Soochow University International Programs

2021 SCUIP Winter Session I
ECON202

Lecture 12: A Macroeconomic Theory of the Open Economy

ECON202: Macroeconomics
Soochow University

Prerequisites

- Things you need to know before you see the rest of this topic:
  - ▷ Net exports are always equal to net capital outflow: $NX = NCO$

  - ▷ National savings is always equal to domestic investment plus net capital outflow: $S = I + NCO$

  - ▷ The loanable funds theory of the real interest rate, for closed economies.
  - ▷ National saving = private sector saving + government saving
    - -> Private sector saving = $Y - T - G$
    - -> Government saving = $T - G$
  - ▷ The real exchange rate is the price of domestic products relative to similar foreign products.
    - -> Calculated as $e \times P/P^*$
  - ▷ Purchasing power parity theory of the real exchange rate
    - -> $\frac{e \times P}{P^*} = 1$

An Accounting Identity: S = I + NCO

- We have seen before that $S = I + NCO$.

- And we have seen before that it makes sense:
  ▷ A nation's saving must end up being loaned to domestic borrowers or foreign borrowers.
  ▷ The loans made to domestic borrowers will end up as investment spending mainly by domestic firms (*I*).
  ▷ And the loans made to foreigners will be net capital outflow (NCO).
  ▷ Therefore, *S = I + NCO*.

Loanable Funds Theory of the Real Interest Rate

- Now, in a free-market economy, people and/or firms cannot be forced to do this or that.

- Therefore, desired saving by households must be equal to desired investment spending by firms and households plus desired net capital outflow.

- How is this accomplished? How are these desired amounts brought into line?

# Loanable Funds Theory of the Real Interest Rate (Cont'd)

- The theory of loanable funds says that:
  - ▷ There's a market for loanable funds
  - ▷ The supply of loanable funds = desired national saving (S).
    - -> This supply depends on many factors, including the real interest rate.
    - -> The supply of loanable funds increases when the real interest rate increases.
  - ▷ The demand for loanable funds = desired domestic investment spending (I) + desired net capital outflow (NCO)
    - -> This demand depends on many factors, including the real interest rate.
    - -> The demand for loanable funds decreases when the real interest rate increase.
  - ▷ The real interest rate reaches equilibrium level at which supply is equal to demand.
  - ▷ In this way, we get $S = I + NCO$ even when the variables are interpreted as the desired amounts.

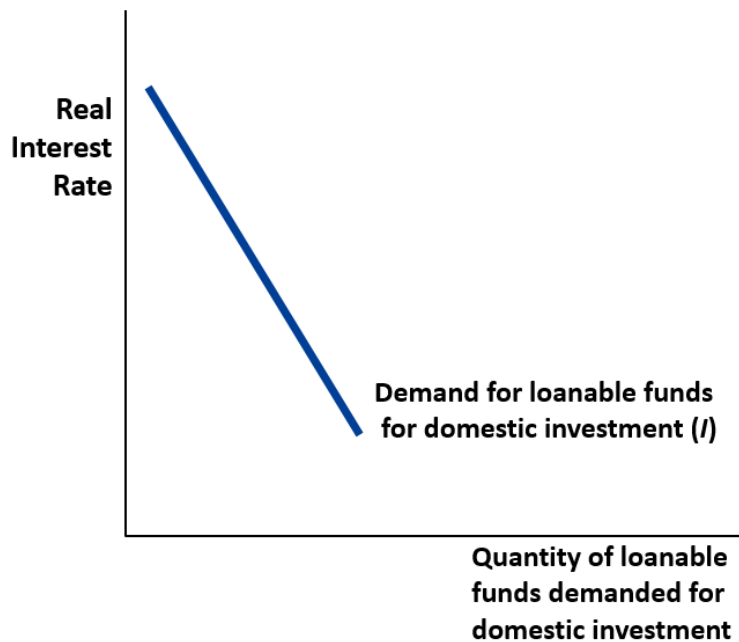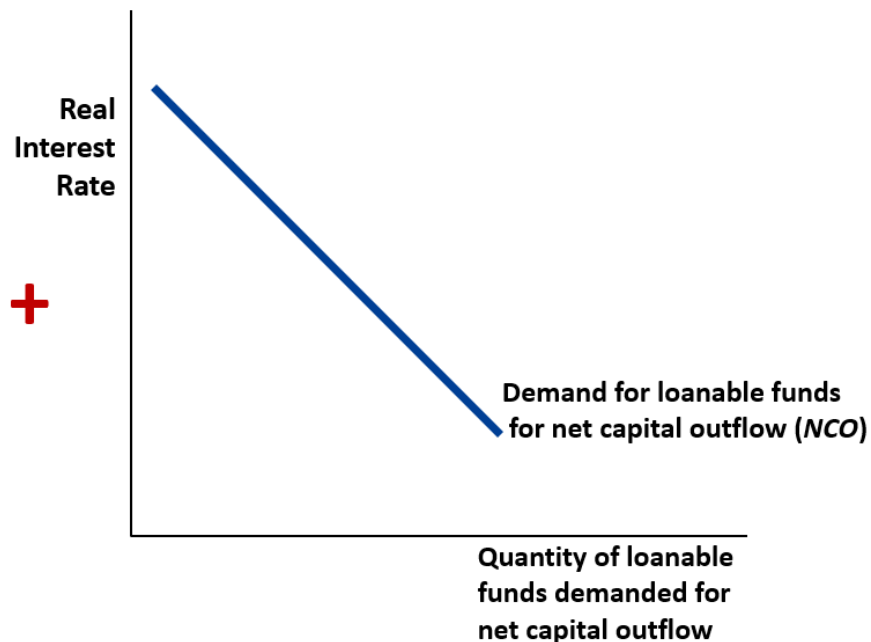# The Market for Loanable Funds: Supply

Real Interest Rate (vertical axis)

Supply of loanable funds (National saving, S)

Quantity of Loanable Funds Supplied (horizontal axis)
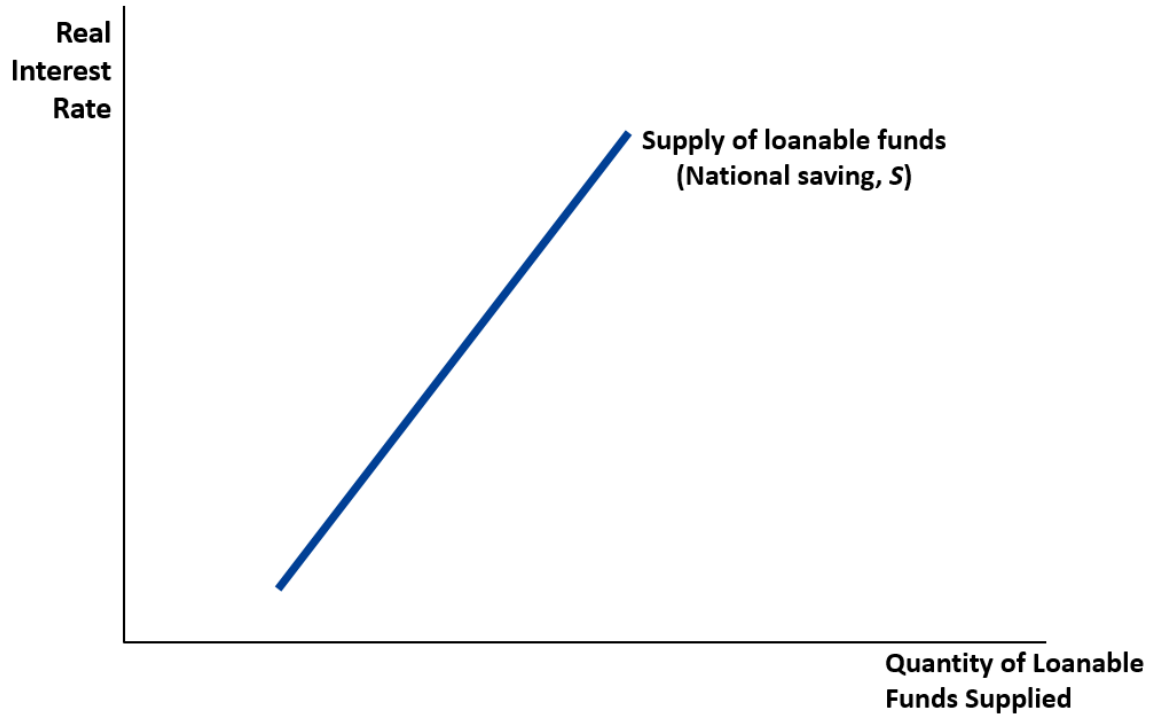
The Market for Loanable Funds: Demand

Loanable Funds Market: Demand (Cont'd)

Real
Interest
Rate

Demand for loanable funds
(domestic investment plus
net capital outflow, *I + NCO*)

Quantity of Loanable
Funds Demanded
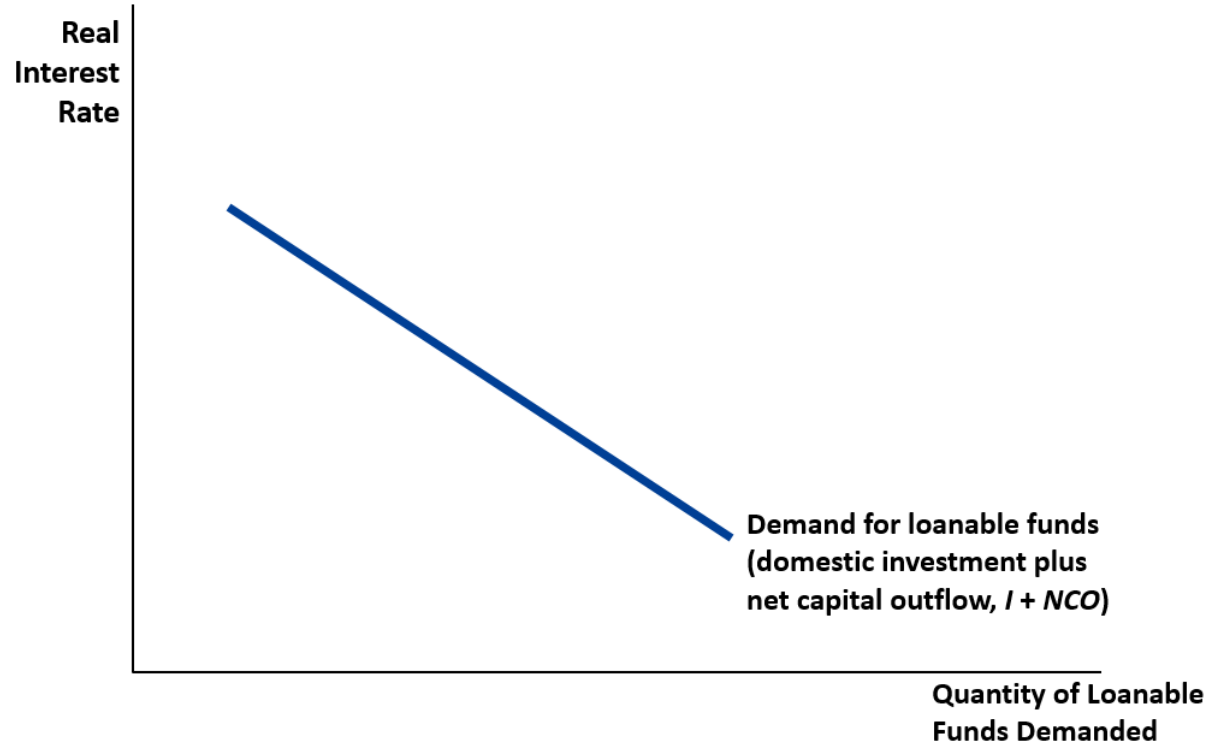
The Market for Loanable Funds: Equilibrium
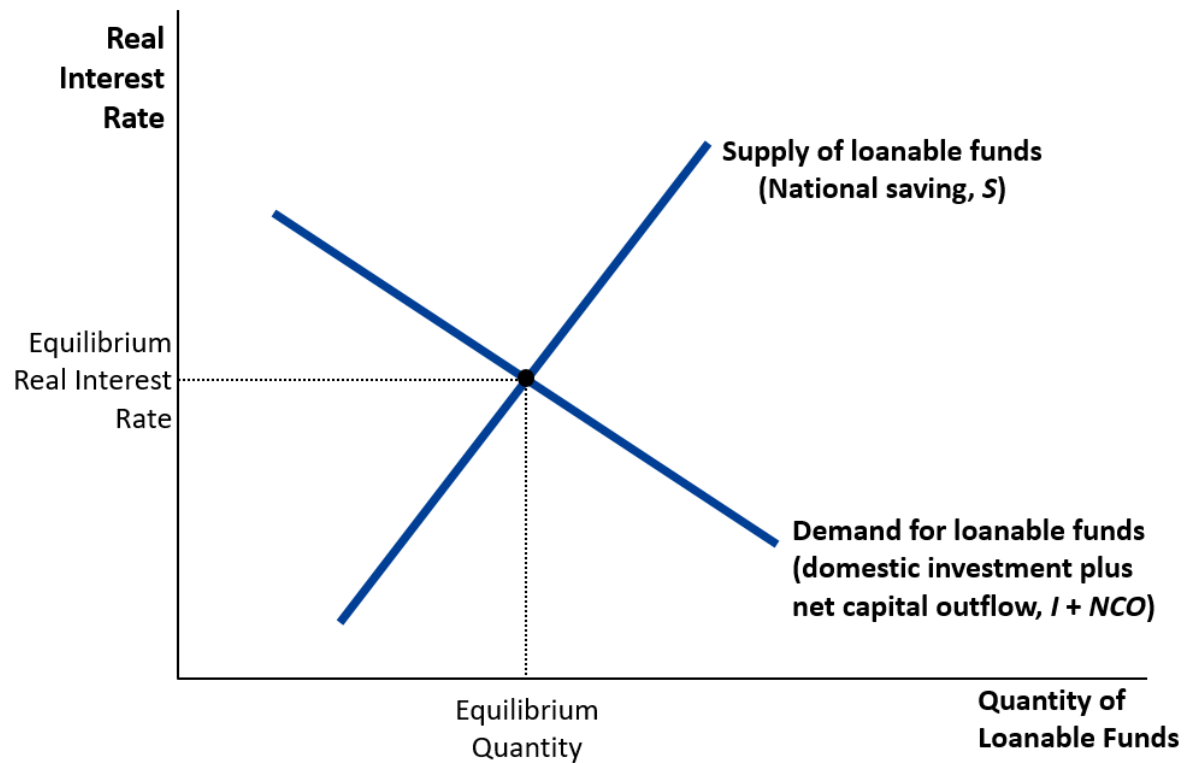
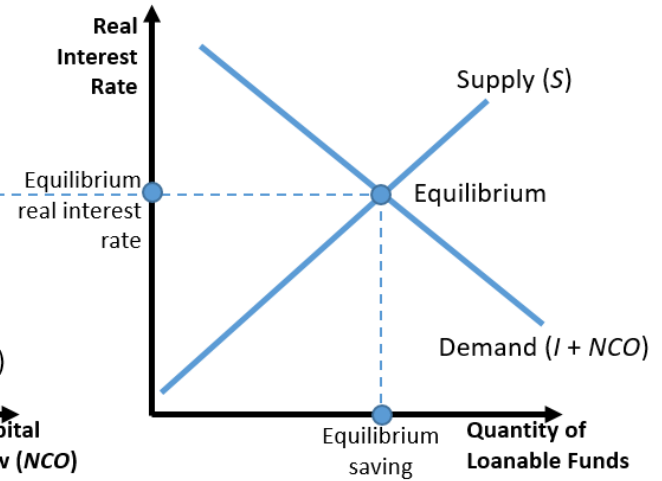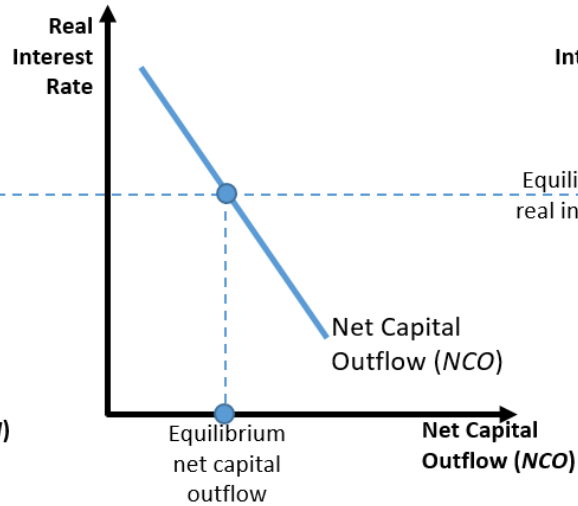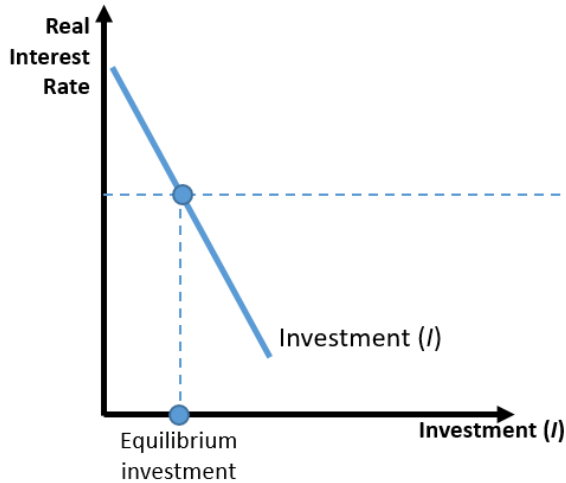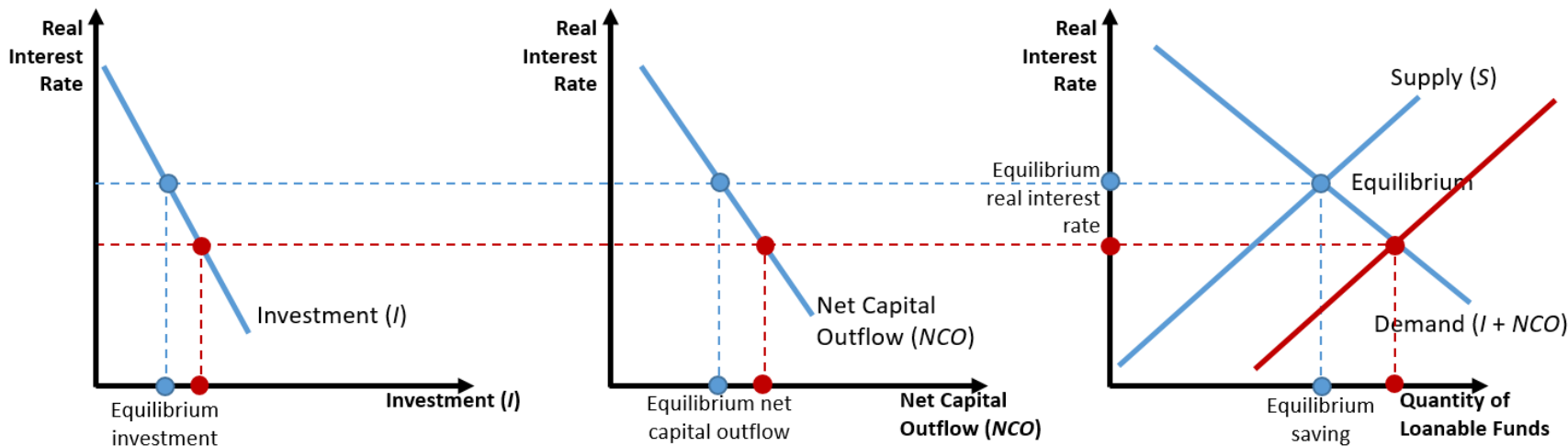# Loanable Funds Market: Equilibrium (Cont'd)

Loanable Funds Market: Equilibrium (Cont'd)

Note that the loanable funds theory predicts that an increase (meaning a shift to the right) in the national saving *curve* will reduce the real interest rate, and increase the equilibrium *amounts* of S, I, and NCO.

An Accounting Identity: NX = NCO

- We have seen before that the actual levels of net exports and net capital outflow MUST be equal: NX = NCO.

- But, in a free-market economy, people and/or firms cannot be forced to do this or that.

- Therefore, desired net exports must be equal to desired net capital outflow.

- How is this accomplished? How are these desired amounts brought into line?

The Market for Foreign Currency Exchange

- Just as we may imagine a market in which ice cream is exchanged for currency, or a market in which Amazon shares are exchanged for currency, we may imagine a market in which different currencies are exchanged for each other.

- That's the market for foreign-currency exchange.

- We assume that in this market there is a supply and a demand for every currency.

- We assume that this market's price reaches equilibrium level at which supply and demand are equal.

The Foreign Exchange Market (Cont'd)

- The supply of the domestic currency = desired net capital outflow (NCO).

  ▷ This supply depends on many factors, but not on the real exchange rate.

  ▷ Recall that the determination of desired net capital outflow was determined in the market for loanable funds before I even mentioned the real exchange rate.

- The demand for the domestic currency = desired net exports (NX).

  ▷ This demand depends on many factors, including the real exchange rate.

  ▷ The demand for the domestic currency decreases when the real exchange rate increases.
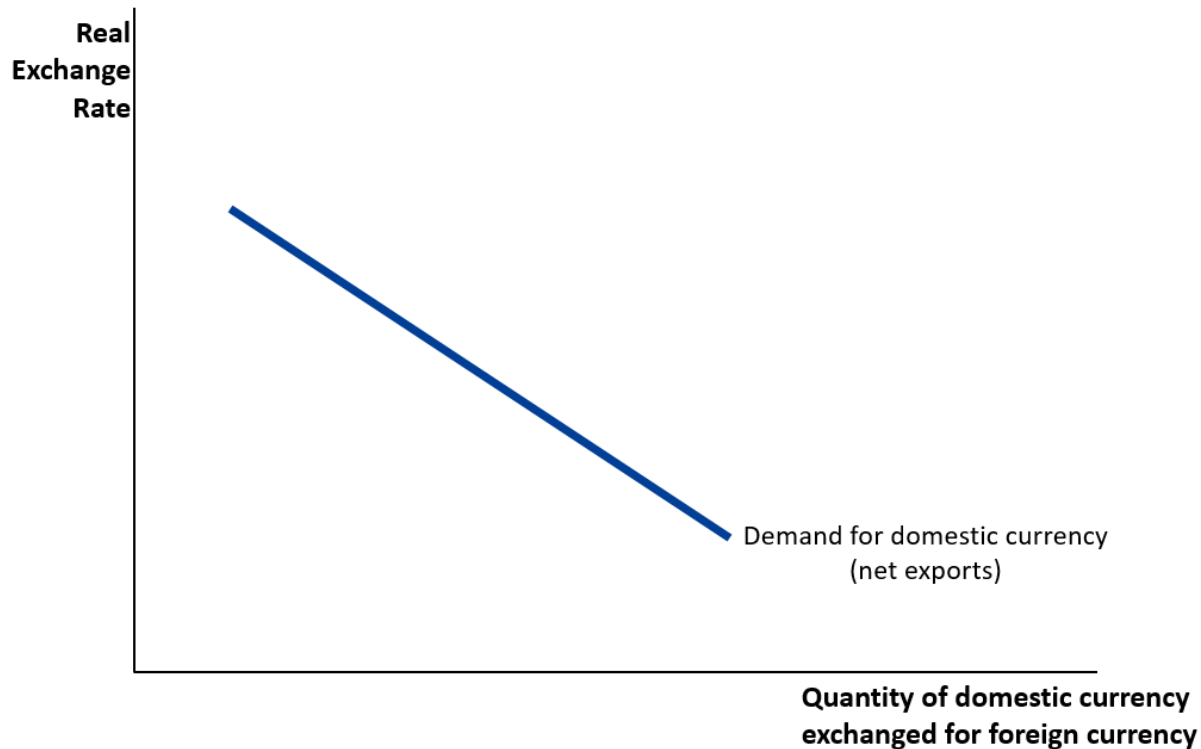
The Foreign Exchange Market (Cont'd)

- The real exchange rate reaches an equilibrium level at which supply equal to demand.

- In this way, we get NX = NCO even when the variables are interpreted as the desired amounts.

Net Exports and the Real Exchange Rate

Real Exchange Rate

Demand for domestic currency (net exports)

Quantity of domestic currency exchanged for foreign currency

Net Capital Outflow and Real Exchange Rate

Real
Exchange
Rate

Supply of domestic currency
(net capital outflow, determined in the
market for loanable funds)

Equilibrium *NCO* and
equilibrium *NX*

**Quantity of domestic currency
exchanged for foreign currency**
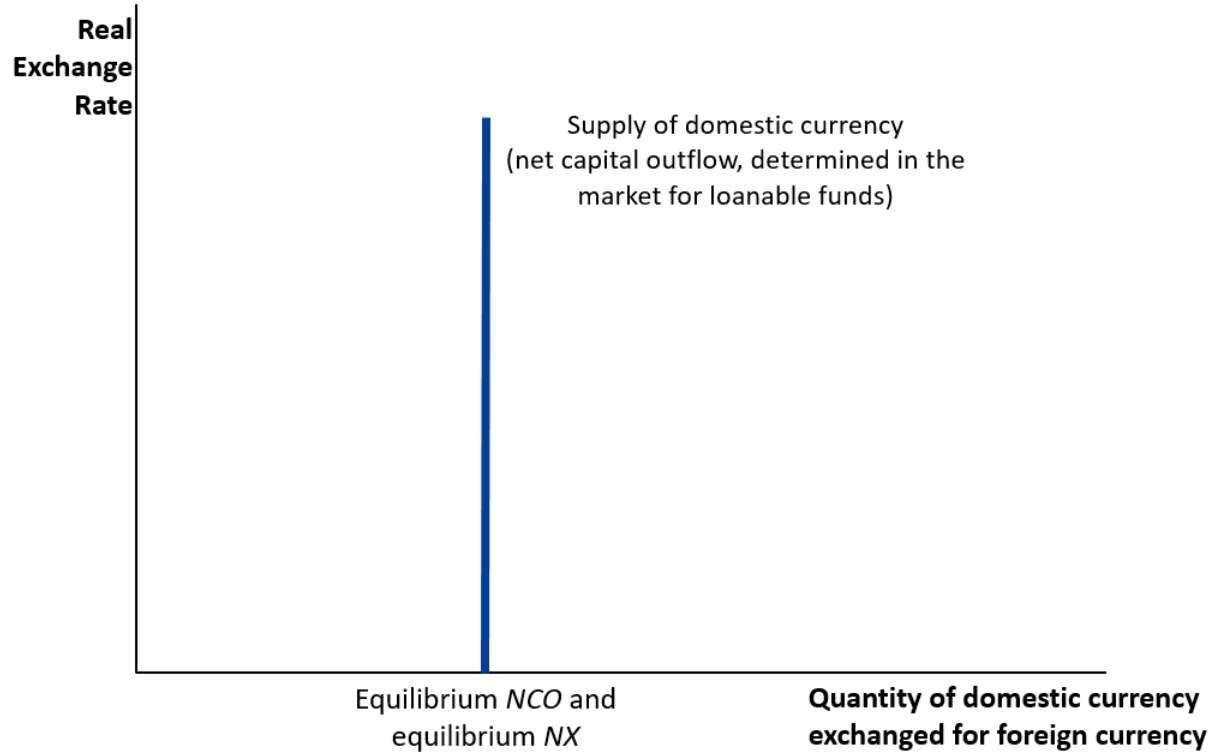
The Foreign Exchange Market (Cont'd)
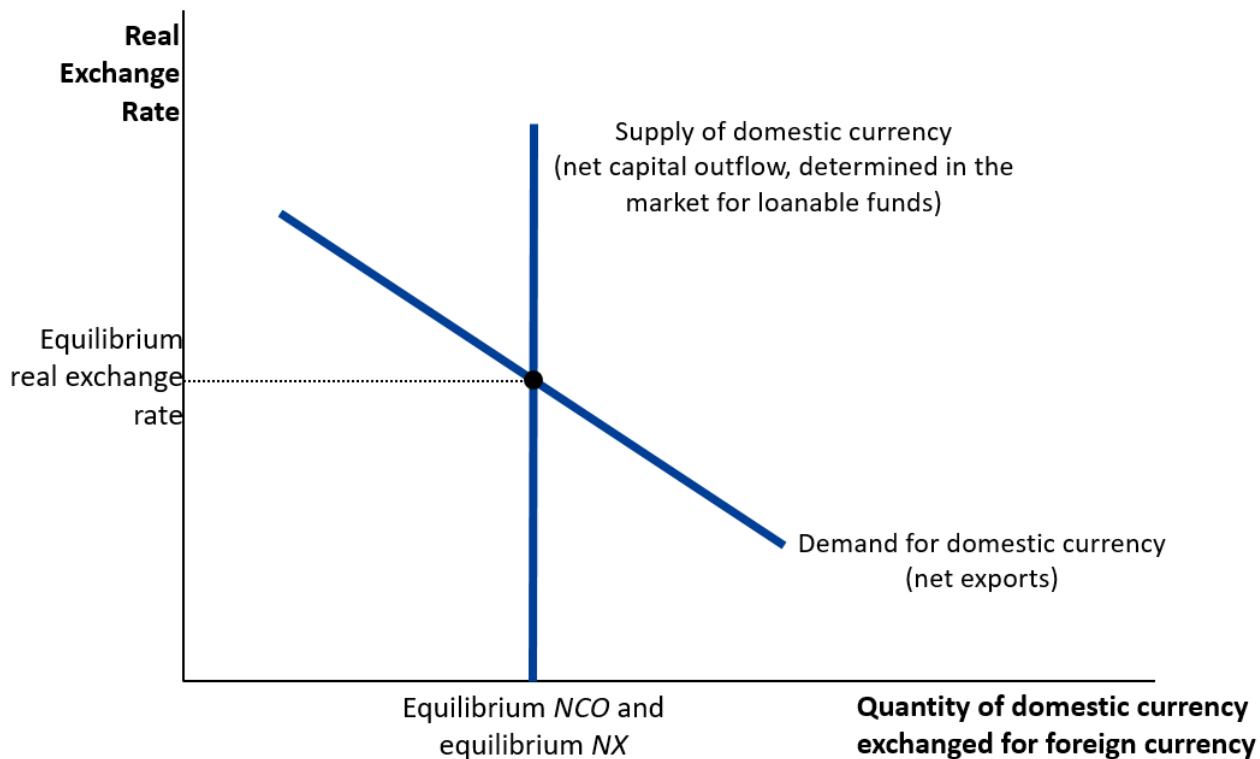
The Unusual Case of Purchasing Power Parity
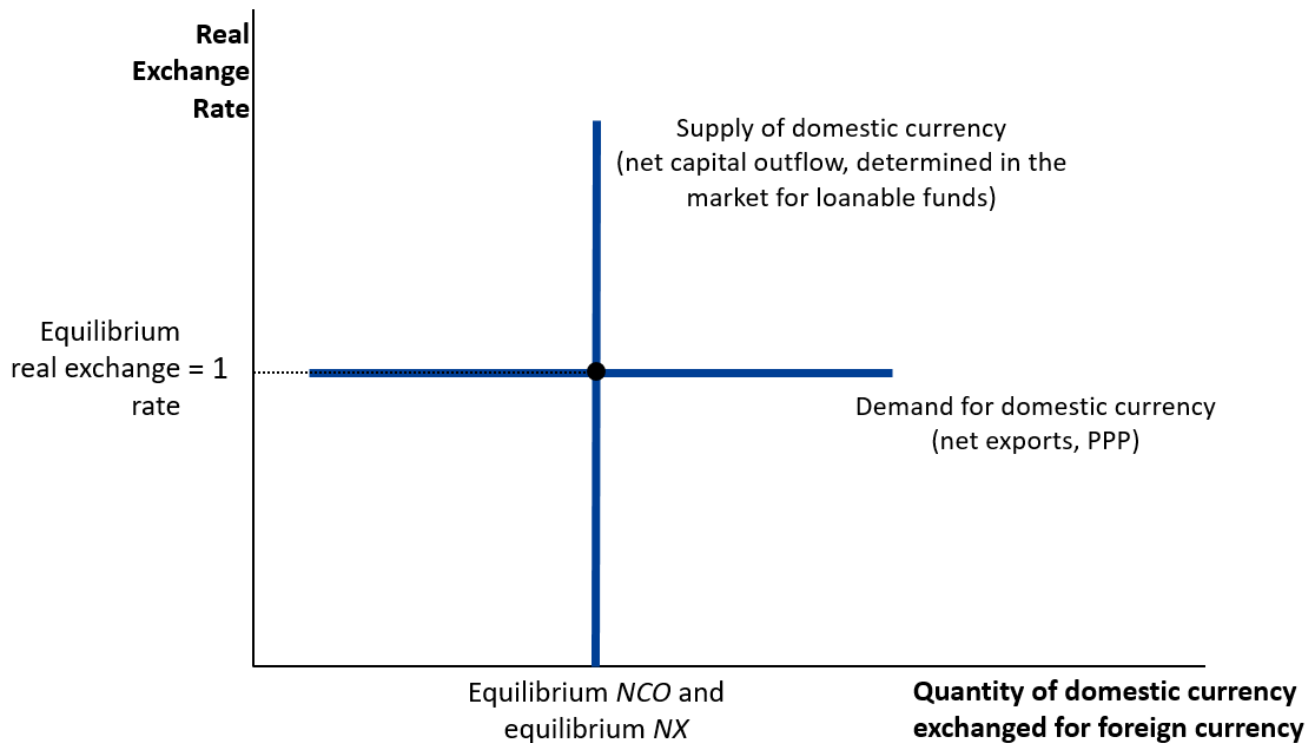
Simultaneous Equilibrium in Two Markets
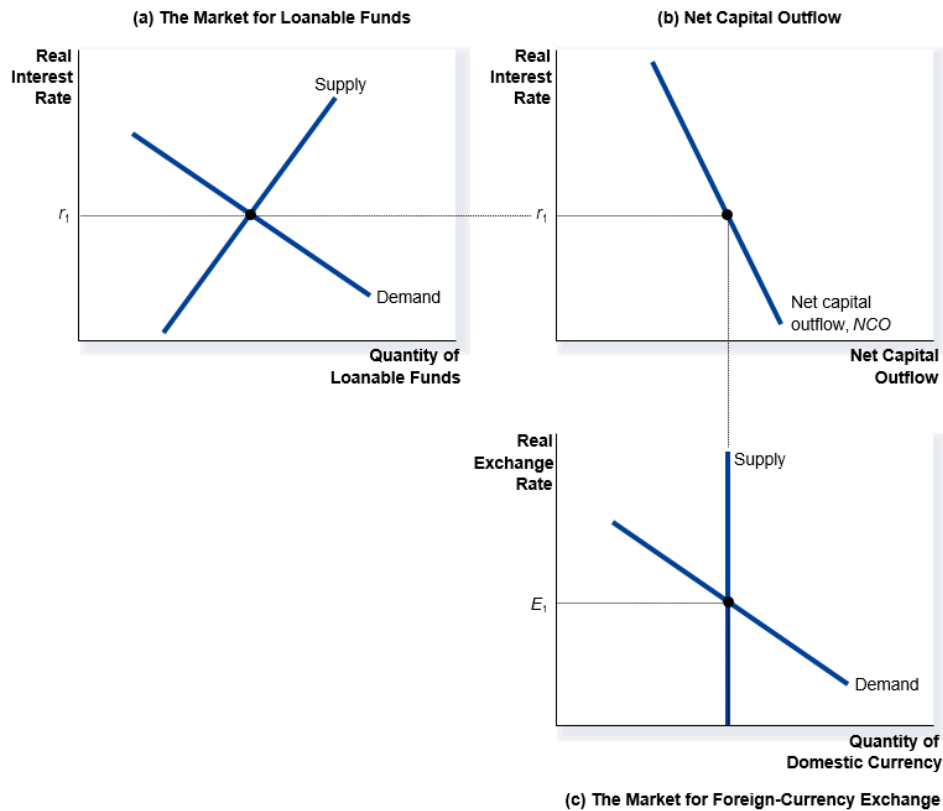
- We need to join together the two markets that we've been discussing – the loanable funds market and the foreign currency exchange market – to get to a coherent understanding of long-run open-economy macroeconomics.

Simultaneous Equilibrium in Two Markets (Cont'd)

(a) The Market for Loanable Funds

(b) Net Capital Outflow

(c) The Market for Foreign-Currency Exchange

Effects of Policy Changes and Unforeseen Events

- The point of building a macroeconomic theory of an open economy is to be able to say something that is not totally idiotic about the likely consequences of some policy change or unforeseen event.

- We will now see what our theory says about the effects of:
  - ▷ A tax cut and/or an increase in government spending
  - ▷ An import tariff or import quota
  - ▷ Political instability and capital flight

Tax Cut and/or Increase in Government Spending

- Recall that:
  - ▷ The supply of loanable funds = national saving (S)
  - ▷ National saving = private sector saving + government saving
    - -> Private sector saving = $Y - T - C$
    - -> Government saving = $T - G$

- Therefore, a tax cut and/or an increase in government spending implies that $T - G$ decreases (that is, government saving decreases).

- Therefore, national saving (S) decreases.

- This shifts the supply of loanable funds to the left.

Tax Cut and/or Increase in Gov Spending (Cont'd)

1. A tax cut or spending hike reduces the supply of loanable funds . . .

(a) The Market for Loanable Funds

(b) Net Capital Outflow

2. . . . which increases the real interest rate . . .

3. . . . which in turn reduces net capital outflow.

4. The decrease in net capital outflow reduces the supply of domestic currency to be exchanged into foreign currency . . .

5. . . . which causes the real exchange rate to appreciate.
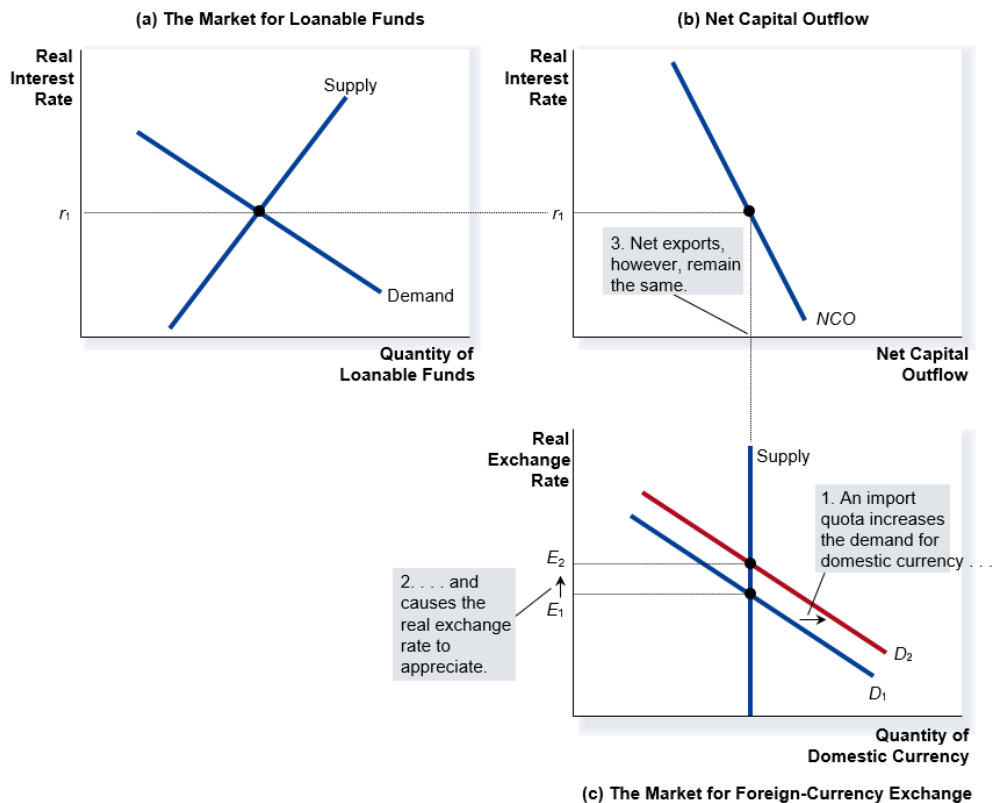
(c) The Market for Foreign-Currency Exchange

An Import Tariff or An Import Quota

- An import tariff is a tax on imported goods.

- An import quota puts a limit on the quantity of imports.

- Either way, imports will decrease, assuming all other factors that affect imports (such as the real exchange rate) are unchanged.

- Therefore, net exports (NX = exports − imports) will increase.

- As a result, the demand for the domestic currency in the market for foreign currency exchange will shift to the right.

- As the curve for S, I, and NCO are unaffected, the market for loanable funds will be unaffected.

An Import Tariff or An Import Quota (Cont'd)

(a) The Market for Loanable Funds

Real Interest Rate

Supply

r_1

Demand

Quantity of Loanable Funds

(b) Net Capital Outflow

Real Interest Rate

r_1

3. Net exports, however, remain the same.

NCO

Net Capital Outflow

(c) The Market for Foreign-Currency Exchange

Real Exchange Rate

Supply

1. An import quota increases the demand for domestic currency . . .

E_2

2. . . . and causes the real exchange rate to appreciate.

E_1

D_2

D_1

Quantity of Domestic Currency

Political Instability and Capital Flight

- An increase in political instability is likely to cause an increase in net capital outflow (also called capital flight, when the outflow is large), assuming all the other factors that affect NCO are unchanged.

- This will shift the NCO curve to the right.

- As the two main sources of the demand for loanable funds are investment (I) and net capital outflow (NCO), the demand for loanable funds will shift right.

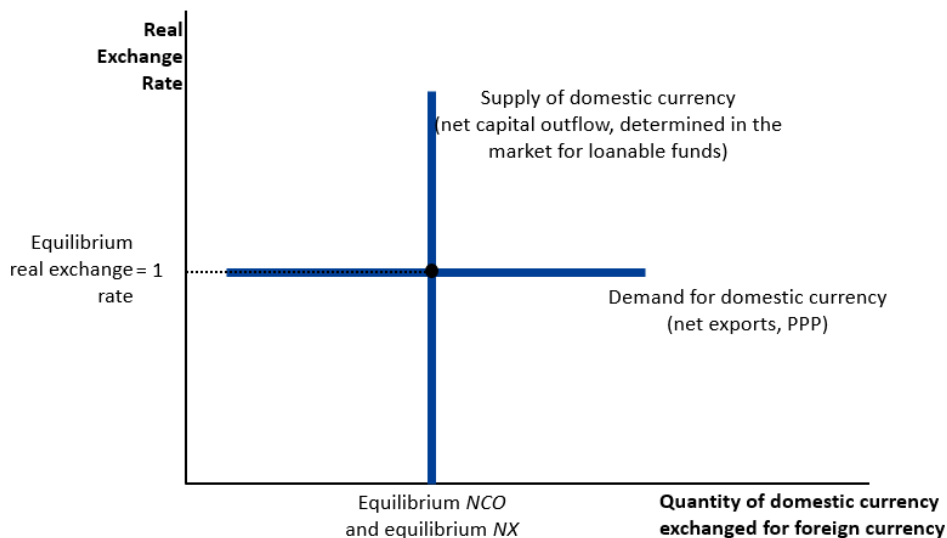# Political Instability and Capital Flight (Cont'd)

(a) The Market for Loanable Funds

(b) Net Capital Outflow

(c) The Market for Foreign-Currency Exchange
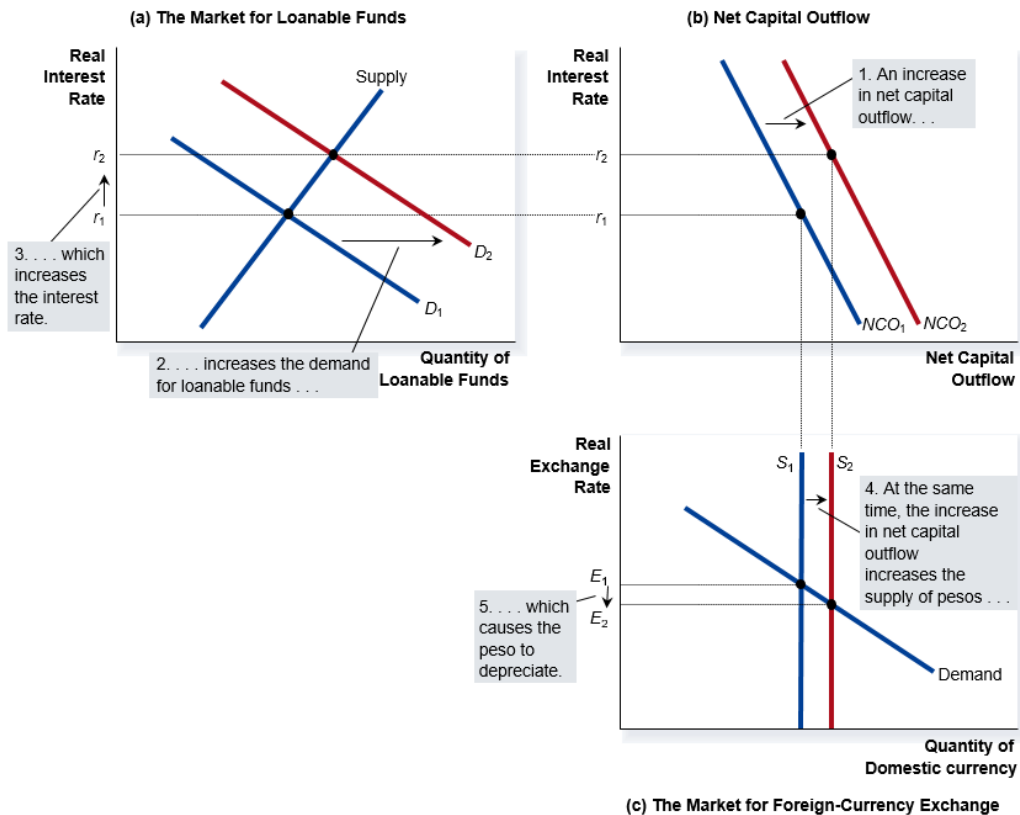
Summary of Predictions

	National Saving (*S*)	Domestic investment (*I*)	Net capital outflow (*NCO*) = Net exports (*NX*)	Real interest rate	Real exchange rate
Tax cut and/or increase in government spending	↓	↓	↓	↑	↑
Import tariff and/or import quota	No change	No change	No change	No change	↑
Increase in political instability	↑	↓	↑	↑	↓

The Unusual Case of Purchasing Power Parity

Recall that under the unusual case of purchasing-power parity, the net exports (*NX*) curve is horizontal at the real exchange rate of 1.

We could repeat the three prediction exercises we just did with this horizontal *NX* curve instead of the more common negatively-sloped *NX* curve.

The predictions would be the same as before, except that the real exchange rate would remain unchanged (at 1) in all cases.

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