2025-2026 – Econ 0016 – International Macroeconomics

Franck Portier
f.portier@ucl.ac.uk

University College London

Version 1.0
08/01/2026

Logistics

- The course will strictly follow "International Macroeconomics: a Modern Approach" by Stéphanie Schmidt-Grohé, Martin Uribe and Michael Woodford.
- The textbook can be accessed remotely via the UCL library website (with a UCL account)
- The plan is to teach chapters 1 to 10 (except 7).

Logistics

- I suggest that you come to the lecture, listen, and then work on the book (read it and do the exercises). But you may also want to read the chapter in advance if you prefer.
- In the tutorial sessions, we will do some of the exercises proposed in the book. You can work the others by yourself.
- No written solution will be provided for the exercises, but some will be solved in the tutorial sessions.
- The tutorial sessions may not cover all the problems of a problem set.
- You can get feedback on the solutions if you hand in to your TA your proposed solution the week before the tutorial (for problems sets 1 to 4).
- As in term 1, video captures of the lectures will be released after the end of the term.

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Chapter 1: Global Imbalances

Schmitt-Grohé, Uribe and Woodford, "International Macroeconomics: A Modern Approach"

Franck Portier
f.portier@ucl.ac.uk

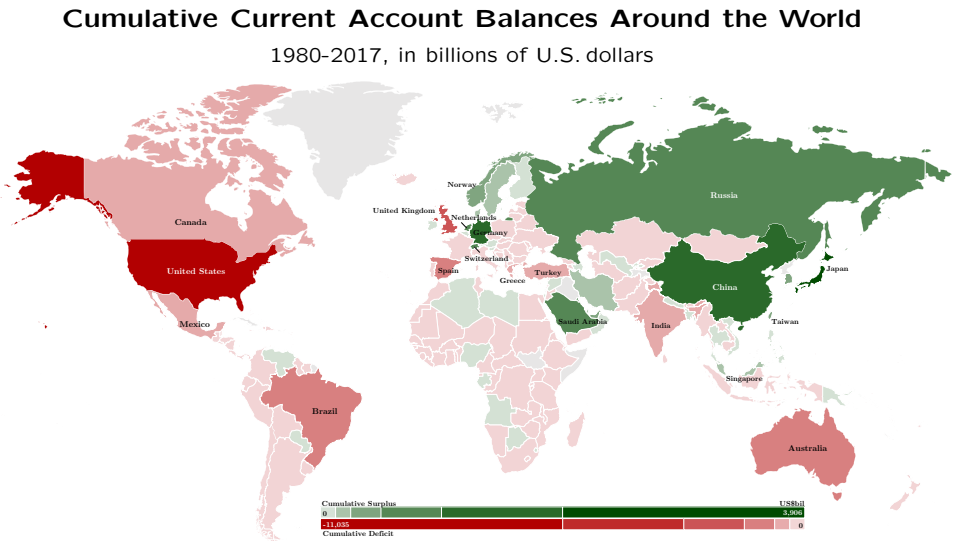
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14/01/2026
Changes from version 1.0 are in red

- Countries trade a lot with one another, which elicits a number of questions (we will look at the U.K. and the U.S. of A. as the running example):
  - × How big are international transactions in goods, services, and financial assets for United Kingdom, United States and other countries?
  - × Does the United Kingdom have a trade deficit or a trade surplus with the rest of the world? What about United States, China, Europe, and Latin America?
  - × Is the United Kingdom an external debtor or an external creditor?
  - × How have the trade balance and the international asset position of the United Kingdom and other countries evolved over time?

- The main focus of this lecture is descriptive.
- In later weeks, we will ask more positive questions such as:
  - × Why do some countries run trade deficits in some years and trade surpluses in others?
  - × Why do countries borrow from abroad?
  - × Can countries borrow forever from abroad?
  - × What determines the size of a country's external debt?

- Let's look at a heat map of the world.
- It displays with colors the accumulated current account balances between 1980 and 2017.
- Roughly speaking, it is the difference between exports and imports of goods, services, and factor payments. (more later)
- If we add up a country's current account balances for the years 1980 to 2017, we get the change in its external debt between 1980 and 2017.

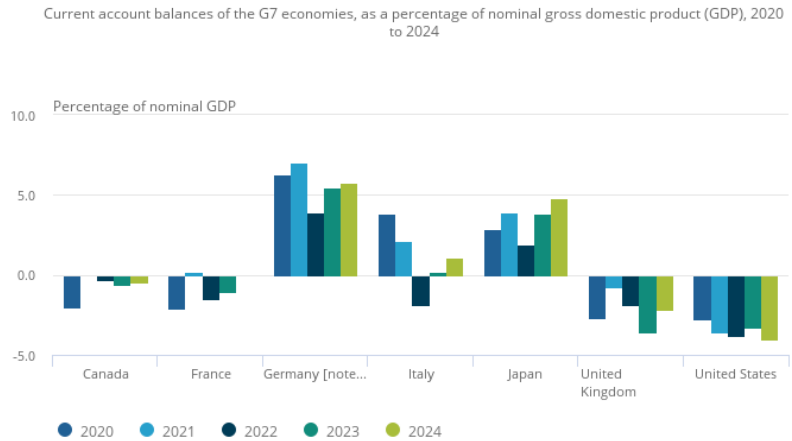

Cumulative Current Account Balances Around the World
1980-2017, in billions of U.S. dollars
Canada
United States
Mexico
Brazil
Norway
United Kingdom
Netherlands
Germany
Switzerland
Spain
Greece
Turkey
Saudi Arabia
Russia
China
India
Japan
Taiwan
Singapore
Australia
Cumulative Surplus
US$bil
0
3,906
-11,035
0
Cumulative Deficit

- The country with the biggest accumulated current account deficit (brightest red) is the United States.
  - × Its cumulative deficit was $11.0 trillion.
- The U.K. accumulated current account deficit has been $1.6 trillion
- The countries that have been financing these deficits (deepest green) are Japan ($3.9 trillion), China ($3.3 trillion), Germany ($3.3 trillion), and oil and gas exporting countries (members of OPEC, Russia, and Norway).
- Overall, the picture is one of unbalanced international trade, with some countries running protracted current account deficits and others running protracted surpluses.
- If all countries were in balance, the map would look pastel white. Instead, it looks mostly either flaming red or dark green, reflecting large global imbalances.

0. Introduction

The U.K. Current Account Deficit in 2024

- The U.K. had the second largest current account deficit, as a percentage of gross domestic product, among G7 countries in 2024.



1. The Balance of Payments

- A country's international transactions are recorded in the *Balance of Payments* (also called the International Transactions Accounts – ITA)
- The balance of payments has two main components:
  1. **current account**: records exports (+) and imports (-) and international receipts (+) and payments (-) of income.
     - A U.S. resident buys a smartphone from South Korea for $500: U.S. current account goes down by $500.
     - A British company pays £100 in dividends to a U.S. shareholder and the exchange rate is 1£=1.3$: U.S. current account goes up by $130.
  2. **financial account**: keeps record of transaction (sales (+) and purchases (-) in financial assets between residents and nonresidents
     - The U.S. resident that bought the smartphone pays $500 to Samsung. She sells an asset ($) and it is a (+) in the financial account
     - Receiving £100 in dividends is an import of a foreign asset (£) and is a (-).
- *Note the double-entry bookkeeping*: each transaction enters twice in the Balance of Payments, once with a + and once with a -.
- *Fundamental balance of payments identity* :

$$\text{Current Account Balance} = -\text{Financial Account Balance} \quad (1)$$

- There is a third component in the Balance of Payments: the **capital account**.
  - × It keeps record of international transfers of financial capital
  - × Main elements are debt forgiveness and migrants' transfers of goods and fnancial assets.
- May be important in some countries/periods:
  - × In July 2007, U.S.A, Germany and Russia provided a $11 billion debt relief to Afghanistan. Small for the creditors, although big for the debtor.
- It is quantitatively unimportant in most countries and we will ignore it.

- The current account is the sum of three accounts:

$$\begin{aligned} \text{current account} \quad = \quad & \text{trade balance} \\ & + \text{ income balance} \\ & + \text{ net unilateral transfers} \end{aligned}$$

- The current account is the sum of three accounts:

$$\begin{aligned} \text{current account} \quad = \quad & \textbf{trade balance} \\ & + \text{ income balance} \\ & + \text{ net unilateral transfers} \end{aligned}$$

- An important figure produced in the ITA is the Trade Balance, which measures the difference between exports of goods and services and imports of goods and services:

Merchandise Trade Balance	=	Exports of Goods - Imports of Goods
Service Balance	=	Exports of Services - Import of Services
Trade Balance	=	Goods Balance + Service Balance

- Examples of internationally traded goods: textiles, oil, cars, and wheat.
- Examples of internationally traded services: education, medical care, and consulting.

The U.K. Trade Balance in 2024 (The Pink Book, Office for National Statistics)

Exports of goods and services	:	£893.5 billion
Imports of goods and services	:	£918.7 billion
Trade balance	:	£-25.2 billion

- When the trade balance is negative, we say the country runs a trade deficit.
- Is £25.2 billion a big or small number?
- In 2024, GDP was roughly £2.8 trillion. Letting TB denote the trade balance, we have:

$$\frac{TB}{GDP} = -\frac{0.025}{2.8} = -0.009.$$

- The trade deficit was 0.9 percent of GDP.
- Is this a small or a big number?
- Big number if it is accumulated for many years.

1. The Balance of Payments

The U.K. Trade Balance from 2009 to 2024 (The Pink Book, Office for National Statistics)



The U.S. Trade Balance in 2024 (U.S. Bureau of Economic Analysis)

Exports of goods and services	:	\$3.2 trillion
Imports of goods and services	:	\$4.1 trillion
Trade balance	:=	\$-0.9 trillion.

- In 2024, U.S. GDP was \$29.2 trillion.

$$\frac{TB}{GDP} = -\frac{0.9}{29.2} = -0.03.$$

- The trade deficit was 3 percent of GDP.
- We will see how the accumulation of trade deficits of this magnitude or even smaller has turned the United States from a creditor in the 1980s to the world's largest debtor in a span of less than 20 years.

- The current account is the sum of three accounts:

$$\begin{aligned} \text{current account} \quad = \quad & \text{trade balance} \\ & + \textbf{income balance} \\ & + \text{net unilateral transfers} \end{aligned}$$

- The Income Balance measures the difference between factor incomes received from the rest of the world and factor incomes paid to the rest of the world.
- These net income payments are recorded separately for capital and labor.
  - × Net income from capital is called Net Investment Income and consists of payments such as dividends, interest, or profits.
  - × Net income from labor is called Net International Payments to Employees and records earnings of U.K. residents temporarily employed abroad and compensation payments to foreigners temporarily working in the United Kingdom.
- We then have

$$\begin{aligned} \text{Income Balance} &= \text{Net Investment Income} \\ &\quad + \text{Net International Payments to Employees} \end{aligned}$$

- In the U.K. ans well as in the U.S., net international payments to employees has been historically small and is quantitatively not important.

- The current account is the sum of three accounts:

$$\begin{aligned} \text{current account} \quad = \quad & \text{trade balance} \\ & + \text{ income balance} \\ & + \textbf{ net unilateral transfers} \end{aligned}$$

- Net Unilateral Transfers, which keeps record of the difference between gifts received from the rest of the world and gifts given to the rest of the world.
- These gifts can involve private agents or governments.

$$\begin{aligned} \text{Net Unilateral Transfers} &= \text{Personal Remittances} \\ &\quad + \text{Government Transfers} \end{aligned}$$

- Net unilateral transfers is negative in most years as the U.K. makes more gifts than it receives.
- The most relevant examples of net unilateral transfers include U.K. residents sending monetary gifts (personal remittances) to relatives living abroad and the U.K. government sending aid to foreign countries or to areas of the world suffering from natural disasters, endemic diseases, or armed conflicts (government transfers).

- To recap, the current account is the sum of three accounts:

$$\begin{aligned} \text{current account} \quad = \quad & \text{trade balance} \\ & + \text{ income balance} \\ & + \text{ net unilateral transfers} \end{aligned}$$

- The current account is an important concept because if the current account is negative, all other things equal, the net external debt of the country goes up, and if the current account is positive, it falls.

Current Account Balance = – **Financial Account Balance**

- The Financial Account has two main components:

  Financial Account = Increase in foreign-owned assets in the U.K.
  – Increase in the U.K.-owned assets abroad.

- As we said earlier, the double-entry bookkeeping method requires that every international transaction result in two entries in the balance of payments account.
- For example, one in the current account and one in the financial account for the Samsung smartphone example.
- But it can be the case that there are two offsetting entries in the financial account or in the current account:
  - × A U.K. resident purchases Coca-Cola shares with £: the financial account receives a + entry (exports of £) and a – one (import of the shares)
  - × The U.K. donates £10 million worth of malaria medication to Cameroon: the current account receives a + entry in the merchandise balance (exports of medication) and a – entry in the net unilateral transfers.

The U.K. Current Account in 2024

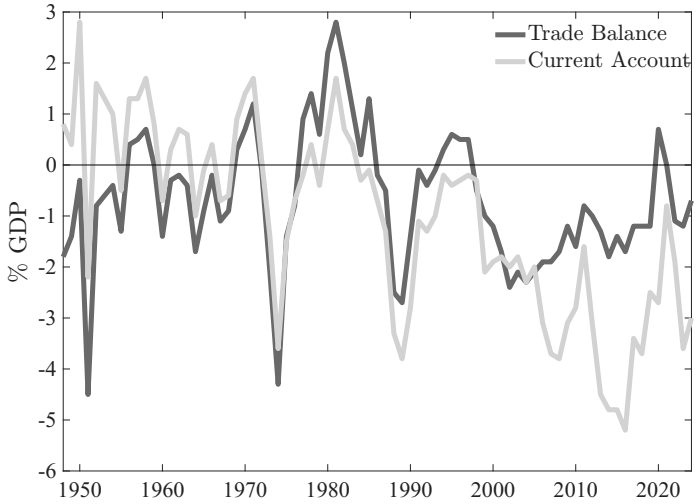
Item	Billion of Pounds	Percentage of GDP
Current Account	-63.2	-2.3
Trade Balance	-25.1	-0.9
Balance on Goods	-210.7	-7.6
Balance on Services	185.5	6.7
Income Balance	-21.0	-0.8
Net Investment Income	-20.3	-0.7
Compensation of Employees	-0.6	-0.0
Net Unilateral Transfers	-17.1	-0.6
Private Transfers	-5.1	-0.2
Government Transfers	-12.0	-0.4

- In 2024, the United Kingdom ran a large current account deficit (not as large as the U.S. in % of GDP - see below).
- The deficit is roughly
  - × 1/3 from Trade deficit,
    - The country had a deficit in the trade balance on goods and a surplus in the trade balance on services. The U.K. imports manufactured goods (cellphones, computers, or vehicle parts) and exports human-capital-intensive services (higher education, R&D, health care, professional consulting).
    - The U.K. typically runs a trade deficit in goods and a trade surplus in services.
  - × 1/3 from Net investment income (investments of U.K. residents in foreign assets paid less in interest, dividends, and profits, than the investments of foreign residents in U.K. assets.
  - × 1/3 from Net unilateral transfers which means that the U.K. gave more gifts to the rest of the world than it received.

- The U.K. has been running a trade balance deficit since the late 1980s (except a few years).
- The U.K. has been running a current account deficit since the late 1980.
- Since the mid 2000s, the Current Account has been more negative than the Trade Balance.

2. The Trade Balance and the Current Account

Observations on the U.K. Current Account and Trade Balance 1948–2024



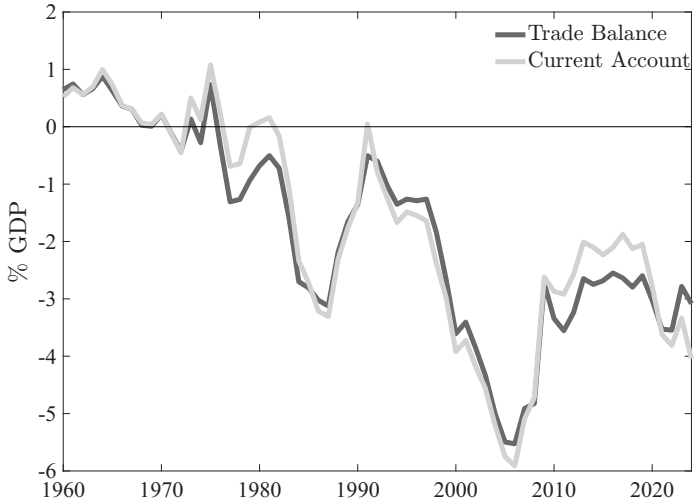
The U.S. Current Account in 2024

Item	Billion of US$	Percentage of GDP
Current Account	-1,185	-4.1
Trade Balance	-904	-3.1
Balance on Goods	-1215	-4.2
Balance on Services	312	1.1
Income Balance	-41	-0.1
Net Investment Income	-19	-0.1
Compensation of Employees	-22	-0.1
Net Unilateral Transfers	-241	-0.8
Private Transfers	-198	-0.7
Government Transfers	-43	-0.1

- In 2024, the United States ran a large current account deficit. The bulk of the current account deficit stems from a large trade balance deficit.
- The country had a deficit in the trade balance on goods and a surplus in the trade balance on services.
- Net investment income were slightly negative.
- Net unilateral transfers were negative and a bit less than 1% of GDP, which means that the United States gave more gifts to the rest of the world than it received. These gifts are largely personal remittances of immigrants in the U.S. to relatives living abroad.

2. The Trade Balance and the Current Account

Observations on the U.S. Current Account and Trade Balance 1960–2020



Observations on the U.S. Current Account and Trade Balance 1960–2020

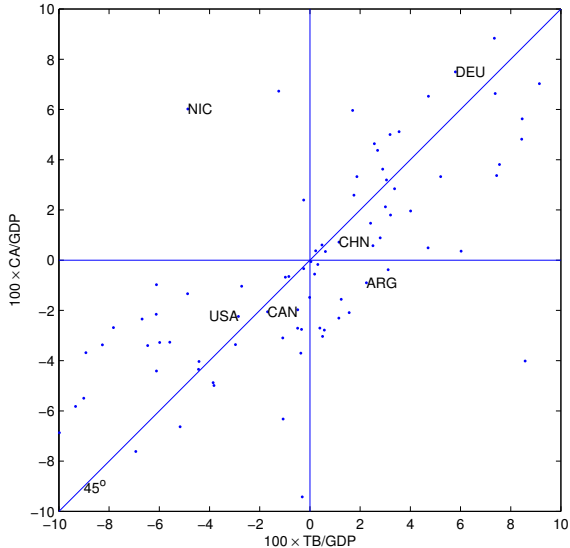
- The United States, have been running a trade balance deficit for the last 50 years.
- In the United States, the Trade Balance and the Current Account are similar in size and move in tandem over time

3. Trade Balance and Current Account Across Countries

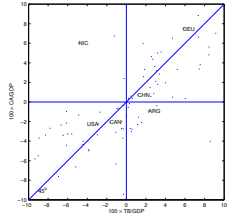
- The Trade Balance and the Current Account also often move in tandem in other countries

3. Trade Balance and Current Account Across Countries

Trade Balance and Current Account as Percentage of GDP across Countries in 2019



3. Trade Balance and Current Account Across Countries



- 82 countries.
- Most dots are in the first or third quadrant: Trade Balance and Current Account have the same sign in many countries.
- Most dots fall around the 45-degree line. The clustering around the 45-degree line suggests that, as in the United States, in many countries the trade balance is the dominant component of the current account.
- Let's highlight 6 countries.

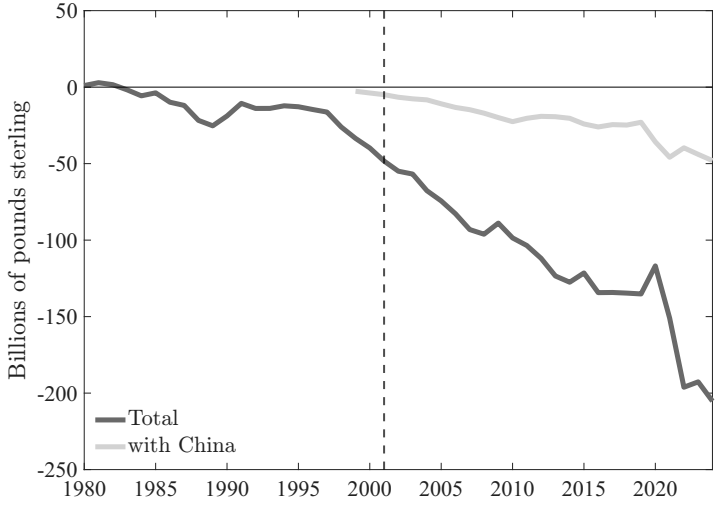
Observations on the table

$$\text{CA} = \text{TB} + \text{Income Balance} + \text{Net Unilateral Transfers}$$

- China: $\frac{TB}{GDP} > \frac{CA}{GDP} > 0$ because Income Balance < 0. China receives negative net investment income on a positive net foreign asset position.
- Germany: $\frac{CA}{GDP} > \frac{TB}{GDP} > 0$ because Income Balance > 0. Germany receives positive net investment income on a positive net foreign asset position.
- Nicaragua: $\frac{CA}{GDP} > 0 > \frac{TB}{GDP}$ because Net Unilateral Transfers > 0. Nicaragua receives remittances equal to 14 percent of GDP, mostly from the United States.
- Canada: $\frac{CA}{GDP} < \frac{TB}{GDP} < 0$ because Income Balance < 0. Negative balance on net international compensation to employees stemming mainly from wages paid by Canadian residents to U.S. residents who commute to work in Canada.
- Argentina: $\frac{CA}{GDP} < 0 < \frac{TB}{GDP}$ because Income Balance < 0. Argentina is a large net debtor, so it makes interest payments to the rest of the world.

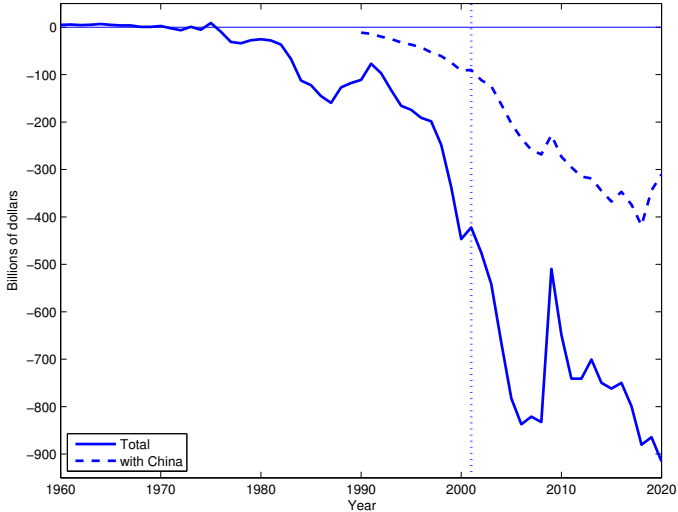
4. Imbalances in Trade with China

The U.K. Merchandise Trade Balance with China, 1980–2024



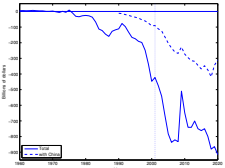
4. Imbalances in Trade with China

The U.S. Merchandise Trade Balance with China, 1990–2020



4. Imbalances in Trade with China

The U.S. Merchandise Trade Balance with China, 1990–2020



- The fraction of the U.S. merchandise trade deficit accounted for by deficits with China has widened steadily since China's accession to the WTO 2001 from about 20 percent in 2000 to near 50 percent by 2015.
- By the end of the sample, the bilateral trade deficit fell significantly.
- In 2020 it stood at 34 percent of the overall U.S. merchandise trade deficit.
- Two candidate explanations for this narrowing of the bilateral trade imbalances:
  - × an increase in trade triangulation after the imposition of import tariffs by the Trump administration starting in 2018,
  - × the COVID-19 pandemic.

5. The Current Account and Net International Investment Position

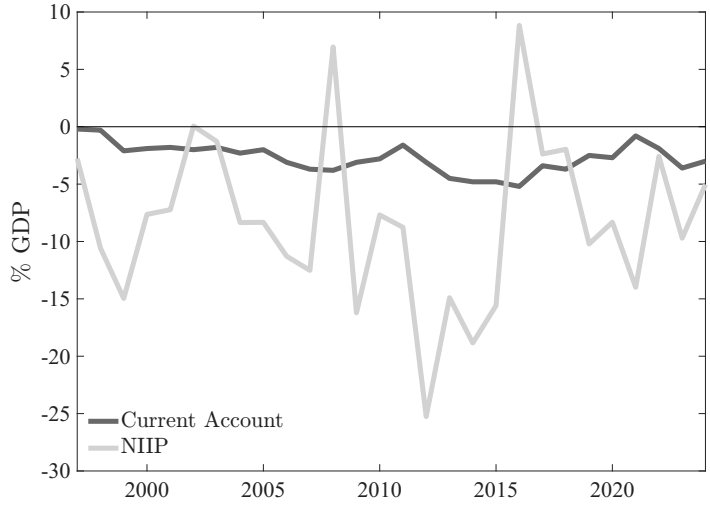
- A country's net international investment position ($NIIP$) is the difference between its foreign asset position (A) and its foreign liability position (L)

$$NIIP = A - L.$$

  - × If the $NIIP$ is negative ($A < L$), then the country is a net debtor to the rest of the world.
  - × If the $NIIP$ is positive ($A > L$), the country is a net creditor to the rest of the world.
- The concept of current account balance is economically important because it reflects a country's net borrowing needs.
- For example, in 2024 the U.K. ran a current account deficit of £63.2 billion. To pay for this deficit, the U.K. must either reduce its international asset position (A) or increase its international liability position (L), or both.
- That is, a current account deficit reduces the NIIP and a current account surplus increases it.

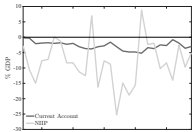
5. The Current Account and Net International Investment Position

The U.K. Current Account and Net International Investment Position



5. The Current Account and Net International Investment Position

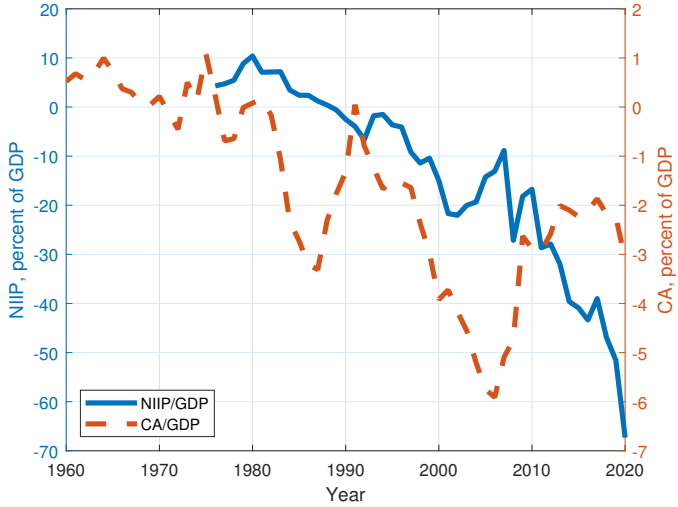
U.K. CA and NIIP



- The U.K.'s NIIP has been predominantly negative, meaning that foreign residents hold more UK assets than UK residents hold of foreign assets.
- Despite relatively smooth Current Account, NIIP has been pretty volatile, which is a sign of *valuation effects* (see below).
  - × The 2008 record high is due to the sterling devaluation following the financial crisis
  - × The 2016 record high is due to the sterling devaluation following the June 2016 EU referendum (Brexit):
  - × In both episodes, because U.K. residents foreign asset holdings are disproportionately denominated in foreign currencies, while foreign investors U.K. liabilities tend to be in sterling, the depreciation increased the sterling-value of UK assets abroad more than it increased the sterling-value of foreign assets in the U.K.

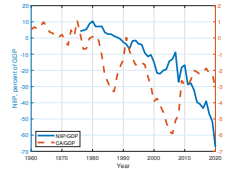
5. The Current Account and Net International Investment Position

The U.S. Current Account and Net International Investment Position



5. The Current Account and Net International Investment Position

U.S. CA and NIIP



- The NIIP was positive at the beginning of the sample (1976).
- The large CA deficits of the 1980s brought the NIIP to negative territory.
- Even larger CA deficits occurred during the 1990s, and the United States ended that decade as the world's largest external debtor.
- The CA deficits continued to increase until the onset of the global financial crisis (GFC) in 2007, reaching 6% of GDP.
- During the GFC, the CA deficits became smaller, but still sizable at around 3% of GDP.
- By the end of 2020, the NIIP stood at -$14.1 trillion or -67 percent of GDP.
- A natural question (addressed in Chapter 2) is whether the U.S. CA deficits are sustainable over time.

- The CA is a Flow and the NIIP a Stock
- All else equal, the NIIP increases when the CA is positive and decreases when the CA is negative.
- Thus, the CA is a flow variable and the NIIP a stock variable.
- Think of a water tank.
  - × The level of water in the tank (a stock) is the NIIP of the country.
  - × The CA is the flow of water that might enter or leave the tank through pipes.
  - × When the flow of water that enters the tank through pipes is larger than the flow of water that leaves the tank, the CA is positive, and the stock of water in the tank, the NIIP, rises over time.
  - × By contrast, when the flow of water that leaves the tank is larger than the flow of water that enters the tank, the CA is negative, and the level of water in the tank, the NIIP, falls over time.

- As we saw, in the United States the current account is similar in size to the trade balance.
- So in the analogy of the tank, periods in which the flow of water entering the tank through pipes is smaller than the flow of water leaving the tank typically represent periods in which imports of goods and services are larger than exports of goods and services.
- (Of course, other components of the current account, such as net investment income and net unilateral transfers are also part of the flows of water affecting the level of water in the tank (the NIIP).)

6. Valuation Changes and the Net International Investment Position

- In the previous figure, not all years in which the current account is negative correspond to years in which the NIIP falls.
- This is particularly evident just before the beginning of the global financial crisis in 2007.
- In general, changes in the NIIP are not always exactly equal to the changes in the CA.
- This is because the current account is not the only source of changes in the net international investment position.
- The NIIP can also change when the market value of a country's international assets or liabilities changes due to movements in stock prices, bond prices, or exchange rates.
- This source of changes in the NIIP is known as *valuation changes*.

- The Net International Investment Position changes for two reasons:
  1. surpluses or deficits in the current account,
  2. valuation changes.

$$\Delta\ NIIP = CA + \text{valuation changes}$$

  with valuation changes = changes in the market value of the country's foreign asset and liability positions (due to currency appreciations or depreciations changes in stock prices, etc.)
- Let's analyze by means of an example how valuation changes can affect the NIIP.

- International assets (A): 25 shares in Italian carmaker Fiat. The price of each share is €2. The exchange rate is 2 dollars per euro.

$$A = 25 \times 2 \times 2 = \$100.$$

- International liabilities (L): 80 U.S. bonds held by foreigners. Price 1 dollar per unit.

$$L = 80 \times 1 = \$80.$$

- Therefore

$$NIIP = A - L = 100 - 80 = \$20.$$

- Suppose that the € depreciates to \$1 per €. Then,

$$A = 25 \times 2 \times 1 = \$50.$$

L = \$80 (unchanged because U.S. bonds denominated in dollars)

$$NIIP = A - L = 50 - 80 = -\$30.$$

- Conclusion: Just because of a change in the exchange rate, the country went from being a creditor to being a debtor of the rest of the world.

Example (c)

- Suppose now that the price of the Fiat share jumps to €7. Then,

$$A = 25 \times 7 \times 1 = \$175.$$

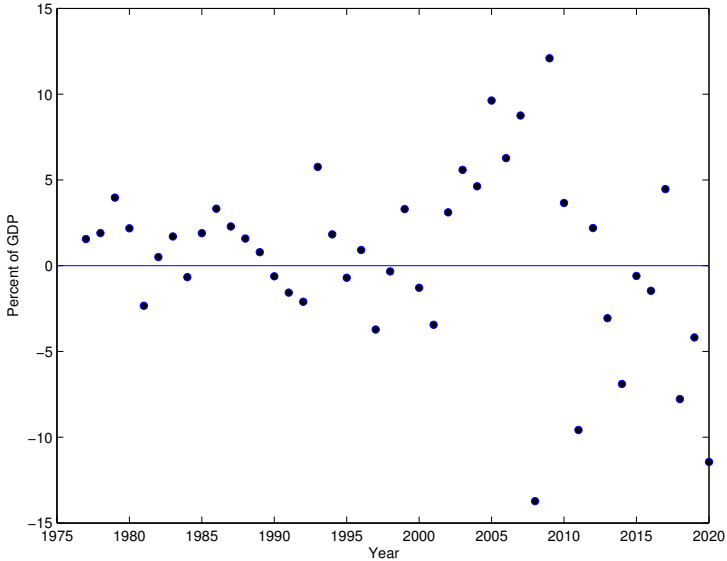
$L = \$80$ is unchanged.

$$NIIP = A - L = 175 - 80 = \$95.$$

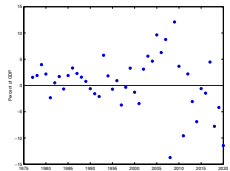
- A change in stock prices has an effect on the country's NIIP: the country went from net debtor (-\$30) to net creditor (+\$95) just because the Italian stock market went up and independently of any changes in the current account.
- Conclusion: The above hypothetical examples illustrate how a country's net international investment position can display large swings because of movements in asset prices or exchange rates.

6. Valuation Changes and the Net International Investment Position

Valuation Changes in the U.S. Net International Investment Position, 1977–2020



Valuation Changes in the United States



- Valuation changes can be large. We have observed valuations changes as large as ± 15 percent of GDP.
- Over the period 2000 to 2010 mostly valuation gains for the US, since then mostly valuation losses.
- Large valuation changes are a recent phenomenon. Until the year 2003, the typical valuation change was ± 3 percent of GDP.

Valuation Changes in the United States Before the Global Financial Crisis (2002 to 2007)

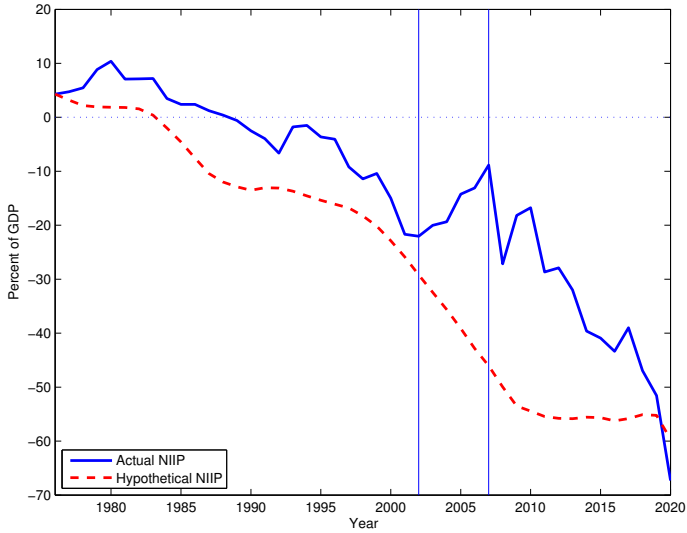
- From 2002 to 2007, the U.S. cumulative CA deficit was $3.9 trillion (32% of GDP).
- Yet, the NIIP improved by $80 billion, $0.08 trillion.
- This means that valuation changes during this period amounted to almost $4 trillion, $3.98 trillion to be exact. The main drivers were:
  1. The dollar depreciated by 20%. This causes large positive valuation changes because U.S.-owned foreign assets are mostly in foreign currency, whereas U.S. liabilities are mostly in dollars.
  2. The stock markets in foreign countries significantly outperformed the U.S. stock market: cumulative return from 2002 to 2007, 190% abroad versus 90% in the United States.
- As a result, the U.S. net equity position went from $0.04 trillion in 2002 to $3 trillion in 2007.

- Large positive valuation changes came to a sudden stop in 2008
- That year, valuation changes were -15% of GDP, mostly from an enormous drop in foreign stock markets.
- Since 2010, and especially during the COVID-19 pandemic, the U.S. NIIP has suffered mostly valuation losses, total -$7.2 trillion.
- One reason is that for most years since 2010 U.S. stocks have outperformed foreign stocks. Every time the U.S. stock market goes up, the value of U.S. portfolio equity liabilities (U.S. stocks held by foreign investors) goes up. And when the foreign stock market goes up, the dollar value of the U.S. portfolio equity asset position (foreign stocks held by U.S. investors) goes up. If U.S. stocks outperform foreign stocks, as they did in most years since 2010, the value of the U.S. net foreign portfolio equity position goes down, that is, the U.S. suffers valuation losses.

- What would be U.S. NIIP absent of Valuation Changes
- How to construct that hypothetical NIIP?
  - × Assume Hypothetical $NIIP_{1976} = NIIP_{1976}$
  - × Hypothetical $NIIP_{1977} = NIIP_{1976} + CA_{1977}$
  - × Hypothetical $NIIP_{1978} = NIIP_{1977} + CA_{1978} = NIIP_{1976} + CA_{1977} + CA_{1978}$
  - × $\cdots$
  - × Hypothetical $NIIP_t = NIIP_{1976} + CA_{1977} + CA_{1978} + \cdots + CA_{t-1} + CA_t$

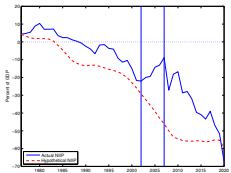
6. Valuation Changes and the Net International Investment Position

Actual and Hypothetical U.S. NIIP in Percent of GDP, 1976–2020



6. Valuation Changes and the Net International Investment Position

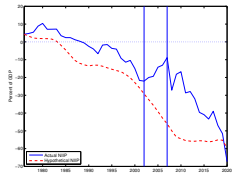
A Hypothetical NIIP That Excludes Valuation Changes



- Until 2002, the actual and hypothetical NIIP were not significantly different from each other $\rightsquigarrow$ valuation changes were small.
- In 2002 the hypothetical NIIP starts to fall at a faster pace but the actual NIIP rises. $\rightsquigarrow$ large positive valuation changes. Without this lucky strike, the NIIP in 2007 would have been -46% of GDP instead of the actual -9% .

6. Valuation Changes and the Net International Investment Position

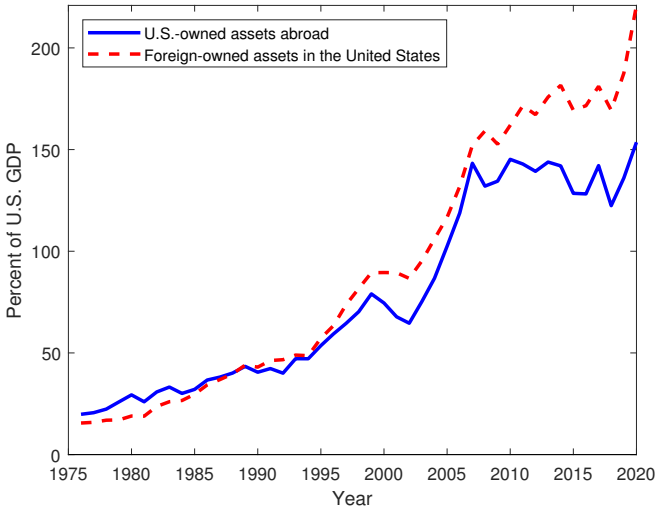
A Hypothetical NIIP That Excludes Valuation Changes



- In the years following the global financial crisis, US equity markets outperformed foreign stock markets, leading to valuation losses and closing the gap between the hypothetical and actual NIIP. By 2019 the gap had shrunk to 4 percent of GDP, similar to the value prior to the exuberant quinquennial 2002-2007.
- During the COVID-19 pandemic the U.S. stock markets continued to outperform foreign markets leading to valuation losses of 11.4 percent of GDP.
- In 2020 the actual NIIP fell below the hypothetical NIIP, indicating that since 1976 the U.S. has experienced a cumulative valuation loss. This calls into question the view that the United States on average benefits from positive valuation changes.

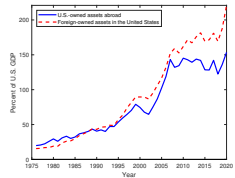
6. Valuation Changes and the Net International Investment Position

Gross Positions and Valuation Changes: U.S.-Owned Assets Abroad and Foreign-Owned Assets in the United States, 1976–2020



6. Valuation Changes and the Net International Investment Position

Gross Positions and Valuation Changes



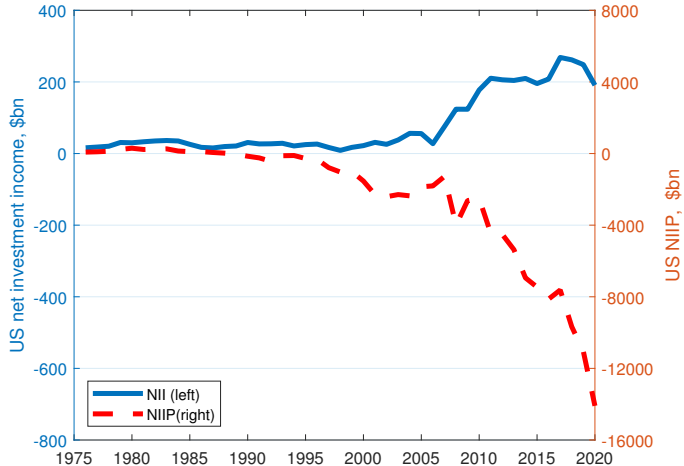
- The figure in the previous slide shows that gross positions (international assets and international liability positions) have expanded enormously since the 2000s.
- This explosion in gross positions represents one reason why valuation changes have become so large in absolute value over the past two decades. To see this, consider the following example:
  - × Suppose in country X: $A = L = 1$ and in country Y: $A = L = 1000$.
  - × Suppose GDP is 100 in both countries.
  - × Then, in both countries NIIP=0% of GDP.
  - × Suppose the value of foreign assets (A) increases by 10% in both countries.
  - × This causes the NIIP to go from 0 to 0.1 in country X, and from 0 to 100 in country Y. Thus, the NIIP increases to 0.1% of GDP in country X and to 100% of GDP in country Y.

7. The Negative-NIIP-Positive-NII Paradox

- The U.S. is the largest external debtor in the world (NIIP< 0),
- But it receives positive Net Investment Income from the rest of the world (NII> 0).

7. The Negative-NIIP-Positive-NII Paradox

Net Investment Income and the Net International Investment Position, United States 1976–2020



7. The Negative-NIIP-Positive-NII Paradox

- How can this paradoxical situation happen?
- Two suggested explanations:
  1. Dark Matter
  2. Return Differentials

7. The Negative-NIIP-Positive-NII Paradox

Dark Matter

- The Dark Matter hypothesis maintains that in reality the U.S. net international investment position is positive but that the Bureau of Economic Analysis fails to account for all of it.
- The source of the underestimation according to this explanation is that U.S. foreign direct investment contains intangible capital, such as entrepreneurial capital and brand capital, whose value is not correctly reflected in the official balance of payments.
- At the same time, this intangible capital invested abroad may generate income for the United States, which is appropriately recorded.
- Assuming this theory is valid, how much dark matter is there in the NIIP?
- Notations
  - × TNIIP = the "true" net international investment position.
  - × NIIP = the observed net international investment position (-$11.1 trillion at the start of 2020).
  - × NII = net investment income ($0.1909 trillion in 2020).

- Net investment income is the return on the True Net International Investment Position. So, letting r denote the interest rate, we have

$$NII = r \times TNIIP$$

- Assume r of 5% per year. Then

$$TNIIP = \frac{NII}{r} = \frac{0.1909}{0.05} = \$3.8 trillion$$

- Dark matter is the difference between the true and the recorded NIIPs:

$$\begin{aligned} \text{Dark Matter} &= \text{TNIIP - NIIP} \\ &= 3.8 - (-11.1) \\ &= \$14.9 \text{ trillion} \end{aligned}$$

- According to the dark matter hypothesis, in 2020 the United States didn't owe \$11.1 trillion to the rest of the world.
- On the contrary, the rest of the world owed \$3.8 trillion to the United States.
- \$14.9 trillion of dark matter seems like a big figure to go unnoticed by the BEA (and the IRS).
- Bureau of Economic Analysis $\approx$ Office of National Statistics in the UK and Internal Revenue Service $\approx$ His Majesty Revenue and Custom in the UK

- Observation (*exorbitant priviledge*):
  - × the gross international asset position of the U.S. is predominantly composed of risky but high-return assets, such as foreign equity and foreign direct investment,
  - × the gross international liability position is mainly composed of safer low-return assets, such as U.S. government bonds (e.g., T-bills).
- A is U.S. international asset position and L its international liability position: $NIIP = A - L$.
- Respective returns are r^A and r^L.
- How large does the interest rate differential on assets and liabilities, $r^A - r^L$ have to be to explain the paradox? Given that

$$NII = r^A A - r^L L$$

- Now let's put some numbers.
- In 2020, $A = \$32.2$ trillion and $L = \$46.3$ trillion.
- $r^L = 0.37\%$ per year (average real rate of return on U.S. T-bills)
- $NII = \$0.1909$ trillion.
- What is the value of r^A that solves the paradox?

$$r^A = \frac{NII + r^L L}{A} = \frac{0.1909 + 0.0037 \times 46.3}{32.2} = 0.0112$$

- $r^A = 1.12\% \rightsquigarrow$, interest rate differential $r^A - r^L = 1.12 - 0.37 = 0.75\%$ per year $\rightsquigarrow$ plausible.

- We have assumed that foreign investors hold only U.S. bonds in their international asset portfolio.
- Okay until 2010, but since then, the composition is roughly half in equity and half in bonds.
- Suppose r^A is the same domestically and abroad.
- Then, $r^L = \frac{1}{2}(r^A + r^B)$, where $r^B = 0.0037$ as before.
- Now

$$NII = r^A A - r^L L = r^A A - \frac{1}{2}(r^A + r^B)L.$$

$$0.1909 = r^A \times 32.2 - \frac{1}{2} \times (r^A + 0.0037) \times 46.3,$$

- which gives $r^A = 3.06\%$
- The corresponding premium of equity over government bonds is 2.69% ($r^A - r^B = 3.06\% - 0.37\%$), which is more plausible.

- If we divide the world into two groups, the United States (US) and the rest of the world (RW), then the rest of the world must display the flipped paradox – that is, a positive net foreign asset position and negative net investment income.
- Indeed

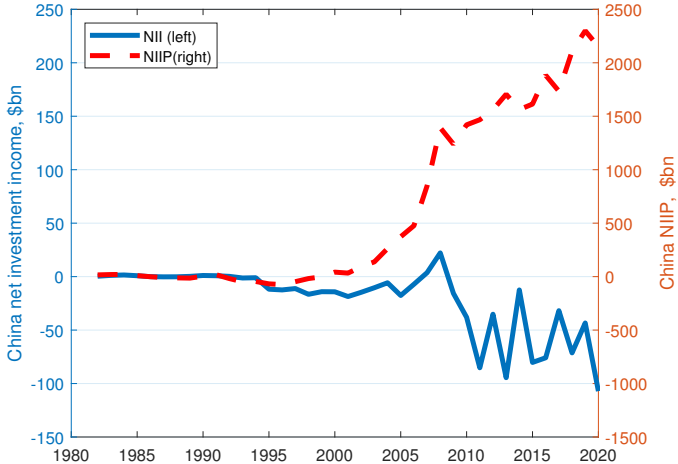
$$NIIP^{US} = A^{US} - L^{US} = L^{RW} - A^{RW} = -NIIP^{RW}$$

$$NII^{US} = r^A A^{US} - r^L L^{US} = r^A L^{RW} - r^L A^{RW} = -NII^{RW}.$$

- Let's look at a particular country, China.
- Why China?
  1. China has been accumulating large current account surpluses for the past quarter century (so likely $NIIP^{\text{China}} > 0$).
  2. We saw previously that (in 2019) $NII^{\text{China}} < 0$.

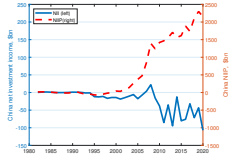
7. The Negative-NIIP-Positive-NII Paradox

The Flip Side of the NIIP-NII Paradox: Net Investment Income and the Net International Investment Position, China 1982–2020



7. The Negative-NIIP-Positive-NII Paradox

The Flip Side of the NIIP-NII Paradox



- Prior to accession to the WTO in 2001, the NIIP was near zero, thereafter it grew rapidly, reaching $2.2 trillion by 2020.
- Net investment income, NII, was close to zero prior to 2001 but then became mostly negative, fluctuating around -$50 billion.
- Thus, China displays the flipped NIIP-NII paradox, a positive NIIP and a negative NII.
- A possible explanation of the Chinese flipped paradox is that China saves largely in safe, low-return assets, such as U.S. Treasury securities, while China's foreign liabilities are predominantly in the form of high-return assets, such as foreign direct investment.

8. Summing Up

a. Worldwide, the distribution of external debts and credits is not even. Some countries, like the United States, are large net external debtors and some, like Germany, Japan, and China, are large net external creditors. This pattern is known as global imbalances.

b. The balance of payments keeps record of a country's international transactions.

c. The balance of payments has two accounts, the current account and the financial account.

d. The current account records transactions in goods, services, in- come, and unilateral transfers between residents and nonresidents.

e. The financial account records transactions involving financial as- sets between residents and nonresidents.

f. The current account has three components: the trade balance, the income balance, and net unilateral transfers.

8. Summing Up

g. For most countries, including the U.K. and the U.S., the trade balance is the largest component of the current account.

h. In the United States, the trade balance and the current account move closely together over time, less so in the U.K.

i. The U.K. and the U.S. have been running large current account deficits since the early 1980s.

j. Current account deficits deteriorate a country's NIIP, which is the difference between a country's international asset position and its international liability position.

k. Due to its large current account deficits, the United States turned from being a net external creditor in the early 1980s to being the world's largest net external debtor since the late 1990s.

l. A second source of changes in a country's NIIP is valuation changes, originating from changes in exchange rates and in the price of the financial instruments that comprise a country's international asset and liability positions.

8. Summing Up

m. In the U.K. valuation changes were large and positive in 2008 (financial crisis) and 2026 (EU referendum) because the sterling depreciated.

n. In the United States, valuation changes became large in the early 2000s, reaching values as high as plus or minus 15 percent of GDP in a single year. Valuation changes were mostly positive between 2001 and 2010 and mostly negative between 2011 and 2020. On net, between 1976 and 2020, positive and negative valuation changes have roughly offset each other.

o. The NIIP-NII paradox refers to the phenomenon that the United States has a negative net international investment position, NIIP<0, and positive net investment income, NII>0.

p. Two stories that aim to explain the NIIP-NII paradox are the dark matter hypothesis and the rate-of-return differential hypothesis.

q. The NIIP-NII paradox in the United States must have a flipped paradox in the rest of the world. China has had a positive NIIP and negative NII since the 2000s, so it displays the flipped NIIP-NII paradox.

