



Chapter 19: The Balance of Payments and Exchange Rates

Learning Objectives

After studying this chapter, you should be able to

- 19.1** Explain Canada's balance of payments
- 19.2** Understand exchange rates and how they are determined
- 19.3** Understand the relationship between inflation and exchange rates
- 19.4** Understand the relationship between the foreign exchange market and the balance of payments
- 19.5** Discuss fixed and flexible exchange rates
- 19.6** Understand the relation between foreign exchange transactions and the money supply
- 19.7** Discuss the international repercussions of monetary policy
- 19.8** Discuss the international repercussions of fiscal policy

Assess Your Knowledge

1. What does a country's balance of payments show?
2. True (T) or false (F)? Canada's major economic transaction with the rest of the world involves exports and imports of goods and services.
3. Define *exchange rate*.
4. What do you think would happen to exports from Canada to the United States if the exchange value of the Canadian dollar fell from US\$0.87 to US\$0.82?

The Balance of Payments

LO 19.1 Explain Canada's balance of payments

Definition of the Balance of Payments

The **balance of payments** is a summary record of all economic transactions between Canadian residents and the rest of the world. These transactions include the movement of goods, services, investment income, and financial assets. The balance of payments records each transaction as either **a current account item or a capital account item**. **Table 19.1 presents Canada's balance of international payments.**

***Balance of payments** : a summary record of all international economic transactions involving residents of a country*

Some transactions involve the receipt of funds by Canadian residents. These are recorded as credit entries and are marked with a plus sign (+). Other transactions involve payments to non-residents and are entered as debit items, marked with a minus sign (-).

Structure of the Current Account

The **current account** records the sale and purchase of currently produced goods and services. Canadian residents export goods and services to the rest of the world and import goods and services from abroad. In addition, Canadians receive investment income from foreign sources and make payments—such as dividends and interest—to foreign investors. The current account also includes unilateral transfers, such

as foreign aid and remittances. Each of these elements appears in the current account section of the balance of payments.

Current account — a record of sales and purchases of goods and services, investment income flows, and unilateral transfers between residents of a country and the rest of the world

Merchandise Trade Balance

Exports and imports of goods comprise what is called **merchandise trade**. Exports trigger an inflow of funds to Canada and are therefore recorded as credits. Imports, by contrast, generate outflows of funds and are entered as debits. In 2023, Canada exported goods worth approximately CAD 404.5 billion and imported goods worth approximately CAD 413.1 billion. The difference between total exports and total imports of goods is the balance of merchandise trade, also known as the balance of visible trade.

Balance of merchandise trade or balance of visible trade — the difference between the value of a country's goods exports and goods imports

Table 19.1

Table 19.1: Canada's Balance of International Payments (2023)

Component	Billions
Current Account Balance	−17.8
Goods Exports	404.5
Goods Imports	413.1
Services Exports	140.0
Services Imports	150.0
Investment Income (Net)	4.3
Transfers (Net)	−2.0
Capital and Financial Account	17.8

(Source: Statistics Canada, Table 36-10-0471-01: Balance of international payments, financial account, annual.
<https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=361004>

Table 19.1 presents Canada's balance of international payments for 2023. It divides international economic transactions into the current account and the capital and financial account.

The current account shows a deficit of \$17.8 billion. The deficit stems from a larger value of imports than exports. Goods exports total \$404.5 billion, falling short of goods imports at \$413.1 billion. Similarly, services exports amount to \$140.0 billion, while services imports reach \$150.0 billion. Net investment income contributes a modest surplus of \$4.3 billion, which partially offsets the trade deficits, but net transfers register a negative \$2.0 billion, adding to the overall current account shortfall.

The capital and financial account records an inflow of \$17.8 billion, matching the current account deficit.

This reflects how Canada finances its current account gap: through net capital inflows, such as foreign investment in Canadian assets.

The table illustrates a typical pattern for an advanced open economy—moderate trade deficits financed by capital inflows, supported by steady investment returns from abroad. The balance between the two accounts confirms that Canada maintained equilibrium in its overall international payments position in 2023.

(Source: Statistics Canada, <https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=3610000401>)

balance of trade the difference between the value of a country's exports and the value of its imports

Balance of Payments and GDP

There is a direct relationship between the balance of payments and GDP. The expenditure approach to GDP calculation is expressed as:

$$\text{GDP} = \text{C} + \text{I} + \text{G} + (\text{X} - \text{M})$$

The term $(\text{X} - \text{M})$, or net exports, links the balance of payments to GDP. A positive trade balance contributes to GDP, while a trade deficit reduces it. A surplus indicates that the rest of the world owes Canada more than Canada owes in return; a deficit implies the reverse.

In 2023, Canadian exports of goods and services total \$544.5 billion—\$404.5 billion in goods and \$140.0 billion in services. Imports total \$563.1 billion—\$413.1 billion in goods and \$150.0 billion in services. The trade deficit in services reaches \$10.0 billion. The combined goods and services trade balance amounts to −\$19.6 billion.

Investment income remains an important part of the current account. Canadians earn returns on foreign investments and pay income to foreign investors. In 2023, Canadians receive \$136.4 billion in investment income and pay \$132.1 billion, producing a net inflow of \$4.3 billion. While this figure is positive in 2023, the investment income balance has frequently been negative in past years and often contributes to Canada's current account deficit. (Statistics Canada, <https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=3610000401>)

The Balance of Investment Income

Canada has traditionally recorded a deficit in its investment income account, largely because foreign investors—especially American—receive more in dividends and interest from their Canadian holdings

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than Canadian investors earn abroad. Foreign ownership of Canadian bonds and equities has historically produced steady outflows.

In 2023, however, the investment income balance turned positive. Canadians earned \$136.4 billion from foreign investments and paid **\$132.1 billion** to foreign investors, generating a **net inflow of \$4.3 billion**. This surplus reflects strong returns on Canadian assets held abroad, driven in part by higher interest rates and global equity performance.

Transfers and the Current Account

Transfers is the final component of the current account. They include remittances, inheritances, immigrants' funds, withholding taxes, and official contributions. Immigrants' incoming funds are credits; remittances sent abroad are debits. Withholding taxes apply to payments made to non-residents, and official contributions include grants and loans to other countries.

In 2023, Canadians receive \$12.5 billion in transfers and remit \$14.5 billion abroad, producing a transfer deficit of \$2.0 billion. Alongside the trade and investment balances, Canada's overall current account registers a deficit of \$17.8 billion.

Capital and Financial Account

The capital and financial account captures transactions in assets—borrowing, lending, and investment. It includes foreign purchases of Canadian assets and Canadian acquisitions of foreign assets.

The account is structured around three types of flows:

- **Long-term capital flows**, including direct investment (ownership or control of foreign businesses) and portfolio investment (foreign holdings of stocks and bonds with maturities over one year).
- **Short-term capital flows**, involving financial instruments with maturities under one year.
- **Changes in official reserves**, covering movements in Canada's international reserve assets.
- **Official Reserves and the Statistical Discrepancy**
- **The final item in the balance of payments is official reserves.** These are foreign assets held by the Bank of Canada to facilitate international payments. They include holdings of gold, U.S. dollars, other major foreign currencies, and special drawing rights (SDRs). SDRs are deposits with the International Monetary Fund (IMF) and can be used to settle international obligations.
- In 2023, Canada's official international reserves amount to approximately \$122 billion, composed mainly of foreign currency assets and SDRs. These reserves act as a buffer to manage

exchange rate fluctuations and maintain confidence in Canada's ability to meet its external obligations.

- The capital and financial account is divided into two broad categories: Canadian assets abroad (net outflows) and Canadian liabilities to non-residents (net inflows). A Canadian purchase of foreign assets is recorded as a debit because it represents a capital outflow. A foreign purchase of Canadian assets is recorded as a credit because it brings capital into the country.
- In 2023, Canadian claims on non-residents total –\$152.6 billion, while liabilities to non-residents reach \$170.4 billion. The net capital inflow of \$17.8 billion matches the current account deficit, reflecting a balanced overall position.
- When the combined current and capital accounts show a deficit, the Bank of Canada finances the gap using official reserves. When the accounts show a surplus, Canada adds to its reserves. These flows are recorded in the official settlements balance.
- Because of timing differences, valuation adjustments, and data gaps, a statistical discrepancy is included in the balance of payments. This item corrects for measurement errors and ensures that the balance of payments, recorded on a double-entry basis, always balances.

Table 19.2 Average Exchange in 2023

(CAD per unit of foreign currency)

Currency	Exchange Rate
US Dollar (USD)	1.35
Euro (EUR)	1.45
British Pound (GBP)	1.70
Japanese Yen (JPY)	0.0098
Chinese Yuan (CNY)	0.195

(Source: Bank of Canada,
<https://www.bankofcanada.ca/rates/exchange/>)

Exchange Rates

LO 19.2 Understand exchange rates and how they are determined

Exchange Rate

An exchange rate is the price of one currency in terms of another. Since most international transactions involve residents who prefer to be paid in their own currency, a system of currency conversion is essential. A Canadian exporter expects payment in Canadian dollars, while a British supplier expects payment in pounds. The market that facilitates this conversion is the foreign

exchange market.

The foreign exchange market is the global platform where currencies are traded.

The exchange rate is the value of one country's currency expressed in units of another country's currency.

For example, if the exchange rate is 1.70 Canadian dollars per British pound, Canadians must pay \$1.70 to obtain £1. Exchange rates fluctuate daily, influenced by trade flows, interest rate differentials, inflation expectations, and geopolitical events.

Table 19.2 provides the average 2023 exchange rates for some of Canada's major trading partners.

Table 19.2 presents average 2023 exchange rates between the Canadian dollar and the currencies of Canada's major trading partners. The British pound registers the highest rate at 1.70, followed by the euro at 1.45 and the US dollar at 1.35. In contrast, the yen and the yuan trade at much lower values—0.0098 and 0.195 respectively—because of their lower unit prices.

These rates determine the relative cost of goods and services across borders. A high exchange rate for the pound, for example, raises the cost of British imports in Canada and improves the price advantage of Canadian exports to the UK.

Exchange rates affect trade flows, inflationary pressures, and international investment decisions. Their movements play a central role in shaping Canada's external economic position.

Flexible Exchange Rate Determination

The exchange rate under a flexible system is set by supply and demand in the foreign exchange market.

Reading Comprehension

1. Give a brief account of the composition of a country's balance of payments.
2. Into which two main categories is the balance of payments divided? What does each section contain?
3. What is the difference between a balance of trade deficit and a current account deficit?
4. Explain why the balance of payments always balances.

When a country allows the market to determine the value of its currency, it adopts a flexible, floating, or freely fluctuating exchange rate system. In this system, the exchange rate adjusts to clear the market for foreign currency.

Figure 19.1 illustrates how market forces establish the exchange rate between the Canadian dollar and the British pound. The demand curve for Canadian dollars reflects the preferences of British buyers for Canadian currency. Three main factors explain this demand:

1. Imports of Canadian goods: British consumers and firms need Canadian dollars to pay Canadian exporters.
2. Investment in Canadian assets: British investors must convert pounds into dollars to purchase Canadian stocks, bonds, or real estate.
3. Speculation: British currency traders may buy Canadian dollars if they expect its value to appreciate, seeking a profit.

Each of these factors contributes to the demand for Canadian currency, while the supply of Canadian dollars on the market comes from Canadians purchasing British goods, investing in the UK, or speculating in pounds. The exchange rate settles where these opposing flows balance.

Supply and Demand for Canadian Dollars

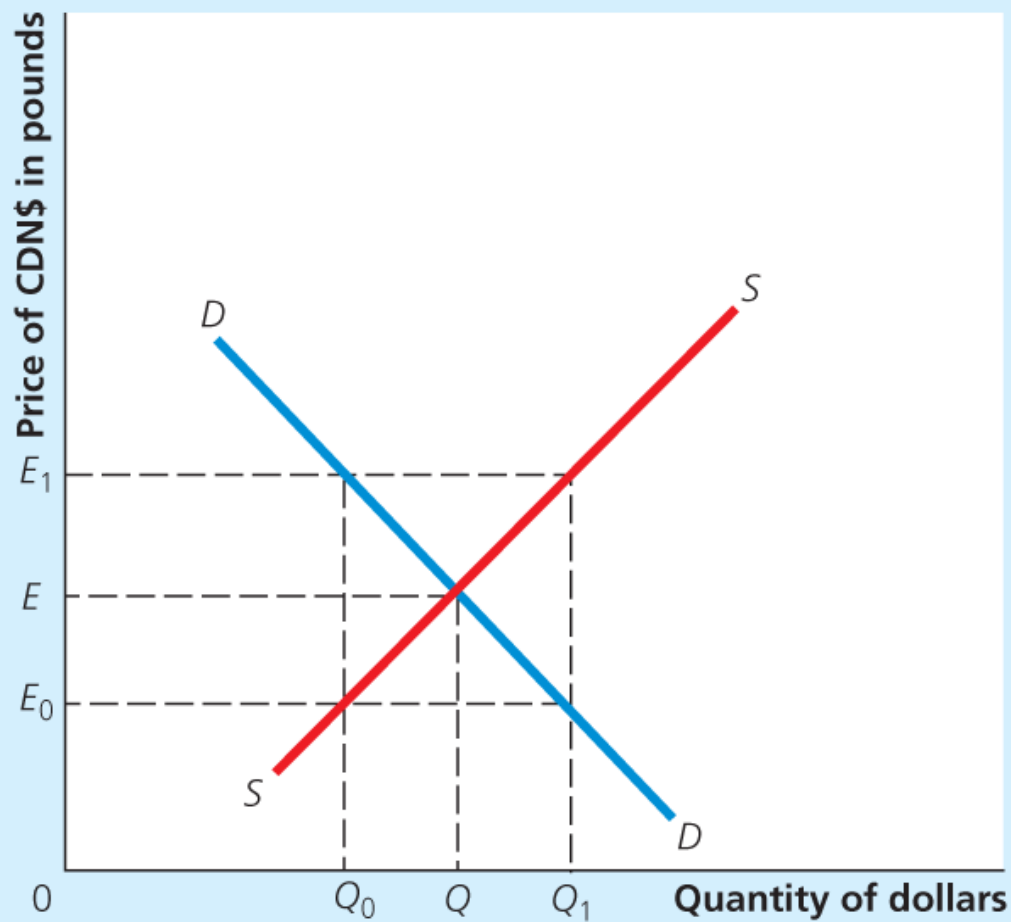
The demand for Canadian dollars in the foreign exchange market originates from the credit side of the balance of payments. British demand arises from trade, investment, and speculation. As the exchange rate rises—that is, as more pounds are needed to obtain Canadian dollars—the quantity of Canadian dollars demanded falls. This inverse relationship explains the downward slope of the demand curve DD in Figure 19.1.

The supply of Canadian dollars comes from the debit side of the balance of payments. Canadian residents exchange their dollars for British pounds when purchasing British goods, investing in the UK, or speculating. As the price of the Canadian dollar in pounds rises, Canadians supply more dollars to acquire pounds, causing the supply curve SS to slope upward

Figure 19.1 Determination of Flexible Exchange Rates

Figure 19.1

Determination of Flexible Exchange Rates



At exchange rate E_1 , Canadians offer $0Q_1$ dollars, but the British demand only $0Q_0$ —creating a surplus. The excess supply of dollars forces the exchange rate down. At exchange rate E_0 , the British demand

more dollars than Canadians supply, resulting in a shortage. This excess demand pushes the exchange rate up.

Equilibrium occurs at exchange rate E , where the demand and supply curves intersect. At this point, the quantity of Canadian dollars demanded equals the quantity supplied, and OQ dollars are traded. This market-determined rate reflects the balance between inflows and outflows in the foreign exchange market.

Effect of Export Demand on the Exchange Rate

An increase in the foreign demand for Canadian goods raises the demand for Canadian dollars. Foreign buyers need Canadian currency to pay for Canadian exports. This higher demand shifts the demand curve from D to D_1 , as shown in Figure 19.2.

At the original exchange rate E , the new demand exceeds the existing supply, creating a shortage of Canadian dollars. This imbalance pushes the exchange rate upward to E_1 . The result is an appreciation of the Canadian dollar—a rise in its market value relative to foreign currencies.

Appreciation: *a market-driven increase in the value of a currency in terms of another.*

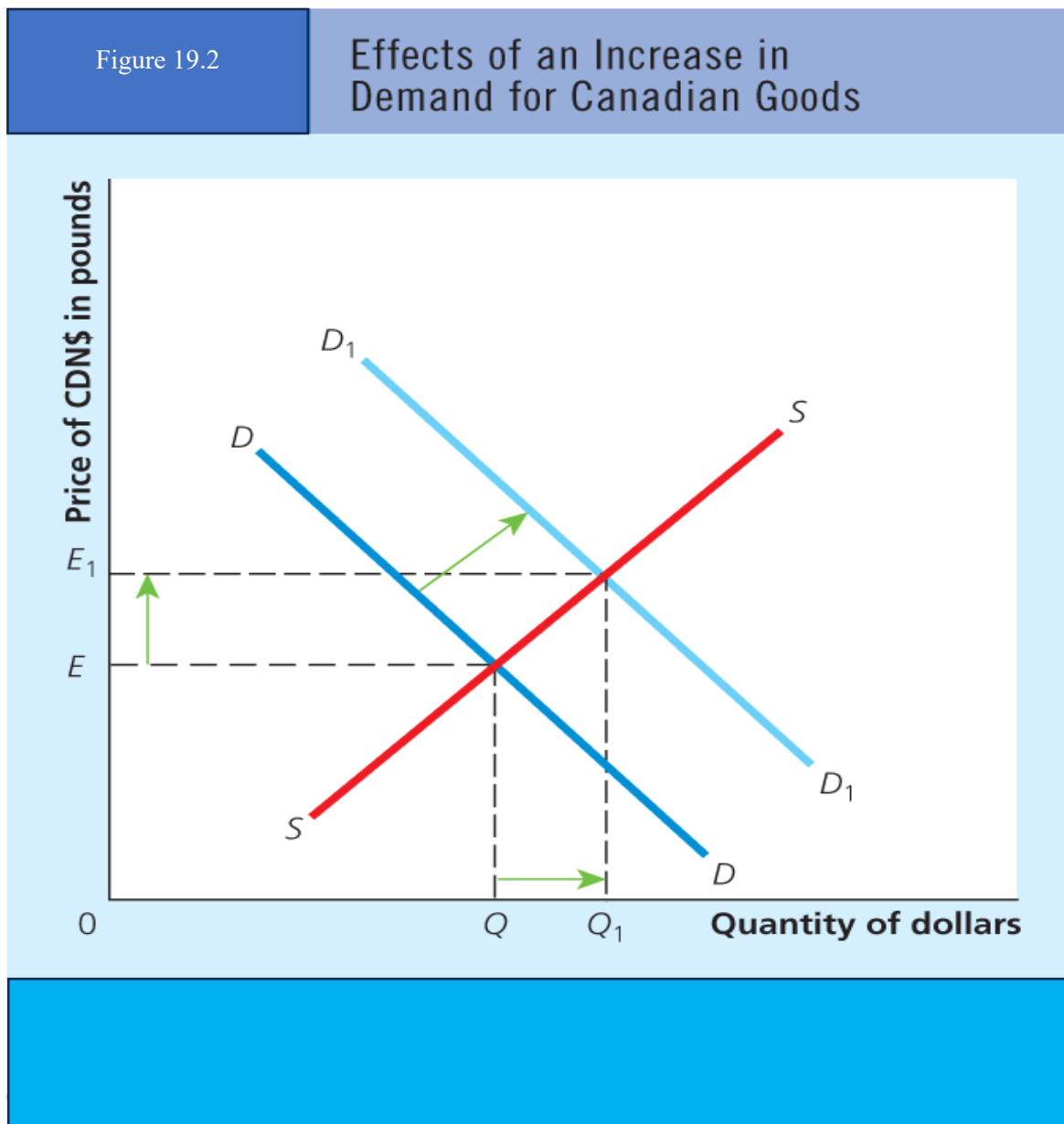
Depreciation: *a market-driven decrease in that value.*

If foreign demand for Canadian goods declines, the opposite occurs. The demand curve shifts leftward, the exchange rate falls, and the dollar depreciates. These currency movements reflect the adjustments in global demand and supply for Canadian currency driven by international trade.

Purchasing Power Parity as an Alternative Theory

An alternative method for determining the exchange rate is the purchasing power parity (PPP) theory. According to this theory, the exchange rate between two countries reflects the difference in price levels between them. In other words, a unit of currency should have the same purchasing power in every country once prices are converted at the prevailing exchange rate.

Figure 19.2 Effects of an Increase in Demand for Canadian Goods



Purchasing power parity — the idea that the exchange rate adjusts to equalize the purchasing power of different currencies.

The PPP theory builds on the law of one price. This law states that, under conditions of free competition and in the absence of transportation costs, tariffs, or other trade barriers, identical goods should sell for the same price in different countries once prices are expressed in a common currency. For example, if a textbook costs \$50 in Canada and the same book costs £25 in the UK, the PPP exchange rate would be 2.0 Canadian dollars per pound.

Law of one price — *the hypothesis that traded goods should have the same price across countries after accounting for transaction costs.*

The PPP theory suggests that, over time, exchange rates adjust to reflect inflation differences. If Canadian prices rise faster than U.S. prices, the Canadian dollar should depreciate relative to the U.S. dollar to restore purchasing power parity. Although short-run exchange rates are driven by financial markets, **the PPP theory provides a long-run anchor.**

Why Prices Equalize Across Borders

The law of one price explains why identical traded goods tend to sell for the same amount across countries once expressed in a common currency. Suppose a CD player costs less in the United States than in Canada. Canadians would buy from U.S. sellers, and some traders would engage in arbitrage—purchasing in the U.S. and reselling in Canada. These transactions raise prices in the U.S. and lower them in Canada until prices equalize.

This convergence forms the basis of the purchasing power parity (PPP) theory. If a CD player costs C\$400 in Canada and US\$300 in the United States, then:

400 Canadian dollars = 300 U.S. dollars

1 Canadian dollar = 0.75 U.S. dollars

The PPP exchange rate is 1 CAD = 0.75 USD.

Purchasing Power Parity Theory

The PPP theory proposes that the exchange rate adjusts to equalize the purchasing power of currencies across countries. A currency in a high-price country should depreciate relative to that of a low-price country to restore purchasing power parity.

Example:

A camera sells for **\$500 in Canada** and **£200 in Britain**. According to the law of one price:

500 Canadian dollars = 200 pounds

1 Canadian dollar = 0.4 pounds

1 pound = 2.5 Canadian dollars

The implied PPP exchange rate is \$2.50 per £1.

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Formula:

$$E = P_f / P_d$$

Where:

E = exchange rate (domestic currency per unit of foreign currency)

P_f = foreign price

P_d = domestic price

In the example: $E = 200 / 500 = 0.4$, or 1 GBP = \$2.50

A practical application of PPP is **the Big Mac Index**, developed by The Economist. If a Big Mac sells for US\$3 in the United States and £2 in Britain, the PPP exchange rate is \$1.50 per £1. The index highlights price-level differences using a standardized consumer good.

Limitations of PPP Theory

Although the purchasing power parity theory is simple to apply, it has several limitations. First, it applies only to goods that are internationally traded, mobile, and standardized. Many goods and services—such as housing, health care, or utilities—are not part of international trade and fall outside the theory's scope.

Second, the theory assumes that transportation and transaction costs are negligible. In practice, these costs can be substantial. For example, shipping and insuring a vehicle purchased abroad can erase any initial price advantage.

Third, trade barriers reduce the validity of the theory. Tariffs, quotas, licensing requirements, and customs procedures limit market access and prevent price equalization.

Fourth, the law of one price depends on competitive markets. When firms have pricing power or operate in segmented markets, price differences persist and undermine PPP.

Fifth, exchange rates respond to capital flows as well as trade in goods. The theory ignores interest rate differentials, investor expectations, and speculative movements, all of which affect currency values independently of purchasing power.

Sixth, PPP relies on national price indexes that may not be comparable across countries. Differences in consumption baskets, inflation measurement, and statistical reliability weaken the precision of PPP-based exchange rate estimates.

Fixed Exchange Rates

A fixed exchange rate, also called a pegged exchange rate, refers to a system in which a country sets the value of its currency at a specific rate in relation to another currency. In this regime, **market forces do not determine the exchange rate**. Instead, the government or central bank commits to maintaining the currency's value within a narrow band or at a specific level.

Fixed exchange rate or pegged exchange rate — an exchange rate set by the government at a specified value.

Revaluation: *an official increase in the value of a currency relative to another.*

Devaluation: *an official decrease in the value of a currency relative to another.*

These terms differ from those used in flexible exchange rate systems, where the currency's value rises or falls through appreciation or depreciation based on market forces.

Examples of Fixed Exchange Rate Regimes

Several countries maintain fixed exchange rate systems by pegging their currencies to another currency or a basket of currencies. For example, the Eastern Caribbean dollar (EC\$) is fixed at 1 U.S. dollar = 2.70 EC dollars. To maintain this rate, the government intervenes in the foreign exchange market by buying or selling foreign currency.

Here are some other examples:

- **Hong Kong:** The Hong Kong dollar is pegged to the U.S. dollar at a rate of approximately 7.75 HKD to 1 USD. The Hong Kong Monetary Authority maintains this peg through market interventions.
- **Saudi Arabia:** The Saudi riyal is pegged to the U.S. dollar at a rate of 3.75 SAR to 1 USD. The Saudi Arabian Monetary Authority manages this fixed rate.
- **Denmark:** The Danish krone is pegged to the euro through the European Exchange Rate Mechanism II (ERM II), maintaining a central rate of 7.46038 DKK per euro with a narrow fluctuation band.
- **Jordan:** The Jordanian dinar is pegged to the U.S. dollar at a rate of approximately 0.709 JOD to 1 USD.
- **Bahrain:** The Bahraini dinar is pegged to the U.S. dollar at a rate of approximately 0.376 BHD to 1 USD.
- **United Arab Emirates:** The UAE dirham is pegged to the U.S. dollar at a rate of 3.6725 AED to 1 USD.

- **CFA Franc:** Used by several African countries, the CFA franc is pegged to the euro at a fixed rate, providing monetary stability in the region.

These fixed exchange rate regimes aim to provide stability in international prices, reduce inflation, and encourage foreign investment by minimizing exchange rate risk.

Managed Flexible Exchange Rates

A third alternative to fixed or fully flexible exchange rates is the managed flexible exchange rate system, also known as a dirty float. In this regime, the exchange rate is primarily determined by market forces, but the government or central bank occasionally intervenes to influence its level.

Managed flexible exchange rate or dirty float — an exchange rate system in which the currency is mostly market-determined but subject to official intervention.

**Table 19.3 The Average value of the Canadian Dollar
(between 2010 and 2023)**

Year	1 USD = X CAD	1 CAD = X USD
2010	1.0298	0.9711
2011	0.9891	1.011
2012	0.9996	1.0004
2013	1.0299	0.971
2014	1.1045	0.9054
2015	1.2787	0.7821
2016	1.3256	0.7542
2017	1.2986	0.77
2018	1.2957	0.7715
2019	1.3269	0.7536
2020	1.3415	0.7457
2021	1.2535	0.7978
2022	1.3014	0.7682
2023	1.3494	0.7414

Under this arrangement, authorities do not commit to a fixed target but seek to moderate excessive fluctuations or guide the exchange rate toward a desired range. For example, if the market sets the Canadian dollar at US\$0.72, the Bank of Canada might intervene by selling U.S. dollars and buying Canadian dollars to prevent the currency from falling below US\$0.70.

Many countries—including Canada—operate under a managed float. While the exchange rate floats daily, monetary authorities retain the option to step in if the currency becomes too volatile or strays too far from macroeconomic fundamentals. This approach combines flexibility with policy discretion, offering a middle path between rigid fixity and unrestricted floating.

Source: Bank of Canada : annual average exchange rates (2010–2023)

Relationship Between the Canadian Dollar and the U.S. Dollar

The exchange rate between the Canadian dollar and the U.S. dollar has fluctuated considerably over the past two decades. At times, the Canadian dollar has traded above parity—for example, in 2011 and 2012, when it averaged close to or above US\$1.00. In contrast, more recent years have seen the Canadian dollar weaken, averaging US\$0.74 in 2023.

The Real Exchange Rate

The exchange rates discussed so far refer to nominal exchange rates. These express the price of one currency in terms of another and are essential for international traders who must convert payments across currencies. But nominal rates alone do not tell us how much purchasing power a unit of foreign currency holds when converted. For this, traders rely on the real exchange rate.

***Real exchange rate** : the nominal exchange rate adjusted for differences in price levels between countries.*

As with GDP, we derive a real value by adjusting the nominal figure for price level differences. Just as:

$$\text{Real GDP} = \text{Nominal GDP} / P,$$

where P is the domestic price level,

the real exchange rate (e) is calculated as:

$$e = E \times (P_d / P_f)$$

Where:

e = real exchange rate

E = nominal exchange rate (units of domestic currency per unit of foreign currency)

P_d = domestic price level

P_f = foreign price level

This formula captures the relative price of foreign goods in terms of domestic goods. A higher real exchange rate implies that foreign goods are relatively more expensive; a lower rate implies they are cheaper.

Example, If:

$$E = 2 \text{ (i.e., 1 unit of foreign currency} = 2 \text{ domestic currency units)}$$

$$P_d = 3$$

$$P_f = 4$$

Then:

$$e = 2 \times (3 / 4) = 1.5$$

This means that, in real terms, one unit of foreign currency buys 1.5 times as many domestic goods as it buys of foreign goods. The real exchange rate provides a better measure of competitiveness and purchasing power in international trade.

Exchange Rate Policy and the Balance of Trade

A country can influence its balance of trade by adjusting its exchange rate. Suppose a country faces a large trade deficit. By devaluing its currency, it lowers the price of its exports in foreign markets while raising the domestic price of imported goods. This change makes domestic products more attractive to foreign buyers and reduces demand for imports at home.

The result is an improvement in the trade balance, driven by higher exports and lower imports. Since net exports are a component of aggregate expenditure, a rise in $(X - M)$ —exports minus imports—raises total output and employment.

Recall the formula: Aggregate Expenditure = $C + I + G + (X - M)$

A weaker currency increases $(X - M)$, stimulating demand for domestic production. This policy tool can be effective in addressing trade imbalances and reviving economic activity, especially during periods of underutilized capacity.

Exchange Rates and the Price Level

Reading Comprehension

1. With the help of a suitable diagram, explain how the exchange rate between Canadian dollars and Japanese yen is determined in the foreign exchange market.
2. Mention three different types of international transactions that give rise to a demand for Canadian dollars on the foreign exchange market.
3. What is the difference between the following pairs of concepts?
 - a. Depreciation and devaluation
 - b. Appreciation and revaluation
4. Explain the purchasing power parity (PPP) theory.
5. Explain how a country can use its exchange rate to improve its balance of trade.
6. Explain the effect of a depreciation of the Canadian dollar on its exports and imports.

LO 19.3 Understand the relationship between inflation and exchange rates

Exchange Rates and the Price Level

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There is a close relationship between exchange rates and the domestic price level. Changes in exchange rates can affect inflation, and changes in domestic prices can influence exchange rate movements. These effects operate in both directions.

Effect of Exchange Rate Changes on the Price Level

When the Canadian dollar depreciates relative to the U.S. dollar, the price of American imports rises in Canadian dollars. Consumers must pay more for goods imported from the United States, leading to higher retail prices. In addition, Canadian firms that rely on U.S. inputs face increased

production costs, which can feed into broader price increases.

A depreciation also increases foreign demand for Canadian goods, which now appear cheaper in U.S. dollar terms. Greater foreign demand may push up domestic prices. At the same time, Canadian consumers may shift their spending from relatively expensive foreign goods to domestic alternatives, adding further upward pressure on prices.

In short, a fall in the value of the Canadian dollar tends to raise the Canadian price level.

Effect of Price Level Changes on the Exchange Rate

If Canadian prices rise faster than U.S. prices, Canadian goods become less competitive internationally. As a result:

- **Canadian consumers increase imports from the United States**, raising the supply of Canadian dollars in the foreign exchange market.
- **U.S. consumers reduce their demand for Canadian goods**, lowering the demand for Canadian dollars.

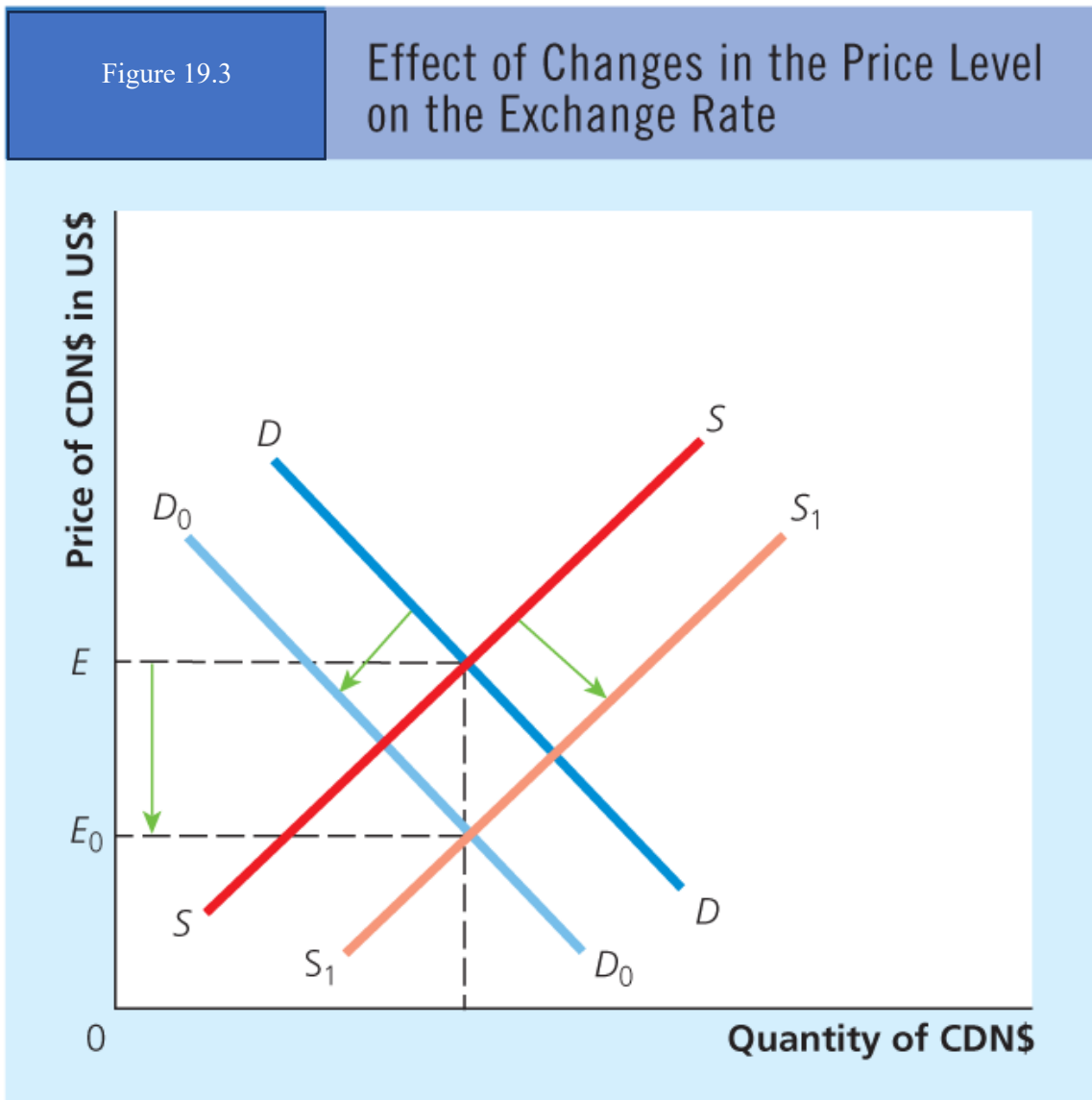
The supply curve for Canadian dollars shifts right, and the demand curve shifts left. Under a flexible exchange rate system, the result is a depreciation of the Canadian dollar.

Thus, exchange rates and the price level interact through trade flows and inflation pressures. Depreciation tends to raise the domestic price level; domestic inflation, in turn, tends to weaken the currency under a floating regime.

Other things being equal, an increase in the average level of prices in Canada will result in a depreciation of the external value of the Canadian currency.

Inflation and the External Value of the Currency

Figure 19.3 Effect of Changes in the Price Level on the Exchange Rate



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Other things being equal, an increase in the average level of prices in Canada leads to a depreciation of the external value of the Canadian dollar. As Canadian goods become relatively more expensive than foreign goods, demand for Canadian exports declines, and imports rise. This shift increases the supply of Canadian dollars on the foreign exchange market while reducing demand, putting downward pressure on the exchange rate.

This analysis assumes a flexible exchange rate system. Under such a regime, the currency depreciates in response to inflation differentials. But if the exchange rate is fixed, the situation is different.

Reading Comprehension

1. What is the relationship between a country's exchange rate and its price level?
2. In what sense is the relationship between exchange rates and the price level a two-way relationship?

In a fixed exchange rate system, the central bank must intervene in the foreign exchange market to maintain the official rate. If the Canadian price level rises persistently faster than the U.S. price level, the Canadian dollar becomes overvalued at the fixed rate. To support the currency, the Bank of Canada must sell foreign reserves and buy Canadian dollars.

However, sustained inflation will eventually erode the credibility of the fixed rate. If reserves become insufficient or market

pressures grow too strong, the government may be forced to devalue the currency—lowering the official exchange rate—or abandon the peg altogether.

Thus, under a fixed system, continued inflation weakens the currency's real value and creates pressure for official adjustment.

Relationship between the Foreign Exchange Market and the Balance of Payments

LO 19.4 Understand the relationship between the foreign exchange market and the balance of payments

Balance of Payments and the Exchange Rate

Changes in the balance of payments influence the exchange rate, but the outcome depends on the exchange rate regime in place. Under a flexible system, the exchange rate adjusts to restore equilibrium; under a fixed system, the central bank intervenes to maintain the exchange rate.

Figure 19.4 The Foreign Exchange Market

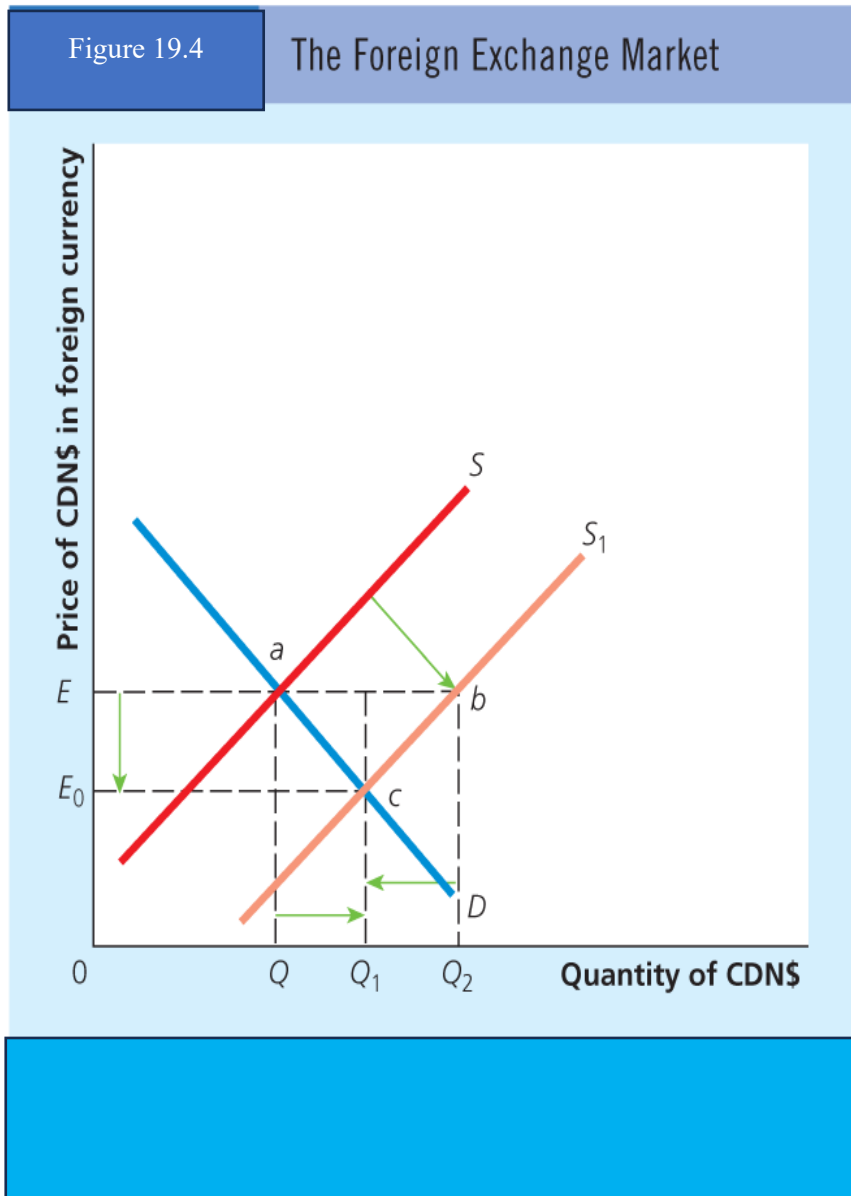
Flexible Exchange Rates and the Balance of Payments

Suppose Canada and the Rest of the World (ROW) are the only two trading entities. The foreign

exchange market is initially in equilibrium at exchange rate E , where the demand for Canadian dollars equals the supply, and the balance of payments is also in equilibrium.

Now assume Canada experiences a current account deficit. Canadian residents demand more foreign currency to pay for imports than foreigners demand Canadian dollars for exports and investment. This results in an excess supply of Canadian dollars on the foreign exchange market. The excess pushes the exchange rate down: the Canadian dollar depreciates.

Depreciation corrects the imbalance by making Canadian goods cheaper for foreigners and foreign goods more expensive for



Canadians. Over time, exports rise, imports fall, and the current account moves back toward equilibrium.

Fixed Exchange Rates and the Balance of Payments

Under a fixed system, the exchange rate cannot adjust. If Canada runs a balance of payments deficit, the Bank of Canada must intervene by selling foreign currency reserves and buying Canadian dollars to maintain the fixed exchange rate.

But continuous intervention drains foreign reserves. If the deficit persists and reserves run low, the central bank may be forced to devalue the currency or allow it to float.

Thus, while a flexible exchange rate corrects external imbalances automatically, a fixed system requires central bank action—and may eventually become unsustainable without adjustment in domestic economic conditions.

Balance of Payments Adjustment Under Flexible Exchange Rates

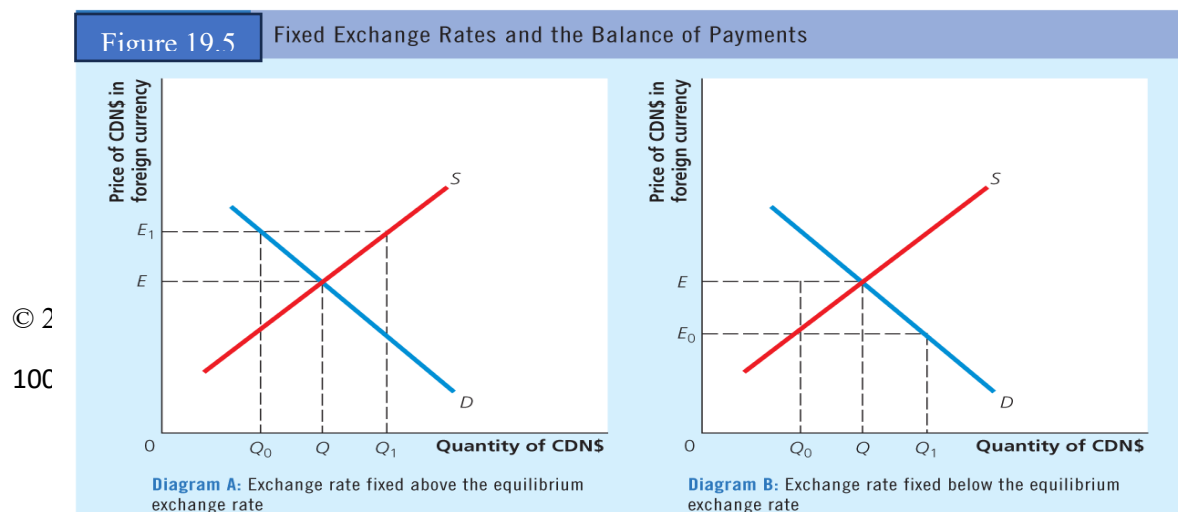
Suppose average income in Canada rises, leading to an increase in imports from the Rest of the World (ROW). To finance these imports, Canadians exchange more dollars for foreign currencies, increasing the supply of Canadian dollars on the foreign exchange market. This shift, shown by the movement of the supply curve from S to S_1 in Figure 20.4, results in a balance of payments deficit as total payments to ROW exceed receipts. The market moves from point a to point b , and the Canadian dollar depreciates.

Depreciation makes Canadian goods cheaper for foreign buyers and imported goods more expensive for Canadian consumers. As exports rise and imports fall, the supply of Canadian dollars decreases. The market adjusts along the new supply curve from point b to point c , and equilibrium is restored at the lower exchange rate E_0 , eliminating the deficit.

Figure 19.5 Fixed Exchange Rates and the Balance of Payments

Diagram A: Exchange rate fixed above the equilibrium exchange rate

Diagram B: Exchange rate fixed below the equilibrium exchange rate



Fixed Exchange Rates and the Balance of Payments

Suppose Canada fixes its exchange rate against the currency of the Rest of the World (ROW) at E_1 —above the market equilibrium rate, as shown in Diagram A of Figure 19.5. At this rate, ROW demands Q_0 Canadian dollars to pay for Canadian goods and services, while Canadians supply Q_1 dollars to purchase goods from ROW. Payments to ROW exceed receipts from ROW, producing a balance of payments deficit equal to $Q_1 - Q_0$.

Under a flexible exchange rate system, this excess supply of Canadian dollars would cause the exchange rate to fall. Under a fixed regime, however, the Bank of Canada must use its foreign exchange reserves to purchase the surplus Canadian dollars. If these reserves are exhausted, the central bank must devalue the currency—lower the official exchange rate.

Now consider the opposite case—Canada fixes its exchange rate at E_0 , below the equilibrium rate E , as shown in Diagram B. At this rate, ROW demands Q_1 Canadian dollars, while Canadians supply only Q_0 .

Reading Comprehension

1. Briefly explain how changes in the balance of payments affect the exchange rate under a flexible exchange rate system.
2. Briefly explain how changes in the balance of payments affect the exchange rate under a fixed exchange rate system.

Payments to Canada exceed payments from Canada, producing a balance of payments surplus of $Q_1 - Q_0$.

To maintain the fixed rate, the Bank of Canada must supply the Canadian dollars needed to absorb the excess demand. In doing so, it acquires additional holdings of ROW currency, and its foreign exchange reserves increase.

In both cases, fixed exchange rates require central bank intervention. Deficits reduce foreign reserves;

surpluses increase them. When market pressures persist, fixed rates become increasingly difficult to sustain without revaluation or devaluation.

Exchange Rate Systems: The Debate

LO 19.5 Discuss fixed and flexible exchange rates

Advantages and Disadvantages of Flexible Exchange Rates

Flexible exchange rates offer several advantages. First, they eliminate the need for direct intervention by the central bank. The exchange rate adjusts automatically in response to changes in demand and supply, maintaining equilibrium without drawing on foreign exchange reserves. This system frees

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monetary policy, allowing it to support domestic objectives such as full employment and price stability. Under fixed rates, central banks must prioritize external balance, even at the cost of internal stability.

Second, flexible exchange rates shield the domestic economy from foreign inflation. For example, if prices rise in the United States while Canadian prices remain stable, U.S. buyers increase their demand for Canadian exports, and Canadian imports from the U.S. fall. The Canadian dollar appreciates in response, offsetting the inflationary impact of rising export demand. Under a fixed system, by contrast, the Bank of Canada must expand the money supply to defend the peg, allowing foreign inflation to transmit into the domestic economy.

Third, flexible exchange rates promote balance of payments adjustment. A trade deficit causes the currency to depreciate, improving export competitiveness and reducing imports. The resulting shift in trade flows restores external balance without policy intervention.

Fourth, countries with flexible exchange rates require fewer foreign reserves. Because the exchange rate adjusts to market conditions, governments do not need to hold large quantities of foreign currency to defend a fixed rate. These resources can be allocated instead to domestic priorities.

Despite these benefits, flexible exchange rates have drawbacks. The most cited is **uncertainty**.

Exchange rate volatility makes it difficult for exporters and importers to plan transactions, potentially reducing international trade. Price instability in currency markets creates risk, raising costs for firms engaged in cross-border activity.

Second, exchange rate movements may have adverse effects on domestic industries. An appreciation of the Canadian dollar lowers the price of foreign goods, which may displace Canadian-made products in the domestic market. The resulting shift in consumption may reduce income and raise unemployment in sectors exposed to import competition.

Third, flexible exchange rates are vulnerable to speculative volatility. Sudden shifts in investor sentiment or capital outflows can trigger rapid depreciation or appreciation, destabilizing financial markets and complicating macroeconomic management.

Fourth, the exchange rate may overshoot its long-run equilibrium. Short-term market reactions to political events, interest rate changes, or financial speculation can cause the currency to diverge from its fundamental value, distorting trade flows and investment decisions.

Advantages and Disadvantages of Fixed Exchange Rates

Fixed exchange rates offer the advantage of stability. International traders benefit from the predictability of prices and costs. With a stable exchange rate, firms can plan long-term contracts and

cross-border investments without the risk of currency fluctuations. This certainty promotes trade, investment, and economic cooperation.

Fixed exchange rates also impose monetary discipline. Because maintaining the peg requires price stability, governments are less likely to pursue inflationary policies that would undermine the currency's external value.

A stable exchange rate can attract foreign investment. Investors, particularly in developing economies, are more likely to commit long-term capital when currency risk is low. Exchange rate certainty improves the investment climate.

Despite these benefits, fixed exchange rates have disadvantages. Most notably, they restrict monetary policy autonomy. To defend the fixed rate, the central bank may need to maintain high interest rates, even during periods of weak domestic demand. Such measures can depress investment, reduce output, and raise unemployment.

A fixed exchange rate also exposes a country to speculative pressure. If investors doubt the credibility of the peg, they may sell the currency en masse, forcing the central bank to intervene. Speculative attacks can deplete reserves and trigger currency crises, as seen in the European Exchange Rate Mechanism in 1992 and in Argentina in 2001.

In addition, maintaining a fixed rate requires large holdings of foreign currency. These reserves tie up national resources and may be difficult to replenish if the country runs persistent deficits.

In essence, fixed exchange rates promote external stability but limit domestic flexibility.

The Link Between Interest Rates and Exchange Rates

A direct relationship exists between interest rates and exchange rates through capital flows. If Canadian interest rates rise relative to those in the United States, foreign investors shift funds into Canadian assets. To do so, they must purchase Canadian dollars, increasing demand for the currency and raising its exchange value.

Conversely, when U.S. interest rates exceed Canadian rates, capital flows out of Canada, increasing demand for the U.S. dollar and leading to a depreciation of the Canadian dollar.

This relationship is captured by the interest rate differential:

$$i_d - i_f$$

Where:

i_d = domestic interest rate

i_f = foreign interest rate

A positive differential in favour of Canada strengthens the Canadian dollar. Other factors held constant, a rise in Canadian interest rates relative to foreign rates leads to appreciation.

This link is strongest when capital is mobile and financial markets are integrated. In systems with capital controls or transaction costs, the effect is weaker or delayed.

Short-run movements in exchange rates are highly sensitive to interest rate changes, but over time, other fundamentals—inflation, productivity, and current account balances—also shape the currency's value.

Foreign Exchange Transactions and the Money Supply

LO 19.6 Understand the relation between foreign exchange transactions and the money supply

Foreign Exchange Transactions and the Domestic Money Supply

The effect of foreign exchange transactions on the money supply depends on the exchange rate regime.

Reading Comprehension

1. What are the advantages and disadvantages of a flexible exchange rate system?
2. What are the advantages and disadvantages of a fixed exchange rate system?
3. Is there any relationship between a country's interest rate and its foreign exchange rate? Explain.

Under a flexible regime, there is no central bank intervention, and the money supply remains unchanged.

Under a fixed regime, central bank actions influence domestic liquidity, similar to open market operations.

Flexible Exchange Rates: No Effect on Money Supply

Assume Canada operates under a flexible exchange rate and that the Canadian dollar trades at par with the U.S. dollar (CDN\$1 = US\$1). If Miss Rose sells US\$1000 to a Canadian bank and deposits the resulting CDN\$1000 into

her chequing account, her bank balance rises. The bank, in turn, sells the U.S. dollars to Mr. Simon, who pays CDN\$1000 from his own deposit account.

The result is a transfer of deposits—from Mr. Simon to Miss Rose—but no net change in total deposits or reserves. Since the Bank of Canada does not intervene in the market, the transaction has no effect on the domestic money supply.

Fixed Exchange Rates: Central Bank Intervention Affects Money Supply

Under a fixed exchange rate, the Bank of Canada must intervene to maintain the currency's official value. Suppose it sells US\$1 million to the chartered banks. To pay for the purchase, banks reduce their balances at the Bank of Canada by CDN\$1 million. This lowers their reserves, reduces their lending capacity, and contracts the money supply.

Conversely, if the Bank of Canada purchases foreign currency—say, US\$1 million—from the banks, it credits their reserve accounts with CDN\$1 million. Increased reserves support additional lending and expand the money supply. These changes affect domestic credit conditions. A fall in reserves tends to raise interest rates and slow investment, while an increase in reserves tends to lower interest rates and stimulate borrowing, spending, and output.

In some cases, the Bank of Canada may attempt to sterilize the impact of these interventions. For

example, after purchasing foreign currency and raising reserves, it may sell government securities to absorb the excess liquidity and prevent inflationary pressure. Sterilization allows the central bank to influence the exchange rate without altering the domestic money supply, though sustained intervention may limit its effectiveness over time.

Foreign exchange transactions under a fixed regime thus operate like open market operations—changing the supply of reserves, influencing interest rates, and affecting the broader economy.

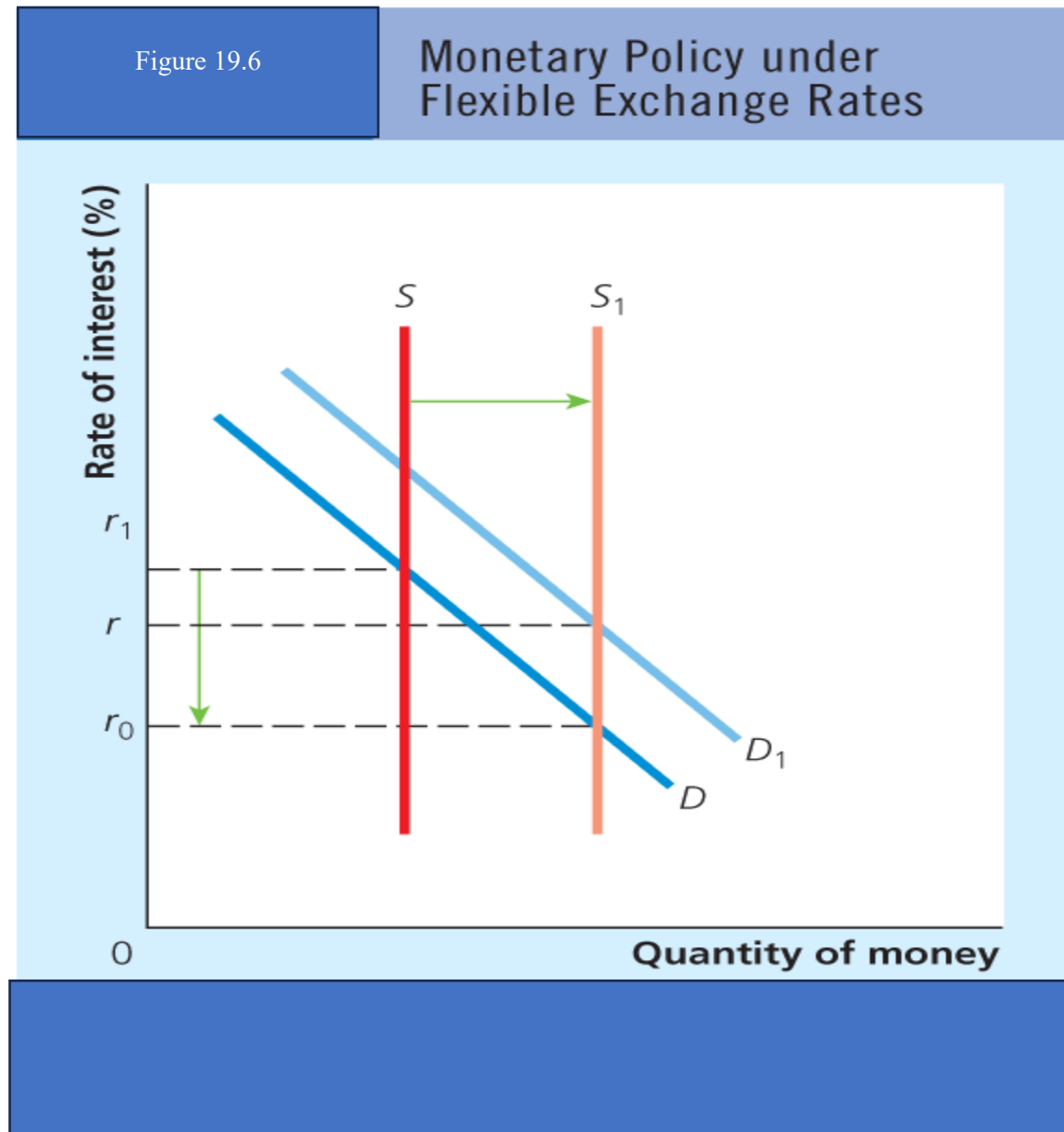
Reading Comprehension

1. How do foreign exchange transactions affect the domestic money supply under a fixed exchange rate system? Would your answer be different for a regime of flexible exchange rates?
2. The effect of foreign exchange transactions on the domestic money supply depends on whether or not the central bank intervenes. Explain briefly.

Monetary Policy and Exchange Rates

LO 19.7 Discuss the international repercussions of monetary policy

Figure 19.6 Monetary Policy under Flexible Exchange Rates



International Repercussions of Monetary Policy

The international effects of monetary policy depend on the exchange rate regime. Under a flexible system, monetary policy produces both domestic and external effects. Under a fixed system, central bank intervention offsets part of the policy impact, which reduces its influence on output and prices.

Flexible Exchange Rate: Effects Are Amplified

Suppose the Canadian economy enters a recession. To stimulate activity, the Bank of Canada increases the money supply—from S to S_1 in Figure 19.6. The interest rate falls from r_1 to r_0 , which raises borrowing and investment. Income rises, which causes an increase in the demand for money. The demand curve shifts from D to D_1 , and the interest rate settles at r , below its initial level.

Canadian securities become less attractive to foreign investors. Capital flows out of Canada. The demand for Canadian dollars falls, and the supply increases in the foreign exchange market. The Canadian dollar depreciates.

Exports rise as the price of Canadian goods falls in foreign currency terms. At the same time, imports fall as foreign goods become more expensive. The $(X - M)$ component of aggregate expenditure rises, which strengthens the policy's domestic effects.

Under a flexible exchange rate, monetary policy gains additional strength from exchange rate adjustments and capital flows.

Fixed Exchange Rate: Effects Are Dampened

Now assume Canada operates under a fixed exchange rate. As before, the Bank of Canada raises the money supply, and interest rates fall. But the exchange rate does not adjust.

The fall in Canadian interest rates triggers capital outflows, which place downward pressure on the dollar. To defend the fixed rate, the Bank of Canada sells foreign currency and withdraws Canadian dollars from the banking system. The decline in reserves limits credit expansion. The monetary base contracts. The intended stimulus weakens.

The Bank may attempt to sterilize the reserve loss by purchasing government securities. But continuous capital outflows reduce the effectiveness of sterilization and may force the central bank to abandon its domestic goals or the exchange rate peg.

Higher domestic demand may also raise the price level. Canadian goods lose competitiveness, and the (X – M) component of expenditure falls. The combined effect of reserve loss and trade deterioration reduces the impact of monetary policy.

Under a fixed exchange rate, monetary policy faces external constraints that weaken its effect on domestic output and prices.

Conclusion: Under flexible exchange rates, monetary policy benefits from currency depreciation and capital flows. Under fixed exchange rates, monetary policy faces reversal through reserve adjustment and trade effects.

Flexible regimes preserve domestic monetary autonomy. Fixed regimes impose external constraints.

BUSINESS SITUATION

19.1

Odds & Ends is a small Canadian retail outlet that obtains most of its supplies from the United States. Interest rates in the United States are slightly lower than those in Canada, and the government is planning to stimulate the economy by expansionary monetary policy.

What decision should Odds & Ends make regarding orders from the United States to take advantage of the situation?

Fiscal Policy and Exchange Rates

LO 19.8 Discuss the international repercussions of fiscal policy

International Repercussions of Fiscal Policy

The impact of fiscal policy depends not only on domestic factors but also on the exchange rate regime. Under a flexible system, currency appreciation and falling net exports weaken the effect. Under a fixed system, central bank intervention reinforces it.

Flexible Exchange Rate: Effects Are Dampened

Assume the government increases spending to reduce unemployment. Aggregate expenditure and GDP rise. The increase in income raises the demand for money. Interest rates move upward. Higher interest rates attract capital inflows. Foreign investors shift funds into Canadian assets. The demand for Canadian dollars rises, and the currency appreciates.

As the dollar strengthens, Canadian goods become more expensive abroad. Exports fall. Imports rise as foreign goods become cheaper for Canadians. The $(X - M)$ component of expenditure declines. The resulting fall in net exports offsets part of the fiscal stimulus.

Under a flexible exchange rate, expansionary fiscal policy loses strength through currency appreciation and trade deterioration.

Fixed Exchange Rate: Effects Are Amplified

Now assume Canada operates under a fixed exchange rate. As before, higher government spending raises income and interest rates. The demand for Canadian dollars increases. Upward pressure on the dollar follows.

Reading Comprehension

1. How do international repercussions affect monetary policy under a flexible exchange rate regime?
2. Under a fixed exchange rate regime, an increase in the money supply causes interest rates to fall, other things being equal, but the fall in interest rates does not result in a fall in the external value of the Canadian dollar. Why not?

To preserve the fixed rate, the Bank of Canada intervenes in the foreign exchange market. It buys foreign currency and injects Canadian dollars into the banking system. Bank reserves rise. The money supply expands.

The increase in liquidity holds down the rise in interest rates. Domestic credit conditions remain supportive. The monetary expansion reinforces the fiscal stimulus. Investment and consumption increase alongside government expenditure.

Under a fixed exchange rate, expansionary fiscal policy gains additional force through central bank intervention.

Conclusion: Under flexibility, rising interest rates trigger capital inflows and currency appreciation, which reduce net exports and weaken fiscal policy. Under fixity, central bank action increases the money supply and amplifies the fiscal impulse.

Exchange rate regimes shape the international transmission of fiscal policy—dampening under flexibility, reinforcing under fixity.

Reading Comprehension

1. How do international repercussions affect fiscal policy under a fixed exchange rate system?
2. The impact of fiscal policy is stronger under a fixed exchange rate system than under a flexible one. Explain briefly.

Review

1. Review the learning objectives listed at the beginning of the chapter.
2. Have you accomplished all the objectives? One way to determine this is to answer the Reading Comprehension Questions at the end of each section. This will help you assess the extent to which you have accomplished the learning objectives.
3. If you have not accomplished an objective, review the relevant material before proceeding.

Key Points to Remember

1. **LO 19.1** The balance of payments records all economic transactions between a country and the rest of the world. Credit items reflect receipts from abroad; debit items reflect payments to other countries.
2. **LO 19.1** The balance of payments consists of two main parts. The current account covers trade in goods and services, investment income, and transfers. The capital account covers international asset transactions, borrowing, and lending.
3. **LO 19.2** The exchange rate reflects the price of one currency in terms of another. Countries may adopt flexible, fixed, or managed flexible exchange rate systems. Flexible regimes allow market forces to determine the rate. Fixed regimes peg the currency to another. Managed regimes allow some fluctuation within a guided range.
4. **LO 19.2** The purchasing power parity theory states that the prices of identical goods tend to equalize across countries, apart from transport costs and trade barriers.
5. **LO 19.5** A flexible exchange rate allows automatic adjustment and shields the domestic economy from foreign inflation but introduces uncertainty and risks to output and employment. A fixed exchange rate offers price stability but may force policy choices that harm domestic performance.
6. **LO 19.6** Under a flexible regime, foreign exchange transactions that exclude the central bank have no effect on the money supply. Under a fixed regime, central bank intervention affects the money supply in the same way as open market operations.
7. **LO 19.8** Monetary policy has stronger effects under flexibility and weaker effects under fixity. Fiscal policy shows the opposite pattern: weaker under flexibility and stronger under fixity, due to international capital flows and central bank intervention.

Problems and Exercises

Basic

1. **LO 19.1** Indicate whether each of the following is a current account item or a capital account item:
 - a. The amount spent by international tourists

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