

International Finance: Lecture 3

National and International Accounts

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Outline

- 1 Introduction
- 2 Balance of Payments
- 3 International Investment Position
- 4 Understanding Global Imbalances

Macroeconomic Policy Goals

In an open economy, macroeconomic policy must balance domestic and foreign interests, aiming to achieve internal and external balance.

① Internal Balance: Full Employment and Price Stability.

- An unsustainable use of resources (overemployment) tends to increase prices; an ineffective use of resources (underemployment) tends to decrease prices.
- Volatile aggregate demand and output tend to create volatile prices that reduce efficiency by making the real value of the monetary unit less certain and thus a less useful guide for economic decisions.

② External Balance: Optimal Current Account and External Wealth.

- A current account is so deeply in deficit that the country may be unable to repay its foreign debts
- A current account is so strongly in surplus that foreigners are put in an opposite position.

Global Imbalances: Micro Foundation

- The patterns of global imbalances: Prior to the 2008 global financial crisis, the world economy faced a grave danger from the large imbalances in current account positions.
 - To understand the issue better, we focus on those systematically important economies: China, the U.S., and the Eurozone.
 - In this lecture, we trace the root of global imbalances to its micro foundation by applying accounting methods to decompose aggregate data into country level international transactions.
 - Furthermore, we expand national income to international accounts.
 - Building on the economic principles between credit and debt, we hope to shed some light on the causes of global imbalances, sovereign risk, and financial crisis.

Financial Statements Basics (w)

A business entity's assets have to equal, or "balance," the sum of its liabilities and shareholders' equity.

$$\text{Assets} = \text{Liabilities} + \text{Equity}$$

- ① **Balance Sheet** shows what a company/country owns and what it owes at a fixed point in time.
 - ② **Income Statement** shows how much money a company/country made and spent over a period of time.
 - ③ **Cash Flow Statement** shows the exchange of money between a company and the outside world also over a period of time.
 - ④ **Owners' Equity Statement** shows changes in the interests of the company's shareholders over time.

National Income and International Transactions

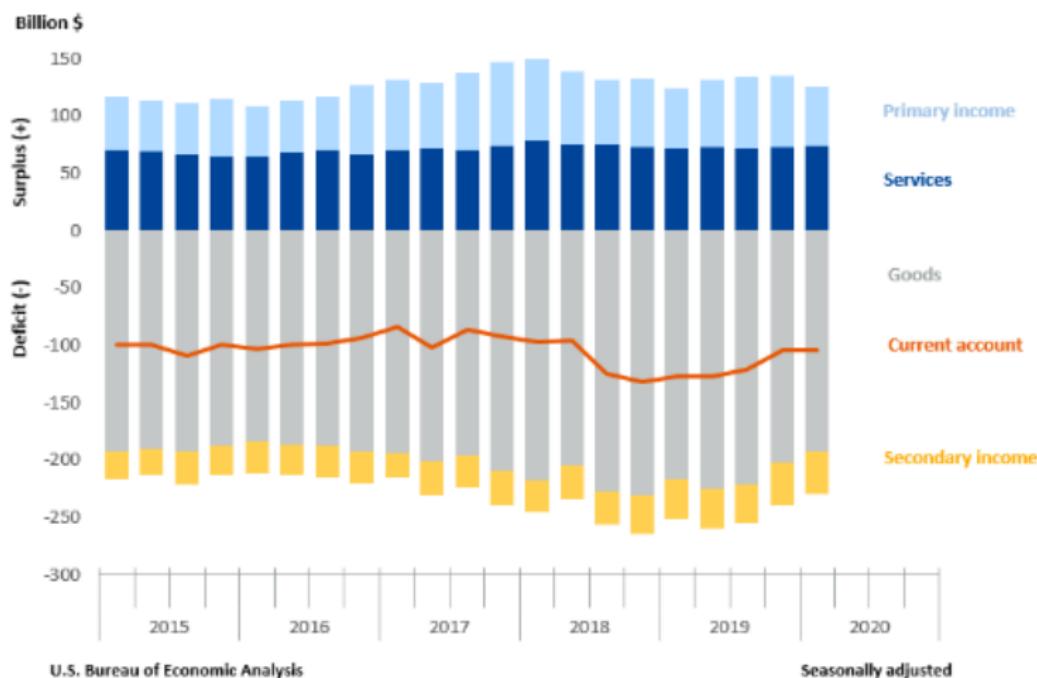


U.S. Bureau of Economic Analysis: Data

<https://www.bea.gov/data/intl-trade-investment>

- International Transactions (BOP): U.S. transactions in goods, services, income, and investment with other countries. ([web](#))
- International Investment Position (NIIP): A balance sheet of U.S. financial assets and liabilities with residents of other countries. ([web](#))
- Direct Investment by Country and Industry: International investment resulting in control or significant influence over a business. ([web](#))
- New Foreign Direct Investment in the United States: Foreign investment to acquire, establish, or expand a U.S. business enterprise. ([web](#))

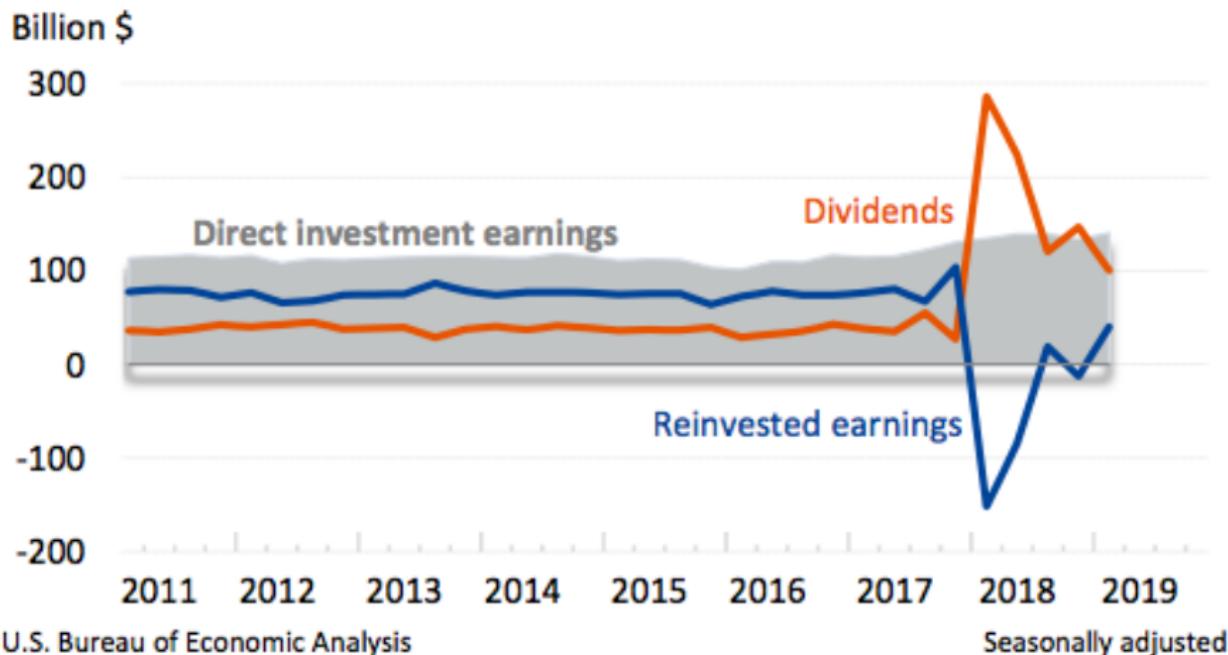
U.S. Current Account Components, 2015-2020 (w)



U.S. Current Account Trends, 2012-2020 (w)



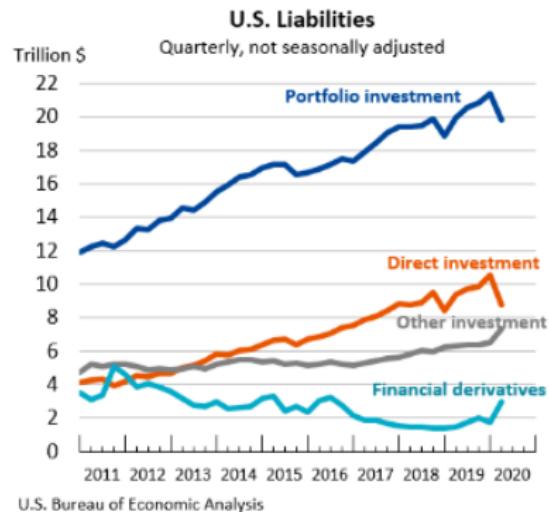
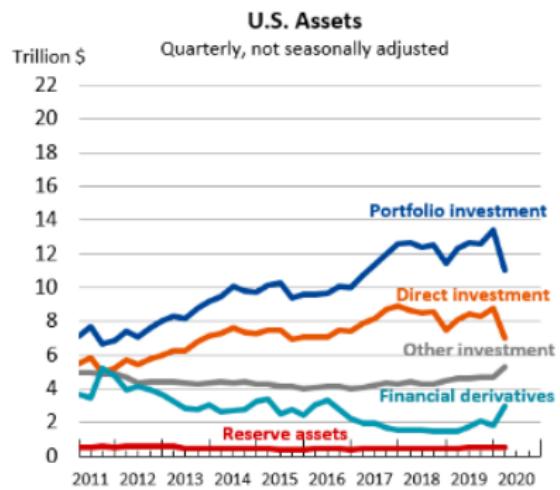
U.S. Direct Investment Earnings 2011-2019



U.S. External Assets and Liabilities 2011-2020 (w)



U.S. External Positions: Composition 2011-2020 (w)



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U.S. International Transactions: 2019 (w)

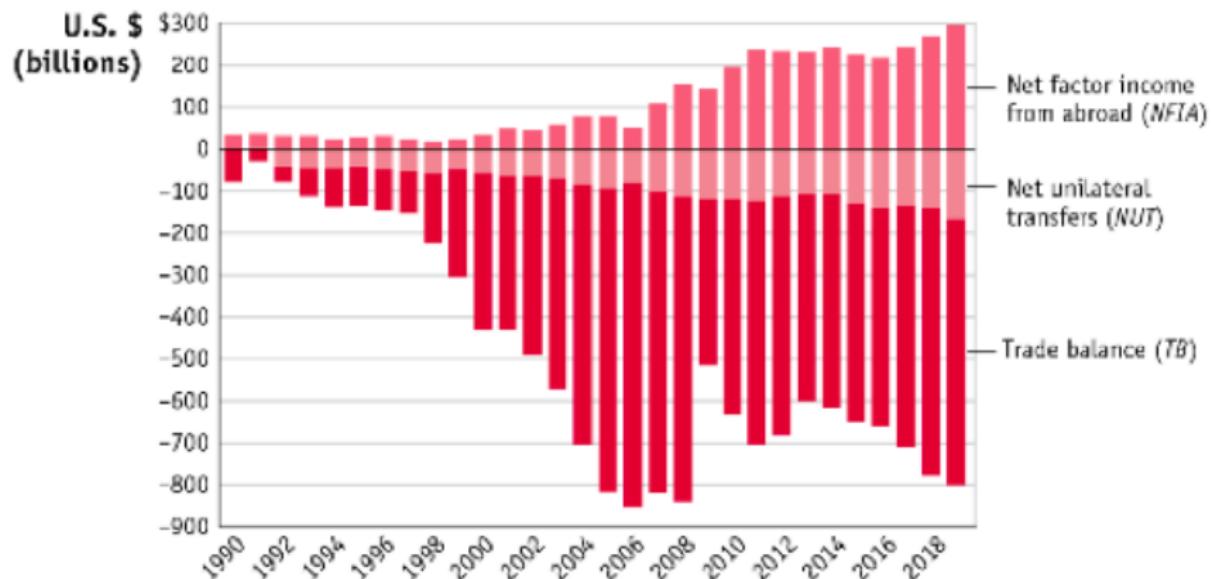
Levels	2019 level	Most recent year with higher value		Most recent year with lower value		Previous record (if 2019 was a record)	
		Year	Level	Year	Level	Year	Level
Current account deficit	480.226	2008	696.523	2018	449.693
As a percentage of U.S. gross domestic product	2.2%	2012	2.6%	2017	1.9%
Goods and services trade deficit	576.865	2018	579.937	2017	513.791
Goods trade deficit	864.331	2018	880.301	2017	799.343
Services trade surplus	287.466	2018	300.364	2017	285.552
Primary income surplus	236.344	2018	251.174	2016	197.021
Secondary income deficit	139.705	none	2018	120.931	2018	120.931
Exports of goods and services and income receipts	3,805.938	none	2018	3,792.867	2018	3,792.867
Exports of goods and services	2,528.262	2018	2,539.383	2017	2,387.391
Goods	1,652.437	2018	1,676.950	2017	1,557.003
Services	875.825	none	2018	862.433	2018	862.433
Primary income receipts	1,135.691	none	2018	1,108.472	2018	1,108.472
Secondary income receipts	141.984	2018	145.012	2016	139.700
Imports of goods and services and income payments	4,286.163	none	2018	4,242.560	2018	4,242.560
Imports of goods and services	3,105.127	2018	3,119.320	2017	2,901.181
Goods	2,516.767	2018	2,557.251	2017	2,356.345
Services	588.359	none	2018	562.069	2018	562.069
Primary income payments	899.347	none	2018	857.298	2018	857.298
Secondary income payments	281.689	none	2018	265.943	2017	266.365
Capital account balance	-6.244	2018	-4.196	2016	-6.606
Net financial transactions	-395.549	2017	-334.095	2018	-419.724
Transactions in assets	440.751	2017	1,188.188	2018	358.971
Transactions in liabilities	797.960	2017	1,546.281	2018	758.291
Transactions in financial derivatives	-38.340	2018	-20.404	2014	-54.335
Statistical discrepancy	90.921	2009	146.227	2018	34.165

<https://www.bea.gov/data/intl-trade-investment/international-transactions>

International Transaction: Categories (w)

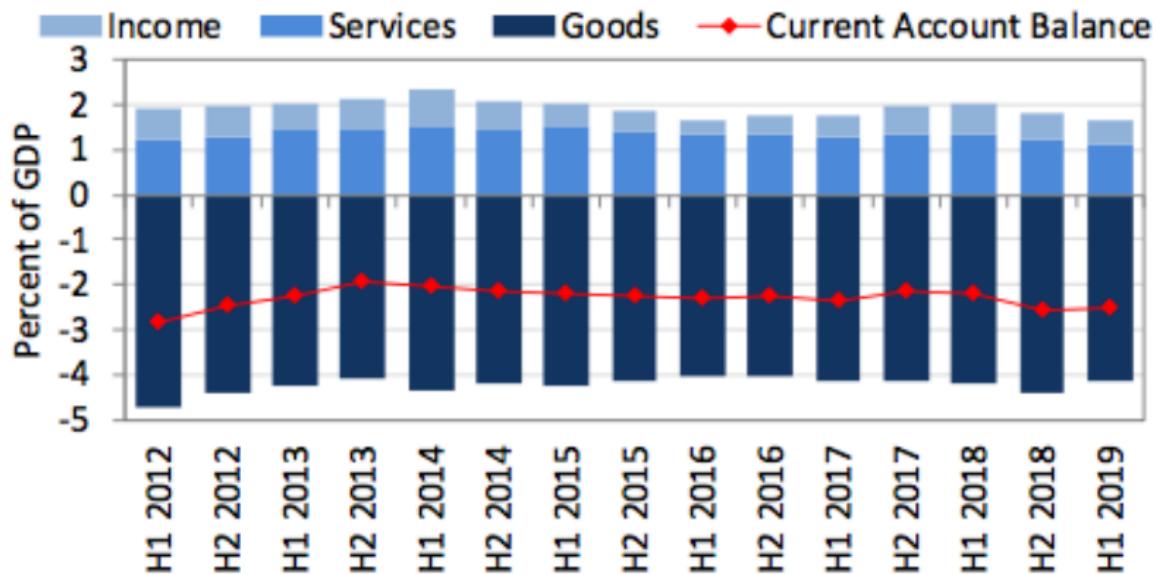
- The international transactions accounts (also called the balance of payments) are a statistical summary of economic activity between U.S. residents and the residents of other countries, organized into three accounts: the current account (CA), the capital account (KA), and the financial account (FA).
 - The CA balance — calculated as exports of goods and services and income receipts minus imports of goods and services and income payments — is a key economic indicator of a nation's external balance.
 - The FA records all international purchases and sales of financial assets. The difference between a country's purchases and sales of foreign assets is called financial account balance or net financial flows.
 - The KA covers remaining activities in BOP, accounting for the acquisition or disposal of nonfinancial, nonproduced assets (patents, copyrights, franchises) and capital transfers (debt forgiveness and gifts of assets).

U.S. Current Account Components, 1990-2019



Source: FT (2021)

U.S. Current Account Components, 2012-2019



Sources: Bureau of Economic Analysis, Haver

What Does it Mean to be "Balanced?"

Balance of Payment means all incomes and expenses must be balanced.
A country with a current account surplus is a (net) lender.

- By the BOP identity, it must have a deficit in its asset accounts.
- Any lender, on net, buys assets (acquiring IOUs from borrowers).
For example, China is a large net lender.

A country with a current account deficit is a (net) borrower.

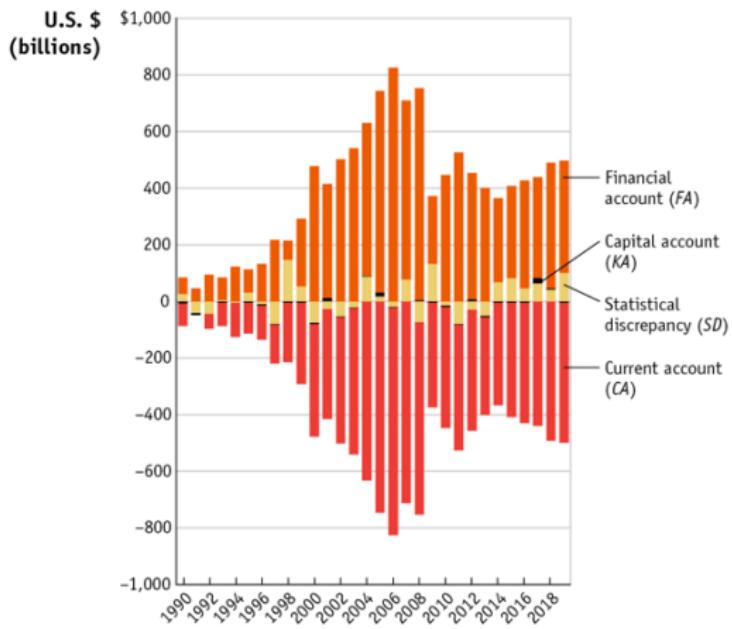
- By the BOP identity, it must have a surplus in its asset accounts.
- Any borrower, on net, sells assets (issuing IOUs to lenders). As we saw, the U.S. is a large net borrower.

U.S. Balance of Payments 1990-2019

The figure shows the four components in the U.S. BoP:

- ① Current account (CA)
- ② Capital account (KA)
- ③ Financial account (FA)
- ④ Statistical discrepancy

Source: FT (2021)



BOP Accounting Rules: Double-Entry

The double-entry principles in the balance of payments: *Every market transaction has two parts. If party A engages in a transaction with a counterparty B, then A receives from B an item of a given value, and in return B receives from A an item of equal value.*

- $CA + FA + KA = 0$ and $SD = -(CA + FA + KA)$
- BOP credit: plus sign (+). BOP debit: minus sign (-).
- CA: exports of goods, services, factor services (+) and unilateral transfers received (+); vice versa
- FA: exports of home and foreign assets (+); vice versa
- KA: capital transfers received (+); vice versa
- A simple rule: "When money flows in, it is a credit; when money flows out, it is a debit."

BOP Accounting Rules: Credit vs Debit

BOP Credits

- ① Current Account (CA): Exports of goods and services $+EX$; Exports of factor services $+EX_{FS}$; Unilateral transfers received $+UT_{in}$.
- ② Capital Account (KA): Capital transfers received $+KA_{in}$.
- ③ Financial Account (FA): Exports of home assets $+EX_a^H$ and foreign assets $+EX_a^F$.

BOP Debits

- ① Current Account (CA): Imports of goods and services $-IM$; Imports of factor services $-IM_{FS}$; Unilateral transfers given $-UT_{out}$.
- ② Capital Account (KA): Capital transfers given $-KA_{out}$.
- ③ Financial Account (FA): Imports of home assets $-IM_a^H$ and foreign assets $-IM_a^F$.

Record Transactions on BOP: Examples

The double-entry principles in the balance of payments. Examples:

- ① U.S. company A imports a \$1,000 fax machine from B. B deposits the check in a U.S. bank.
- ② Company A buys lunch in France and pay \$200 by credit card. French restaurant receives payment from the credit card company.
- ③ Individual A buys a share of British Petroleum (BP) for \$100. BP deposits the money in a U.S. bank.
- ④ U.S. banks forgive a \$5,000 debt owed by the government of B through debt restructuring. U.S. banks who hold the debt thereby reduce the debt by crediting B's bank accounts.

Record Transactions on BOP: Bookkeeping

The double-entry principles in the balance of payments.

- ① Fax machine purchase (CA, U.S. good import): -\$1,000
Sale of bank deposit (FA, U.S. asset sale): +\$1,000
- ② Meal purchase (CA, U.S. service import): -\$200
Sale of credit card claim (FA, U.S. asset sale): +\$200
- ③ Stock purchase (FA, U.S. asset purchase): -\$100
Bank deposit (FA, U.S. asset sale): +\$100
- ④ U.S. banks debt forgiveness (KA, transfer payment): -\$5,000
Reduction bank's claims on B (FA, U.S. asset sale): +\$5,000

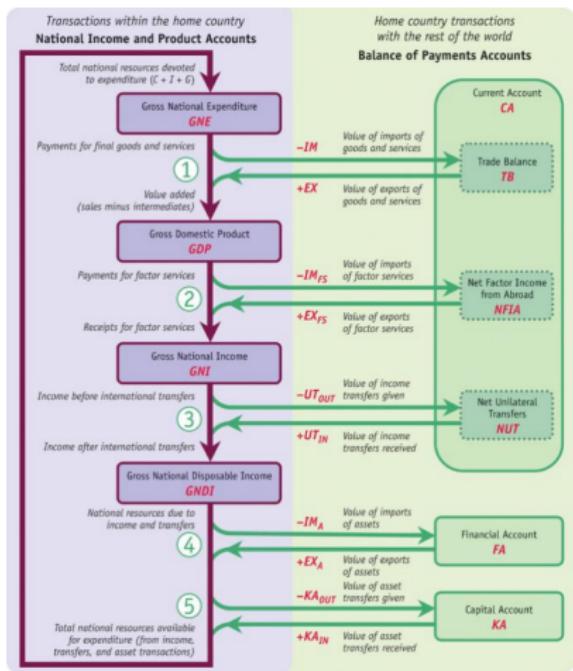
The Balance of Payments: Recap

The balance of payments accounts consist of:

- The current account, which measures external imbalances in goods, services, factor services, and unilateral transfers
- The financial and capital accounts, which measure external transaction in assets.
- Surpluses on the current account side must be offset by deficits on the asset side. Deficits on the current account must be offset by surpluses on the asset side.
- Due to data issues, account keepers force the two sides to balance by adding into the accounts a statistical discrepancy item.

The BOP makes the connection between a country's income and spending decisions and the evolution of that country's wealth.

From National to International Income



The open economy measurements of national expenditure, product, and income are recorded in the national income and product accounts; measurements of international transactions are recorded in the balance of payments accounts. The purple line shows the flow of transactions within the home economy. The green lines show all cross-border transactions.

$$GNE \rightarrow GDP \rightarrow GNI \rightarrow GNDI$$

Source: FT (2017)

From National to International Accounts

$$GNDI = GNE + (TB + NFP + NUT) = GNE + CA$$

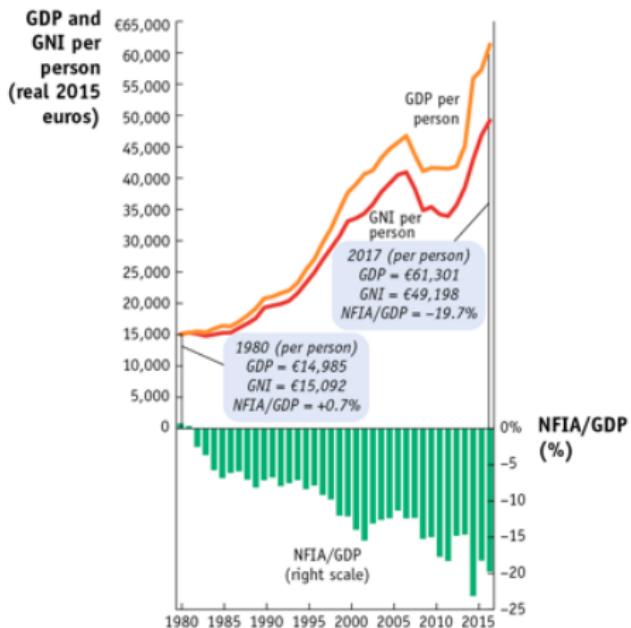
- ① Gross National Expenditure (GNE) = $C + I + G$
- ② Gross Domestic Product (GDP) = GNE + TB, where TB is trade balance and $TB = \text{Export of goods} - \text{Import of goods}$.
- ③ Gross National Income (GNI) = GDP + NFP, where NFP is net factor payment or net factor income from abroad (NFIA)
 - NFP = Export of factor service – Import of factor service.
 - NFIA = Receipt for factor service – payments for services.
- ④ Gross National Disposable Income (GNDI) = GNI + NUT, where NUT is net unilateral transfer.
 - $NUT = UT_{in} - UT_{out} = \text{transfer received} - \text{transfer given out}$

U.S. Economic Aggregates 2015

Line	Category	Symbol	\$ billions
1	Consumption (personal consumption expenditures)	C	12,272
2	+ Investment (gross private domestic investment)	I	3,021
3	+ Government consumption (government expenditures)	G	3,183
4	= Gross national expenditure	GNE	18,476
5	+ Trade balance	TB	-529
6	= Gross domestic product	GDP	17,947
7	+ Net factor income from abroad	NFIA	214
8	= Gross national income	GNI	18,161
9	+ Net unilateral transfers	NUT	-134
10	= Gross national disposable income	GNDI	18,027

Source: FT (2017)

Net Factor Income From Abroad: From GDP to GNI

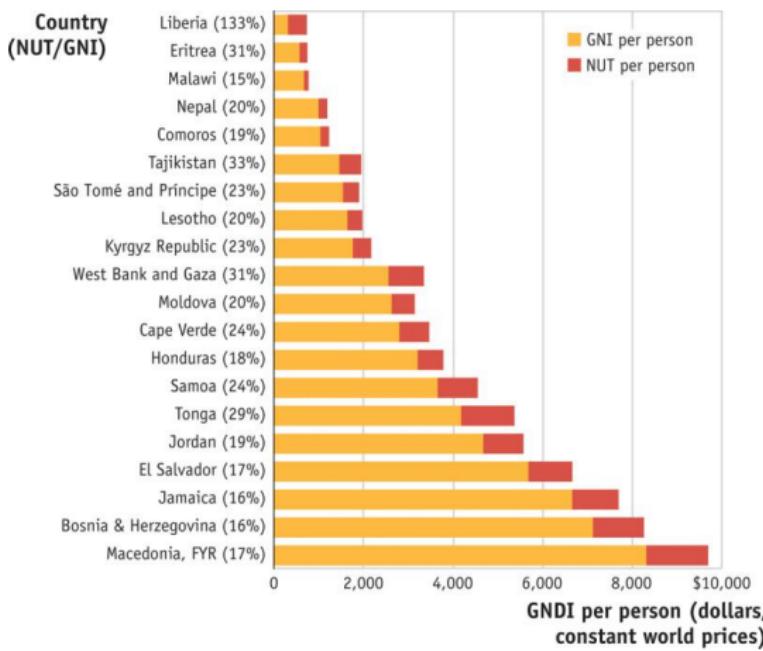


The chart shows trends in GDP, GNI, and NFIA in Ireland from 1980 to 2016. Irish GNI per capita grew more slowly than GDP per capita during the boom years of the 1980s and 1990s because an ever-larger share of GDP was sent abroad as net factor income to foreign investors. Close to zero in 1980, this share had risen to around 15% of GDP by the year 2000 and has remained there.

$$\text{GDP} + \text{NFIA} = \text{GNI}$$

Source: FT (2021)

Net Unilateral Transfers: From GNI to GNDI



Source: FT (2021)

The chart shows average figures for 2000 to 2010 for all countries in which net unilateral transfers exceeded 15% of GNI. Many of the countries were heavily reliant on foreign aid, including some of the poorest countries in the world, such as Liberia, Eritrea, Malawi, and Nepal. Some countries with higher incomes also have large transfers because of substantial migrant remittances from a large number of emigrant workers overseas (Tonga, El Salvador, Honduras, and Cape Verde).

$$GNI + NUT = GNDI$$

Asset Trades in the BOP: FA+KA

$$CA + FA + KA = 0$$

$$FA + KA = EX_a - IM_a + KA_{in} - KA_{out}$$

$$GNDI + FA + KA = GNE + CA + FA + KA = GNE$$

- The GNDI is resources available to the home country from income.
- The home economy can also free up resources by sales (or purchases) of assets, consisting of FA and KA transactions.

- ① EX_a : Value of all assets exported $EX_a = EX_a^H + EX_a^F$
- ② IM_a : Value of all assets imported $IM_a = IM_a^H + IM_a^F$
- ③ KA_{in} : Value of all assets imported as gifts
- ④ KA_{out} : Value of all assets exported as gifts

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U.S. NIIP: Quarterly Change 2020 (w)

Table A. Quarterly Change in the U.S. Net International Investment Position
Billions of dollars, not seasonally adjusted

	Position, 2019 Q4	Change in position in 2020 Q1			Position, 2020 Q1	
		Total	Attributable to:			
			Financial transactions	Other changes in position ¹		
U.S. net international investment position	-11,050.5	-1,007.0	-184.2	-822.8	-12,057.5	
Net position excluding financial derivatives	-11,070.7	-1,022.1	-162.4	-859.8	-12,092.8	
Financial derivatives other than reserves, net	20.2	15.2	-21.8	37.0	35.3	
U.S. assets	29,152.8	-2,385.7	(²)	(²)	26,767.1	
Assets excluding financial derivatives	27,362.4	-3,595.8	739.9	-4,335.7	23,766.6	
Financial derivatives other than reserves	1,790.4	1,210.1	(²)	(²)	3,000.5	
U.S. liabilities	40,203.3	-1,378.7	(²)	(²)	38,824.6	
Liabilities excluding financial derivatives	38,433.0	-2,573.6	902.3	-3,475.9	35,859.4	
Financial derivatives other than reserves	1,770.3	1,194.9	(²)	(²)	2,965.2	

1. Disaggregation of other changes in position into price changes, exchange rate changes, and other changes in volume and valuation is only presented for annual statistics (see table B and table 2 in this release).

2. Financial transactions and other changes in financial derivatives positions are available only on a net basis; they are not separately available for U.S. assets and U.S. liabilities.

Source: U.S. Bureau of Economic Analysis.

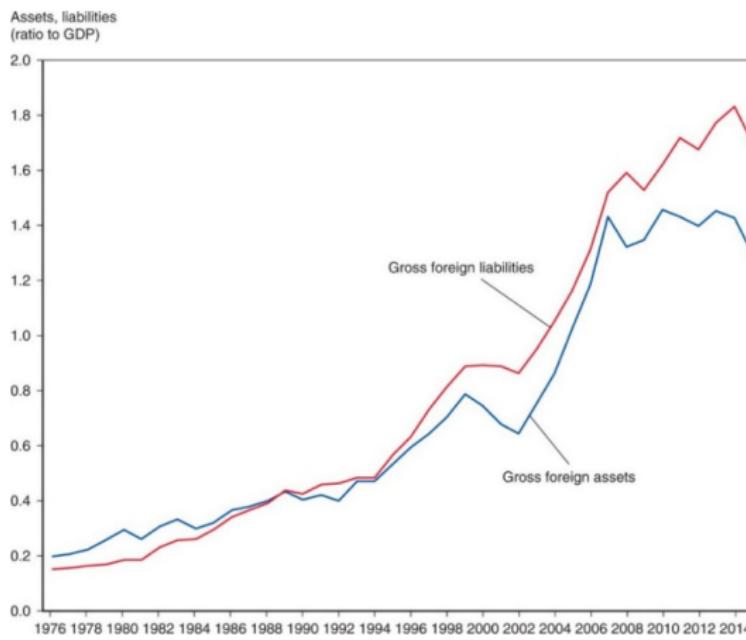
International Investment Position (w)

- The international investment position accounts represent a statistical balance sheet between the United States and the world. They show the accumulated value of U.S.-owned financial assets in other countries and U.S. liabilities to residents of other countries at the end of each quarter.
- The difference between assets and liabilities is the U.S. net international investment position (external wealth).
- Data are shown by categories of investment, such as direct investment, portfolio investment, and reserve assets, each with expanded detail available.
- Understanding the types of investment held by foreign owners can shed light on the vulnerability of the U.S. economy to changes in external market conditions.

External Wealth or Net Foreign Wealth (NW)

- A country's level of external wealth is also called its net international investment position or net foreign assets.
- It is a stock measure, not a flow measure.
- **External Wealth** is the difference between foreign assets owned by home and home assets owned by foreign.
- If $NW > 0$, home is a net creditor country: external assets exceed external liabilities ($A > L$).
- If $NW < 0$, home is a net debtor country: external liabilities exceed external assets ($A < L$).
- Change in external wealth = – financial account + net capital gains
on external wealth = current account (unspent income) + capital account (net capital transfer received) + valuation effects (V.E.)

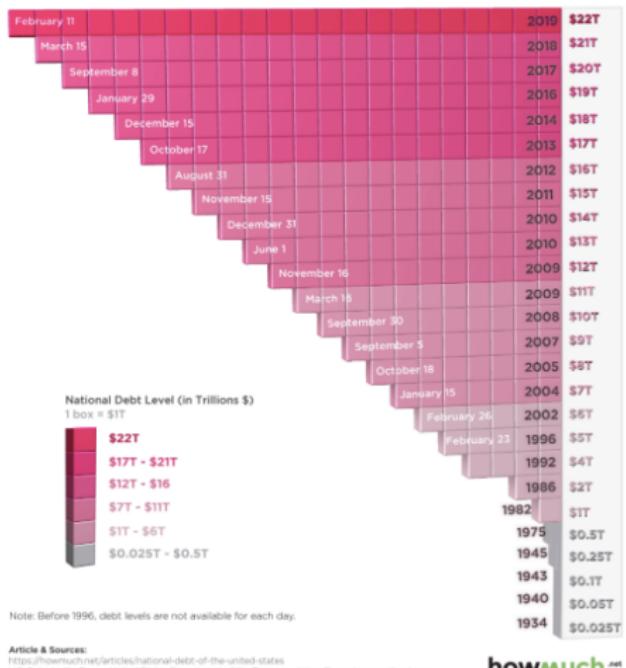
U.S. Foreign Assets and Liabilities 1976-2015



Since 1976, both the foreign assets and the liabilities of the United States have increased sharply. But liabilities have risen more quickly, leaving the United States with a substantial net foreign debt.

Source: KOM (2018)

U.S. National Debt 1934-2019 (w)



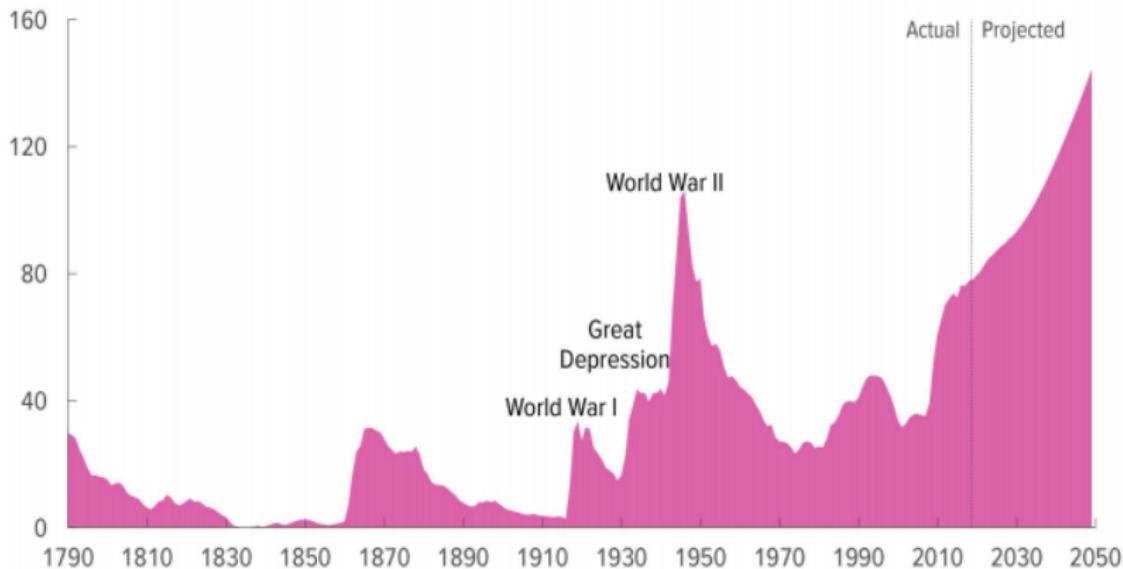
Article & Sources:
<https://howmuch.net/articles/national-debt-of-the-united-states>
 U.S. Debt to the Penny, United States Department of the Treasury - <https://www.treasurydirect.gov>

The national debt is composed of two main categories: intragovernmental debt and debt held by the public. In 1934, the national debt was only \$25 billion. It began increasing rapidly in the 1980s, reaching \$1 trillion in 1982 and ballooning throughout the 1990s and 2000s. In February 2019, the national debt hit an eye-popping \$22 trillion. The projected annual deficit for this year alone is almost \$1.1 trillion – that's more than the GDP of Singapore, Norway, and New Zealand combined.

howmuch.net

US Federal Debt Held by the Public since 1790 (w)

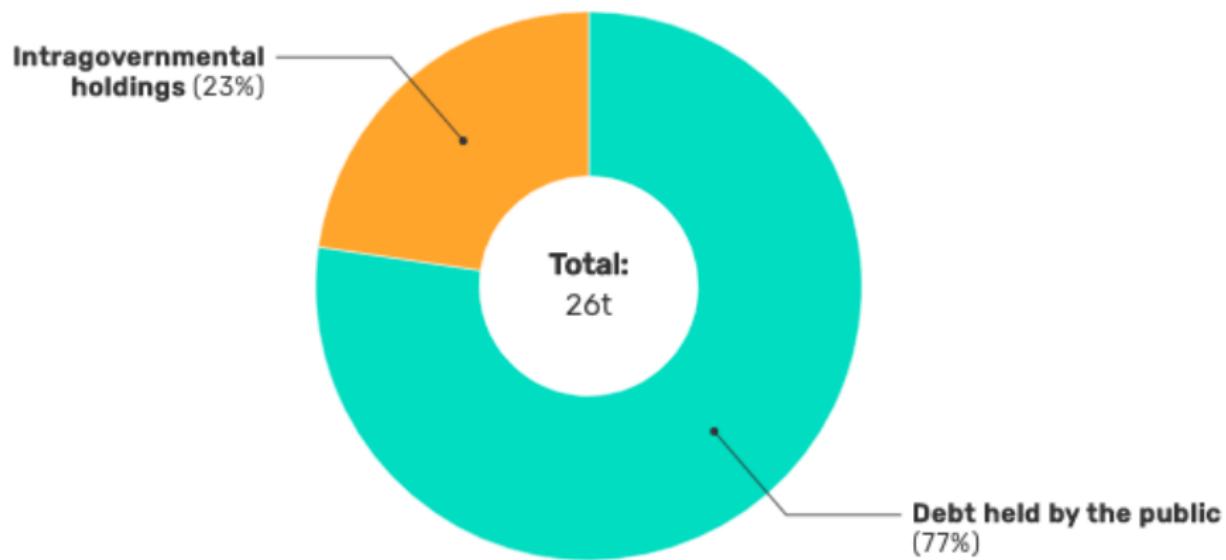
Percentage of Gross Domestic Product



Source: Congressional Budget Office (2019)

Breaking Down the National Debt (w)

Total U.S national debt was \$26 trillion in July 2020. Here's how it breaks down.



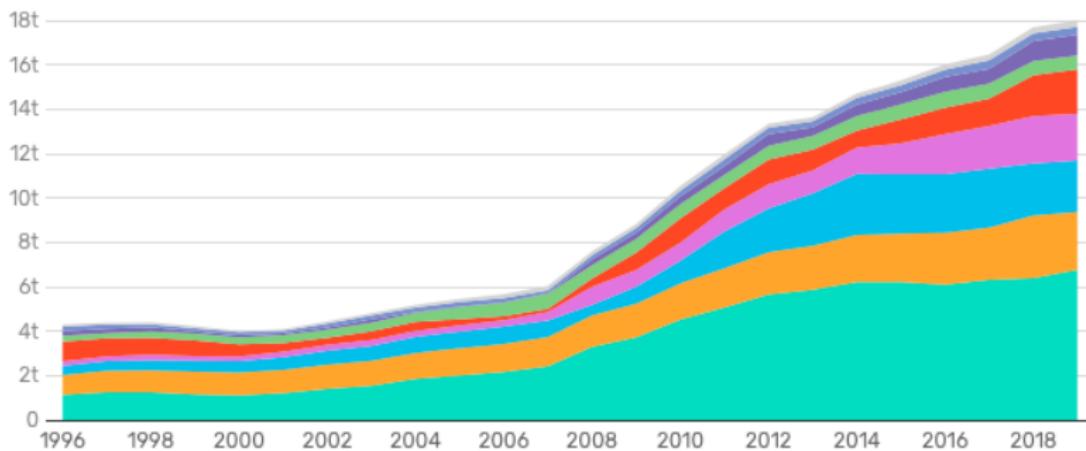
Source: U.S. Treasury Department (2020)

U.S. Treasury Securities Holders By Type ^(w)

Foreign holdings of U.S. debt have ballooned in the past decade.

Legend:

- Foreign
- Pensions
- Monetary authorities
- Mutual funds
- Individuals
- State/local gov'ts
- Banks
- Insurance companies
- Other

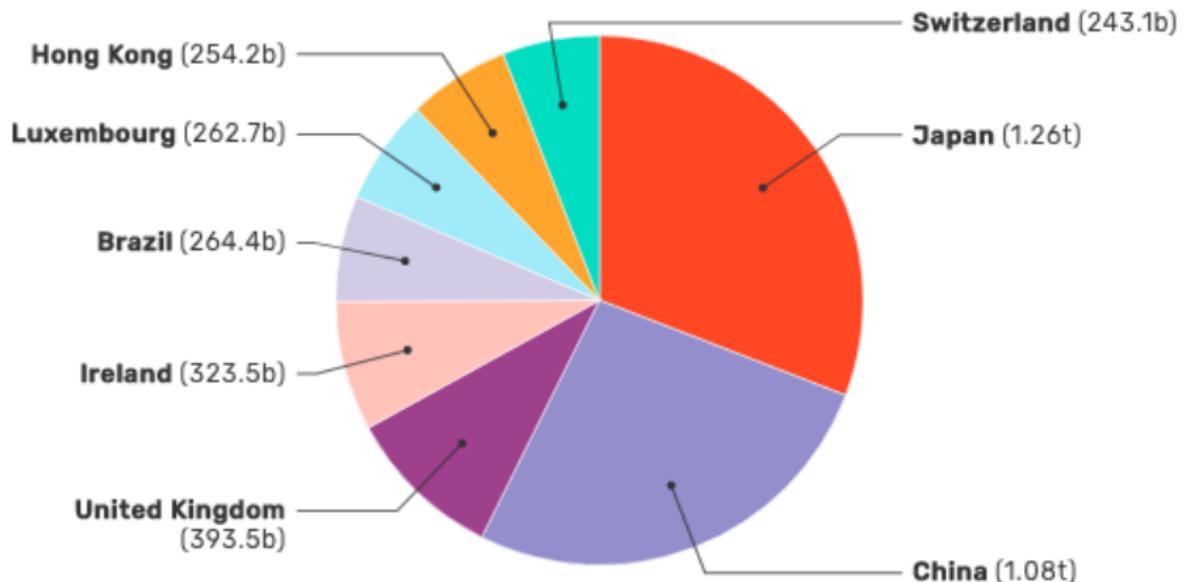


2019 data as of Q2

Chart: The Balance • Source: [SIFMA](#)

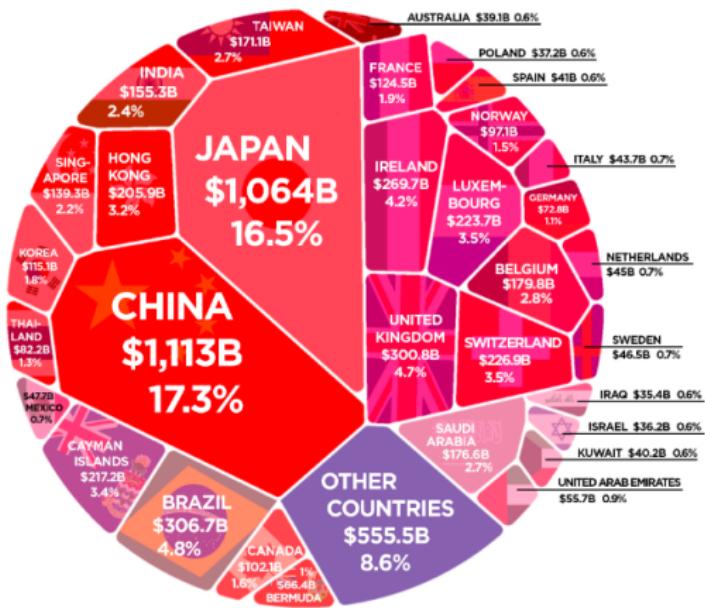
Foreign Holders of U.S. Public Debt (w)

Japan is the largest holder of U.S. debt.



Source: U.S. Treasury Department (2020)

Major Foreign Holders of U.S. Public Debt ^(w)



As of April 2019, the total amount of treasury securities issued to foreign countries is \$6.433 trillion. China currently holds the most U.S. debt due to a variety of factors, including China's desire to keep the yuan weak compared to the dollar. Most of the treasury securities held by other countries are in the form of treasury notes and bonds, rather than treasury bills.

Source: U.S. Treasury and howmuch.net

U.S. NIIP: Annual Change 2019 (w)

Table B. Annual Change in the U.S. Net International Investment Position

Billions of dollars

	Position, 2018	Change in position in 2019						Position, 2019	
		Total	Attributable to:						
			Financial trans- actions	Other changes in position					
				Total	Price changes	Exchange rate changes	Changes in volume and valuation n.i.e.		
U.S. net investment position	-9,674.4	-1,376.1	-395.5	-980.5	(¹)	(¹)	(¹)	-11,050.5	
Net position excl. derivatives	-9,716.5	-1,354.2	-357.2	-997.0	-1,104.9	119.5	-11.5	-11,070.7	
Financial derivatives, net	42.0	-21.9	-38.3	16.4	(¹)	(¹)	(¹)	20.2	
U.S. assets	25,233.8	3,919.0	(²)	(²)	(²)	(²)	(²)	29,152.8	
Assets excl. derivatives	23,784.2	3,578.2	440.8	3,137.4	3,080.1	128.3	-71.0	27,362.4	
Financial derivatives	1,449.6	340.8	(²)	(²)	(²)	(²)	(²)	1,790.4	
U.S. liabilities	34,908.2	5,295.1	(²)	(²)	(²)	(²)	(²)	40,203.3	
Liabilities excl. derivatives	33,500.7	4,932.4	798.0	4,134.4	4,185.0	8.8	-59.4	38,433.0	
Financial derivatives	1,407.5	362.7	(²)	(²)	(²)	(²)	(²)	1,770.3	

1. Data are not separately available for price changes, exchange rate changes, and changes in volume and valuation n.i.e. (not included elsewhere).

2. Financial transactions and other changes in financial derivatives positions are available only on a net basis; they are not separately available for U.S. assets and U.S. liabilities.

Source: U.S. Bureau of Economic Analysis.

Changes in External Wealth (ΔNW)

There are three reasons a country's level of external wealth changes:

$$\Delta NW = CA + KA + VE = -FA + VE$$

- **Trade flows:** All else equal, trade deficit cause external wealth to fall; surpluses (and defaults) cause it to rise.
- **Financial flows:** As a result of asset trades, the country can increase or decrease its external assets and liabilities. Net exports of home assets cause an equal increase in the level of external liabilities and hence a corresponding decrease in external wealth.
- **Valuation effects:** The value of existing external assets and liabilities may change over time due to capital gains or losses. In the case of external wealth, this change in value could be due to price effects or exchange rate effects.

From BOP to NIIP (NW)

$$CA + KA + FA = 0$$

$$\Delta NW = -FA + VE$$

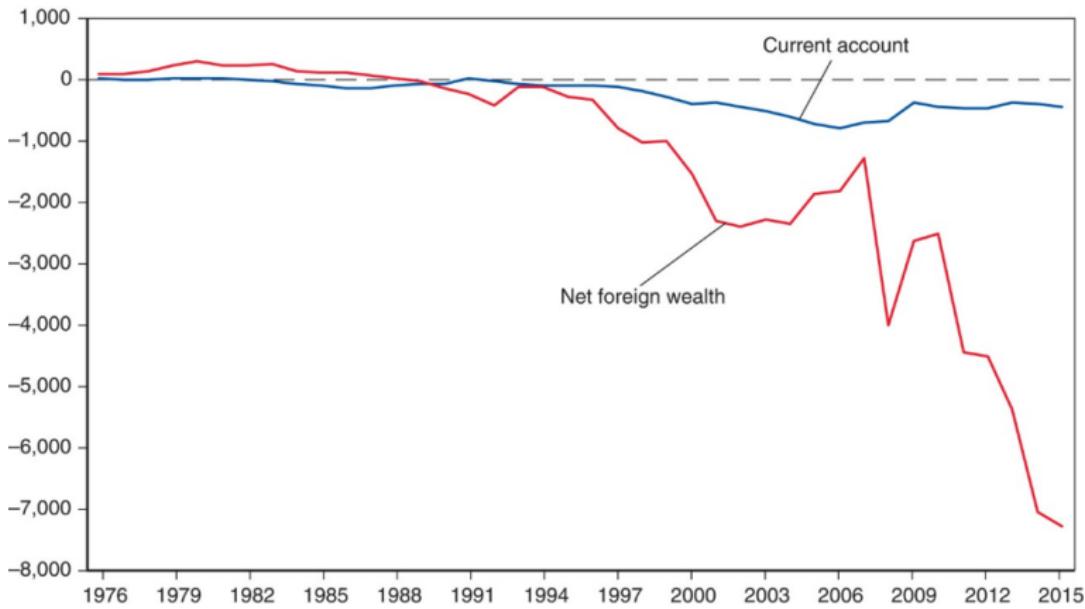
$$\Delta NW = CA + KA + VE$$

This fundamental formula tells us that a country can increase its external wealth in one of only three ways below. Similarly, a country can reduce its external wealth by doing any of the opposites.

- ① Through its own thrift (a CA surplus: spend less than income)
- ② By the charity of others (a KA surplus: receive net gifts of wealth)
- ③ With the help of windfalls or currency manipulation (having positive capital gains)

U.S. CA and NIIP 1976-2015

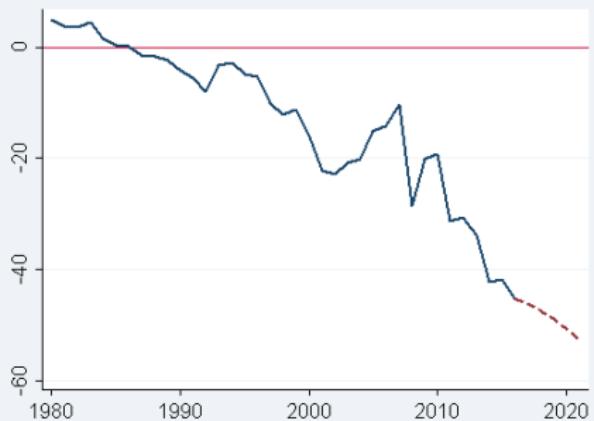
Current account,
net foreign wealth (billions of dollars)



Source: KOM (2018)

U.S. External Debt and Deficit 1980-2021 (w)

U.S. NIIP, 1980-2021 (% GDP)

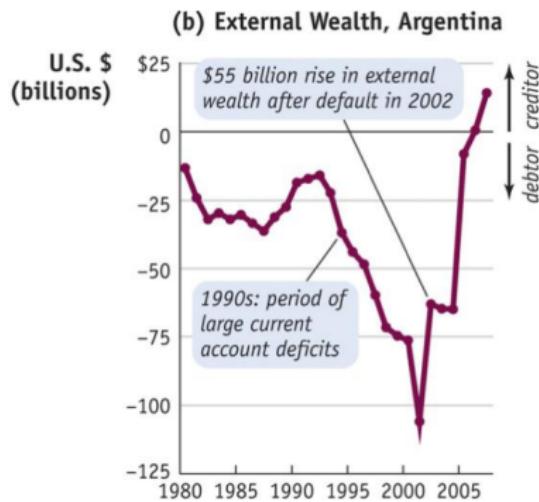
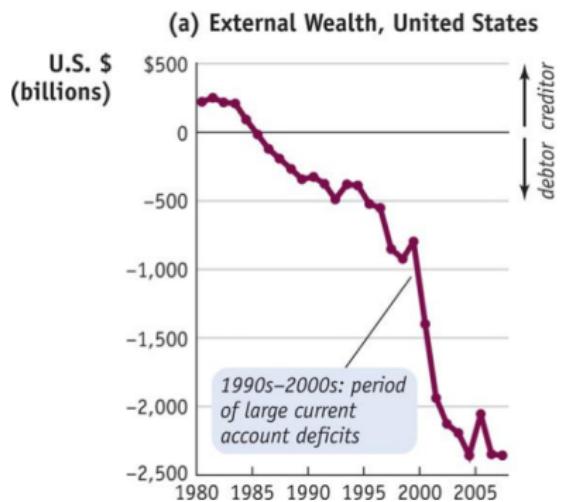


U.S. CA, 1980-2021 (% GDP)



Source: Gagnon (2017) PII: The Unsustainable Trajectory of US International Debt.

External Wealth: US and Argentina 1980-2005



Source: FT (2017). A country's net credit position with the rest of the world is called external wealth. The time series charts show levels of external wealth from 1980 to 2007 for the United States in panel (a) and Argentina in panel (b). All else equal, deficits cause external wealth to fall; surpluses (and defaults) cause it to rise.

Exchange Rate Fluctuation and U.S. External Wealth

In 2015, U.S. GDP was around \$18T, what would a 10% depreciation of the dollar have had an impact on its external wealth position?

- Since 1976, both the foreign assets and the liabilities of the United States have increased sharply. But liabilities have risen more quickly, leaving the United States with a substantial net foreign debt.
- About 70% of foreign assets held by the U.S. are denominated in foreign currencies and almost all of U.S. liabilities (debt) are denominated in dollars.
- Appreciation (depreciation) of the value of foreign currencies makes foreign assets held by the U.S. more (less) valuable, but does not change the dollar value of dollar-denominated debt for the U.S.

Answer:

Exchange Rate Valuation Effect: Example

- Assume U.S. assets are denominated in Euro but all liabilities in U.S. dollar.
- In 2014, U.S. external wealth position is balanced with €2T assets and \$2T liabilities, the exchange rate is $\text{€}1=\$1$ as of 2014.
- In 2015, U.S. dollar depreciates by 10% to $\text{€}1=\$1.1$.
- Assume financial flows is zero.
- How would this 10% depreciation affect U.S. external wealth position?

2014 Balance Sheet

Assets	Liabilities
€2T	\$ 2T
(\$2T)	

2015 Balance Sheet

Assets	Liabilities
€2T	\$ 2T
(\$?)	

Valuation Effects on 2015 U.S. External Wealth

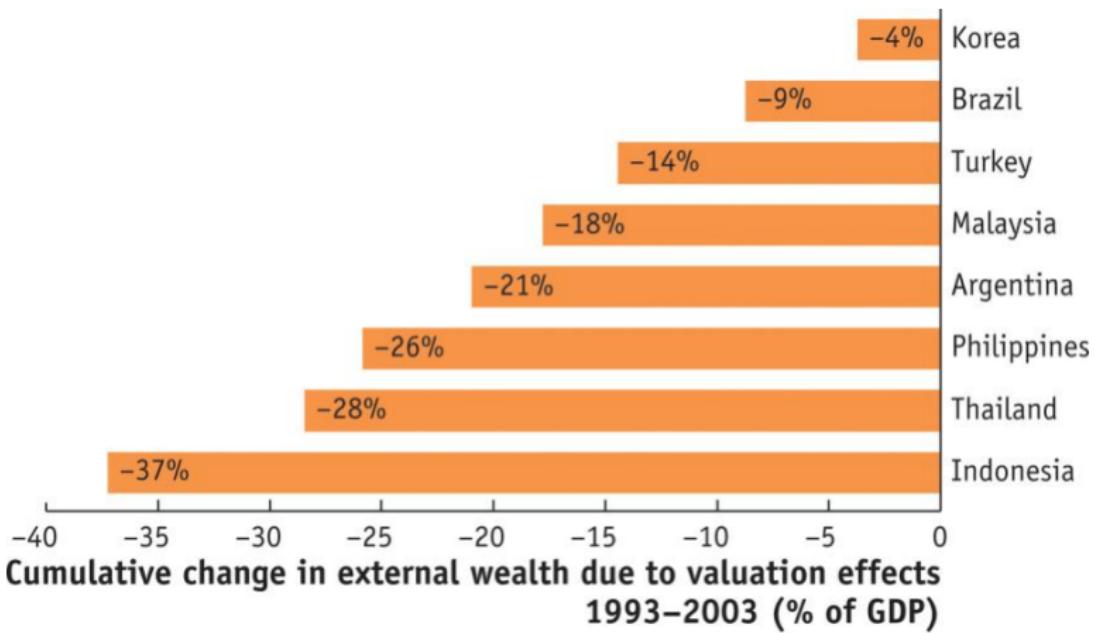
Category	CHANGES IN POSITION DURING 2015 (\$ BILLIONS)						Position, end 2015 (\$ billions)	
	Position, end 2014 (\$ billions)	VALUATION EFFECTS				Total (a + b + c + d)		
		Financial Flows (a)	Price Changes (b)	Exchange Rate Changes (c)	Other Changes (d)			
1. External Assets	21,503	225	220	-1,142	138	-558	20,945	
<i>= U.S.-owned assets abroad:</i>								
2. External Liabilities	28,635	395	-561	-90	-96	-351	28,283	
<i>= Foreign-owned assets in the United States</i>								
3. External Wealth								
	= (Line 1 minus line 2)	-7,132	-170	781	-1,052	234	-206	
	<i>= U.S. net international investment position</i>						-7,338	
<i>Symbol</i>	<i>W</i> (end 2014)	<i>-FA</i>	<i>Capital gains</i>			<i>ΔW</i>	<i>W</i> (end 2015)	

Source: FT (2017)

Valuation Effects and U.S. External Wealth

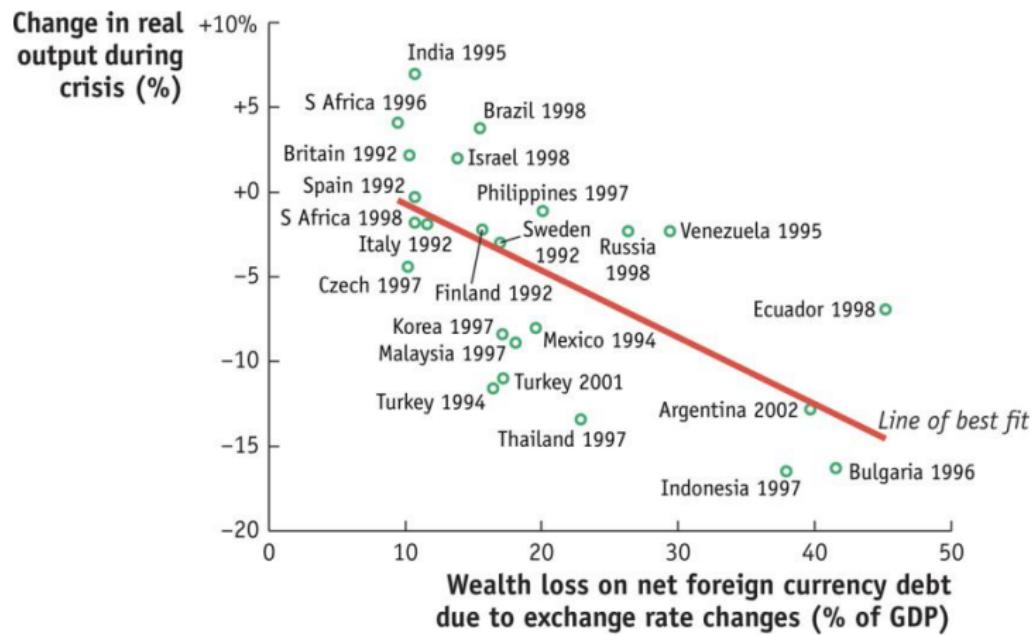
- For the past 30 years the United States has almost always had a financial account surplus, reflecting a net export of assets to the rest of the world to pay for chronic current account deficits.
- If there were no valuation effects, it implies that the change in the level of external wealth should equal the cumulative net import of assets over the intervening period.
- But valuation effects or capital gains can generate a significant difference in external wealth. Indeed, due to sharp movements in exchange rates and stock prices, the U.S. economy lost about \$800 in this way between 2007 and 2008 and gained a comparable amount between 2008-2009.
- Over the 27 years since 1988, these effects reduced U.S. net external indebtedness at end 2015 by almost 20% compared with the level that financial flows alone would have predicted. See slide 33.

Currency Depreciation and Wealth Loss, 1993-2003



Source: FT (2017)

Foreign Currency Debt and Wealth Loss

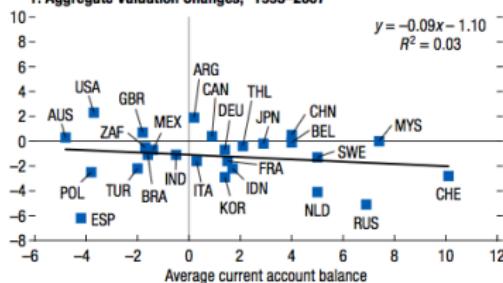


Source: FT (2017)

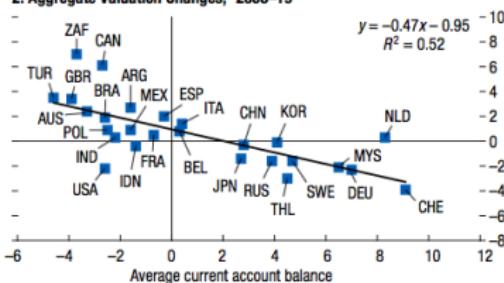
Current Account Valuation Loss since 2008

Countries with persistent current account surpluses have experienced sustained valuation losses since the global financial crisis, while this relationship did not hold before the crisis. Valuation effects were not systematically related to exchange rates, but to other asset prices.

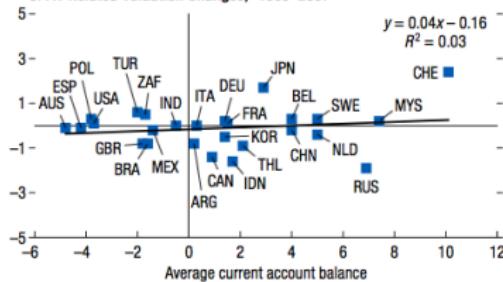
1. Aggregate Valuation Changes,² 1995–2007



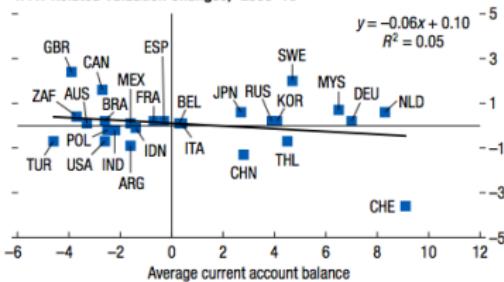
2. Aggregate Valuation Changes,² 2008–19



3. FX-Related Valuation Changes,³ 1995–2007

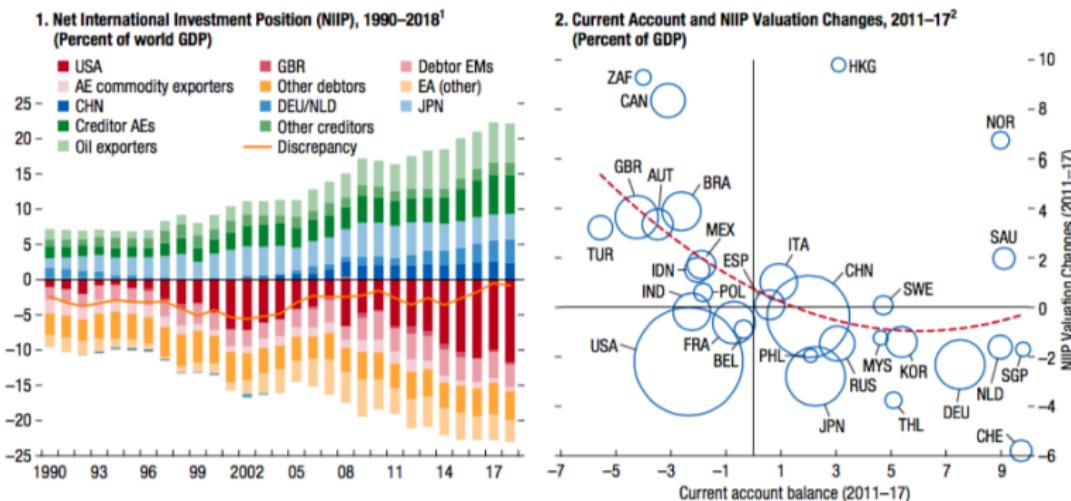


4. FX-Related Valuation Changes,³ 2008–19



Source: IMF External Sector Report (2020)

NIIP and Valuation Changes 1990-2018



Sources: External Wealth of Nations database, IMF, *World Economic Outlook*; Updated and extended version of data set constructed by Lane and Milesi-Ferretti (2007); and IMF staff calculations.

Note: AEs = advanced economies; EA = euro area; EMs = emerging market economies; NIIP = net international investment position. Data labels in the figure use International Organization for Standardization (ISO) country codes.

¹AE commodity exporters comprise Australia, Canada, and, New Zealand; Debtor EMs comprise Brazil, India, Indonesia, Mexico, South Africa, and Turkey; Oil exporters comprise WEO definition plus Norway. Creditor AEs comprise Hong Kong SAR, Korea, Singapore, Sweden, Switzerland, and Taiwan Province of China. Other debtor (creditor) comprise all other economies with negative (positive) NIIP positions.

²See the methodology in Adler and Garcia-Macia (2018).

From External Wealth to Total Wealth: I

$$TW = K + NW = K + (A - L)$$

$$\Delta TW = \Delta K + \Delta NW = \Delta K + \Delta(A - L) + VE(K) + VE(A - L)$$

$$\Delta TW = \Delta K + \Delta NW = I - FA + VE(K) + VE(A - L)$$

- External wealth is only part of a country's total wealth, the sum of the home capital stock (all nonfinancial assets in the home economy, denoted K) plus amounts owed to home by foreigners (A) minus amounts owed foreigners by home (L).
- Additions to the domestic capital stock K are simply investment, denoted I. Additions to external wealth, A-L, equal net additions to external assets minus net additions to external liabilities.

From External Wealth to Total Wealth: II

$$\Delta TW = \Delta K + \Delta NW = I - FA + VE(K) + VE(A - L)$$

$$\Delta TW = I + CA + KA + VE(K) + VE(A - L)$$

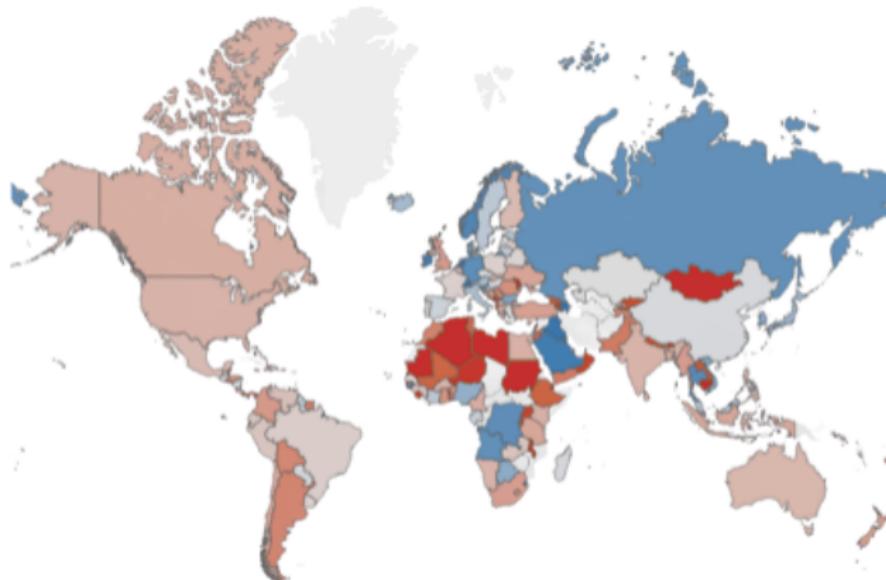
$$\Delta TW = S + KA + VE(K) + VE(A - L)$$

- Connect saving, investment, and current account: $S = I + CA$.
- The message of this expression is clear, there are only three ways to get more (or less) wealthy: do more (or less) saving (S), receive (or give) gifts of assets (KA), or enjoy the good (or bad) fortune of capital gains (or losses).
- What is true about individuals' wealth is also true for the wealth of a nation in the aggregate.

Outline

- 1 Introduction
- 2 Balance of Payments
- 3 International Investment Position
- 4 Understanding Global Imbalances

Global Current Accounts (% GDP) 2018 (w)

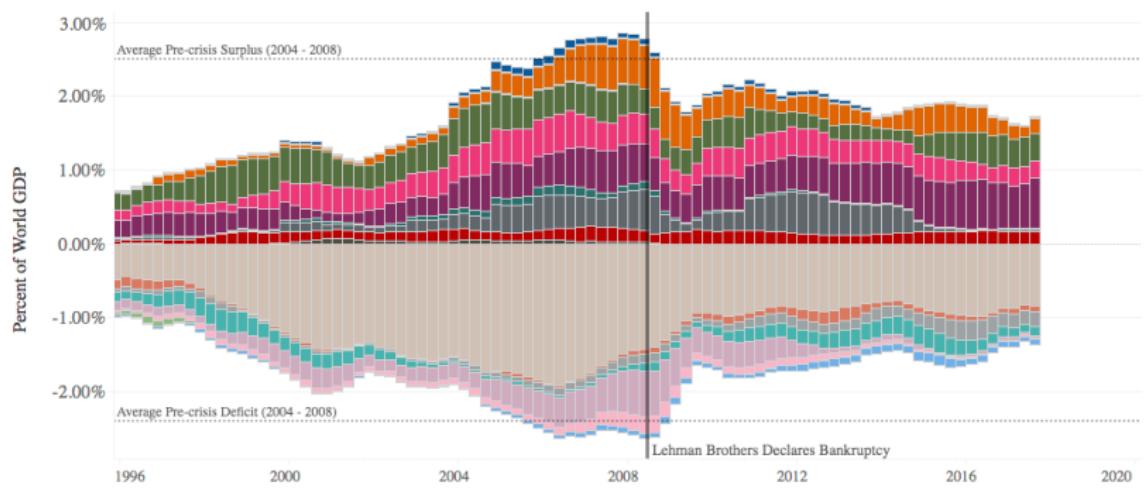


Magnitude of Deficit (-) / Surplus (+) (percent of GDP)

-10.0% 10.0%

<https://www.cfr.org/report/global-imbalances-tracker>

Global Imbalances Index 1996-2018 (w)



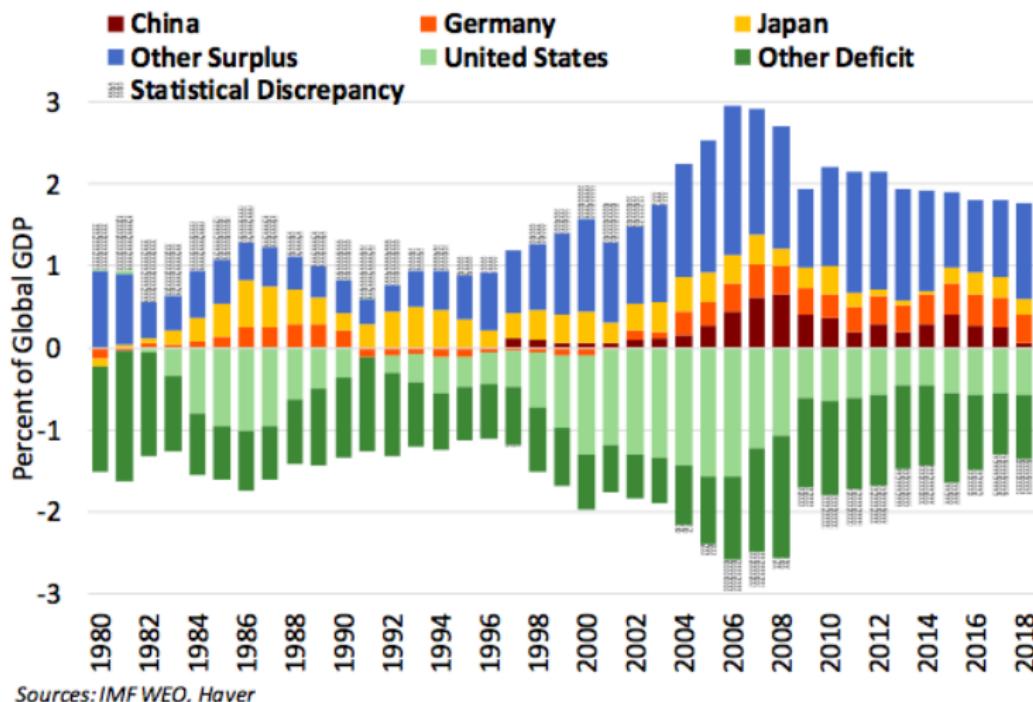
+ a b | e a u

← → ← ↘ ↙

Africa	Anglophone Countries*	China	East Asia (ex China)	Eurozone	Other Europe	Latin America/the Caribbean	Middle East/North Africa	South Asia/Pacific
Surplus	[dark grey square]	[orange square]	[green square]	[purple square]	[pink square]	[teal square]	[grey square]	[red square]
Deficit	[light brown square]	[orange square]	[green square]	[purple square]	[pink square]	[teal square]	[grey square]	[brown square]

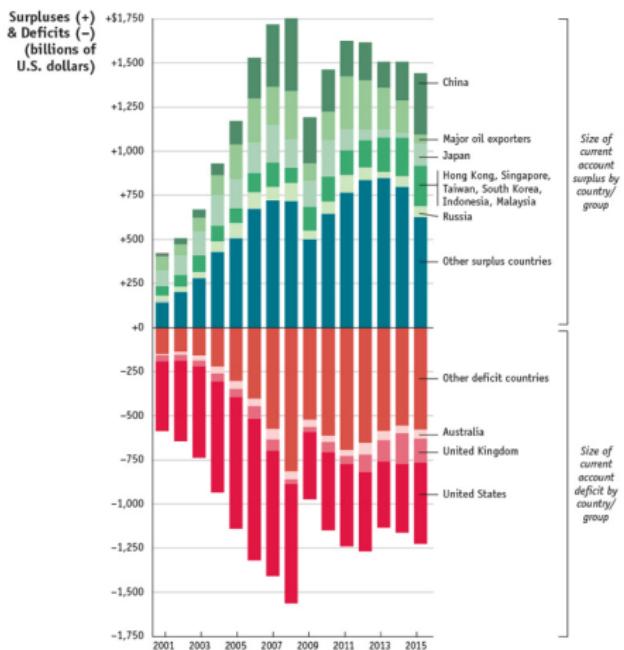
<https://www.cfr.org/report/global-imbalances-tracker>

Global CA Imbalances 1980-2018



Sources: IMF WEO, Haver

Global Imbalances 2001-2015

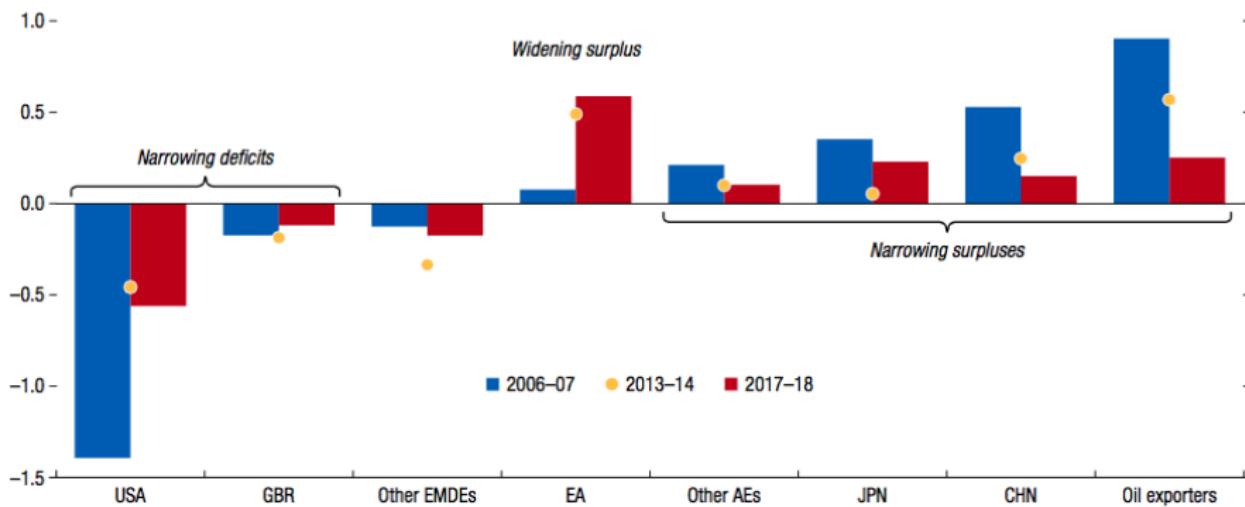


For more than a decade, the U.S. current account deficit has accounted for about half of all deficits globally. Major offsetting surpluses have been seen in Asia (China and Japan) and in oil-exporting countries. How are these imbalances financed? How long can they persist? Why are some countries in surplus and others in deficit? What role do current account imbalances perform in a well-functioning economy? Why are these imbalances the focus of so much policy debate?

Source: FT (2017)

Change in Global Current Account Imbalances, 2006-2018

(Percent of world GDP)

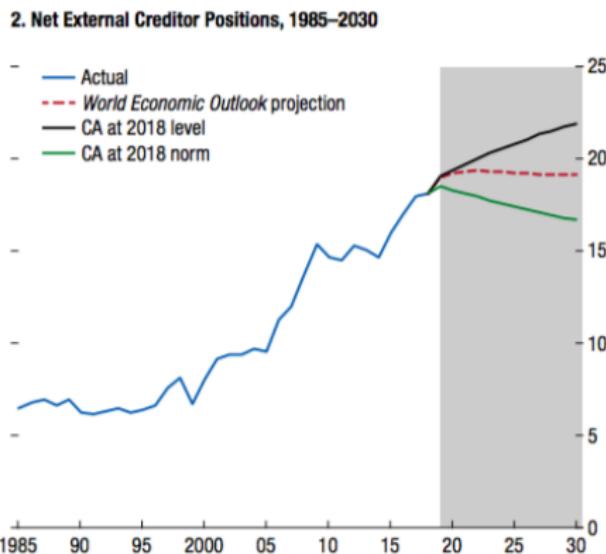
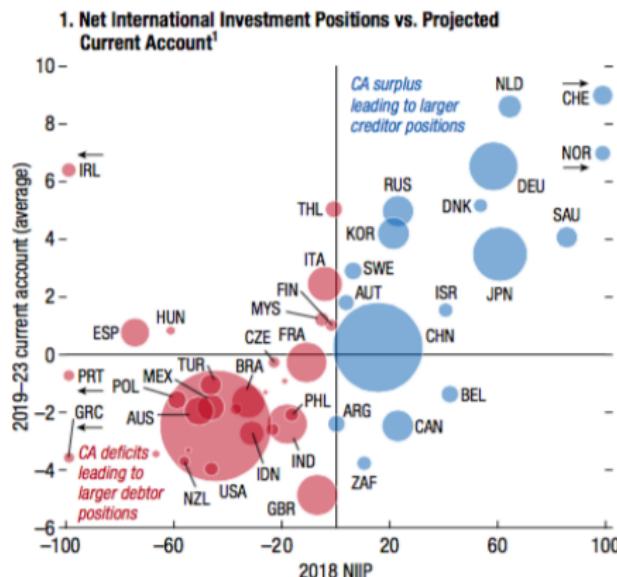


Sources: IMF, *World Economic Outlook*, and IMF staff calculations.

Note: Each data point includes an average of the current account (as a percent of world GDP) in the two years referenced in the legend. AEs = advanced economies; EA = euro area; EMDEs = emerging market and developing economies. Data labels use International Organization for Standardization (ISO) country codes.

¹Country groupings follow WEO definitions. Oil exporters include countries in the WEO definition plus Norway.

Current Account and External Position Projections



Sources: IMF, *World Economic Outlook*, and IMF staff calculations.

Note: Data labels use International Organization for Standardization (ISO) country codes. CA = current account.

¹Bubble sizes are proportional to US dollar GDP.

Saving, Investment and Current Account

In a closed economy, national income identity implies that an economy's investment is always financed by its saving.

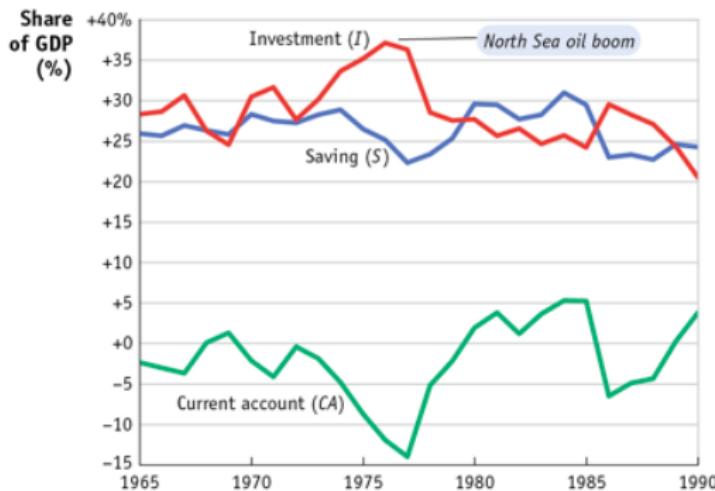
- $Y = C + I + G \Rightarrow I = Y - C - G = Y - C - T + T - G$
- $S = (Y - C - T) + (T - G) = S_{private} + S_{public} = I$

Is this relation still true for an open economy?

- $Y = GNDI = GNE + CA = C + I + G + CA$
- $I = Y - C - G - CA = Y - C - T + T - G - CA$
- $(Y - C - T) + (T - G) = S - CA = S_{private} + S_{public} - CA = I$
- $CA = S - I$, current account is financed by net savings.

Implications: Countries running CA surplus must save a lot whereas nations running CA deficit must borrow from others. Examples?

The Case of Norway during the Oil Boom

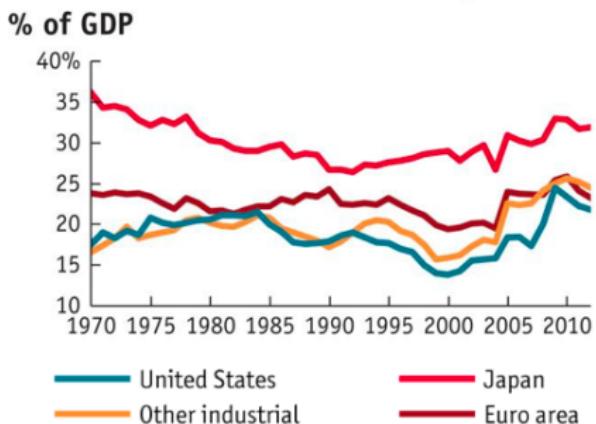


Source: FT (2021)

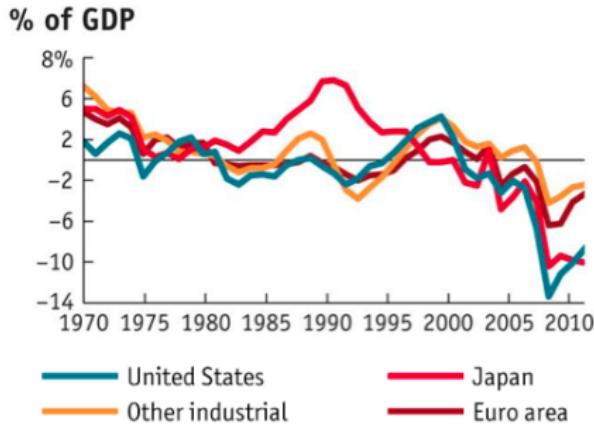
Following a large increase in oil prices in the early 1970s, Norway invested heavily to exploit oil fields in the North Sea. Norway took advantage of openness to finance a temporary increase in investment by running a very large current account deficit, thus increasing its indebtedness to the rest of the world. At its peak, the current account deficit was more than 10% of GDP.

Global Imbalances: Private and Public Savings

(a) Private Saving, S_p

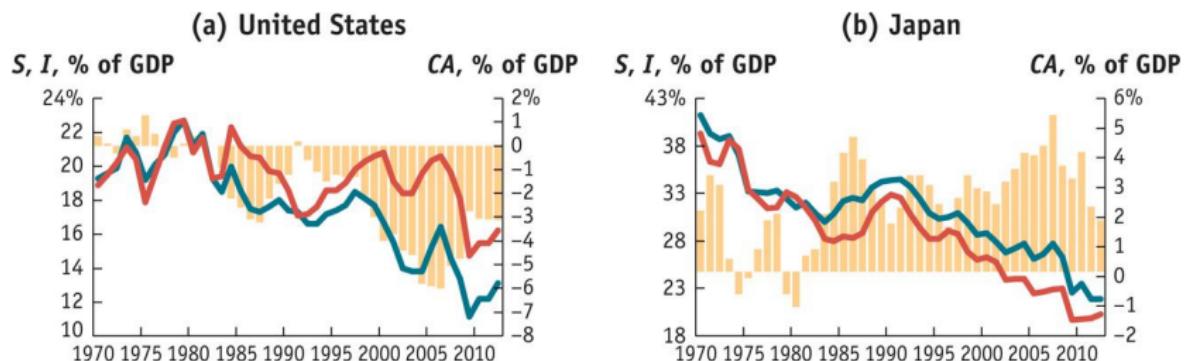


(b) Public Saving, S_g



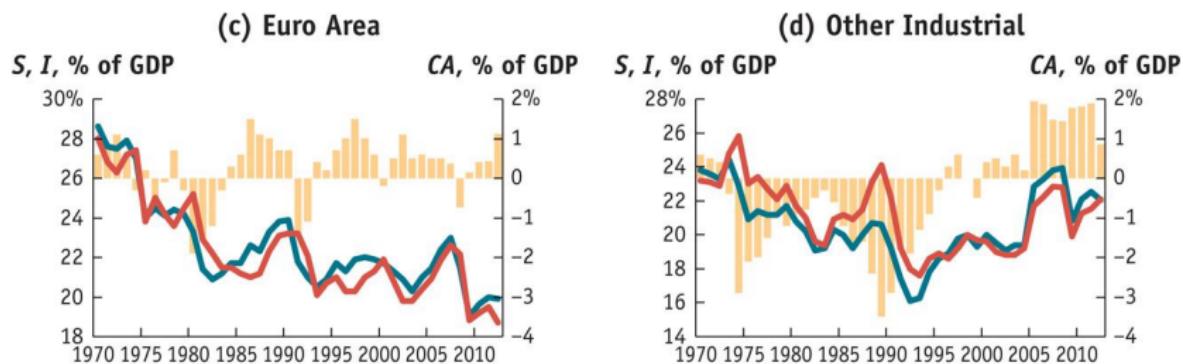
Source: FT (2017). Private saving has been declining in the industrial countries, especially in Japan (since the 1970s) and in the U.S. (since the 1980s). Public saving: Japan has been mostly in surplus and massively so in the late 1980s and early 1990s. The U.S. briefly ran a government surplus in the late 1990s but has now returned to a deficit position. $V(S_{public}) > V(S_{private})$.

Global Imbalances: U.S. and Japan



Source: FT (2017). Saving (green), Investment (red), CA (bars). The United States has seen both saving and investment fall since 1980, but saving has fallen further than investment ($S < I$), opening up a large CA deficit approaching 6% of GDP in recent years. Japan's experience is the opposite: Investment fell further than saving ($S > I$), opening up a large CA surplus of about 3% to 5% of GDP.

Global Imbalances: Euro Zone and Other Industrial

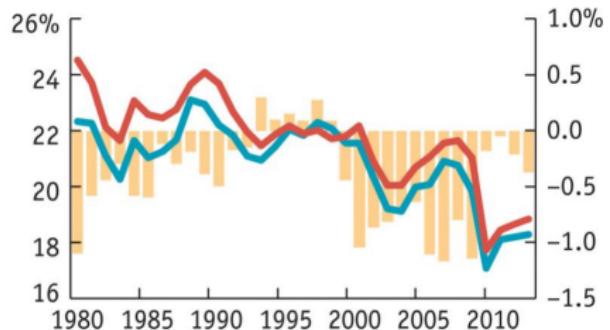


Source: FT (2017). The Euro area has also seen saving and investment fall but has been closer to balance overall. Other advanced countries (e.g., non-Euro area EU countries, Canada, Australia, etc.) have tended to run large current account deficits.

Global Imbalances: S, I, CA

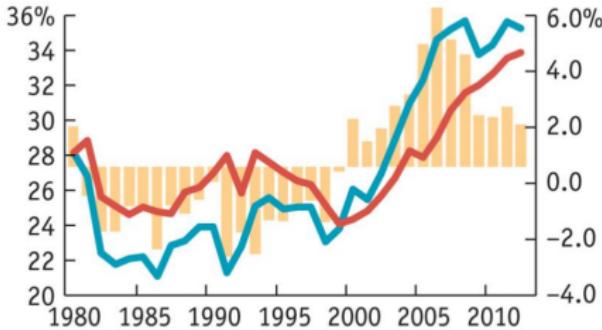
(a) Advanced Countries

$S, I, \% \text{ of GDP}$



(b) Emerging & Developing Countries

$S, I, \% \text{ of GDP}$



Current account (right scale)
Saving
Investment

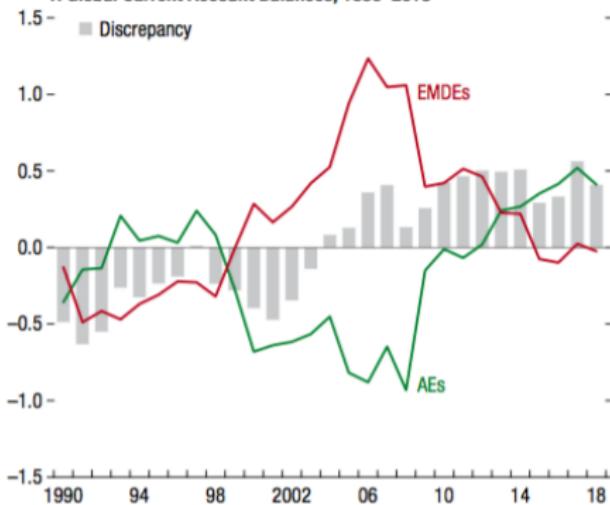
Current account (right scale)
Saving
Investment

Source: FT (2017)

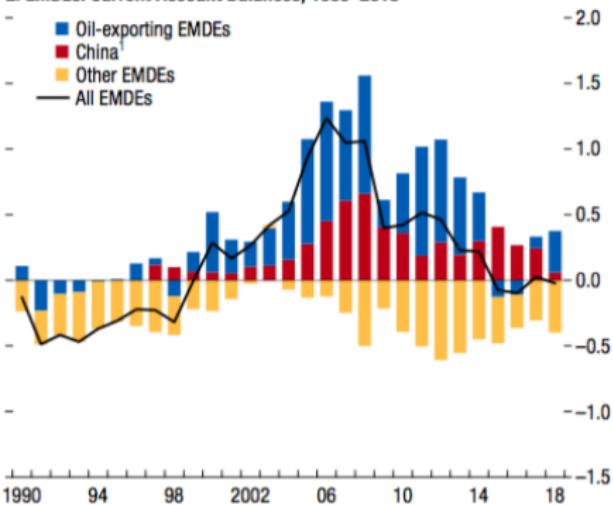
Global Allocation of Capital Flows, 1990-2018

(Percent of world GDP)

1. Global Current Account Balances, 1990–2018



2. EMDEs: Current Account Balances, 1990–2018

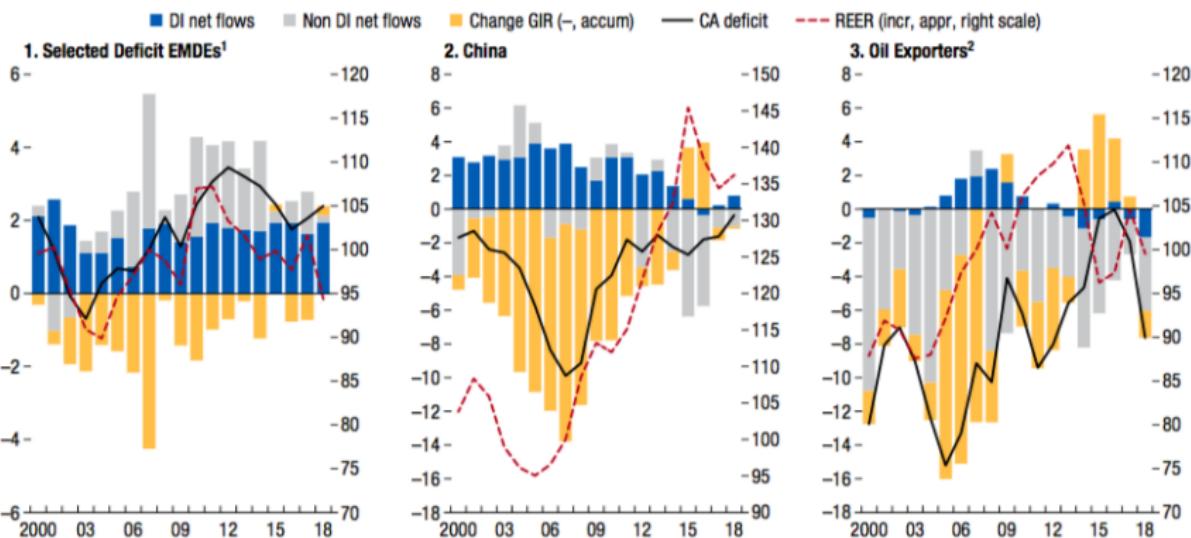


Sources: IMF, *World Economic Outlook*; and IMF staff calculations.

Note: AE = advanced economy; EMDEs = emerging market and developing economies.

¹EMDEs include oil-exporting EMDEs. China's current account data are available starting in 1997.

Emerging Market and Developing Economies: CA & FA



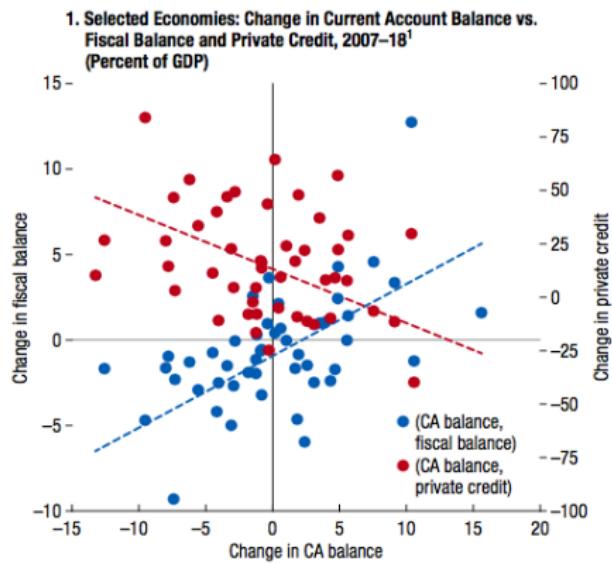
Sources: IMF, *World Economic Outlook*; and IMF staff calculations.

Note: CA = current account; EMDEs = emerging market and developing economies; DI = direct investment; Non-DI = portfolio and other investment; GIR = gross international reserves; REER = real effective exchange rate.

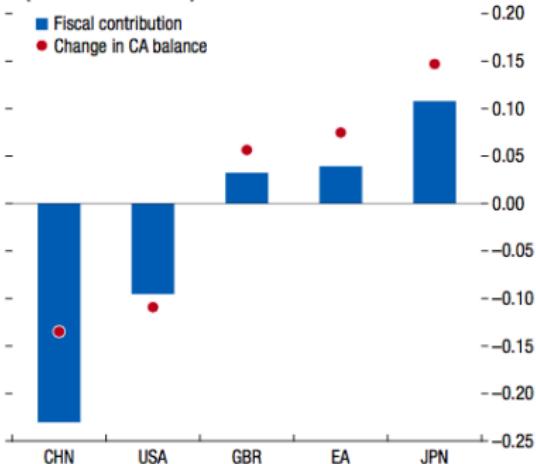
¹Argentina, Brazil, India, Indonesia, Mexico, South Africa, and Turkey; weighted average (share of GDP and REER index).

²Russia and Saudi Arabia; weighted average (share of GDP and REER index).

Current Account: The Role of Fiscal and Credit Policy



2. Systemic Economies: Fiscal Contribution to the Change in the Current Account, 2013–18²
(Percent of world GDP)



Sources: Bank for International Settlements; IMF, *World Economic Outlook*; World Bank, Global Financial Development Database; and IMF staff calculations.

Note: Data labels use International Organization for Standardization (ISO) country codes. CA = current account; EA = euro area.

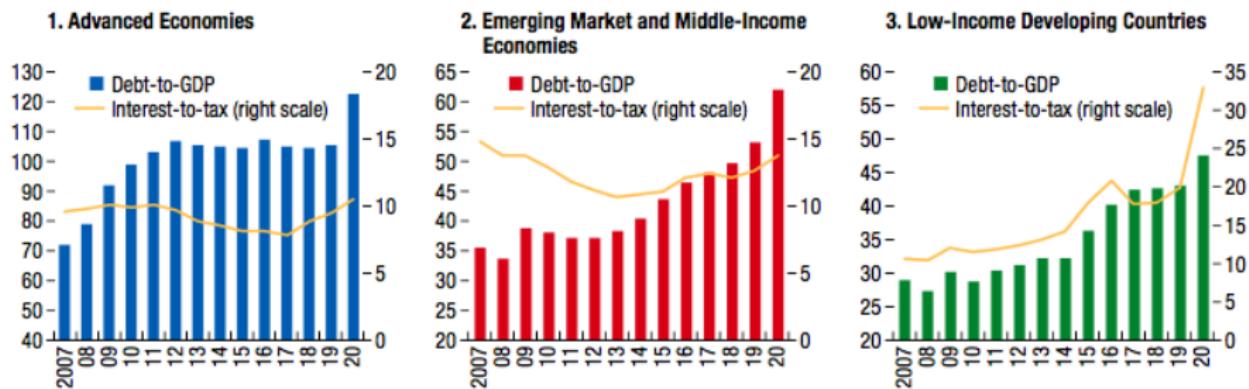
¹Panel 1 comprises all 49 economies in the External Balance Assessment (EBA) model.

²The fiscal contribution is calculated by multiplying the coefficient on the fiscal balance from the EBA current account model with the change in the fiscal balance relative to world GDP between 2013–18. Fiscal balance refers to the cyclically adjusted general government balance.

Global Public Debt-to-GDP 2007-2020

Figure 1.3. General Government Gross-Debt-to-GDP and Interest-Expenditure-to-Tax-Revenue Ratios, 2007–20 (Percent)

Public debt vulnerabilities persist.



Source: IMF, World Economic Outlook database.

Note: Interest-to-tax ratios are weighted averages among countries in the income group. The rise in the average interest-to-tax ratio of low-income developing countries in 2020 is largely driven by a few countries, such as Nigeria and Zambia, that are expected to experience sizable increases in their ratios.

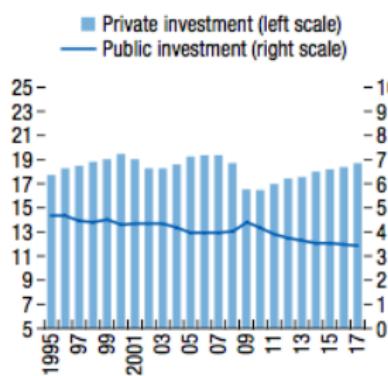
Public and Private Investment 1995-2017

Figure 1.4. Public and Private Investment, 1995–2017

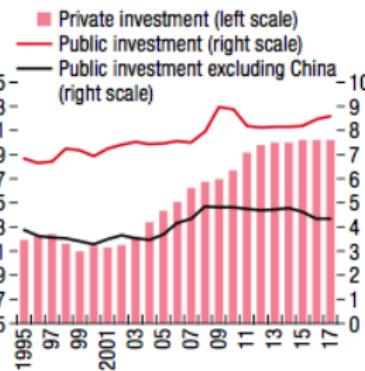
(Percent of GDP)

Before the pandemic crisis, public investment had been declining in advanced economies and was growing slowly in emerging market and middle-income economies and low-income developing countries.

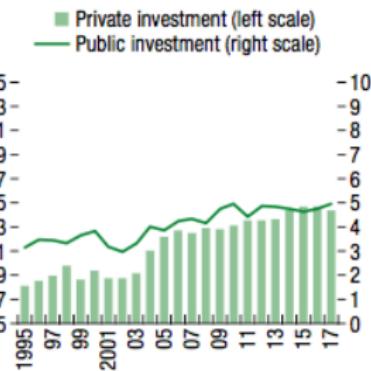
1. Advanced Economies



2. Emerging Market and Middle-Income Economies



3. Low-Income Developing Countries



Source: IMF, Investment and Capital Dataset.

Credit, Debt and Budget Constraint

Ray Dalio (2018) Part I: The Archetypal Big Debt Cycle. Principles For Navigating Big Debt Crises. Bridgewater.

- Credit is the giving of buying power. This buying power is granted in exchange for a promise to pay it back, which is debt.
- Generally speaking, because credit creates both spending power and debt, whether or not more credit is desirable depends on whether the borrowed money is used productively enough to generate sufficient income to service the debt.
- Typically debt crises occur because debt and debt service costs rise faster than the incomes that are needed to service them, causing a deleveraging.

A must watch video by Ray Dalio 2018: How the Economic Machine Works in 30 minutes? <https://sites.google.com/site/19bc3033/m>

Financial Distress: Solvency and Liquidity

Ray Dalio (2018) Part I: The Archetypal Big Debt Cycle. Principles For Navigating Big Debt Crises. Bridgewater.

- ① Financial/credit crunch or depression can come from, or cause, either balance sheet (solvency) problems or cash-flow (liquidity) problems.
- ② A **balance sheet (solvency) problem** means that, according to accounting and regulatory rules, the entity does not have enough equity capital to operate—i.e., it is “broke” and must be shut down. So, the accounting laws have a big impact on the severity of the debt problem at this moment.
- ③ A **cash-flow (liquidity) problem** means that an entity doesn’t have enough cash to meet its needs, typically because its own lenders are taking money away from it—i.e., there is a “run.” A cash-flow problem can occur even when the entity has adequate capital because the equity is in illiquid assets. Lack of cash flow is an immediate and severe problem—and as a result, the trigger and main issue of most debt crises.

Debt Limit and Budget Constraint: Assumptions

How a nation's long-run budget constraint is determined? Here are some assumptions we make in the model:

- ① Small open economy: price taker and cannot influence prices/interest rates in world markets.
- ② It is a real economy without monetary effects. There is one real good and one real asset.
- ③ The asset, real debt, carries a real interest rate r , given by the world. The country can lend or borrow an unlimited amount at this rate.
- ④ The country pays a real interest rate on its liabilities L and assets A . Net interest income payments equal to $r(A-L)$, or rW .
- ⑤ No unilateral transfers, no capital transfers, and no capital gains on external wealth. Therefore, current account only equals the trade balance TB and net factor income from abroad, rW .

Intertemporal Budget Constraint

$$\Delta W = CA + KA + VE$$

$$W_t = TB_t + (1+r)W_{t-1}$$

$$\Delta W_t = W_t - W_{t-1} = TB_t + rW_{t-1}$$

- External wealth equals the sum of three terms: the current account, the capital account, and capital gains on external wealth. In the special case we are studying, our assumptions tell us that the last two terms are zero.
- In this simplified world, external wealth can change for only two reasons: surpluses or deficits on the trade balance in the current period, or surpluses and deficits on net factor income arising from interest received or paid.

Two-Period Budget Constraint

$$W_1 = TB_1 + (1+r)W_0$$

$$W_2 = TB_2 + (1+r)W_1$$

$$-W_0 = TB_1/(1+r) + TB_2/(1+r)^2$$

$$W_2 = TB_2 + (1+r)[TB_1 + (1+r)W_0] = 0$$

- The fourth equation assumes the end of world at $t = 2$.
- The third equation derives from the fourth and produces a two-period budget constraint for the economy. It tells us that a creditor country with positive initial wealth will run trade deficit "on average" in present and future periods, to run down their assets.

Long-Run Budget Constraint: Infinite Horizon

$$-W_0 = TB_1/(1+r) + TB_2/(1+r)^2 + \dots + TB_\infty/(1+r)^\infty$$

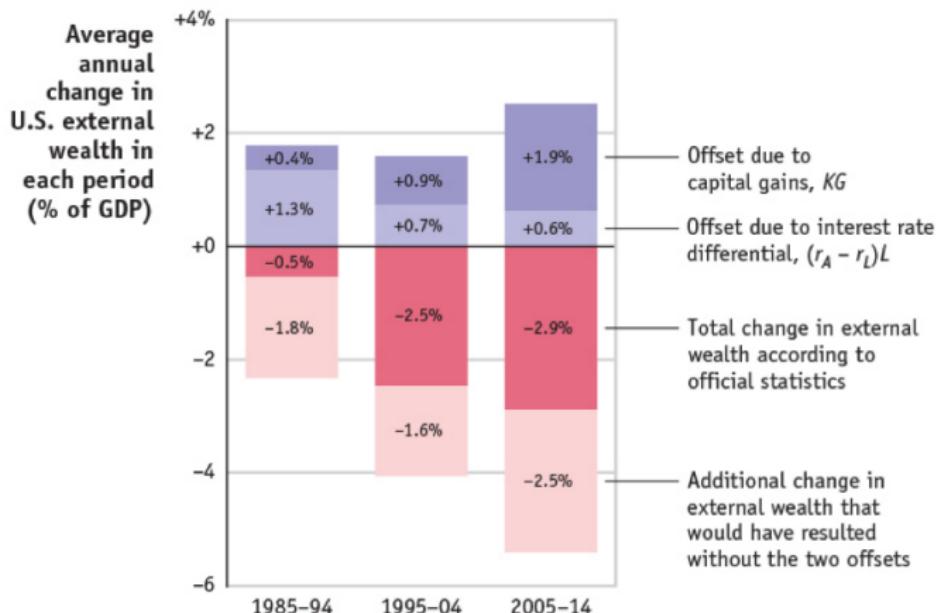
$$W_0 + GDP_1/(1+r) + GDP_2/(1+r)^2 + \dots = GNE_1/(1+r) + GNE_2/(1+r)^2 + \dots$$

- The first equation extends the two-period budget to infinite horizon. This expression says that a debtor country must have future trade balances that are positive in present value terms so that they offset the country's initially negative wealth.
- Apply $TB = GDP - GNE$, the second equation is derived, meaning that in the long run, in present value terms, a country's expenditures (GNE) must equal its production (GDP) plus any initial wealth.
- The LRBC is key to our analysis of how countries can lend or borrow because it imposes a condition that rules out choices that would lead to exploding positive or negative external wealth.

The Favorable Situation of the U.S.

- The United States has been a net debtor with $W = A - L < 0$ since the 1980s. Negative external wealth leads to a deficit on net factor income from abroad with $rW = r(A - L) < 0$.
- However, U.S. net factor income from abroad has been positive throughout this period. How come? Answer: "[Exorbitant Privilege](#)."
- The only way a net debtor can earn positive net interest income is by receiving a higher rate of interest on its assets than it pays on its liabilities ($r_A > r_L$).
- The United States borrows low and lends high. For most poorer countries, the opposite is true.
- The U.S. enjoys positive capital gains on its external wealth. These large capital gains on external assets and the smaller capital losses on external liabilities are gains that cannot be otherwise measured, so their accuracy and meaning is controversial.

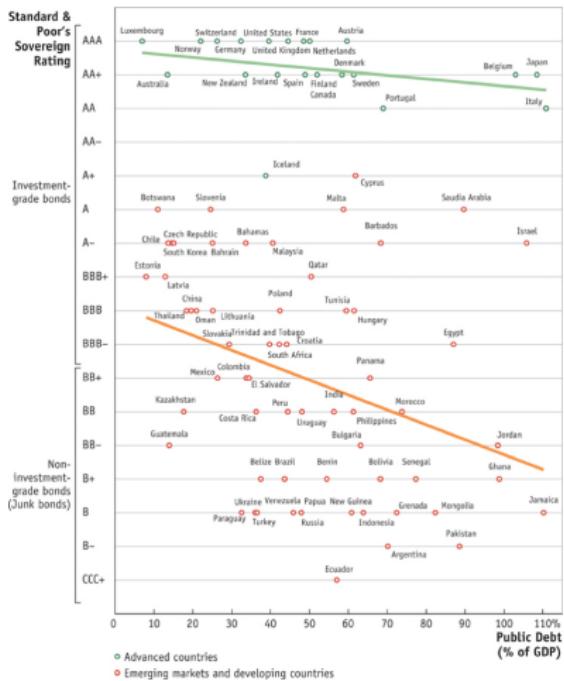
Favorable Interest Rates and Capital Gains to U.S.



Source: FT (2017)

$$\Delta W_t = W_t - W_{t-1} = TB_t + r_A W_{t-1} + (r_A - r_L)L + V.E.$$

The Difficult Situation of the Emerging Markets

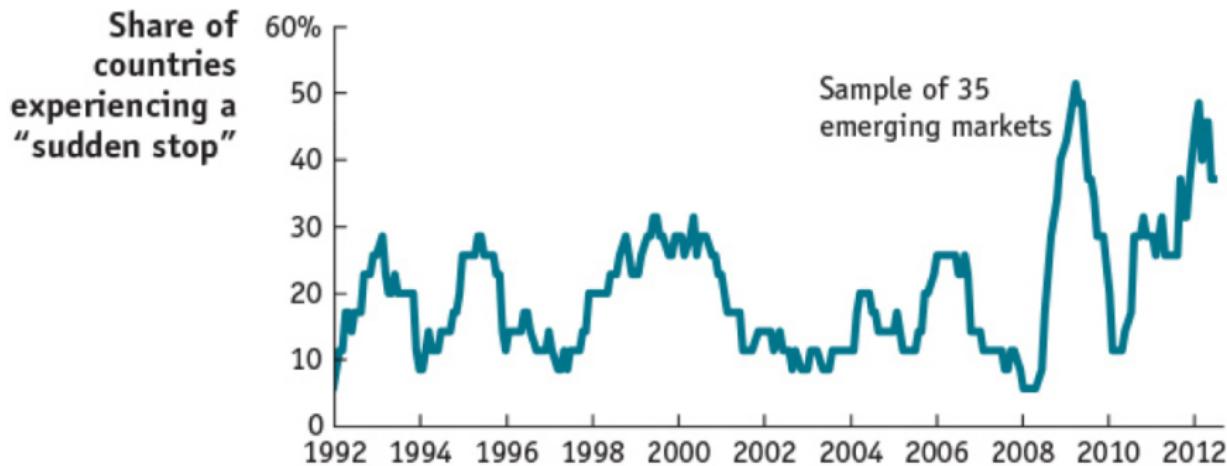


Sovereign Ratings and Public Debt Levels (1995-2005)

- The advanced countries (green) are at the top of the chart. Their credit ratings do not drop very much in response to an increase in debt levels. And ratings are always high investment grade.
- The emerging markets and developing countries are at the bottom of the graph. Their ratings are low or junk, and their ratings deteriorate as debt levels rise.

Source: FT (2017)

The Difficult Situation of EMDE: Sudden Stop

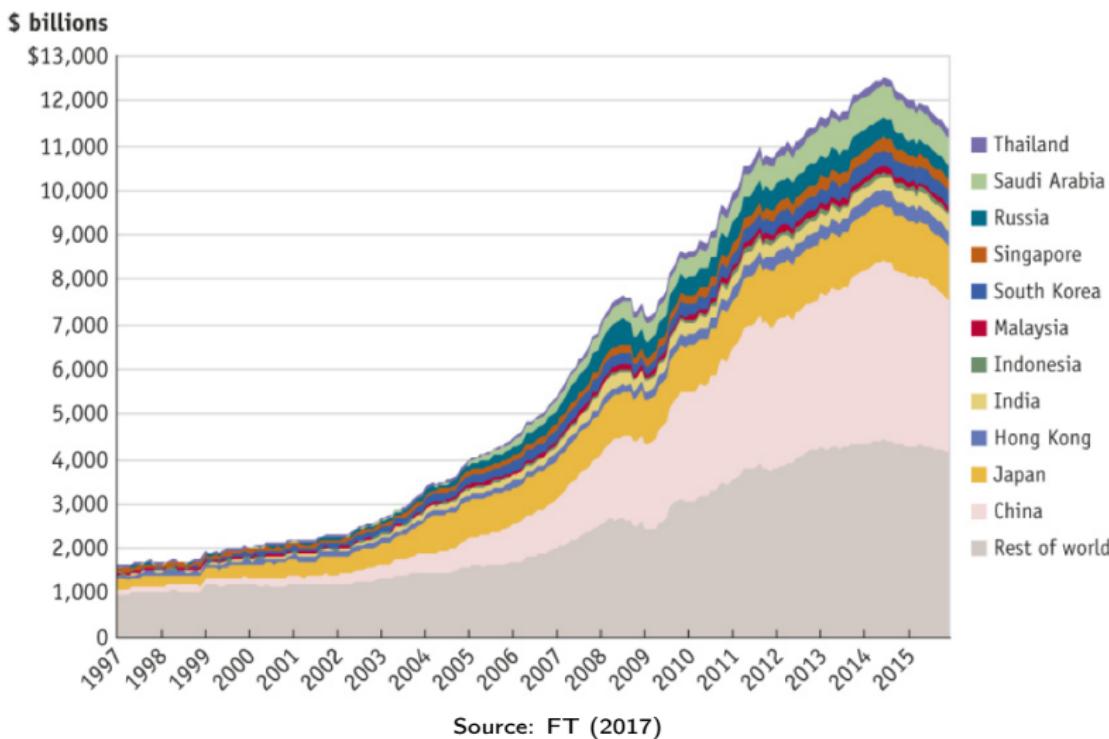


Source: FT (2017). Sudden Stops in Emerging Markets: On occasion, capital flows can suddenly stop, meaning that those who wish to borrow anew or roll over an existing loan will be unable to obtain financing. These capital market shutdowns occur frequently in emerging markets (financial account surplus rapidly shrink) .

Precautionary Saving, Reserves, Sovereign Wealth Funds

- Countries may engage in precautionary saving, whereby the government acquires a buffer of external assets, a “rainy day” fund.
- Precautionary saving is on the rise and takes two forms. The first is the accumulation of **foreign reserves** by central banks, which may be used to achieve certain goals, such as maintaining a fixed exchange rate, or as reserves that can be deployed during a sudden stop.
- The second form is called **sovereign wealth funds**, whereby state-owned asset management companies invest some of the government savings.
- As of 2010, the countries with the biggest sovereign wealth funds were China (\$831 billion), Abu Dhabi (\$654 billion), Norway (\$471 billion), and Saudi Arabia (\$415 billion), with other large funds (between \$50 and \$150 billion each) in Kuwait, Russia, Singapore, Qatar, Libya, Australia, and Algeria.

Foreign Exchange Reserve Accumulation 1997-2015



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