or transfers from (to) abroad

Examples:

government aid to foreign country; immigrant workers in the US sending money abroad; foreign debt forgiveness

No reciprocal trade leading to these transactions, thus, they are called Unilateral Transfers  
(nothing given in exchange)

Thus the aggregate national disposable income (GNDI) is:

$$GNDI = \underbrace{C + I + G + X - M}_{GDP} + \underbrace{X_{FS} - M_{FS}}_{NFIA} + \boxed{\underbrace{UT_{in} - UT_{out}}_{\text{net unilateral transfers}}}$$

$$\text{NUT} = UT_{in} - UT_{out}$$

# The Current Account in the Balance of Payments

What we did (going from GNE to GNDI) was to sum each component of the **Current Account (CA)**

CA: Summary of all cross-border flows in an economy (due to trade and income payments)

$$CA = \underbrace{(X - M)}_{TB} + \underbrace{(X_{FS} - M_{FS})}_{NFIA} + \underbrace{(UT_{in} - UT_{out})}_{NUT}$$

Current Account: net payments to domestic economy from abroad

$$Y_{GNDI} = C + I + G + [(X - M) + (X_{FS} - M_{FS}) + (UT_{in} - UT_{out})]_{CA}$$

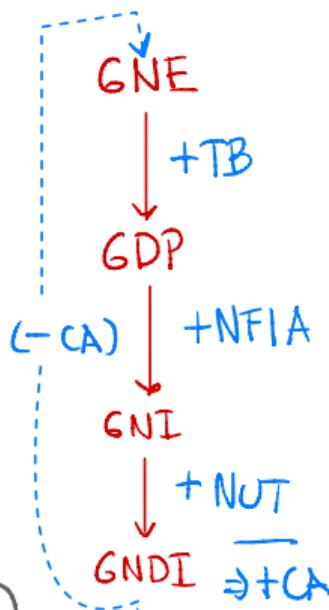
Surplus

$CA > 0$  → domestic economy earns *more* than it spends

$CA < 0$  → domestic economy earns *less* than it spends

$\Rightarrow \uparrow \text{Savings}$   
( $\uparrow \text{Wealth}; \downarrow \text{Debt}$ )  
 $\downarrow (\text{External Savings})$

(in a closed economy:  $CA = 0$ )



# US NIPAs in 2012

Figure: National Income Accounting for the USA in 2012

Line	Category	Symbol	\$ billions
1	Consumption (personal consumption expenditures)	C	11,120
2	+ Investment (gross private domestic investment)	I	2,062
3	+ Government consumption (government expenditures)	G	3,063
4	= Gross national expenditure	GNE	16,245
5	+ Trade balance	TB	-560
6	= Gross domestic product	GDP	15,685
7	+ Net factor income from abroad	NFIA	243
8	= Gross national income	GANI	15,928
9	+ Net unilateral transfers	NUT	-157
10	= Gross national disposable income	GNDI	15,771

Annotations:

- A blue bracket groups lines 1-4 under the label "GNE".
- A red bracket groups lines 5-8 under the label "GDP".
- A red bracket groups lines 9-10 under the label "GNDI".
- The label "(+ NFIA)" is written next to line 7.
- The label "(+ NUT)" is written next to line 9.
- The label "GNDI" is written next to line 10.

Note: Details may not add to totals because of rounding.

Source: U.S. Bureau of Economic Analysis, NIPA Tables 1.1.5 and 4.1, using the NIPA definition of the United States. Data revised as of March 28, 2013.

## US NIPAs

In general GNE is very stable:

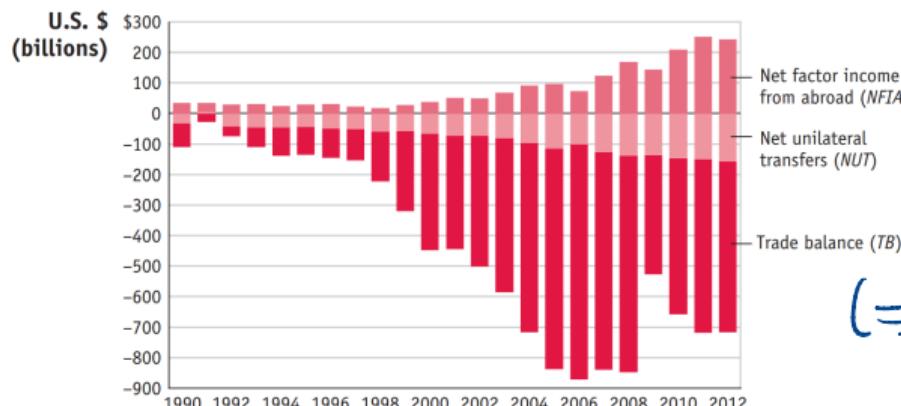
- ▶  $\frac{C}{GNE} \approx 0.7$
- ▶  $\frac{G}{GNE} \approx 0.15$
- ▶  $\frac{I}{GNE} \approx 0.15$

In contrast, the current account (CA) has been growing more negative since 1990

Most of it is the trade balance (TB):

[link in FRED]

Figure: National Income Accounting for the USA in 2012



US has been running  
TB depicts  
(over time & at a greater  
extent)  
(⇒ Indebted w/ RDW)

# The Current Account and National Savings

Start from the identity

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

*Income* ←

↑ TB + NFIAT + NUT

Rearrange

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

where  $S = Y - (C + G)$  is (national) Savings, i.e., income minus consumption (private and public)

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$$S = I + CA$$

a country can get a loan from  
ROW to invest beyond what it saves

In a closed economy: savings funds investment ( $S = I$ )

$$(I > S \Rightarrow CA < 0)$$

Open economy: current account (CA) makes up the difference between savings and investment

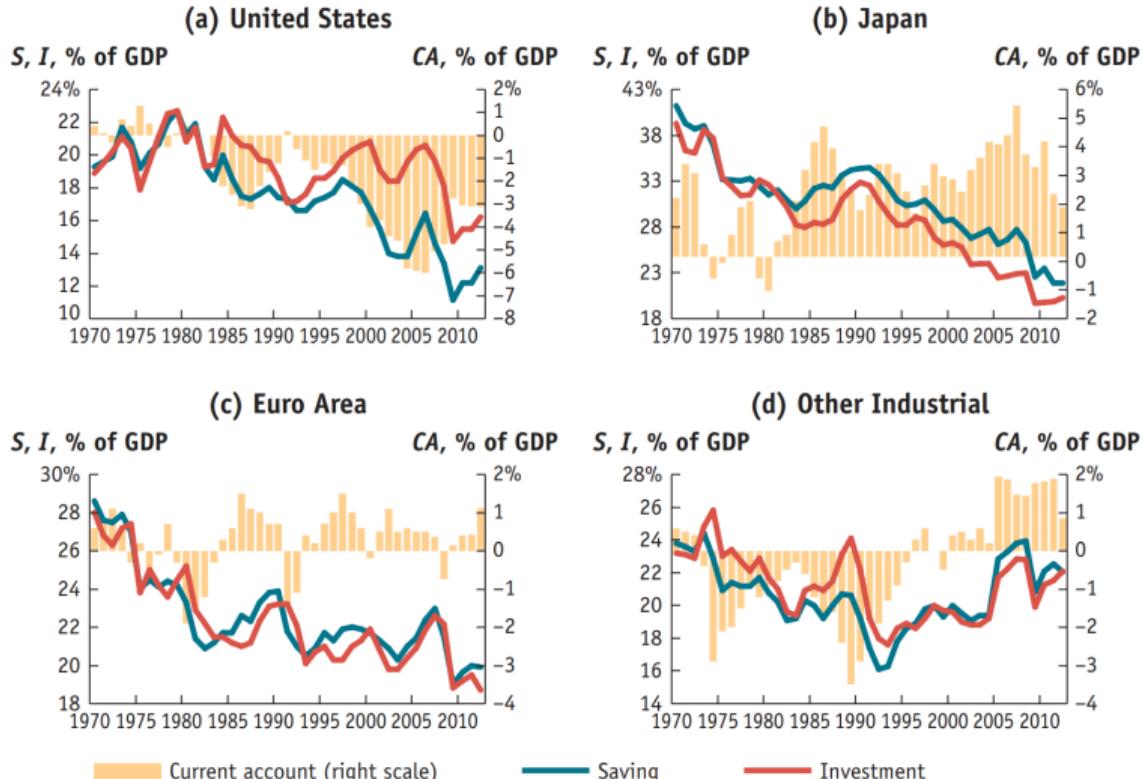
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CA: wedge between national savings and investment  $\Rightarrow CA \approx$  international (flow) savings

- + (e.g, if a country saves too much—more than what invested at home—extra is sent abroad as a CA surplus)

# Savings, Investment and CA around the world

Figure: Savings, Investment and Current Account: Industrial Economies



Source: IMF, WEO

# Cross-country lending: A first look

Assume the World has: Two countries, home and foreign (foreign here's the ROW)

By definition:

$$CA_f = -CA_h$$

i.e, exports of one location are negative exports of the other, same with imports & other CA parts.

Thus, If  $CA_h < 0$  the  $CA_f > 0$

$$S_h - I_h = CA_h < 0$$

$$S_f - I_f = CA_f > 0$$

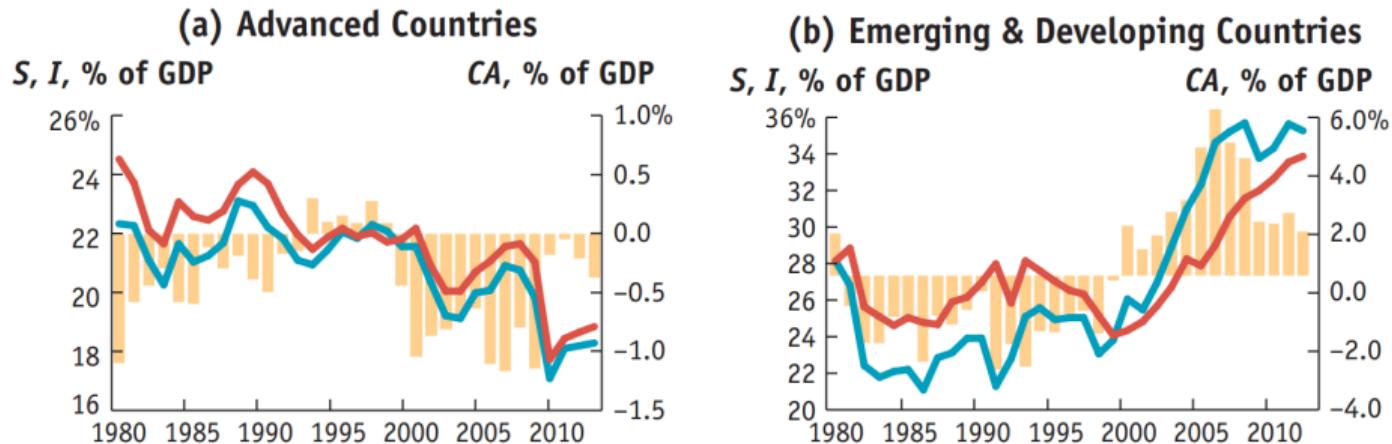
Home runs a CA<sub>FO</sub>  
Foreign economy runs a CA<sub>f</sub> >  
 $\Rightarrow$  Home gets indebted  
(w/ country f)

Foreign country sends its extra savings to the home country (as lending)

With these resources home country makes up the difference between savings and investment

## Cross-country lending (cont.)

Figure: Savings, Investment and Current Account: Industrial Economies



Source: IMF, WEO

We can see that Advanced Economies (AE) have become international borrowers

Those resources are lent by Emerging Economies (EMEs) which run CA surpluses

US: largest debtor in the world

Lenders

# Private, Public Savings and the Current Account

We can relate the CA to different types of Savings in an economy:

$$\underbrace{Y - C - G}_S = I + CA.$$

Add and subtract taxes revenues:

$$\begin{aligned} & Y - C - G - T + T = I + CA, \\ & \underbrace{(Y - C - T)}_{S_p: \text{private savings}} + \underbrace{(T - G)}_{S_g: \text{government savings}} = I + CA. \end{aligned}$$

*revenues for Government*

Private:  $S_p = Y - C - T$  (after-tax income minus consumption)

Government:  $S_g = T - G$  (tax revenue minus expenditure)

$$\underline{S_p + S_g = CA + I}$$

Twin deficits: when we have  $S_g < 0$  and  $CA < 0$

(here we can see that one doesn't always lead to the other. We can have CA deficit with fiscal surplus)

[link in FRED]

## The twin deficits

Do government deficits cause current account deficits?

$$S_g + S_p = CA + I$$

1990s:  $S_g > 0$  and CA shrinking towards zero

2000s:  $S_g < 0$  and CA growing more negative

Some evidence of the twin deficits (government and CA) but the relationship is not perfect

Depends on: Investment behavior; private savings behavior

# The Balance of Payments

Balance of Payments (BOP) components:

1. Current Account (CA)
2. Financial Account (FA)
3. Capital Account (KA)

How to link the FA and KA to our NIPAs definitions?:

Include net trade of assets (and gifts in assets)

Then we get from disposable income (GNDI) back to available resources for spending (GNE)  
(completing the circle)

# The Financial Account

**Financial Account (FA):** records cross-border financial asset trade payments

Examples: stocks, bonds, sale of a firm

$$FA = EX_A - IM_A$$

$FA > 0 \rightarrow$  stock of assets falling (home is sending assets abroad)

$FA < 0 \rightarrow$  stock of assets rising (home is bringing assets)

To avoid confusions:

The sign of FA denote the payments flow

If home acquires (imports) an asset they have to pay for it ( $FA < 0$  or negative payment)

If home sells (gets rid of) an asset they are paid ( $FA > 0$ )

# Assets: Issuance vs. holdings

Every asset has a "nationality"

Nationality of the asset: country of issuance (where it was created)

- ▶ US T-Bill: claim on US tax payers → US issued
- ▶ Share of Vodafone stock: claim on Vodafone profits → UK issued
- ▶ a ¥500 coin: claim on ¥500 worth of goods and services sold in Japan → Japan issued

Asset issuance is NOT the same as ownership

- ▶ Indian bank can hold T-Bills
- ▶ German hedge fund can hold Vodafone stock
- ▶ American tourist can take yen coins back to America

## The Financial Account (cont.)

When a foreign-issued asset is held in the home country, the asset is an:

External asset of the home country

External liability of the foreign country

Consider the home **financial account**:

FA: Part of the Balance of Payments → Flow of payments for trade of external assets

FA: Exports minus imports **of assets** → Exports: Assets sent abroad (sold); Imports: Assets brought home

$$\begin{aligned} FA &= EX_A - IM_A \\ &= EX_A^h + EX_A^f - IM_A^h - IM_A^f = \underbrace{(EX_A^h - IM_A^h)}_{\substack{\text{net exports of home assets} \\ = \text{addition to external liabilities}}} - \underbrace{(IM_A^f - EX_A^f)}_{\substack{\text{net imports of foreign assets} \\ = \text{addition to external assets}}} \end{aligned}$$

We can also express the FA as the sum of the net exports of each type of asset: (compare with eq. above)

$$FA = (EX_A^h - IM_A^h) + (IM_A^f - EX_A^f)$$

here,  $EX_A^h$ : exports of home (issued) assets;  $EX_A^f$ : exports of foreign (issued) assets;  $IM$ : Imports

$FA > 0 \rightarrow$  net addition to external liabilities (more assets sold/exported than bought)

$FA < 0 \rightarrow$  net addition to external assets (more assets bought/acquired/imported)

# The Capital Account

Minor (not too important) in most countries

- ▶ Especially in developed ones
- ▶ Can be relevant in low income countries due to non-market debt forgiveness

The capital account (KA):

- ▶ Trade in non-financial, non-produced assets (e.g., patents, trademarks, etc)
- ▶ Gifts of assets (capital transfers such as forgiveness of debts)

$$KA = KA_{in} - KA_{out}$$

$KA > 0 \rightarrow$  net receiver of (this type of) assets

$KA < 0 \rightarrow$  net giver of assets

# The balance of payments

Balance of Payments (BOP) components:

1. Current Account (CA)
2. Financial Account (FA)
3. Capital Account (KA)

$$CA = (X - M) + (EX_{FS} - IM_{FS}) + (UT_{in} - UT_{out})$$

$$FA = (EX_A^h - IM_A^h) + (EX_A^f - IM_A^f)$$

$$KA = KA_{in} - KA_{out}$$

Why "Balance of Payments"? Record of all payments between national and foreign residents

Through CA, FA, KA we cover all the cross-country payments (between home and foreign residents)  
(e.g., from goods/services trade, assets' trade, etc.)

Let's look at some examples (of where in the BOP would each transaction go)

## Balance of Payments: examples

American in Paris spends €100 (\$ 110) on hotel, pays with Amex

- ▶ CA: Hotel room (import of lodging service):  $IM_{us} = \$110$
- ▶ FA: Hotel claim on AMEX:  $EX_A^{us} = \$110$

An American buys \$10,000 of Danone stock, pays with check drawn on Citi

- ▶ FA: French stock:  $IM_A^{fr} = \$10000$
- ▶ FA: Claim on Citibank:  $EX_A^{us} = \$10000$

US congress forgives \$1 mil. of Haitian debt

- ▶ KA: US debt forgiveness:  $KA_{out} = \$1 \text{ mil}$
- ▶ FA: Export of foreign asset:  $EX_A^{ht} = \$1 \text{ mil}$

In the background: Double entry principle of accounting

The debits and credits are balanced (and canceled out) in the BOP → hence the "Balance" part

(Debits: "-" sign on BOP) (Credits: "+" sign on BOP) (look at signs of equations for CA, FA, KA)

# The Balance of Payments Identity

$$CA + KA + FA = 0$$

This is accounting, not theory

Double entry principle at work (debits and credits balance out)

Ignore the capital account for now:

$CA > 0, FA < 0$ :

- ▶ net exporter of goods, services, income (factors)
- ▶ net importer of assets (net addition to external *assets*)

$CA < 0, FA > 0$ :

- ▶ net importer of goods, services, income
- ▶ net exporter of assets (net addition to external *liabilities*)

# The US BOP in 2012

Major Account	Line	Category or Subcategory	Symbol	\$ billions
Current Account	1	Exports of goods and services	+EX	2,194
	1a	Of which: Goods		1,564
	1b	Services		630
	2	Income receipts [= exports of factor services]	+EX <sub>FS</sub>	742
	3	Imports of goods and services (-)	-IM	-2,734
	3a	Of which: Goods (-)		-2,299
	3b	Services (-)		-435
	4	Income payments [= imports of factor services (-)]	-IM <sub>FS</sub>	-543
	5	Net unilateral transfers	NUT	-134
Capital and Financial Account	6	Capital account net	KA	6
	7	U.S.-owned assets abroad net increase (-) [= net imports of ROW assets or financial outflow (-)]	+EX <sub>A</sub> <sup>F</sup> - IM <sub>A</sub> <sup>F</sup>	18
	7a	Of which: U.S. official reserve assets		-4
	7b	Other assets		22
	8	Foreign-owned assets in U.S. net increase (+) [= net exports of U.S. assets or financial inflow (+)]	+EX <sub>A</sub> <sup>H</sup> - IM <sub>A</sub> <sup>H</sup>	385
	8a	Of which: Foreign official assets		374
	8b	Other assets		11
Statistical Discrepancy	9	Statistical discrepancy (sum of 1 to 8, sign reversed)	SD	+66
Summary Items		Balance on current account (lines 1, 2, 3, 4, and 5)	CA	-475
		Of which: Balance on goods and services (lines 1 and 3)	TB	-540
		Balance on income (lines 2 and 4)	NFIA	199
		Balance on financial account (lines 7 and 8)	FA	403
		Of which: Official settlements balance (lines 7a and 8a)		370
		Nonreserve financial account (lines 7b and 8b)		33

Source: U.S. Bureau of Economic Analysis, ITA table 1

## Financial Account vs. Capital Account

Many countries have a Capital Account only and include there what we called FA and KA

As we do, they consider what goes in KA a minor account, or residual, for the most part

We use the BOP definitions and structure of the IMF where we have separate FA and KA

Also, we use the narrow definition of the FA:

Narrow definition of FA = change in foreign ownership of domestic assets – change in home ownership of foreign assets

But we can also break this down by type of asset: (example: table 1 [\[here\]](#))

$$FA = FDI + \text{Portfolio investments} + \text{Other Investments} + \text{Reserves Account}$$

FDI: Foreign Direct Investments (long run investments)

Portfolio: purchase of stocks and bonds

Other: banking flows (loans, payments)

Reserve: official settlement account operated by central bank to buy/sell (assets in) foreign currency

(Neither way is really better than the other, all accomplish the same in terms of what the BOP does.)

## External Wealth

Financial Account: change (net addition to) in a country ownership of assets/liabilities

FA: **Flow** variable (flow as in payments or transactions)

External Wealth: **Stock** of foreign assets and liabilities (of a country)

$$\text{External Wealth} = \text{ROW assets owned in home} - \underbrace{\text{home assets owned in ROW}}_{\text{Liabilities: } L}$$

$$W = A - L$$

$W > 0$ : home country is a net creditor (lender) to ROW

$W < 0$ : home country is a net debtor (borrower) to ROW

These variables are the same thing:

external wealth, net international investment position, net foreign assets (NFA)

# Changes in External Wealth

The FA (payments for assets) feeds into the external wealth

(flow goes into the stock the same way your wage, payments and loans go into your wealth)

External wealth changes for two reasons:

1. Trade in assets (-FA: notice the minus ... if you acquired assets you paid for them in FA)
2. Change in value of assets: valuation effects (from changes in asset prices or in exchange rates)

$$\Delta W = -FA + \text{valuation effects}$$

By BOP we know:  $-FA = CA + KA$

Then:

$$\Delta W = CA + KA + \text{valuation effects}$$

Increase wealth by saving ( $CA > 0$ ), charity ( $KA > 0$ ), or with capital gains

(Intuition: use extra savings to invest in new assets, or pay pre-existing debts)

# US External Wealth

Changes in Position during 2012 (\$ billions)

Category	Of Which Valuation Effects							Position, end 2012 (\$ billions)	
	Position, end 2011 (\$ billions)	Financial Flows (a)	Price Changes (b)	Exchange Rate Changes (c)			Total (a + b + c + d)		
				Other Changes (d)					
<b>1. External Assets</b>	16,920	97	991	6	4		1,098	18,018	
<i>= U.S.-owned assets abroad, of which:</i>									
U.S. official reserve assets	537	4	33	-2	0		35	572	
U.S. government assets, other	179	-85	—	0	0		-85	94	
U.S. private assets	16,204	178	958	8	4		1,148	17,352	
<b>2. External Liabilities</b>	20,736	544	501	1	157		1,203	21,940	
<i>= Foreign-owned assets in the United States, of which:</i>									
Foreign official assets in the United States	5,256	394	42	0	0		436	5,692	
Other foreign assets	15,480	150	459	1	157		767	16,247	
<b>3. External Wealth</b>									
= Line 1 minus Line 2	-3,817	-446	490	5	-153		-105	-3,922	
<i>= Net international investment position of the United States</i>									
<i>Symbol</i>	<i>W</i> (end 2011)	<i>-FA</i>	<i>Capital gains</i>			<i>ΔW</i>	<i>W</i> (end 2012)		

Source: U.S. Bureau of Economic Analysis, IIP table 2

## US External Wealth (cont.)

The US:

Added \$446M in external liabilities (decreases wealth)

Had capital gains of \$332M (increase wealth)

On net terms: external wealth decreased (increased liabilities)

The US is the World's largest debtor

But the outlook is not so grim for the US:

Usually positive valuation effects and high returns on foreign investments (wrt to their cost of debt)

What we'll see next:

the long-run balance constraint (external wealth over time) and the gains of financial globalization