

Issues in International Finance

National income and product accounts

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Roadmap

1. National income accounts measure expenditure, production, and income
2. Adapt national income accounting to the open economy
3. Big idea: Borrowing and lending with the rest of the world (ROW)
4. The balance of payments measuring transactions with ROW
 - ▶ Current account ~ tracks: goods / service trade
 - ▶ Financial account ~ income flows
5. External wealth
 - tracks trade in assets.
 - foreign assets owned by U.S. entities
 - US assets owned by foreigners.

The NIPAs

- ▶ The National Income and Product Accounts (NIPAs) track aggregate income, production, and expenditure
- ▶ In the United States, these are constructed by the Bureau of Economic Analysis (BEA) <https://www.bea.gov/data/gdp>
- ▶ The big three measures:
 - ▶ Gross National Expenditure (GNE) *gross of depreciation*
 - ▶ Gross Domestic Product (GDP)
 - ▶ Gross National Income (GNI)
- ▶ First, look at these in a closed economy (review)
- ▶ Second, look at these in the open economy (partially review)

NIPAs: GNE

- ▶ Gross national expenditure is spending on final goods and services

vs. intermediate

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

- ▶ C = private consumption; I = investment; G = government spending

~
creating
physical
capital

NIPAs:GDP

- ▶ Gross domestic product is value of production of goods and services
- ▶ The sum of the *value added* of every firm in the economy

$$GDP = \sum_f (p_f y_f - \text{int goods}_f)$$

- ▶ $p_f y_f$ = sales of firm f ; int goods_f = intermediate goods
- ▶ Reminder: A firm has three kinds of expenditures

1. Intermediate goods and services • *things that go into product*

2. Payments to labor (wages, salaries, benefits)

3. Payments to capital holders (profits, rents, equipment investments)

- ▶ This means that the sum of value added = sum of incomes

$$\text{value} = \text{labor pg} + \text{capital payments}$$

NIPAs: GNI

- ▶ Gross national income is total income in the economy

$$GNI = \text{labor income} + \text{capital income}$$

- ▶ Note: Capital gains are not part of GNI (or GDP or GNE). GNI is income from *production*. Capital gains are a change in valuation.

NIPAs in the closed economy

- ▶ In the closed economy there are no exports, no imports, no expatriate workers, no cross border sales of assets...

$$\begin{array}{c} \swarrow \text{TB} \quad \swarrow \text{NFIA} \\ \rightarrow GNE = GDP = GNI + \text{n.d.T.} = \text{GNDI} \\ \leftarrow \end{array}$$

The diagram shows the equation $GNE = GDP = GNI + \text{n.d.T.} = \text{GNDI}$. A black arrow points from the left towards the first equals sign. A red arrow points from the second equals sign towards the right. A red arrow points from the text $+ \text{n.d.T.} = \text{GNDI}$ back towards the first equals sign. Red handwritten labels 'TB' and 'NFIA' are positioned above the first and second equals signs, respectively, with red arrows pointing down to them.

- ▶ value of everything purchased = value of everything produced
 - ▶ value of everything produced = value of labor and capital producing it
 - ▶ value of labor and capital income = value of everything purchased
-
- ▶ In the open economy, each equality is modified...

GNE and GDP in the open economy

- ▶ Gross national expenditure is spending on final goods and services
 - ▶ Now, some goods are not made at home
 - ▶ Now, some goods made at home are sold abroad

$$GDP = \underbrace{C + I + G}_{\text{GNE}} + \underbrace{X - M}_{\text{trade balance}}$$

- ▶ X = exports of goods and services; M = imports of goods and services
- ▶ The terms “net exports” (NX) and “trade balance” (TB) both refer to $X - M$
 - ▶ $TB < 0$ is a trade deficit
 - ▶ $TB > 0$ is a trade surplus

} \Rightarrow NET EXPORTS

Consider bilateral TB

$$TB_{\text{US}, \text{CAN}} < 0$$

$$TB_{\text{US}, \text{CAN}} > 0$$

GDP and GNI in the open economy

- ▶ Gross domestic product is the value of domestic production
 - ▶ Some labor or capital is from abroad (e.g., rent equipment from foreign company; pay an architect who lives abroad)
 - ▶ Some domestic labor and capital is used abroad (e.g., rent office space to a foreign company, provide consulting services to the UK government)
- ▶ This is about the nationality of the labor and capital owner

$$GNI = \underbrace{C + I + G + X - M}_{\text{GDP}} + \underbrace{X_{FS} - M_{FS}}_{\text{net factor income from abroad (NFIA)}}$$

GNI and GNDI in the open economy

- ▶ GNI is the income from production
- ▶ In the open economy, we could also have “gifts” of income from/to abroad
- ▶ Examples: government aid to foreign country; immigrant workers in the U.S. sending money to their families abroad; foreign debt forgiveness
- ▶ There is no reciprocal trade, so we call these unilateral transfers

$$GNDI = \underbrace{C + I + G + EX - IM}_{\text{GDP}} + \underbrace{EX_{FS} - IM_{FS}}_{\text{NFIA}} + \underbrace{UT_{IN} - UT_{OUT}}_{\text{net unilateral transfers}}$$

GNI

The current account

- ▶ An important open-economy measure is the current account (CA)
- ▶ CA summarizes all the cross-border flows

$$CA = \underbrace{(EX - IM)}_{TBS} + \underbrace{(EX_{FS} - IM_{FS})}_{NFA} + (UT_{IN} - UT_{Out})_{UNI. TRANS.}$$

- ▶ Current account is the net payment to the domestic economy from abroad

$$\begin{aligned} \text{GDP} &= C + I + G + X - M \\ \hline \text{GNDI} &= C + I + G + CA \end{aligned}$$

expenditure

- ▶ If $CA > 0$ domestic economy earns more than it spends
- ▶ If $CA < 0$ domestic economy spends more than it earns
- ▶ In a closed economy $CA = 0$

US NIPAs: 2012

	Symbol	\$ bil.
+ Consumption	C	11,120
+ Investment	I	2,062
+ Government	G	3,063
Gross National Expenditure	GNE	16,245
+ Trade Balance	+ TB	-560
Gross Domestic Product	GDP	15,685
+ Net Factor Income from Abroad	NFIA	243
+ Net Unilateral Transfers	NUT	-157
Gross national Disposable Income	GNDI	15,771

US NIPAs

- ▶ In general, GNE spending is pretty stable
 - ▶ $C/GNE \approx 0.70$
 - ▶ $G/GNE \approx 0.15$ *on goods ? services*
 - ▶ $I/GNE \approx 0.15$ *[NOT transfers]*
- ▶ The current account has been growing more negative
- ▶ Most of the current account is the trade balance
- ▶ <https://fred.stlouisfed.org/graph/?g=lv1y>

The current account and savings

- ▶ Start from the identity

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

- ▶ Rearrange

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

- ▶ Where $S = Y - C - G$ is *savings* (i.e., income minus consumption)

$$S = I + CA$$

$$S - I = CA$$

$$\neq > S \quad CA < 0$$

- ▶ In a closed economy: savings funds investment
- ▶ In an open economy: current account makes up the difference between savings and investment

A corny example: Closed economy

- ▶ Corn is the only good in the economy
- ▶ At the end of the year pick the corn (Y)
 - ▶ Eat some (C)
 - ▶ Whatever you don't eat, plant for next year's crop (I)
- ▶ Investment is funded by savings: the corn you don't consume is invested

$$Y - C = I$$

Cross-country lending: A first look

- ▶ Two countries, home and foreign
- ▶ By definition

$$CA_F = -CA_H$$

- ▶ If $CA_H < 0$ the $CA_F > 0$

$$S_H - I_H = CA_H < 0$$

$$S_F - I_F = CA_F > 0$$

- ▶ Foreign country sends its extra savings to the home country to make up the difference between saving and investment
- ▶ This is not a gift: the foreign country must be repaid in the future

A corny example: Open economy

- ▶ Two countries, each grows corn
- ▶ At the end of the year pick the corn (Y_H, Y_F)
- ▶ Home finds out that next year will be great for growing corn
 - ▶ Would like to increase investment (I_H)
 - ▶ Closed economy: decrease consumption (C_H) — not good
- ▶ Open economy: borrow some corn from F ($X_F > 0, M_H \neq 0$)
 - ▶ Increase I_H , but C_H falls less

$$Y_H - C_H < I_H$$

$$Y_F - C_F > I_F$$

$$TB_F > 0$$

$$TB_H < 0$$

More on savings

- ▶ Break up savings into private and government
- ▶ Start with the identity

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

- ▶ Add and subtract tax revenue to the left side

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

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

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

- ▶ Gov't: $S_g = T - G$ (tax revenue minus expenditure)

$$S_g + S_p = CA + I$$

$Y - T = \text{after tax income}$

The "twin" deficits

CA deficits

Government budget deficits

- ▶ Do government deficits cause current account deficits?

$$S_g + S_p = CA + I$$

< 0 < 0

- ▶ 1990s: $S_g > 0$ and CA shrinking towards zero
- ▶ 2000s: $S_g < 0$ and CA growing more negative
- ▶ The US: <https://fred.stlouisfed.org/graph/?g=ly5R>

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 current account) but the relationship is not perfect. Depends on
 - ▶ Investment behavior
 - ▶ Private savings behavior

The balance of payments

- ▶ Balance of payments (BOP) accounts are made up of
 1. The current account ✓
 2. The financial account
 3. The capital account

The financial account

- ▶ The financial account records cross-border financial asset trade
- ▶ Examples: stocks, bonds, sale of a factory

$$FA = EX_A - IM_A$$

- ▶ $FA > 0$ stock of assets falling
- ▶ $FA < 0$ stock of assets rising

FA is a flow variable

Assets issuance vs. holdings

- ▶ Every asset has a “nationality”
- ▶ The nationality of the asset corresponds to the country of issue
 - ▶ US T-bill: claim on U.S. tax payer (US issued)
 - ▶ Share of Vodafone stock is a claim on Vodafone profits (UK issued)
 - ▶ A ¥500 coin is claim on ¥500 worth of goods and services sold in Japan (Japan issued)
- ▶ Asset issuance is NOT the same as ownership
 - ▶ An Indian bank can hold US-Tbills
 - ▶ A German hedge fund can hold Vodafone stock
 - ▶ An American tourist can take yen coins back to America

Assets issuance vs. holdings

- ▶ 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

$$EX_A = EX_A^H + EX_A^F$$

e.g. Tbill e.g. Vodafone stock

$$\begin{aligned}
 FA_H &= EX_A - IM_A \\
 &= EX_A^H + EX_A^F - IM_A^H - IM_A^F \\
 &= \underbrace{(EX_A^H - IM_A^H)}_{\text{additions to external liab}} - \underbrace{(IM_A^F - EX_A^F)}_{\text{additions to external assets}}
 \end{aligned}$$

How much more does Home owe F?

How much more does F owe home country?

- ▶ $FA > 0$ net addition to external liabilities
- ▶ $FA < 0$ net addition to external assets

$$EX_A^H - IM_A^H > 0$$

$IM_A^F - EX_A^F > 0$
Row owes U.S. money

The capital account

- ▶ Not usually important in high-income countries
- ▶ The capital account records cross-border
 - ▶ Trade in nonfinancial, nonproduced assets
 - ▶ Gifts of assets
- ▶ Examples: Patents, franchises, debt forgiveness

$$KA = KA_{IN} - KA_{OUT}$$

- ▶ $KA > 0$ net receiver of assets
- ▶ $KA < 0$ net giver of assets

The balance of payments

- ▶ Balance of payments (BOP) accounts are made up of
 1. The current account ✓
 2. The financial account ✓
 3. The capital account ✓
- ▶ Why do we say “balance of payments?”
- ▶ Let’s look at some examples. For each transaction, sort out which **accounts** record the transaction.

The balance of payments: examples

- ▶ American in Paris spends €100 (\$110) on hotel; pays with Amex
 - ▶ CA: Hotel room (import of lodging service): $IM_{US} = \$100$ *import services*
 - ▶ FA: Hotel claim on AMEX: $EX_A^{US} = \$100$ *export an U.S. asset*
- ▶ An American buys \$10,000 of Danone stock; pays w/check drawn on Citi
 - ▶ FA: French stock: $IM_A^{FR} = \$10,000$ *import French asset*
 - ▶ FA: Claim on Citibank: $EX_A^{US} = \$10,000$ *export U.S. asset.*
- ▶ U.S. congress forgives \$1 mil. of Haitian debt
 - ▶ KA: U.S. debt forgiveness: $KA_{OUT} = \$1\text{mil.}$
 - ▶ FA: Export of foreign asset: $EX_A^{HT} = \$1\text{mil.}$

Balance of payments: examples

US Accounts

-110

$$CA = EX - IM + EX_{FS} - IM_{FS} + UT_{IN} - UT_{OUT}$$

-110

HOTEL

$$KA = KA_{IN} - KA_{OUT}$$

- 1mil

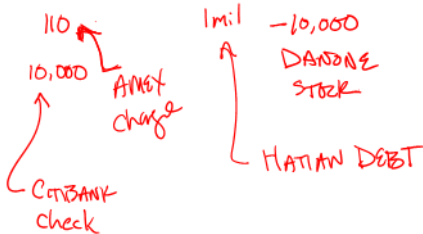
- 1mil ← debt forgiveness

$$FA = EX_A^{US} - IM_A^H + EX_A^F - IM_A^F$$

+ 1mil

+ 110

0



The balance of payments identity

$$CA + KA + FA = 0$$

- ▶ This is accounting, not theory
- ▶ Ignore the capital account for the moment
- ▶ If $CA > 0$, $FA < 0$
 - ▶ net exporter of goods, services, income
 - ▶ net importer of assets (net addition to external assets)
- ▶ If $CA < 0$, $FA > 0$
 - ▶ net importer of goods, services, income
 - ▶ net exporter of assets (net addition to external liabilities)

US BOP, 2012 (bil. USD)

Flow	Symbol	Value
+ Exports of goods and services	EX	2,194
+ Income receipts	EX_{FS}	1,564
+ Imports of goods and service	IM	-2,734
+ Income payments	IM_{FS}	-543
+ Net unilateral transfers	NUT	-134
Current account balance	CA	-475
+ US-owned foreign assets (net change)	$EX_A^F - IM_A^F$	18
+ Foreign-owned US assets (net change)	$EX_A^H - IM_A^H$	385
Financial Account balance	FA	403
Capital account (net)	KA	6
Statistical discrepancy		66

External wealth

- ▶ The financial account measures the addition to a country's foreign assets or liabilities: it is a **flow** variable
- ▶ **Stock** of foreign assets and liabilities determine country's external wealth

external wealth = ROW assets owned in home – home assets owned in ROW

$$W = A - L$$

- ▶ If $W > 0$ net creditor (lender) to ROW
- ▶ If $W < 0$ net debtor (borrower) to ROW
- ▶ Three terms all mean the same thing: external wealth, net international investment position, net foreign assets

Changes in external wealth

- ▶ External wealth changes for two reasons

1. Trade in assets
2. Change in the value of assets: *valuation effects* (from change in asset prices or change in exchange rates)

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

change

- ▶ By BOP: $-FA = CA + KA$ $FA + CA + KA = 0$

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

- ▶ Increase wealth by saving ($CA > 0$), charity ($KA > 0$), capital gains

US External Wealth in 2012 (billions USD)

	end of of 2011	asset trade	Δ price	Δ fx	other	total Δ	end 2012
Ext. assets	16,920	97	991	6	4	1,098	18,018
Ext. liabilities	20,736	544	501	1	157	1,203	21,940
External wealth	-3,187	-446	490	5	-153	-105	-3,922
	$W_{2011} =$	$-FA$	$+$	valuation effects		ΔW	W_{2012}

- ▶ Added \$446 in external liabilities: decrease wealth
- ▶ Capital gains of \$342: increase wealth
- ▶ On net, external wealth decrease

borrow more

Intensity fact: unique to US

$W_{us} < 0$

net return > 0