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The Influence of Monetary and Fiscal Policy on Aggregate Demand

PRINCIPLES OF
MACROECONOMICS
FOURTH CANADIAN EDITION

N.GREGORY MANKIW
RONALD D.KNEEBONE
KENNETH J.McKENZIE
NICHOLAS ROWE

PowerPoint® Slides
by Ron Cronovich
Canadian adaptation by Marc Prud'Homme

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In this chapter, look for the answers to these questions:

- How does the interest-rate effect help explain the slope of the aggregate-demand curve?
- How can the central bank use monetary policy to shift the *AD* curve?
- In what two ways does fiscal policy affect aggregate demand?
- What are the arguments for and against using policy to try to stabilize the economy?

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Introduction

- Earlier chapters covered:
 - the long-run effects of fiscal policy on interest rates, investment, economic growth
 - the long-run effects of monetary policy on the price level and inflation rate
- This chapter focuses on the short-run effects of fiscal and monetary policy, which work through aggregate demand.

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Aggregate Demand

- Recall, the *AD* curve slopes downward for three reasons:
 - the wealth effect
 - the interest-rate effect
 - the exchange-rate effect
- Next: a supply-demand model that helps explain the interest-rate effect and how monetary policy affects aggregate demand.

the most important of these effects for the Canadian economy

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The Theory of Liquidity Preference

- Keynes developed the *theory of liquidity preference* in order to explain what factors determine the economy's interest rate.
- r adjusts to balance supply and demand for money
- Money supply: assumed fixed by the BOC
 - Open-market operations
 - Changing the bank rate
- Does not depend on interest rate.

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The Theory of Liquidity Preference

- Money demand reflects how much wealth people want to hold in liquid form.
- For simplicity, suppose household wealth includes only two assets:
 - Money – liquid but pays no interest
 - Bonds – pay interest but not as liquid
- A household's "money demand" reflects its *preference for liquidity*.
- The variables that influence money demand: Y , r , and P .

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Money Demand

- Suppose real income (Y) rises. Other things equal, what happens to money demand?
- If Y rises:
 - Households want to buy more g&s, so they need more money.
 - To get this money, they attempt to sell some of their bonds.
- *I.e., an increase in Y causes an increase in money demand, other things equal.*

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ACTIVE LEARNING 1: The determinants of money demand

- A. Suppose r rises, but Y and P are unchanged. What happens to money demand?
- B. Suppose P rises, but Y and r are unchanged. What happens to money demand?

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ACTIVE LEARNING 1: Answers

- A. Suppose r rises, but Y and P are unchanged. What happens to money demand?
 r is the opportunity cost of holding money.
An increase in r reduces money demand: Households attempt to buy bonds to take advantage of the higher interest rate.
Hence, *an increase in r causes a decrease in money demand, other things equal.*

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ACTIVE LEARNING 1: Answers

- B. Suppose P rises, but Y and r are unchanged. What happens to money demand?
- If Y is unchanged, people will want to buy the same amount of g&s.
- Since P is higher, they will need more money to do so.
- Hence, **an increase in P causes an increase in money demand, other things equal.**

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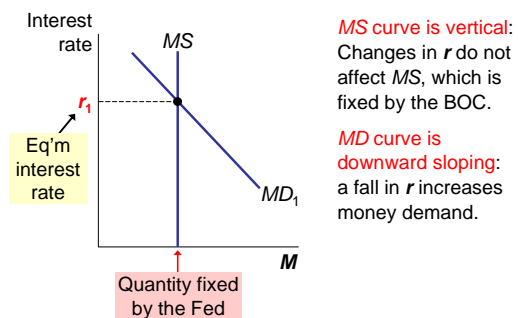
The Theory of Liquidity Preference

- Equilibrium in the Money Market
 - Assume the following about the economy:
 - The price level is stuck at some level.
 - For any given price level, the interest rate adjusts to balance the supply and demand for money.
 - The level of output responds to the aggregate demand for goods and services.

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How r Is Determined



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The Downward Slope of the Aggregate Demand Curve

- The price level is one determinant of the quantity of money demanded.
- A higher price level increases the quantity of money demanded for any given interest rate.
- Higher money demand leads to a higher interest rate.
- The quantity of goods and services demanded falls.

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The Downward Slope of the Aggregate Demand Curve

- In an open economy, the other important influence is the real exchange-rate effect.
 - An increase in the price level causes the real exchange rate to increase
 - Canadian-produced goods are more expensive relative to foreign-produced goods, and both foreigners and Canadians substitute away from Canadian-produced goods
 - Canada's net exports fall

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The Downward Slope of the Aggregate Demand Curve

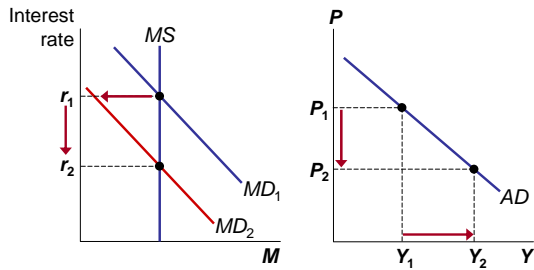
- The end result of this analysis is a negative relationship between the price level and the quantity of goods and services demanded.

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How the Interest-Rate Effect Works

A fall in P reduces money demand, which lowers r .



A fall in r increases I and the quantity of g&s demanded.

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Monetary Policy and Aggregate Demand

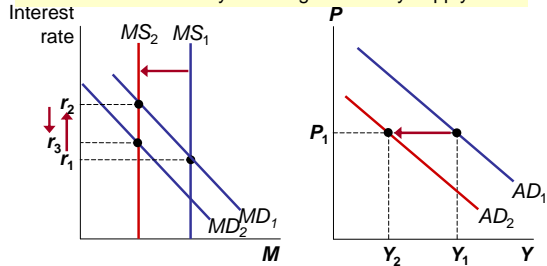
- When the Bank of Canada
 - increases the money supply, the interest rate falls and increases the quantity of goods and services demanded for any given price level, increasing aggregate demand.
 - contracts the money supply, the interest rate rises and reduces the quantity of goods and services demanded for any given price level, lowering aggregate demand.

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The Effects of Reducing the Money Supply: Closed Economy

The BOC can raise r by reducing the money supply.



The decrease in AD reduces the demand for money.

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ACTIVE LEARNING 2: Exercise

For each of the events below,

- determine the short-run effects on output
- determine how the BOC should adjust the money supply and interest rates to stabilize output

- A. The Minister of Finance tries to balance the budget by cutting govt spending.
- B. A stock market boom increases household wealth.
- C. War breaks out in the Middle East, causing oil prices to soar.

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ACTIVE LEARNING 2: Answers

- A. The Minister of Finance tries to balance the budget by cutting govt spending.

This event would reduce aggregate demand and output.

To offset this event, the BOC should increase MS and reduce r to increase agg demand.

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ACTIVE LEARNING 2: Answers

- B. A stock market boom increases household wealth.

This event would increase aggregate demand, raising output above its natural rate.

To offset this event, the BOC should reduce MS and increase r to reduce aggregate demand.

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ACTIVE LEARNING 2: Answers

- C. War breaks out in the Middle East, causing oil prices to soar.
- This event would reduce aggregate supply, causing output to fall.
- To offset this event, the BOC should increase MS and reduce r to increase agg demand.

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Open Economy Considerations

- A monetary injection by the Bank of Canada
 - causes the dollar to depreciate in value;
 - the dollar depreciation causes net exports to rise;
 - there is an additional increase in demand for Canadian-produced goods and services not realized in a closed economy; and
 - in the end, a monetary injection in an open economy shifts the aggregate-demand curve farther to the right than in a closed economy.

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Open Economy Considerations

- The Bank of Canada cannot simultaneously choose the size of the money supply and the value of the Canadian dollar.

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Fiscal Policy and Aggregate Demand

- **Fiscal policy:** the setting of the level of govt spending and taxation by govt policymakers
- **Expansionary** fiscal policy
 - an increase in G and/or decrease in T
 - shifts AD right
- **Contractionary** fiscal policy
 - a decrease in G and/or increase in T
 - shifts AD left
- Fiscal policy has two effects on AD .
 - Multiplier effect
 - Crowding-out effect

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1. The Multiplier Effect

- If the govt buys \$20b of planes from Boeing, Boeing's revenue increases by \$20b.
- This is distributed to Boeing's workers (as wages) and owners (as profits or stock dividends).
- These people are also consumers, and will spend a portion of the extra income.
- This extra consumption causes further increases in aggregate demand.

Multiplier effect: the additional shifts in AD that result when fiscal policy increases income and thereby increases consumer spending

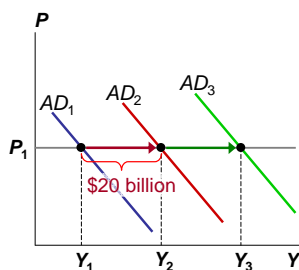
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The Multiplier Effect

A \$20b increase in G initially shifts AD to the right by \$20b.

The increase in Y causes C to rise, which shifts AD further to the right.



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Marginal Propensity to Consume

- How big is the multiplier effect?
It depends on how much consumers respond to increases in income.
- Marginal propensity to consume (MPC):**
the fraction of extra income that households consume rather than save
- E.g., if $MPC = 0.8$ and income rises \$100, C rises \$80.

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A Formula for the Multiplier

Notation: ΔG is the change in G ,
 ΔY and ΔC are the ultimate changes in Y and C

$$Y = C + I + G + NX \quad \text{identity}$$

$$\Delta Y = \Delta C + \Delta G \quad I \text{ and } NX \text{ do not change}$$

$$\Delta Y = MPC \Delta Y + \Delta G \quad \text{because } \Delta C = MPC \Delta Y$$

$$\Delta Y = \frac{1}{1 - MPC} \Delta G \quad \text{solved for } \Delta Y$$

The multiplier

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A Formula for the Multiplier

The size of the multiplier depends on MPC .

e.g., if $MPC = 0.5$ multiplier = 2
if $MPC = 0.75$ multiplier = 4
if $MPC = 0.9$ multiplier = 10

$$\Delta Y = \frac{1}{1 - MPC} \Delta G$$

The multiplier

A bigger MPC means changes in Y cause bigger changes in C , which in turn cause more changes in Y .

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Other Applications of the Multiplier Effect

- The multiplier effect:
each \$1 increase in G can generate more than a \$1 increase in aggregate demand.
- Also true for the other components of GDP.
Example: Suppose a recession overseas reduces demand for U.S. net exports by \$10b.
Initially, aggregate demand falls by \$10b.
The fall in Y causes C to fall, which further reduces aggregate demand and income.

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The Crowding-Out Effect on Investment

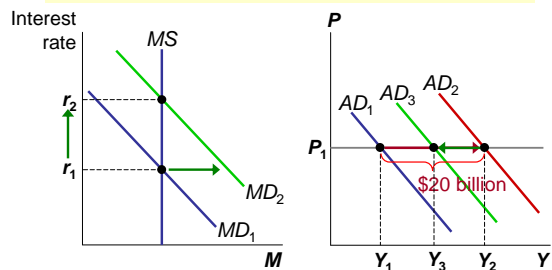
- Fiscal policy has another effect on AD that works in the opposite direction.
- A fiscal expansion shifts AD to the right, but also raises r , which reduces investment and, thus, reduces the net increase in aggregate demand.
- So, the size of the AD shift may be smaller than the initial fiscal expansion.
- This is called the **crowding-out effect**.

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How the Crowding-Out Effect Works

A \$20b increase in G initially shifts AD right by \$20b



But higher Y increases MD and r , which reduces AD .

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The Crowding-Out Effect on Investment

- When the government increases its purchases by \$20 billion, the aggregate demand for goods and services could rise by more or less than \$20 billion, depending on whether the multiplier effect or the crowding-out effect is larger.

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Open-Economy Considerations

- Canada's interest rate must equal the world interest rate
- The interest rate increased as a result of the increased government spending
- Higher interest rate increases demand for Canadian assets and therefore the Canadian dollar

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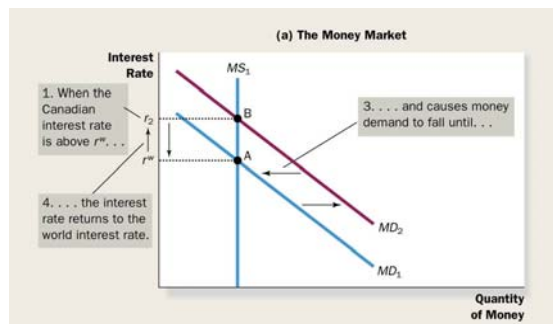
Open-Economy Considerations: Flexible Exchange Rates

- If the Bank of Canada allows the exchange rate to be flexible, the dollar appreciates, which makes Canadian-produced goods and services relatively more expensive, and Canada's net exports fall.
- This is an additional *crowding-out effect (on net exports)* that reduces the demand for Canadian-produced goods and services.
- In the end, fiscal policy has no lasting effect on aggregate demand.

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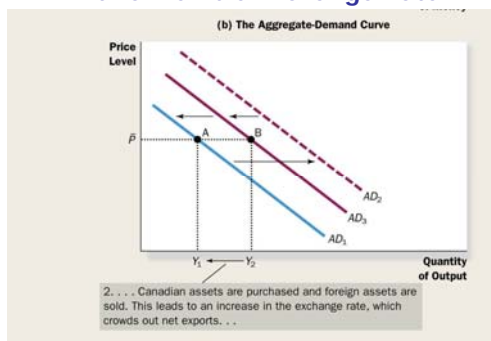
Fiscal Expansion in an Open Economy with a Flexible Exchange Rate



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Fiscal Expansion in an Open Economy with a Flexible Exchange Rate



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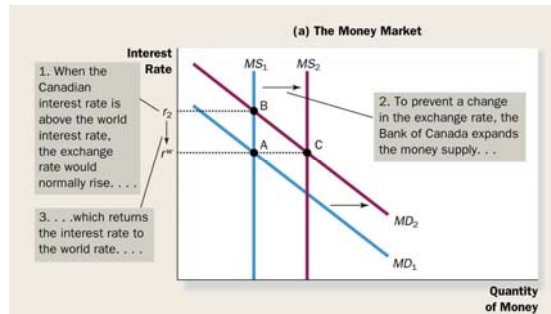
Open-Economy Considerations: Fixed Exchange Rates

- To prevent the appreciation of the dollar,
 - the Bank of Canada increases the money supply by selling dollars in the market for foreign-currency exchange;
 - this increase in the money supply also prevents the interest rate from changing
- As a result, both forms of crowding out are avoided
- In the end, the fiscal expansion has a large effect on aggregate demand.

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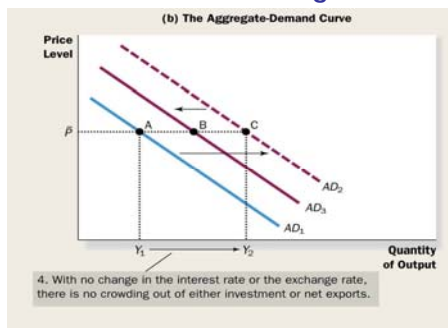
A Fiscal Expansion in an Open Economy with a Fixed Exchange Rate



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A Fiscal Expansion in an Open Economy with a Fixed Exchange Rate



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Changes in Taxes

- When the government cuts personal income taxes, it increases households' take-home pay.
 - Households save some of this additional income.
 - Households also spend some of it on consumer goods.
 - Increased household spending shifts the aggregate-demand curve to the right.

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Changes in Taxes

- The size of the shift in aggregate demand
 - is affected by the multiplier and crowding-out effects.
 - is determined by the households' perceptions about the permanency of the tax change.
- In a small open economy, whether the change in the position of aggregate demand is a lasting one depends on whether exchange rates are flexible or fixed

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Deficit Reduction

- Deficit reduction can be accomplished with reduced government spending, increased taxes, or a combination of the two
- Deficit reduction can have a minimal impact on the level of aggregate demand if the central bank adopts the appropriate exchange-rate policy

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ACTIVE LEARNING 3: Exercise

The economy is in recession.
Shifting the *AD* curve rightward by \$200b
would end the recession.

- A. If $MPC = .8$ and there is no crowding out, how much should the government increase **G** to end the recession?
- B. If there is crowding out, will the government need to increase **G** more or less than this amount?

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ACTIVE LEARNING 3: Answers

The economy is in recession.
Shifting the *AD* curve rightward by \$200b
would end the recession.

- A. If $MPC = .8$ and there is no crowding out,
how much should the government increase **G**
to end the recession?

$$\text{Multiplier} = 1/(1 - .8) = 5$$

Increase **G** by \$40b
to shift *AD* by $5 \times \$40b = \$200b$.

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ACTIVE LEARNING 3: Answers

The economy is in recession.
Shifting the *AD* curve rightward by \$200b
would end the recession.

- B. If there is crowding out, will the government need to
increase **G** more or less than this amount?

Crowding out reduces the impact of **G** on *AD*.

To offset this, the government should increase **G** by a
larger amount.

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The Case for Active Stabilization Policy

- Unexpected expansions and contractions of the economy impose costs like unemployment, inflation, and uncertainty.
- If monetary and fiscal policy can be used to stabilize the economy, they can be used to offset the harmful effects of economic fluctuations.

The Case for Active Stabilization Policy

- Some economists argue that monetary and fiscal policy destabilizes the economy.
- Monetary and fiscal policy affect the economy with a substantial lag.
- They suggest the economy should be left to deal with the short-run fluctuations on its own.

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Automatic Stabilizers

- **Automatic stabilizers** are changes in fiscal policy that stimulate aggregate demand when the economy goes into a recession without policymakers having to take any deliberate action.
- Automatic stabilizers include the tax system and some forms of government spending.

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A Flexible Exchange Rate as an Automatic Stabilizer

- A U.S. recession would cause Canadian net exports to fall, lowering aggregate demand
- However, with flexible exchange rates
 - Lower Canadian income results in lower money demand, reducing the interest rate below the world interest rate
 - Decreased demand for Canadian assets results in depreciation of the Canadian dollar, making Canadian-produced goods relatively less expensive
 - Net exports rise

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CHAPTER SUMMARY

- Keynes proposed the theory of liquidity preference to explain determinants of the interest rate.
 - According to this theory, the interest rate adjusts to balance the supply and demand for money.

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CHAPTER SUMMARY

- An increase in the price level raises money demand and increases the interest rate.
- A higher interest rate reduces investment and the quantity of goods and services demanded.
- In a small open economy, an increase in the price level increases the real exchange rate and Canadian net exports fall
- The downward-sloping aggregate-demand curve expresses these negative relationships between the price-level and the quantity demanded.

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CHAPTER SUMMARY

- Policymakers can influence aggregate demand with monetary policy.
- An increase in the money supply will lead to a rightward shift in the aggregate-demand curve.
- In a small open economy,
 - the lower interest rate also means a fall in the exchange rate, increasing the demand for Canadian-produced goods and services; and
 - as a result, a monetary injection shifts the aggregate demand curve farther to the right than in a closed economy.

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CHAPTER SUMMARY

- Policymakers can influence aggregate demand with fiscal policy.
- An increase in government purchases or a cut in taxes shifts the aggregate-demand curve to the right.
- A decrease in government purchases or an increase in taxes shifts the aggregate-demand curve to the left.

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CHAPTER SUMMARY

- When the government alters spending or taxes, the resulting shift in aggregate demand can be larger or smaller than the fiscal change.
- The multiplier effect tends to amplify the effects of fiscal policy on aggregate demand.
- The crowding-out effect tends to dampen the effects of fiscal policy on aggregate demand.
- The multiplier effect is much smaller in an open economy than in a closed economy.

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CHAPTER SUMMARY

- In a small open economy with perfect capital mobility, fiscal policy may or may not cause a lasting shift in the aggregate demand curve.
- If the Bank of Canada allows the exchange rate to be flexible, fiscal policy has no lasting effect on the position of the aggregate demand curve.

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CHAPTER SUMMARY

- The government sometimes monetary and fiscal policies in an attempt to stabilize the economy.
- Economists disagree about how active the government should be in this effort.

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Fiscal Policy and Aggregate Supply

- Most economists believe the short-run effects of fiscal policy mainly work through *AD*.
- But fiscal policy might also affect AS.
- Recall one of the Ten Principles from Chap 1:
People respond to incentives.
- A cut in the tax rate gives workers incentive to work more, so it might increase the quantity of g&s supplied and shift AS to the right.
- People who believe this effect is large are called "Supply-siders."



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Fiscal Policy and Aggregate Supply

- Govt purchases may also affect AS:
- Suppose govt increases spending on roads (or other public capital).
- Better roads may increase business productivity, which increases the quantity of g&s supplied, shifts AS to the right.
- This effect is probably more relevant in the long run, as it takes time to build the new roads and put them into use.

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Using Policy to Stabilize the Economy

- Since the Employment Act of 1946, economic stabilization has been a goal of U.S. policy.
- Economists debate how active a role the govt should take to stabilize the economy.

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The Case for Active Stabilization Policy

- Keynes: "animal spirits" cause waves of pessimism and optimism among households and firms, leading to shifts in aggregate demand and fluctuations in output and employment.
- Also, other factors cause fluctuations, e.g.,
 - booms and recessions abroad
 - stock market booms and crashes
- If policymakers do nothing, these fluctuations are destabilizing to businesses, workers, consumers.

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The Case for Active Stabilization Policy

- Proponents of active stabilization policy believe the govt should use policy to reduce these fluctuations:
 - when GDP falls below its natural rate, should use expansionary monetary or fiscal policy to prevent or reduce a recession
 - when GDP rises above its natural rate, should use contractionary policy to prevent or reduce an inflationary boom

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Keynesians in the White House

1961:

John F Kennedy pushed for a tax cut to stimulate agg demand. Several of his economic advisors were followers of Keynes.



2001:

George W Bush pushed for a tax cut that helped the economy recover from a recession that had just begun.

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The Case Against Active Stabilization Policy

- Monetary policy affects economy with a long lag:
 - firms make investment plans in advance, so I takes time to respond to changes in r
 - most economists believe it takes at least 6 months for mon policy to affect output and employment
- Fiscal policy also works with a long lag:
 - Changes in G and T require Acts of Congress.
 - The legislative process can take months or years.

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The Case Against Active Stabilization Policy

- Due to these long lags, critics of active policy argue that such policies may destabilize the economy rather than help it:
By the time the policies affect agg demand, the economy's condition may have changed.
- These critics contend that policymakers should focus on long-run goals, like economic growth and low inflation.

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Automatic Stabilizers

- **Automatic stabilizers:**
changes in fiscal policy that stimulate
agg demand when economy goes into recession, without
policymakers having to take any deliberate action

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Automatic Stabilizers: Examples

- The tax system
 - Taxes are tied to economic activity.
When economy goes into recession,
taxes fall automatically.
 - This stimulates agg demand and reduces the
magnitude of fluctuations.

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Automatic Stabilizers: Examples

- Govt spending
 - In a recession, incomes fall and
unemployment rises.
 - More people apply for public assistance
(e.g., unemployment insurance, welfare).
 - Govt outlays on these programs automatically
increase, which stimulates agg demand and reduces
the magnitude of fluctuations.

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CONCLUSION

- Policymakers need to consider all the effects of their actions. For example,
 - When Congress cuts taxes, it needs to consider the short-run effects on agg demand and employment, and the long-run effects on saving and growth.
 - When the Fed reduces the rate of money growth, it must take into account not only the long-run effects on inflation, but the short-run effects on output and employment.

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CHAPTER SUMMARY

- In the theory of liquidity preference, the interest rate adjusts to balance the demand for money with the supply of money.
- The interest-rate effect helps explain why the aggregate-demand curve slopes downward:
An increase in the price level raises money demand, which raises the interest rate, which reduces investment, which reduces the aggregate quantity of goods & services demanded.

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CHAPTER SUMMARY

- An increase in the money supply causes the interest rate to fall, which stimulates investment and shifts the aggregate demand curve rightward.
- Expansionary fiscal policy – a spending increase or tax cut – shifts aggregate demand to the right. Contractionary fiscal policy shifts aggregate demand to the left.

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CHAPTER SUMMARY

- When the government alters spending or taxes, the resulting shift in aggregate demand can be larger or smaller than the fiscal change:
The multiplier effect tends to amplify the effects of fiscal policy on aggregate demand.
The crowding-out effect tends to dampen the effects of fiscal policy on aggregate demand.

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CHAPTER SUMMARY

- Economists disagree about how actively policymakers should try to stabilize the economy.
Some argue that the government should use fiscal and monetary policy to combat destabilizing fluctuations in output and employment.
Others argue that policy will end up destabilizing the economy, because policies work with long lags.

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End: Chapter 15

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