# The Exchange Rate and the Balance of Payments

## Foreign currency or Foreign money

The money of other countries in the form of notes, coins, or bank deposits.

we can buy foreign currency in the foreign exchange market

# Foreign Exchange Market

The market in which the currency of one country is exchanged for the currency of another country.

- Made up of importers, exporters and currency traders.

# Exchange Rate

The price at which one currency exchanges for another currency.

In october 2002, one canadian dollar bought 63 U.S. cents

The exchange rate was 63 U.S. cents per dollar.

If the exchange rate is 63 U.S. cents per Canadian dollar, then one U.S. dollar will buy $1/0.63 = 1.58$ Canadian dollars.

Currency appreciation

A rise in the value of the canadian dollar in terms of the U.S. dollar

Currency depreciation

A fall in the value of the canadian dollar in terms of the U.S. dollar

# Nominal and Real Exchange Rates

The nominal exchange rate is the value of the canadian dollar expressed in units of foreign currency per canadian dollar.

The real exchange rate is the relative price of Canadian-produced goods and services to foreign-produced goods and services.

The real exchange rate measures the quantity of the real GDP of other countries that a unit of Canadian real GDP buys.

Example

Calculation of the real exchange rate for a single good

The price of a snow blower in China is 8,000 yuan

The price of an airplane in Canada is $8 million

The nominal exchange rate is 10 yuan per dollar.

$$RER = \frac{10 \frac{\text{yuan}}{\text{dollar}} \times \$8 \text{ million per can airplane}}{8{,}000 \frac{\text{yuan}}{\text{chinese snow blower}}}$$

$$= \frac{80{,}000{,}000 \frac{\text{yuan}}{\text{can airplane}}}{8{,}000 \frac{\text{yuan}}{\text{chinese snow blower}}}$$

$$= 10{,}000 \frac{\text{chinese snow blower}}{\text{canadian airplane}}$$

one Canadian plane buys 10,000 snow blowers.

Chinese snowblowers per canadian airplane

10 (a)

Real Exchange Rate using aggregate price levels.

P = the Canadian price level (GDP deflator)

$P^*$ = the Chinese price level

E = the nominal exchange rate (yuan per dollar)

The real exchange rate is

$$RER = \frac{E\,P}{P^*}$$

Chinese real GDP per unit of Canadian real GDP.

Example 10(b)

The Canadian commodity basket costs $120 (so that $p = \$120$ per Canadian basket)

The European commodity basket costs €100 (so that $p^* = €100$ per European basket)

The nominal exchange rate is $E = \frac{\text{euros}}{1\$ \text{CAN}}$

$= \frac{0.83 \text{ euros}}{\$ \text{CAN}}$

10(c)

The real dollar/euro exchange rate would be

$$RER = \frac{0.83 \frac{\text{euros}}{\$\,\text{CAN}} \times \$120 \text{ / CAN Basket}}{€100 \text{ / European Basket}}$$

$$= \frac{(€100 \text{ per CANADIAN BASKET})}{(€100 \text{ per European Basket})}$$

= 1 European Basket per Canadian Basket

one Canadian basket buys one European basket

# Cross Exchange Rates "

Example

Suppose the Canadian dollar exchanges for 0.85 U.S. dollars and also for 0.71 Euros. A U.S. dollar will exchange for

$$\frac{0.85 \text{ U.S}}{\$1 \text{ CAN}} \quad \frac{0.71 \text{ Euros}}{\$1 \text{ CAN}}$$

$$\frac{\dfrac{0.71 \text{ Euros}}{\$1 \text{ CAN}}}{\dfrac{0.85 \text{ U.S.}}{\$1 \text{ CAN}}} = 0.83529 \frac{\text{Euros}}{\text{U.S.}} \simeq 0.84 \frac{\text{Euros}}{\text{U.S.}}$$

# Canadian-Dollar Effective Exchange Rate Index (CERI)

An average of the exchange rates of the Canadian dollar against all the currencies in which Canada trades.

# How trading in the Foreign exchange market determines the exchange rate.

A. The Demand for Canadian dollars in the Foreign Exchange Market

People demand Canadian dollars so they can buy

1. Canadian-made goods and services - Canadian exports

2. Canadian assets i.e., bonds, stocks, and real estate.

# What determines the quantity of Canadian dollars demanded in the foreign exchange market

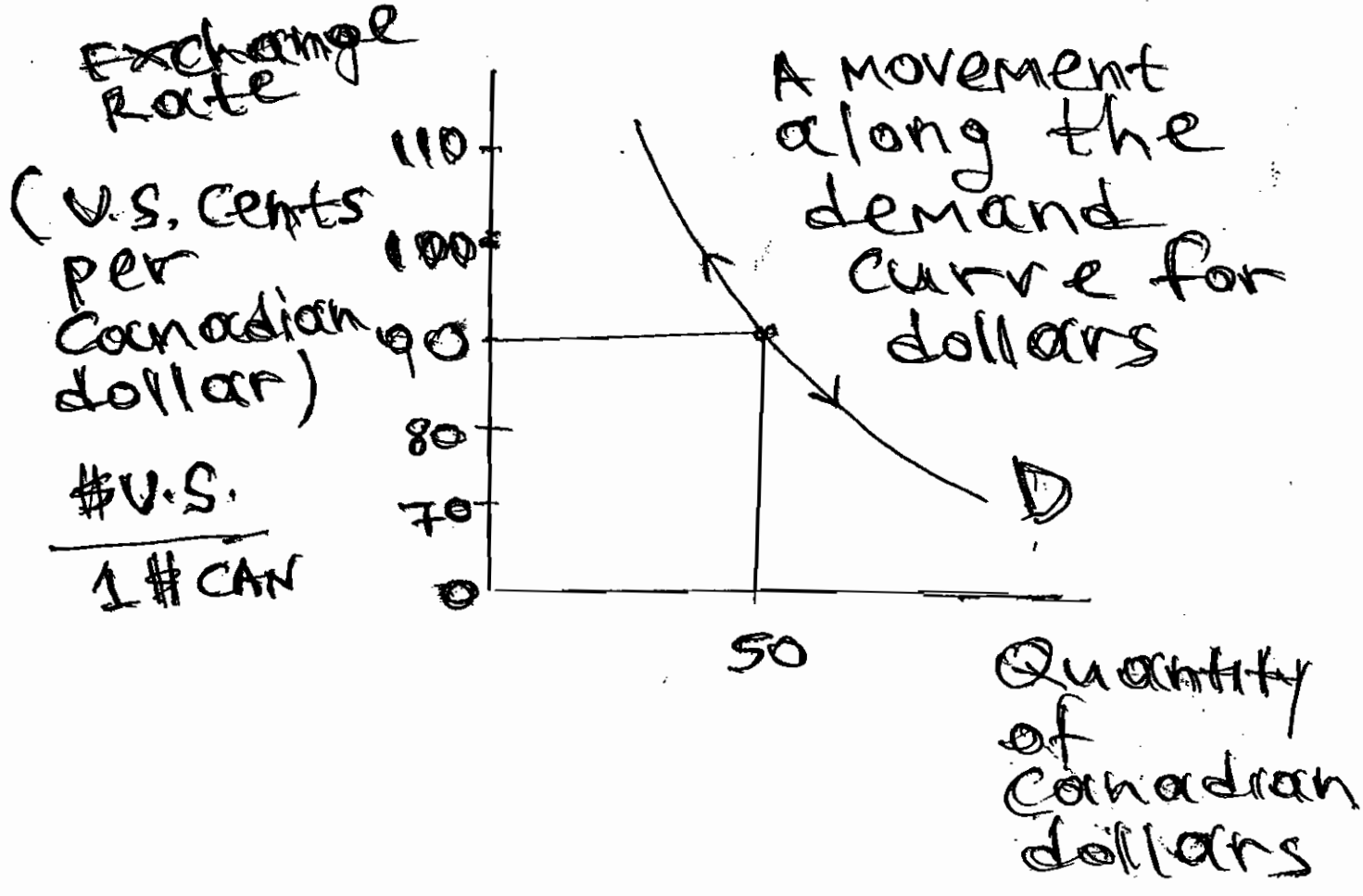
1. The exchange rate
2. World demand for canadian exports
3. Interest rates in Canada and other countries
4. The expected future exchange rate

The relationship between the quantity of Canadian dollars demanded in the foreign exchange market and the exchange rate.

keeping other things constant, the higher the exchange rate, the smaller is the quantity of Canadian dollar demanded

# This is the law of demand for foreign exchange

The demand for Canadian Dollars



The exchange rate influences the quantity of dollars demanded for two reasons:

1. Export effect

The lower the exchange rate, the cheaper are Canadian produced goods and services and the more Canada exports.

As a result, the quantity of CAN dollars demanded on the foreign exchange Market increases

2. Expected profit effect

The lower the exchange rate, the larger is the expected profit from buying Canadian dollars

People expect the value of the dollar to increase in the future.

So the quantity of dollars demanded increases.

B. The supply of canadian dollars in the foreign exchange market

people supply canadian dollars in the foreign exchange market when they buy other currencies.

They buy other currencies in order to buy

1. Foreign-made goods and services
2. Foreign assets

The quantity of of Canadian dollars supplied in the foreign exchange market depends on

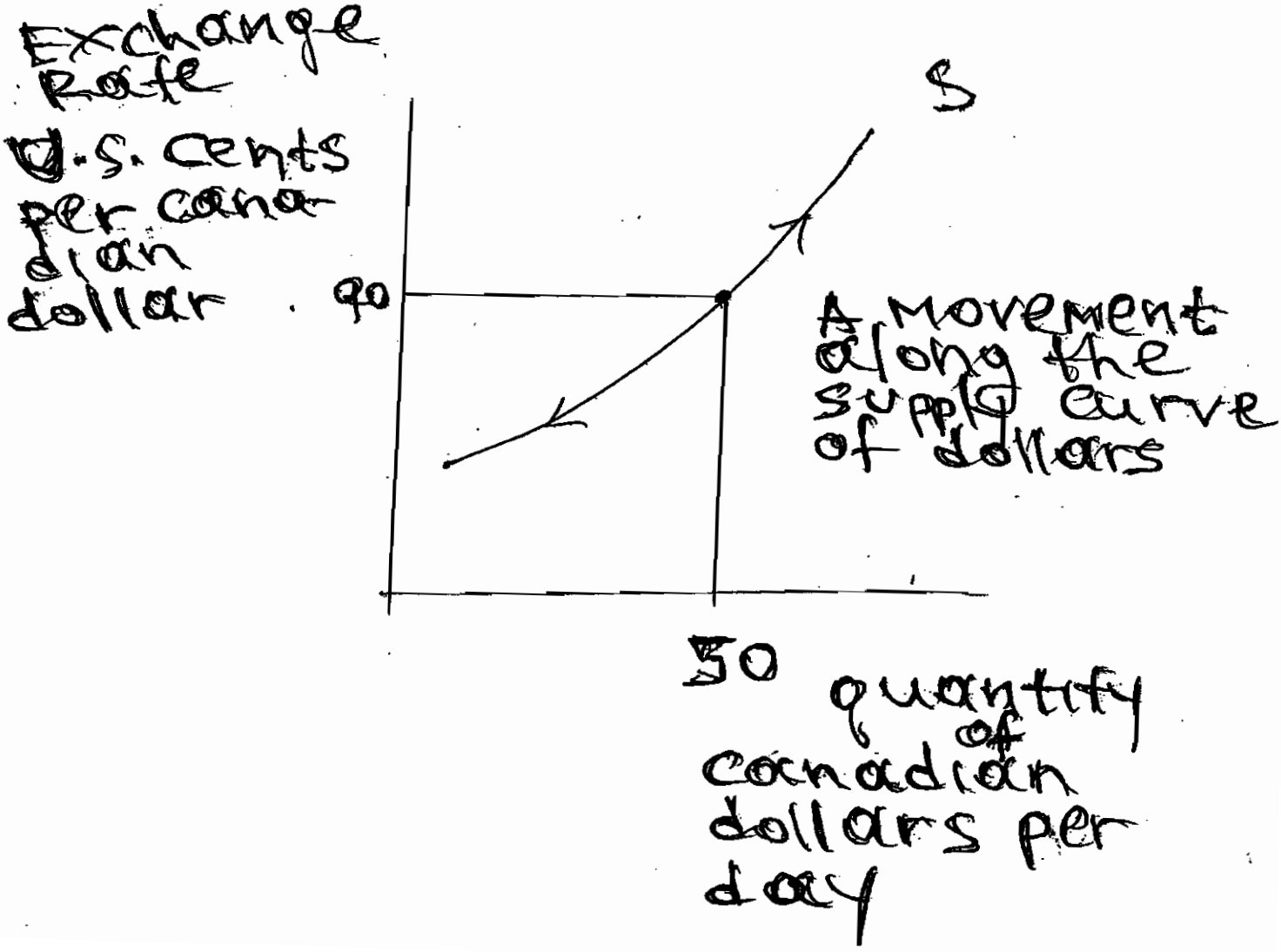
1. The exchange rate
2. Canadian demand for imports
3. Interest rates in Canada and other countries
4. The expected future exchange rate

# The relationship between the quantity of Canadian dollars supplied in the foreign exchange market and the exchange rate

Other things remaining the same, the higher the exchange rate, the greater is the quantity of Canadian dollars supplied in the foreign exchange market.

# This is the law of supply of foreign exchange

The supply of canadian dollars in the foreign exchange market



The exchange rate influences the quantity of Canadian dollars supplied for two reasons:

1. Import effect

The higher the exchange rate, the cheaper are foreign-produced goods to Canadians, and the more Canada imports

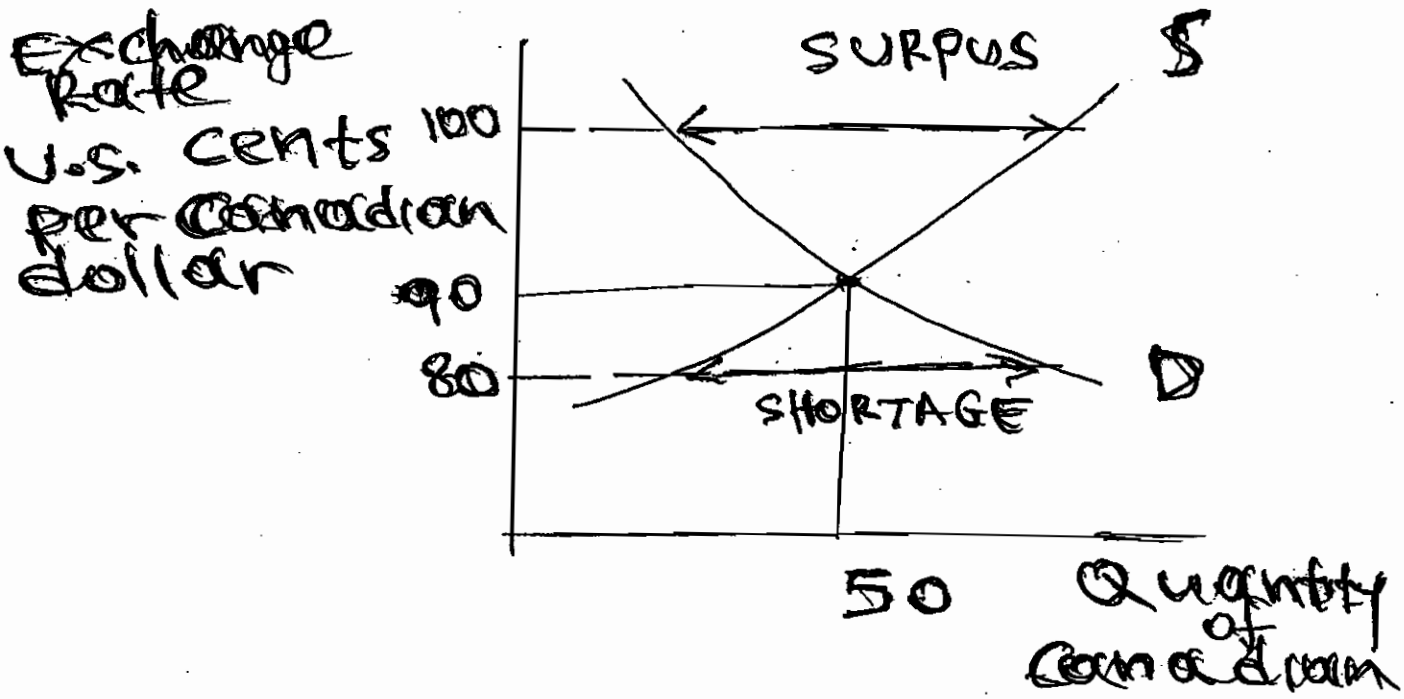
The greater is the quantity of dollars supplied.

2. Expected Profit Effect

The higher the exchange rate, the larger is the expected profit from selling Canadian dollars and the greater is the quantity of Canadian dollars supplied.

# Equilibrium Exchange Rate






At the equilibrium exchange rate, the supply of Canadian dollars equals the demand for Canadian dollars.

# Changes in the demand for dollars

The demand for Canadian dollars on the foreign exchange market changes (increases or decreases) when there are changes in

1. world demand for canadian exports
2. interest rates in Canada and other countries
3. the expected future exchange rate

1. Canadian interest rate rises and the foreign interest rate remains constant

The Canadian interest rate differential increases.

People buy Canadian assets because they pay higher interest rates.

This leads to a greater demand for Canadian dollars on the foreign exchange market.

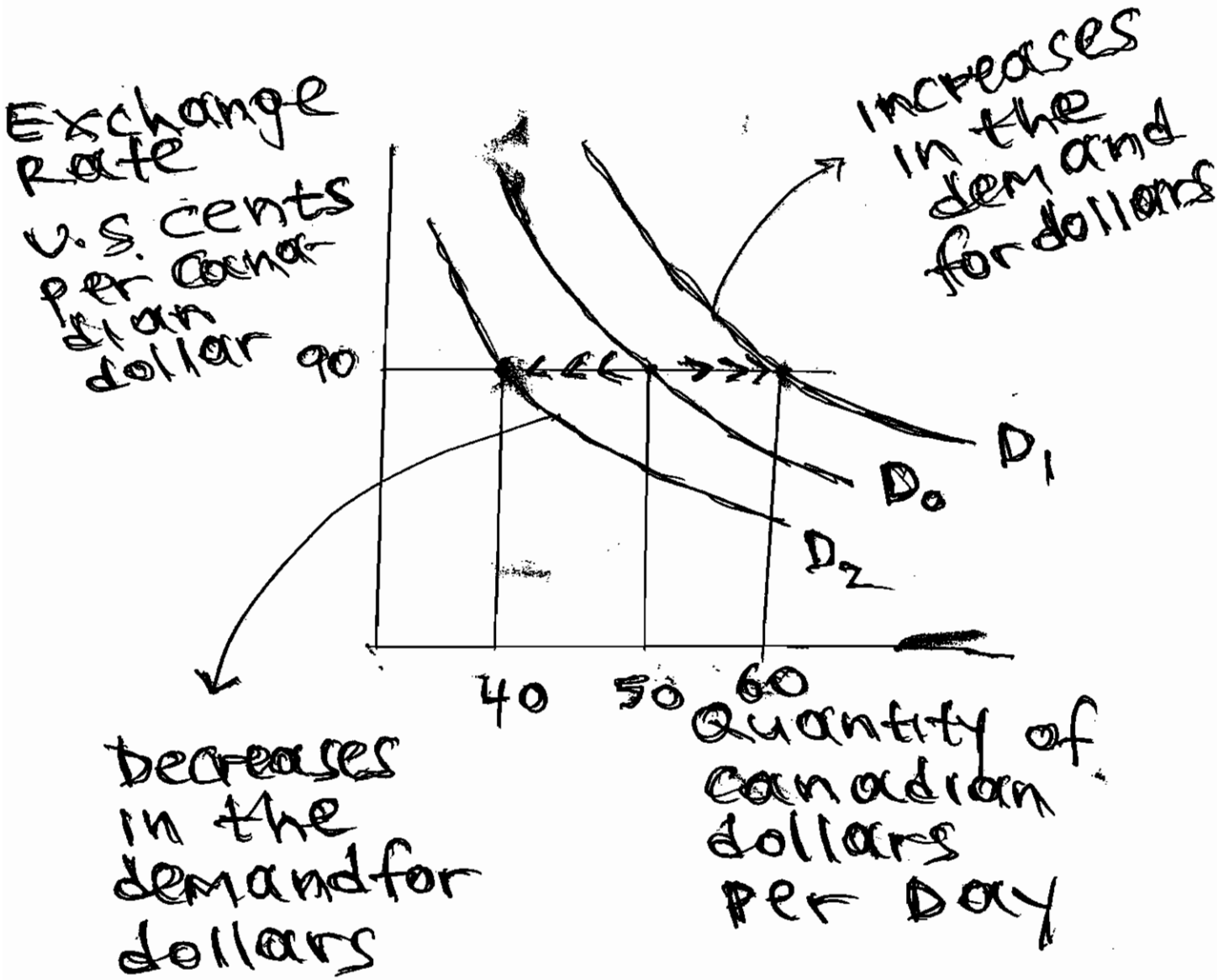
2. The expected future exchange rate

The higher the expected future exchange rate, the greater is the expected profit that people expect to earn by holding Canadian dollars

This increases the demand for Canadian dollars

The demand for Canadian dollars shifts out and to the right

# Changes in the demand for dollars



## Changes in the supply of dollars

The supply of dollars in the foreign exchange market changes (increases or decreases) when there are changes in

1. Canadian demand for imports
2. Interest rates in canada and other countries
3. The expected future exchange rate

1. Canadian demand for imports

An increase in Canadian demand for imports increases the supply of the Canadian dollar on the foreign exchange market

They buy more U.S. dollars with Canadian dollars

2. Interest rates in Canada and other countries

A rise in the Canadian interest rate decreases the supply of Canadian dollars.

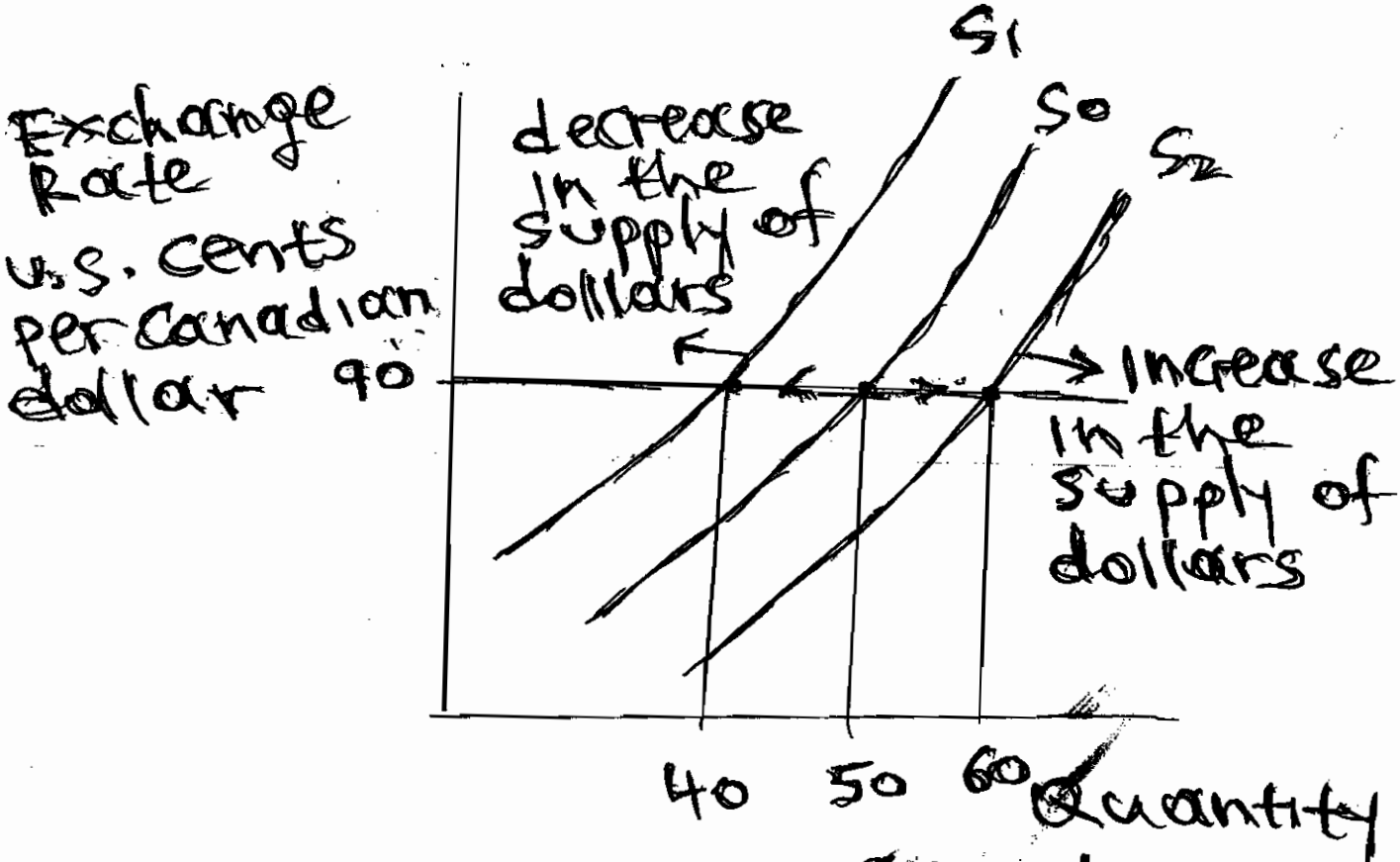
The supply is smaller because the demand for foreign assets is smaller.

3. The expected future exchange rate

The higher the expected future exchange rate, the smaller is the supply of Canadian dollars in the foreign exchange market.

People expect to make profits by holding the Canadian dollar.

# Changes in the supply of dollars

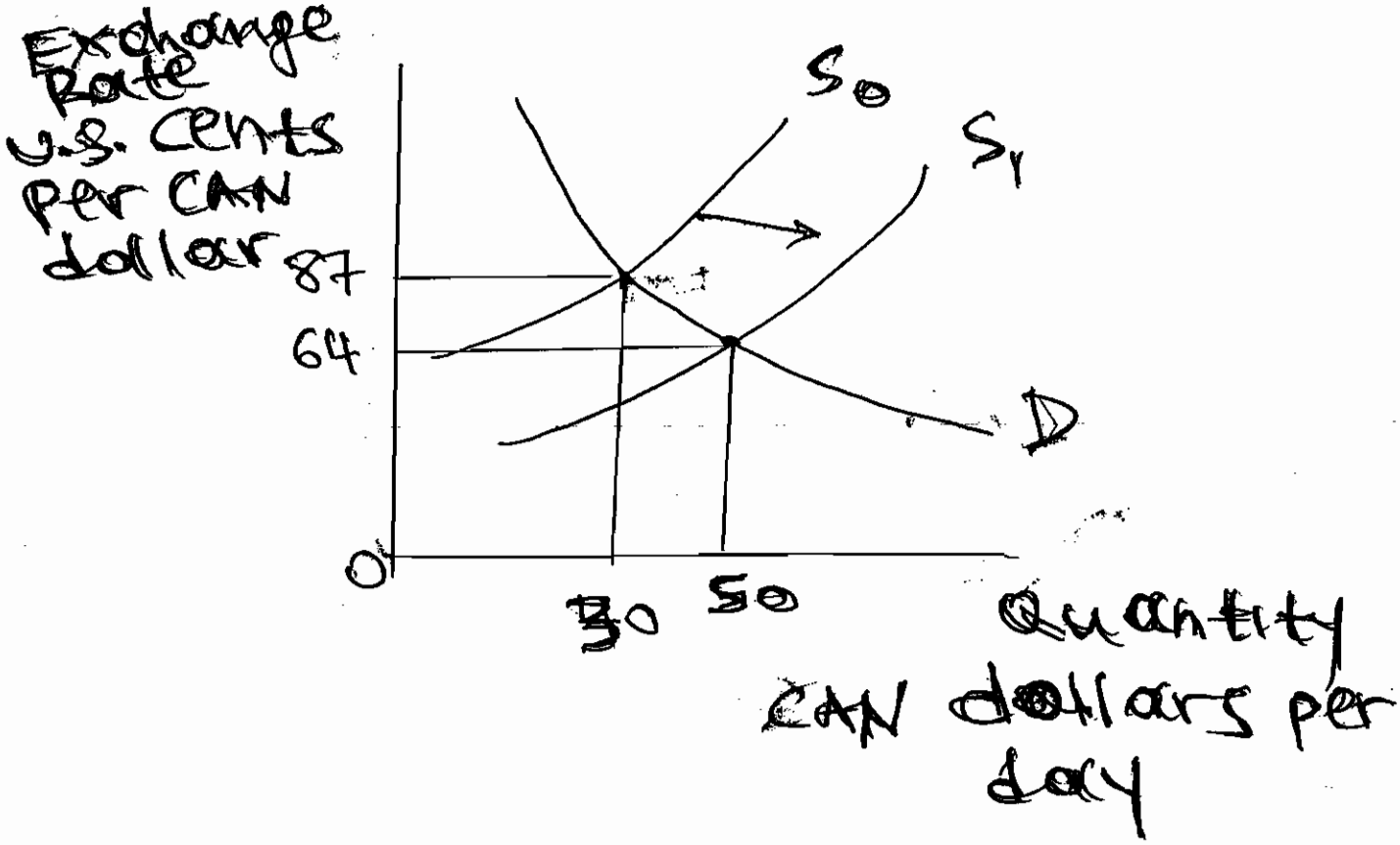



Shifts in the supply of Canadian dollars

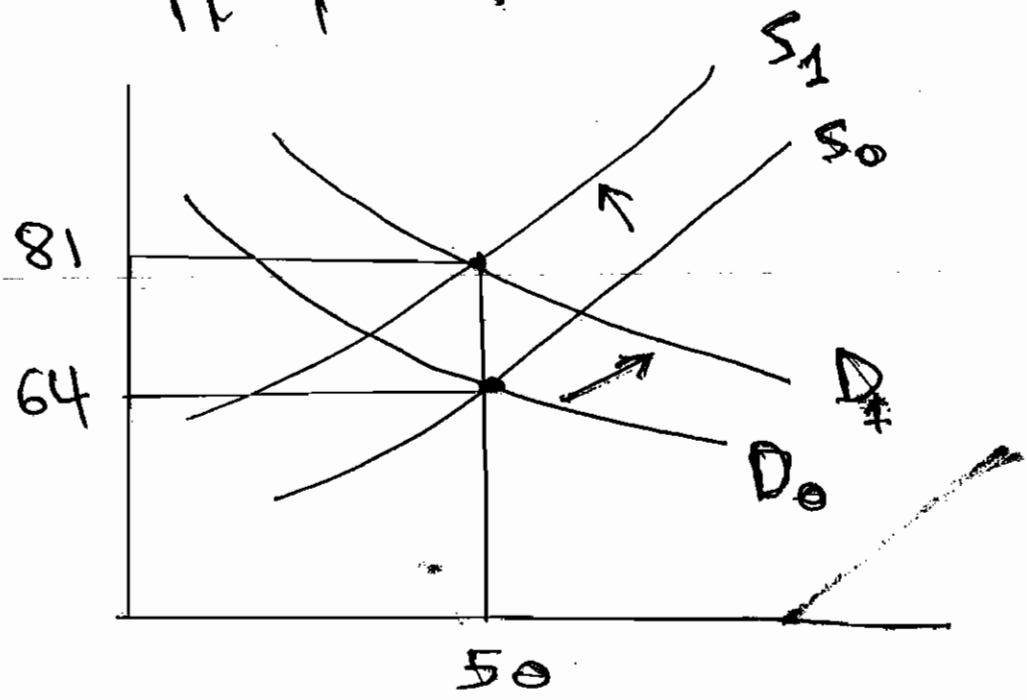
# Exchange rate fluctuations

1. The increase in supply of canadian dollars with no change in demand lowers the exchange rate and increases the quantity of dollars traded

   A depreciation of the Canadian dollar


Exchange Rate U.S. cents per CAN dollar
$S_0$
$S_1$
87
64
D
0
30
50
Quantity CAN dollars per day

2. An increase in the demand for dollars combined with a decrease in the supply of dollars




An <u>appreciation</u> of the Canadian dollar in the foreign exchange markets.

A large increase in the world demand for Canadian exports led to an increase in the demand for Canadian dollars.

The demand shifts from $D_0$ to $D_1$.

People expect the future exchange rate to increase, reducing the supply of Canadian dollars.

The supply shifts from $S_0$ to $S_1$.

# Interest Rate Parity

It focuses on what money can earn in Canada and abroad.

It implies equal rates of return on your investment in Canada and in the united states when exchange rate changes are taken into account.

Suppose that the interest rate on a bank deposit is 4 percent in Canada and 5 percent in the United States.

If people expect the Canadian dollar to appreciate by 1 percent a year, expected returns on bank deposits are equal

No money will flow from Canada to the United States or vice versa.

Suppose the interest rate in Canada rises compared with the interest rate in Japan. Interest rate parity implies that the yen is expected to appreciate against the dollar.

# Purchasing Power Parity

It focuses on what money can buy

The principle that the exchange rate adjusts to equate the value of money in one country with that of the other country

suppose a burger costs #4.50 (CAN) in Toronto, and the exchange rate is 67 cents (U.S) per CAN dollar. Then A burger should cost #3 (U.S) in New York if the purchasing power parity holds

$$P^{US} = 0.67\, P^{CAN}$$

$$P^{U.S} = 0.67\,(4.50)$$

$$P^{U.S.} = \#3.00$$

The price of a burger is the same in canada and the united states, adjusting for the exchange rate

In this case,

$$\text{Exchange Rate} = \frac{P^{U.S.}}{P^{CAN}}$$

$$= \frac{\#3}{\#4.50} = 67 \text{ cents U.S.}$$

# Balance of payments Accounts

They record a country's international trading, borrowing, and lending

Three balance of payments accounts:

1. current account
2. capital account
3. official settlements account

# The Current Account records international payments

YEAR 2001 – CANADA

| CURRENT ACCOUNT | Billions of $'s |
|---|---|
| Exports of goods and services | +530 |
| Imports of goods and services | -501 |
| Net interest payments | -14 |
| Net Transfers | -1 |
| Current Account Balance | 14 |

The current account has a surplus of $14 billion

Transfers are foreign aid payments

Net interest payments to foreigners

The capital account records foreign investment in Canada minus Canadian investment abroad

| CAPITAL ACCOUNT | BILLIONS OF $'s |
|---|---|
| Foreign investments in Canada | + 153 |
| Canadian investment abroad | − 167 |
| statistical discrepancy | 4 |
| capital account balance | − 10 |

| OFFICIAL SETTLEMENTS ACCOUNT | |
|---|---|
| official settlements account balance | − 4 |

Statistical discrepancy in the current account arises from errors and omissions in measuring international capital transactions

(Because of illegal and hidden transactions)

The capital account shows that our net foreign lending is #10 billion

The official settlements account records the change in official canadian reserves (government's holdings of foreign currency).

An increase in official reserves of #4 billion

An increase in offi-
cial canadian re-
serves is recorded
as a negative num-
ber

why?

Because an increase
in our reserves is
like making a loan
to the rest of the
world

when the current account balance is negative, the current account balance is positive.

In this case, we borrow from the rest of the world.

Net Borrower

A country that borrows more from the rest of the world than it lends to it.

A country with a current account deficit

The united states since the early 1980s

Net Lender

A country with a current account surplus

Japan, China are net lenders

Debtor nation 54

A country that during its entive history has borrowed more from the rest of the world than it has lend to it

The net foreign debt is positive

Canada is a debtor nation

The united states is a debtor nation

Creditor nation

The other way around

# What determines a countries's current account balance and net foreign borrowing?

$$CAB = NX + \text{Net interest income} + \text{Net transfers}$$

CAB → Current Account balance

NX → Net exports

Fluctuations in net exports are the main source of fluctuations in the CAB.

$$X - M = (T - G) + (S - I)$$

Net exports — Government sector surplus or saving — Private sector surplus or saving

There is a tendency for the current account to deteriorate when the government deficit goes into a deeper deficit

They have been called the <u>twin deficits</u>

# Exchange Rate Policy

## Flexible exchange rate

- The exchange rate is determined by forces of demand and supply

## Fixed exchange rate

- The exchange rate is fixed (pegged) by the gov't or central bank