

## Saving and Investment in the Open Economy

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## Agenda

- Balance of Payments Accounting.
- Goods Market Equilibrium in an Open Economy.
- Saving and Investment in a Small Open Economy.
- Saving and Investment in a Large Open Economy.

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## Balance of Payments Accounts

Current Account		
Net exports of goods and services (NX)		-723.7
Exports of goods and services	1272.2	
Goods	892.6	
Services	379.6	
Imports of goods and services	-1995.9	
Goods	-1674.3	
Services	-321.6	
Net income from abroad (NIF)		1.8
Income receipts from abroad	468.7	
Income payments to residents of other countries	-466.9	
Net unilateral transfers		-62.9
Current Account Balance (CA)		-804.3
Capital and Financial Account		
Capital Account		-5.6
Net capital account transactions		801.0
Financial Account		
Net financial flows		801.0
Increase in U.S.-owned assets abroad		
Financial inflows	-491.7	
U.S. official reserve assets	14.1	
Other U.S.-owned assets abroad	-605.9	
Increase in foreign-owned assets in U.S.	1292.7	
Financial inflows		
Foreign official assets	202.7	
Other foreign-owned assets	1072.0	
Capital and Financial Account Balance (FA)		795.4
Statistical Discrepancy		9.4
Reconciling		
Balance on goods and services (trade balance)		-723.7
Balance on goods, services, and income		-722.1
Official settlements balance =		
Balance of payments =		
Increase in U.S. official reserve assets minus increase in foreign official assets = -14.1 - 202.7		-216.8

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## Balance of Payments Accounting

- The Balance of Payments Accounts are a summary of a country's net international transactions.
  - Credit items represent international receipts.
  - Debit items represent international payments.

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## Balance of Payments Accounting

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- Basic Principles:
  - Credit items (+) are funds flowing into a country.
    - Exports of goods and services,
    - Investment income on foreign assets owned by domestic residents,
    - Transfers to domestic residents,
    - Net purchases of domestic assets by foreign residents.
  - This represents the demand for the domestic currency (in the foreign exchange market).

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## Balance of Payments Accounting

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- Basic Principles:
  - Debit items (–) are funds flowing out of a country:
    - Imports of goods and services,
    - Investment payments on domestic assets owned by foreign residents,
    - Transfers to foreign residents,
    - Net purchases of foreign assets by domestic residents.
  - This represents the supply for the domestic currency (in the foreign exchange market).

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## Balance of Payments Accounting

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- The Balance of Payments Accounts consists of:
  - The current account balance, *CA*,
  - The capital and financial account balance, *KFA*, and
  - The official settlements account balance, *OSA*.

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## Balance of Payments Accounting

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- The Current Account balance, *CA*, consists of:
  - Net exports of goods and services (*NX*),
  - Net income from abroad (*NFP*), and
  - Net unilateral transfers (*NUT*).

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## Balance of Payments Accounting

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- The Current Account balance,  $CA$ :
  - Net exports of goods and services, ( $NX$ ):
    - Exports,  $X$ , (a credit item).
  - MINUS**
  - Imports,  $M$ , (a debit item).
  - For most countries, net exports,  $X - M$ , are the largest part of the current account and they are hugely negative for the U.S.

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## Balance of Payments Accounting

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- The Current Account balance,  $CA$ :
  - Net income from abroad ( $NFP$ ):
    - Investment income on foreign assets owned by domestic residents, (a credit item).
  - MINUS**
  - Investment payments on domestic assets owned by foreign residents, (a debit item).
  - For most countries, net income from abroad is a relatively small part of the current account and is about equal to net factor payments,  $NFP$ .

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## Balance of Payments Accounting

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- The Current Account balance,  $CA$ :
  - Net unilateral transfers ( $NUT$ ):
    - Transfers to domestic residents, (a credit item).
  - MINUS**
  - Transfers to foreign residents, (a debit item).
  - For some countries, net unilateral transfers are a substantial (positive) part of the current account; for the U.S., net unilateral transfers have been increasingly negative.

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## Balance of Payments Accounting

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- The Current Account balance,  $CA$ , is given by:
$$CA = NX + NFP + NUT$$
  - When  $CA > 0$ , there is a current account surplus.
    - More funds flowing into than out of a country.
  - When  $CA < 0$ , there is a current account deficit.
    - Fewer funds flowing into than out of a country.

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## Balance of Payments Accounting

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- The Capital and Financial Account balance, *KFA*:
  - The capital and financial account balance is the net international transactions in existing real and financial assets.
    - Real assets like real estate.
    - Financial assets like stocks and bonds.

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## Balance of Payments Accounting

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- The Capital and Financial Account balance, *KFA*, consists of:
  - The Capital Account balance, and
  - The Financial Account balance.

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## Balance of Payments Accounting

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- The Capital and Financial Account balance, *KFA*:
  - The capital account balance is the net flow of unilateral transfers of assets into or out of a country.

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## Balance of Payments Accounting

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- The Capital and Financial Account balance, *KFA*:
  - The financial account balance is the net flow of:
    - Net purchases of domestic assets by foreign residents, (a credit item)
  - MINUS**
  - Net purchases of foreign assets by domestic residents, (a debit item).
  - Most international transactions are in the financial account part of the capital and financial account.

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## Balance of Payments Accounting

- The Capital and Financial Account balance, *KFA*:
  - Foreign direct investment:
    - A foreign firm buys or builds domestic capital goods.
    - Increases the capital and financial account balance.
  - Portfolio investment:
    - Foreigners acquire U.S. securities.
    - Increases the capital and financial account balance.

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## Balance of Payments Accounting

- The Official Settlements Account balance, *OSA*:
  - The Official Settlements Account balance is the net transactions between central banks using official reserve assets to make international payments in the foreign exchange market.
  - Official reserve assets include:
    - Foreign government securities,
    - Bank deposits, and
    - SDRs of the IMF, and
    - Gold.

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## Balance of Payments Accounting

- The Official Settlements Account balance, *OSA*:
  - Central banks buy (or sell) official reserve assets with (or to obtain) their own currencies.
  - The *OSA* is also called the “balance of payments”.
    - The net change in a country’s official reserve assets.
      - The change in the domestic government’s reserve assets
      - MINUS**
      - The change in foreign central bank holdings of domestic assets.

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## Balance of Payments Accounting

- The Official Settlements Account balance, *OSA*:
  - A balance of payments surplus means a country is increasing its official reserve assets.
  - A balance of payments deficit means a country is reducing its official reserve assets.

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## Balance of Payments Accounting

- The relationship between the *CA* and the *KFA*:
  - Every exchange of goods, services, and/or assets requires a payment.
  - Therefore, the current account plus the capital and financial account must sum to zero.

$$CA + KFA = 0$$

or

$$CA = -KFA$$

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## Balance of Payments Accounting

- The relationship between the *CA* and the *KFA*:
  - In practice,  $CA + KFA$  does not equal 0 because of measurement problems.
    - These are recorded as a statistical discrepancy.

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## Balance of Payments Accounting

- Net foreign assets and the balance of payments accounts:
  - Net foreign assets are a country's total foreign assets minus its total foreign liabilities.
    - Net foreign assets can change because of the acquisition or disposition of new assets or liabilities.
    - Net foreign assets may also change because of an change in the value of existing assets or liabilities.

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## Balance of Payments Accounting

- Net foreign assets and the balance of payments accounts:
  - The net increase (decrease) in foreign assets equals a country's current account surplus (deficit).
    - A current account surplus implies a capital and financial account deficit, and a net increase in holdings of foreign assets (a financial outflow).
    - A current account deficit implies a capital and financial account surplus, and a net decline in holdings of foreign assets (a financial inflow).

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## Balance of Payments Accounting

- Equivalent measures of a country's international trade and finance:

- Current account surplus (deficit):
  - = capital and financial account deficit (surplus), or
  - = net acquisition (disposition) of foreign assets, or
  - = net foreign lending (borrowing), or
  - = net exports surplus (deficit)
- If  $NFP$  and  $NUT$  are zero.

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## Goods Market Equilibrium, Open Economy

- National saving is given by:

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

- National saving has two uses:
  - Increase the capital stock by domestic investment.
  - Increase net foreign assets by lending to foreigners.
- For simplicity, assume  $NFP = NUT = 0$ .

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## Goods Market Equilibrium, Open Economy

$$S = I + CA = I + NX$$

- Goods market equilibrium requires that national saving and investment must equal their desired levels:

$$S^d = I^d + NX$$

- or

$$I^d = S^d - NX$$

- or

$$NX = S^d - I^d$$

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## Small Open Economies

- A *small open economy*, SOE, is an economy too small to affect the world real interest rate.

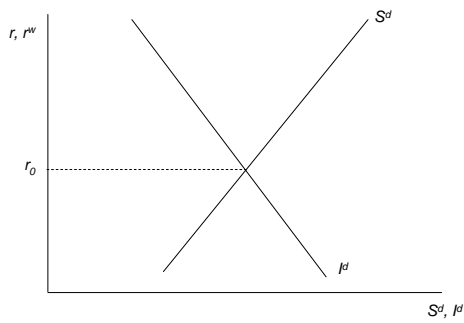
- World real interest rate ( $r^w$ ):

- The world real interest rate is the real interest rate in the international capital markets.

- **Key assumption:** Residents of a SOE can borrow or lend any amount at the expected  $r^w$ .

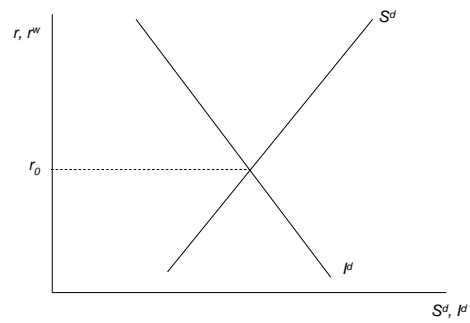
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### A SOE that neither lends or borrows abroad



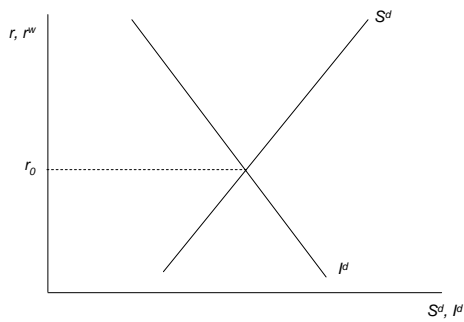
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### A SOE that lends abroad



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### A SOE that borrows from abroad



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### Saving and Investment in a SOE

- $r^w$  may be such that  $S^d > I^d$ ,  $S^d = I^d$ , or  $S^d < I^d$ .
  - If  $S^d > I^d$ , the excess saving is lent internationally.
    - Net foreign lending is positive and  $NX > 0$ .
  - If  $S^d = I^d$ , no net foreign lending and  $NX = 0$ .
  - If  $S^d < I^d$ , the excess investment is financed by borrowing internationally.
    - Net foreign lending is negative and  $NX < 0$ .

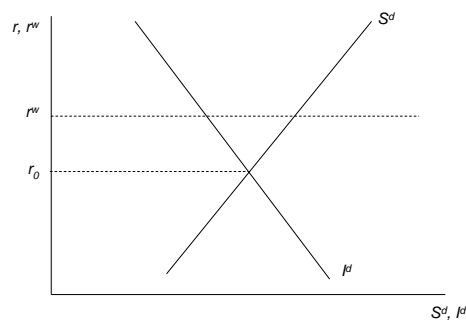
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## Saving and Investment in a SOE

- Economic shocks in a SOE.
  - Anything that changes desired national saving.
    - Changes in current output, future output,  $G$ , etc.
  - Anything that changes desired investment.
    - Changes in the  $MPK^e$ ,  $\tau$ , etc.

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## An increase in desired saving in a SOE



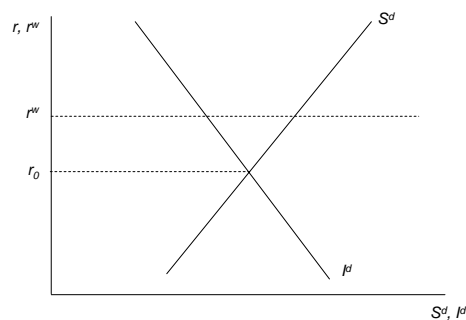
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## An increase in desired saving in a SOE

- Economic shocks in a SOE:
  - An increase in desired saving (at a given world interest rate):
    - Increases the current account balance, and
    - Increases net foreign lending or decreases net foreign borrowing.

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## An increase in desired investment in a SOE



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## An increase in desired investment in a SOE

- Effects of economic shocks in a SOE:
  - An increase in desired investment (at a given world interest rate):
    - Reduces the current account balance, and
    - Reduces net foreign lending or increases net foreign borrowing.

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## Large Open Economies

- A **large open economy**, LOE, is an economy that is large enough to affect the world real interest rate.
  - Suppose there are just 2 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 =  $I_{for}$ .

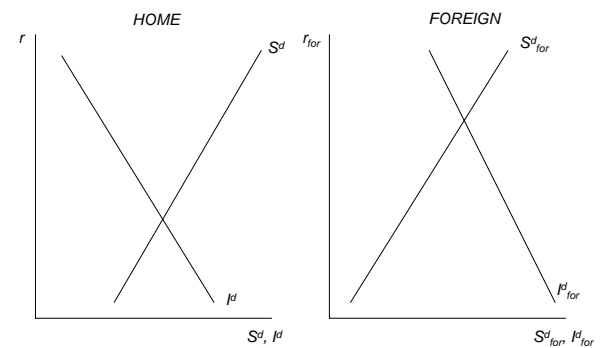
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## Saving and Investment in LOE

- The **world real interest rate**,  $r^w$ , will adjust to equilibrate desired international lending by one country with desired international borrowing by the other.
  - The equilibrium world real interest rate is determined such that a current account surplus in one country is equal in magnitude to the current account deficit in the other.

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## Determination of $r^w$ with two LOEs



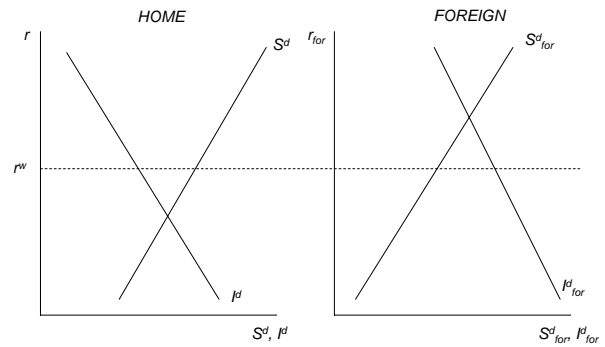
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## Saving and Investment in LOE

- Economic shocks in a LOE:
  - Anything that changes desired national saving.
    - Changes in current output, future output,  $G$ , etc.
  - Anything that changes desired investment.
    - Changes in the  $MPK^f$ ,  $\tau$ , etc.

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## An increase in desired saving with LOEs



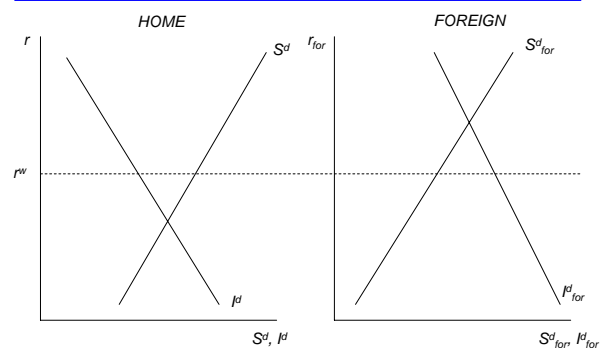
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## An increase in desired saving with LOEs

- Economic shocks in a LOE:
  - An increase in desired saving in one LOE will:
    - Increase that country's current account balance,
    - Increase that country's net foreign lending, and
      - Or decrease that country's net foreign borrowing.
    - Cause the world real interest rate to decline.

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## An increase in desired investment with LOEs



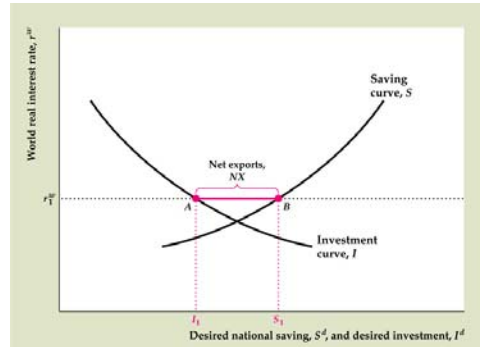
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## An increase in desired investment with LOEs

- Economic shocks in a LOE:
  - An increase in desired investment in a LOE will:
    - Reduce that country's current account balance,
    - Reduce that country's net foreign lending, and
      - Or increase that country's net foreign borrowing.
    - Cause the world real interest rate to rise.

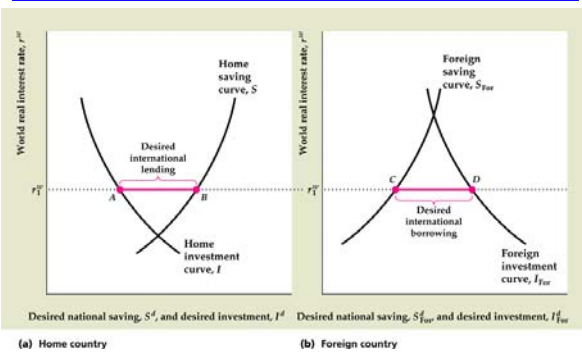
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## Key Diagram: Saving, Investment in a SOE



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## Key Diagram: Saving, Investment in a LOE



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