

Topic 4: Saving and Investment in the Open Economy

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Chapter Outline

- Balance of Payments Accounting.
- Goods Market Equilibrium in an Open Economy.
- Saving and Investment in a Small Open Economy.
- Saving and Investment in Large Open Economies.
- Fiscal Policy and the Current Account.

Balance of payments accounting

- In a closed economy,

$$\text{savings} = \text{investment}$$

- In the real world, one country usually has

$$\text{savings} \neq \text{investment}$$

For instance, Asian countries “saings glut”, U.S. current account deficit.

- Savings and investment in open economy setup.

Balance of Payments Accounting (BPA): Basic Principles

- BPA are part of the national income accounts and are the record of a country's international transactions.
- Credit item (+):
 - Any transaction that involves a flow of funds *into* the U.S.
 - Example: exports of goods.
- Debit item (−):
 - Any transaction that involves a flow of funds *out* of the U.S.
 - Example: imports of goods.

Balance of Payments Accounts of the United States, 2011 (Billions of Dollars)

Current Account		
Net exports of goods and services (NX)		-560.0
Exports of goods and services	2105.1	
Goods	1497.4	
Services	607.7	
Imports of goods and services	-2665.0	
Goods	-2235.7	
Services	-429.3	
Net income from abroad (NFI)		221.1
Income receipts from abroad	738.7	
Income payments to residents of other countries	-517.7	
Net unilateral transfers		-134.6
Current Account Balance (CA)		-473.4
Capital and Financial Account		
Capital Account		
Net capital account transactions		-1.2
Financial Account		
Net financial flows		387.3
Increase in U.S.-owned assets abroad (financial outflow)	-396.4	
U.S. official reserve assets	-15.9	
Other U.S.-owned assets abroad	-380.5	
Increase in foreign-owned assets in U.S. (financial inflow)	783.7	
Foreign official assets	164.8	
Other foreign-owned assets	618.9	
Financial derivatives		6.8
Capital and Financial Account Balance (KFA)		392.9
Statistical Discrepancy		80.5
<i>Memoranda:</i>		
Balance on goods and services (trade balance)		-560.0
Balance on goods, services, and income		-338.9
Official settlements balance =		
Balance of payments =		
Increase in U.S. official reserve assets minus increase in foreign official assets = 15.9 - 164.8		-148.9
<small>Note: Numbers may not add to totals shown owing to rounding.</small>		
<small>Source: "U.S. International Transactions: Fourth Quarter and Year 2011," Table L, p. 30 and Table J, p. 31, Survey of Current Business, April 2012.</small>		

The current account (CA)

- CA measures a country's trade in currently produced goods and services, along with unilateral transfers between countries.
- Net exports of goods and services (NX).
- Net income from abroad ($NIFA$): income receipts from abroad minus payments to residents of other countries.
 - Income received from abroad is a credit item, since it causes funds to flow into the U.S.
 - Payment of income to foreigners is a debit item.
 - Net income from abroad is part of the current account, and is about equal to NFP . (NFP appears in National Income and Product Account and $NIFA$ appears in BPA.)
- Net unilateral transfers (NUT):
 - Payments made from one country to another that do not correspond to the purchase of any G&S or asset. E.g., official foreign aid.
 - Negative net unilateral transfers for the U.S., since the U.S. is a net donor to other countries.

The current account (CA)

- Adding all the credit items and subtracting all the debit items in the CA yields the CA balance:

$$CA = NX + NFP + NUT$$

- Positive CA balance implies CA surplus.
- Negative CA balance implies CA deficit.

The capital and financial account

- The capital and financial account (*KFA*) records trades in existing assets, either real (for example, houses) or financial (for example, stocks and bonds).
- *KFA* consists of a capital account and a financial account. The capital account records the net flow of unilateral *transfers* of assets into the country.
- Most transactions appear in the financial account part of the *KFA*:
 - When home country sells assets to a foreign country, that is a capital inflow for the home country and a credit (+) item in the *KFA*.
 - When assets are purchased from a foreign country, there is a capital outflow from the home country and a debit (−) item in the *KFA*.

The capital and financial account

- Financial Account
 - Financial Inflow. Credit item (+).
 - Sale of U.S. assets to foreigners.
- Financial Outflow
 - Debit item (-).
 - Purchase of foreign assets by U.S. residents.

The official settlements balance (OSB)

- Transactions in official reserve assets are conducted by central banks of countries.
- Official reserve assets are assets (foreign gov. securities, bank deposits, and SDRs of the IMF, gold) used in making international payments.
- Central banks buy (or sell) official reserve assets with (or to obtain) their own currencies.
- OSB also called the balance of payments (BOP), it equals the net increase in a country's official reserve assets.
- For the U.S., the net increase in official reserve assets is the rise in U.S. gov. reserve assets minus foreign central bank holdings of U.S. dollar assets.
- Having a BOP surplus means a country is increasing its official reserve assets; a balance of payments deficit is a reduction in official reserve assets.

The relationship between the CA and the KFA

- Current account balance (CA) + capital and financial account balance (KFA) = 0.
- $CA + KFA = 0$
by accounting; every transaction involves offsetting effects.
- Every international transaction involves a swap of C&S or assets between countries. The two sides of the swap always have offsetting effects on the sum of the CA and KFA .
- In practice, measurement problems, recorded as a statistical discrepancy, preventing $CA + KFA = 0$ from holding exactly.

Why the Current Account Balance and the Capital and Financial Account Balance Sum to Zero: An Example

(Balance of Payments Data Refer to the United States)

**Case I: United States Imports \$75 Sweater from Britain;
Britain Imports \$75 Computer Game from United States**

Current Account

Exports	+\$75
Imports	<u>-\$75</u>
Current account balance, CA	0

Capital and Financial Account

No transaction	
Capital and financial account balance, KFA	0
Sum of current and capital and financial account balances, CA + KFA	0

**Case II: United States Imports \$75 Sweater from Britain;
Britain Buys \$75 Bond from United States**

Current Account

Imports	<u>-\$75</u>
Current account balance, CA	-\$75

Capital and Financial Account

Financial inflow	<u>+\$75</u>
Capital and financial account balance, KFA	+\$75
Sum of current and capital and financial account balances, CA + KFA	0

**Case III: United States Imports \$75 Sweater from Britain;
Federal Reserve Sells \$75 of British Pounds to British Bank**

Current Account

Imports	<u>-\$75</u>
Current account balance, CA	-\$75

Capital and Financial Account

Financial inflow (reduction in U.S. official reserve assets)	<u>+\$75</u>
Capital and financial account balance, KFA	+\$75
Sum of current and capital and financial account balances, CA + KFA	0

Net foreign assets and the balance of payments accounts

- Net foreign assets are a country's foreign assets minus its foreign liabilities:
 - Net foreign assets may change in value (example: change in stock prices).
 - Net foreign assets may change through acquisition of new assets or liabilities.
- The net increase in foreign assets equals a country's *CA* surplus.
- A *CA* surplus implies a *KFA* deficit, and thus a net increase in holdings of foreign assets (a financial outflow).
- A *CA* deficit implies a *KFA* surplus, and thus a net decline in holdings of foreign assets (a financial inflow).

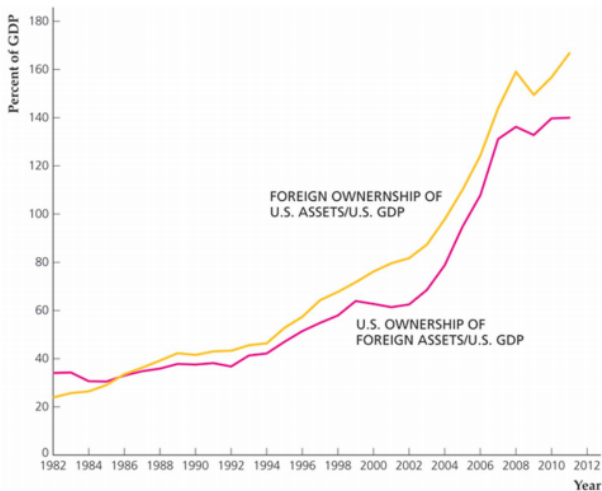
Net foreign assets and the balance of payments accounts

- Foreign direct investment (FDI): a foreign firm buys or builds capital goods.
 - Causes an increase in the *KFA*.
- Portfolio investment: foreigners acquire U.S. securities; also increases *KFA* balance.
- Summary: Equivalent measures of a country's international trade and lending.
 - $CA \text{ surplus} = KFA \text{ deficit} = \text{net acquisition of foreign assets} = \text{net foreign lending} = \text{net exports}$ (if *NFP* and net unilateral transfers are 0).

Application: The U.S. as international debtor

- The rise in foreign liabilities by the U.S. since the early 1980s has been very large.
- The U.S. has become the world's largest international debtor.
- But the net foreign debt of the U.S. relative to U.S. GDP is relatively small (27%) compared to other countries (some of whom have net foreign debt of over 100% of GDP).
- Despite the large net foreign debt, the U.S. has direct foreign investment (companies, land) in other countries about equal in size to other countries' foreign direct investment in the U.S.
- What really matters is not size of net foreign debt, but country's wealth (physical and human capital):
 - If net foreign debt rises but wealth rises, there's no problem.
 - But U.S. wealth isn't rising as much as net foreign debt, which is worrisome.

International ownership of assets relative to U.S. GDP, 1982-2011



Foreign Holdings of U.S. Treasury Securities

Yearend (billions)	2009	2010	2011
China	1036.4	1277.4	1283.7
Japan	750.2	860.9	1050.1
Belgium and Luxembourg	111.3	167.7	239.7
Brazil	169.5	181.7	222.7
OPEC Asia	166.1	173.2	201.5
United Kingdom	29.7	101.8	180.7
Russia	156.3	169.1	152.2
Taiwan	125.8	150.8	147.1
Switzerland	91.0	109.0	132.2
Cayman Islands	70.4	103.3	127.5
Other countries	963.9	1171.7	1333.7
Total Holdings	3670.6	4466.6	5071.1

Source: Elena L. Nguyen, "The International Investment Position of the United States at Yearend 2011," *Survey of Current Business* (July 2012), Table K, p. 14.

Goods Market Equilibrium in an Open Economy

- Goods market:

$$S = I + CA = I + (NX + NFP)$$

which is a version of the uses-of-saving identity: Saving has two uses:

- Increase the capital stock by domestic investment.
- Increase the stock of net foreign assets by lending to foreigners.
- In this section, we'll assume $NFP = 0 = NUT$

$$CA = NX$$

- To get *goods market equilibrium*, actual national saving, consumption and investment must equal their *desired* levels:

$$Y = C^d + I^d + G + NX$$

Savings

$$S^d = Y - C^d - G$$

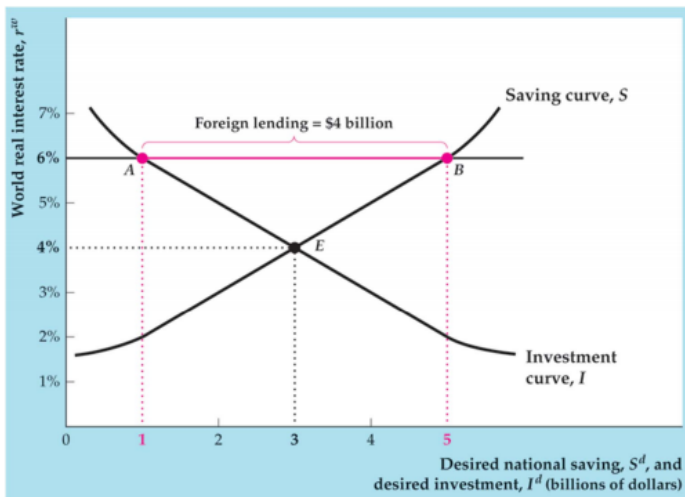
Hence

$$S^d = I^d + NX \Rightarrow S^d = I^d + CA$$

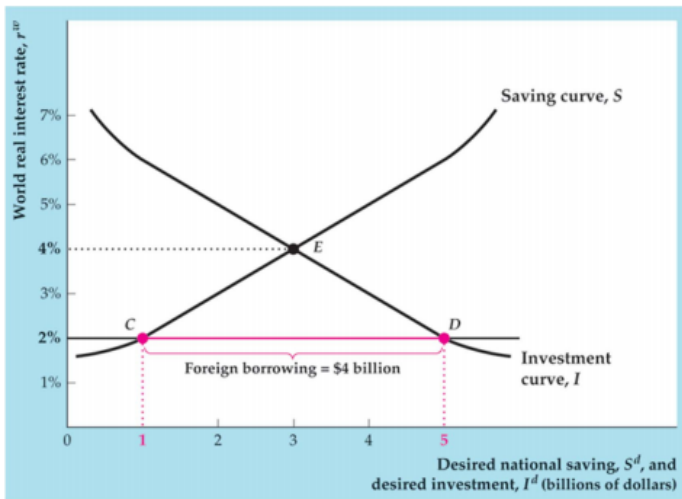
Saving and Investment in a Small Open Economy

- Small open economy (SOE): an economy too small to affect the world real interest rate (IR).
 - World real interest rate (r^W): the real IR in the international capital market.
- Key assumption: Residents of the SOE can borrow or lend at the expected world real IR.
- Result: r^W may be such that $S^d > I^d$, $S^d = I^d$, or $S^d < I^d$:
 - If $S^d > I^d$, the excess of desired saving over desired investment is lent internationally (net foreign lending is positive) and $NX > 0$.
 - If $S^d = I^d$, there is no net foreign lending and $NX = 0$.
 - If $S^d < I^d$, the excess of desired investment over desired saving is financed by borrowing internationally (net foreign lending is negative) and $NX < 0$.
- Net exports equals net foreign lending equals the CA balance (assuming NFP and net unilateral transfers are 0).

A small open economy that lends abroad



A small open economy that borrows abroad



Goods Market Equilibrium in a Small Open Economy: An Example (Billions of Dollars)

Given

Gross domestic product, Y	20
Government purchases, G	4

Effect of real interest rate on desired consumption and investment

	(1)	(2)	(3)
(1) World real interest rate, r^w (%)	2	4	6
(2) Desired consumption, C^d	15	13	11
(3) Desired investment, I^d	5	3	1

Results

(4) Desired absorption, $C^d + I^d + G$	24	20	16
(5) Desired national saving, $S^d = Y - C^d - G$	1	3	5
(6) Net exports, $NX = Y - \text{desired absorption}$	-4	0	4
(7) Desired foreign lending, $S^d - I^d$	-4	0	4

Note: We assume that net factor payments, NFP , and net unilateral transfers equal zero.

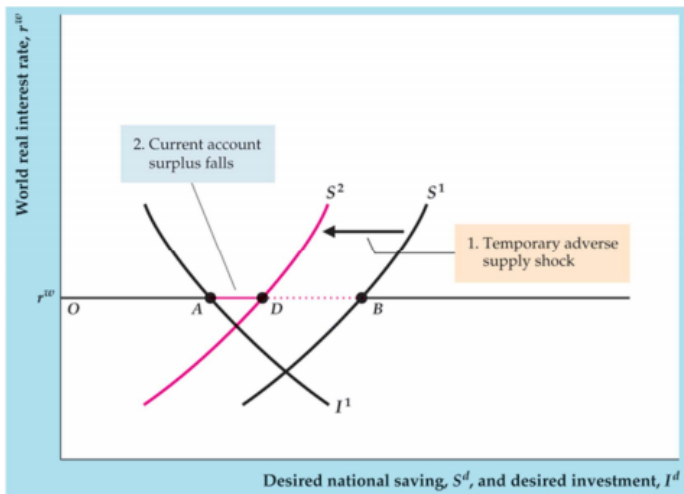
CA surplus

- If residents in one country have strong desire to save more, CA surplus.
- Savings glut: Asian countries
- Why some countries have high savings rate?
- Trade war between U.S. and China.

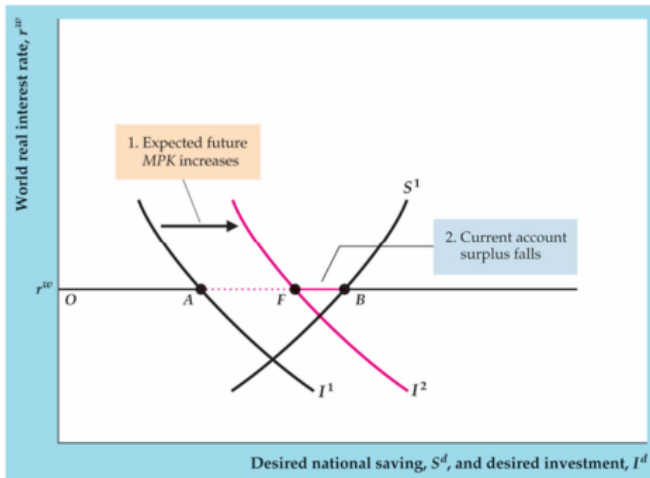
The effects of economic shocks in a small open economy

- Anything that increases desired national saving (Y rises, future output falls, or G falls) relative to desired investment (MPK^f falls, τ rises) at a given world IR increases net foreign lending, and vice versa.
- A temporary adverse supply shock:
 - Temporary drop in income leads to a drop in saving, so net foreign lending declines.
- An increase in the expected future marginal product of capital. Desired investment rises, so net foreign lending falls.

A temporary adverse supply shock in a small open economy



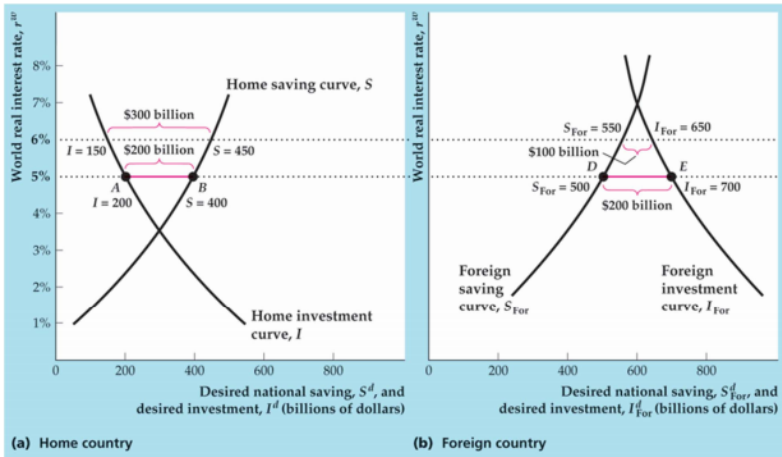
An increase in the expected future MPK in a small open economy



Saving and Investment in Large Open Economies

- Large open economy: an economy large enough to affect the world IR. Suppose there are just two economies in the world:
 - The home or domestic economy (saving S , investment I).
 - The foreign economy, representing the rest of the world (saving S_{For} , investment I_{For}).
- The world real IR moves to equilibrate desired international lending by one country with desired international borrowing by the other.
- The equilibrium world real IR is determined such that a CA surplus in one country is equal in magnitude to the CA deficit in the other.
- Changes in the equilibrium world real IR: Any factor that increases desired international lending of a country relative to desired international borrowing causes the world real IR to fall.

The determination of the world real interest rate with two large open economies



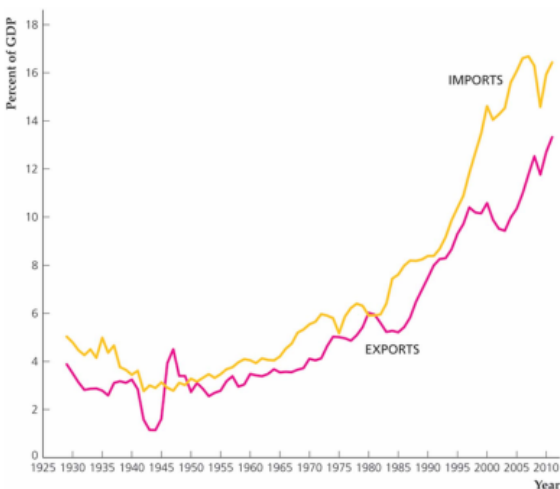
Application: The Impact of Globalization on the U.S. Economy

- World's economies are increasingly interdependent – more international trade and investment.
- Historical data on trends in trade from 1929 to 2011.
 - Note large gains in both exports and imports over past 50 years (as % of GDP).
- Costs of globalization: U.S. jobs lost in particular sectors.
- Benefits of globalization: U.S. jobs gained in particular sectors.
 - U.S. exports increase.
 - Cheaper imported goods means more G&S at lower prices – gains from trade.

Application: The Impact of Globalization on the U.S. Economy

- But loss for jobs from foreign trade is a small fraction of total job loss in U.S.
- Recent years: big changes in business services industry – call centers, etc.
- Critics: moving jobs abroad.
- Reality: U.S. is world leader in exporting business services – far more is done in U.S. and sold abroad than vice versa.
- So U.S. benefits from such activity far more than it “loses”.

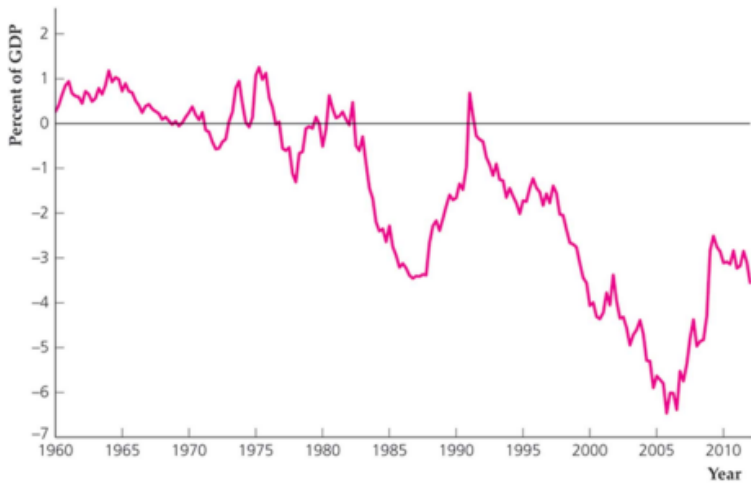
Exports and imports of goods and services as a percent of GDP, 1929-2011



Application: Recent Trends in the U.S. CA Deficit.

- U.S. CA deficit is large.
- Why is the U.S. CA deficit continuing to increase?
 - Lower foreign demand.
 - Better international investment opportunities.
 - Higher oil prices.
 - Increased saving by developing countries.

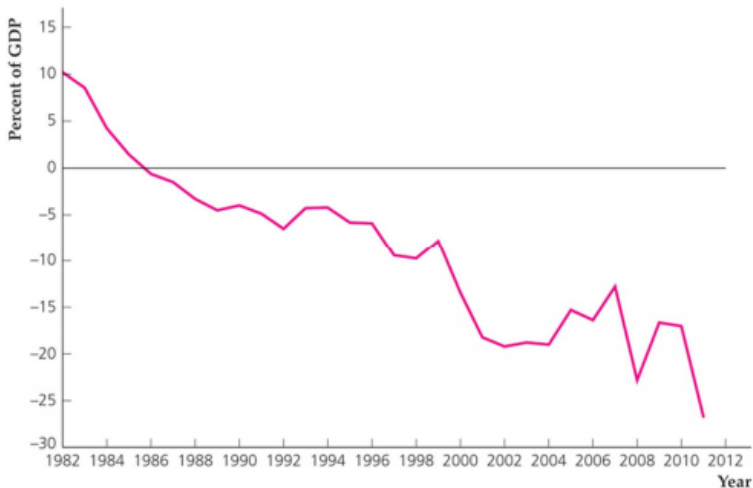
Current account balance as a percent of GDP, 1960-2012



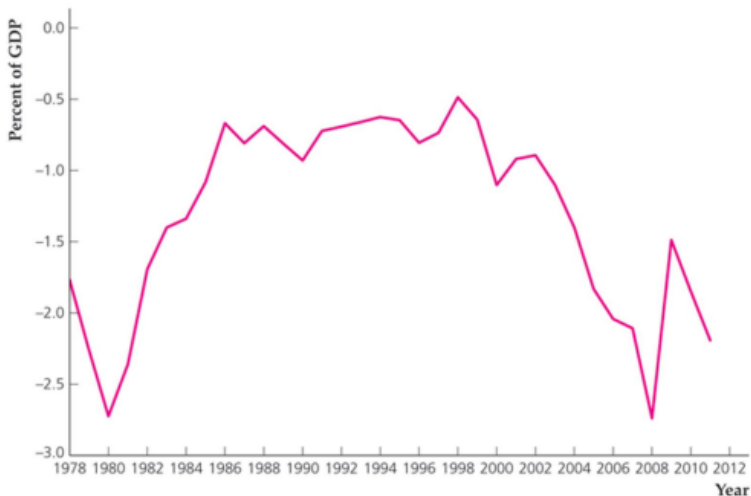
Application: Recent Trends in the U.S. CA Deficit.

- Lower foreign demand
 - Slower economic growth in Japan and Europe in early 2000s.
 - People there are saving more and investing in U.S. more, but buying fewer U.S. goods.
- Better international investment opportunities:
 - U.S. investors are diversifying investments internationally.
 - Foreign investors are investing more in U.S.
- Higher oil prices
 - U.S. imports much more oil than it exports.
 - Doubling of oil prices recently led to decline in CA balance of over 1% of GDP.

Net international ownership of assets relative to U.S. GDP, 1982-2011



Petroleum net exports as a percent of U.S. GDP, 1978-2011



Application: Recent Trends in the U.S. CA Deficit.

- Increased saving by developing countries:
 - Many developing nations want to invest in safe places like U.S., rather than borrowing and getting into financial crises.
 - They changed from being international borrowers to being international lenders.
- Some people also blame U.S. gov. deficit – twin deficits argument
 - twin deficits: government budget deficits accompanied by current account deficits
 - But in late 1990s, U.S. gov. ran surpluses, and CA deficit got larger.
 - Other countries with CA surpluses also run larger gov. budget deficits than U.S.

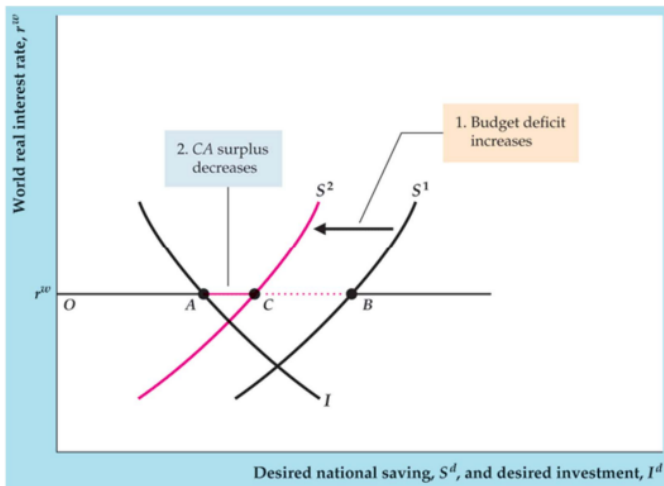
Are government budget deficits necessarily accompanied by CA deficits (“twin deficits”)?

- The critical factor: the response of national saving:
 - An increase in the government budget deficit (GBC) raises the CA deficit only if the increase in the budget deficit reduces desired national saving.
 - In a SOE, if an increase in the GBC reduces desired national saving, the saving curve shifts left, thus reducing the CA balance.

The government budget deficit and national saving

- A deficit caused by increased government purchases:
 - No question here: The deficit definitely reduces national saving.
 - Result: The CA balance declines.
- A deficit resulting from a tax cut:
 - S^d falls only if C^d rises.
 - So S^d won't change if Ricardian equivalence holds, since then a tax cut won't affect consumption.
 - But if people don't foresee the future taxes implied by a tax cut today, they will consume more, desired saving will decline, and so will the CA balance.

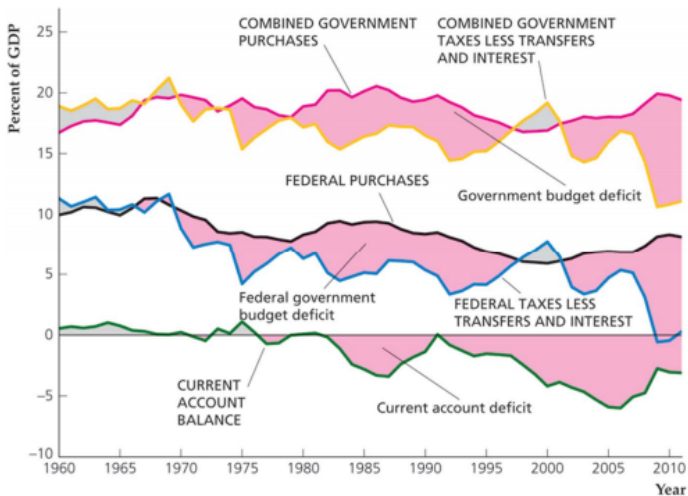
The government budget deficit and the current account in a small open economy



Application: the twin deficits

- Relationship between the U.S. GBC and U.S. CA deficit.
- The deficits appear to be twins in the 1980s and early 1990s, moving closely together.
- But at other times (during World Wars I and II, and during 1975) government budget deficits grew, yet the CA balance increased.
- The evidence is also mixed for foreign countries.

The government budget deficit and the current account in the United States, 1960-2011

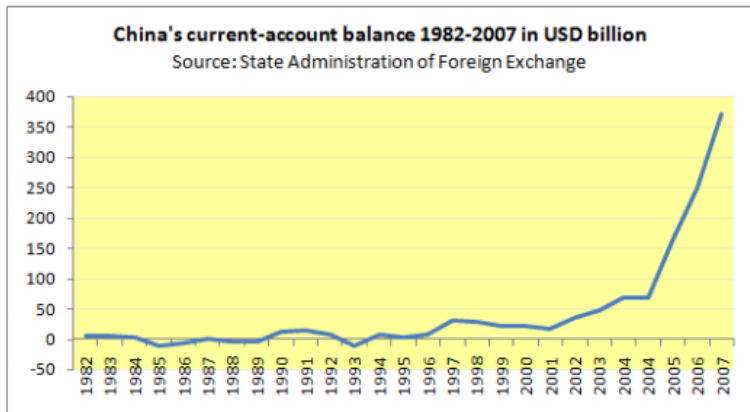


Application: the twin deficits

- U.S. experience:
 - Early and mid 1980s: supports twin deficits.
 - Federal tax rebate, 1975: contrary to twin deficits.
 - Recent experience: contrary to twin deficits.
- Experience of other countries
 - Germany: increased CA deficit and budget deficit.
 - Canada, Italy mid 1980s large budget deficits without severe CA deficits.

Savings glut

The role of China:



Savings glut

Why Chinese save so much?

- Precautionary motive
- Financial market under-development
- Habit
- Marriage market
- And Trump's view: export policy in China, hence, recent trade war between U.S. and China