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A Macroeconomic Theory  
of the Open Economy

PRINCIPLES OF  
MACROECONOMICS  
FOURTH CANADIAN EDITION

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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:**

- In an open economy, what determines the real interest rate? The real exchange rate?
- How are the markets for loanable funds and foreign-currency exchange connected?
- How do government budget deficits affect the exchange rate and trade balance?
- How do other policies or events affect the interest rate, exchange rate, and trade balance?

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Open Economies

- An open economy is one that interacts freely with other economies around the world.
- The important macroeconomic variables of an open economy include:
  - net exports
  - net foreign investment
  - nominal exchange rates
  - real exchange rates

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### Basic Assumptions of a Macroeconomic Model of an Open Economy

- The model takes as *given*
  - the economy's GDP
  - the economy's price level

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### SUPPLY AND DEMAND FOR LOANABLE FUNDS AND FOR FOREIGN-CURRENCY EXCHANGE

- To understand the forces at work in an open economy, two markets are important
  - Market for loanable funds, which coordinates the economy's saving, investment, and the flow of loanable funds abroad.
  - Market for foreign-currency exchange, which coordinates people who want to exchange the domestic currency for the currency of other countries

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### The Market for Loanable Funds

- All savers go to this market to deposit their saving, and all borrowers go to this market to get their loans.
- In this market, there is one interest rate, which is both the return to saving and the cost of borrowing.

$$\begin{array}{rcl}
 S & = & I + NCO \\
 \text{Saving} & = & \text{Domestic Investment} + \text{Net Capital Outflow}
 \end{array}$$

- In an open economy the amount that a nation saves does not have to equal the amount it spends to purchase domestic capital.

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### The Market for Loanable Funds

- If the amount of national saving exceeds the amount needed to finance the purchase of domestic capital, net capital outflow (NCO) is positive.
- If the national saving is insufficient to finance the purchase of domestic capital, the NCO is negative.

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### The Market for Loanable Funds

- The supply of loanable funds comes from national saving (S).
- The demand for loanable funds comes from domestic investment (I) and net capital outflows (NCO).

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### The Market for Loanable Funds

- The supply and demand for loanable funds depend on the real interest rate.
- A higher real interest rate encourages people to save and raises the quantity of loanable funds supplied.
- The interest rate adjusts to bring the supply and demand for loanable funds into balance.
- At the equilibrium interest rate, the amount that people want to save exactly balances the desired quantities of domestic investment and net foreign investment.

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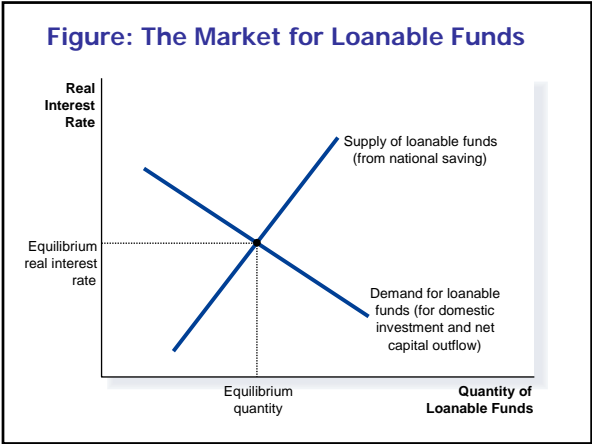
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**The Market for Loanable Funds**

- In a small open economy with perfect capital mobility, like Canada, the domestic interest rate will equal the world interest rate.
- As a result, the quantity of loanable funds made available by the savings of Canadians does not have to equal the quantity of loanable funds demanded for domestic investment.
- The difference between these two amounts is net capital outflow (NCO)

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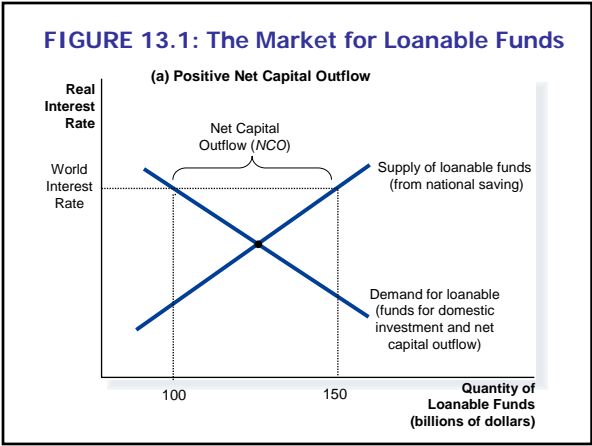
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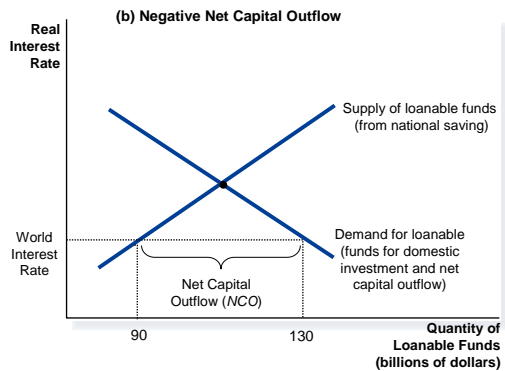
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**FIGURE 13.1: The Market for Loanable Funds**




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### The Market for Foreign-Currency Exchange

- The market for foreign-currency exchange exists because people want to trade with people in other countries, but they want to be paid in their own currency.
  - The two sides of the foreign-currency exchange market are represented by *NCO* and *NX*.
  - *NCO* represents the imbalance between the purchases and sales of capital assets.
  - *NX* represents the imbalance between exports and imports of goods and services.

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### The Market for Foreign-Currency Exchange

- In the market for foreign-currency exchange, Canadian dollars are traded for foreign currencies.
- For an economy as a whole, *NCO* and *NX* must balance each other out, or:

$$NCO = NX$$

- The price that balances the supply and demand for foreign-currency is the real exchange rate.

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### The Market for Foreign-Currency Exchange

- The demand curve for foreign currency is downward sloping because a higher exchange rate makes domestic goods more expensive.
- The supply curve is vertical because the quantity of dollars supplied for net capital outflow is unrelated to the real exchange rate.

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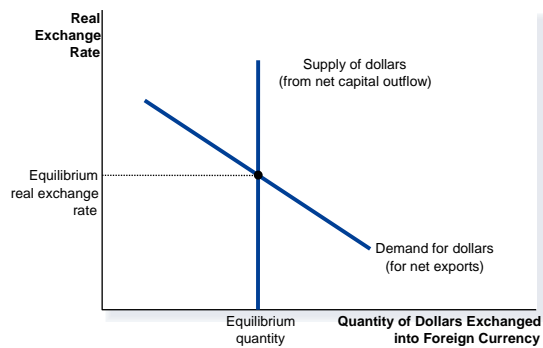
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FIGURE 13.2: The Market for Foreign-Currency Exchange




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### The Market for Foreign-Currency Exchange

- The real exchange rate adjusts to balance the supply and demand for dollars.
- At the equilibrium real exchange rate, the demand for dollars to buy net exports exactly balances the supply of dollars to be exchanged into foreign currency to buy assets abroad.

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## EQUILIBRIUM IN THE OPEN ECONOMY

- Net capital outflow is the variable that links these two markets
  - In the market for loanable funds, supply comes from national saving and demand comes from domestic investment and net capital outflow.
  - In the market for foreign-currency exchange, supply comes from net capital outflow and demand comes from net exports.
  - The key determinant of net capital outflow is the world interest rate.

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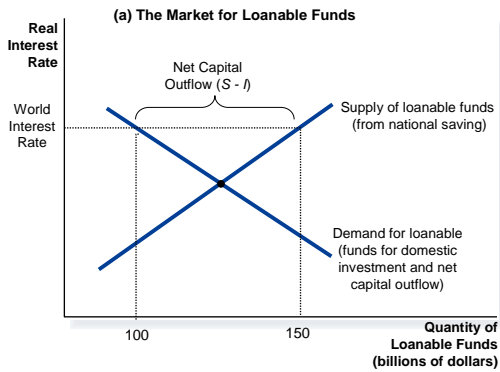
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**FIGURE 13.3: The Real Equilibrium in a Small Open Economy**




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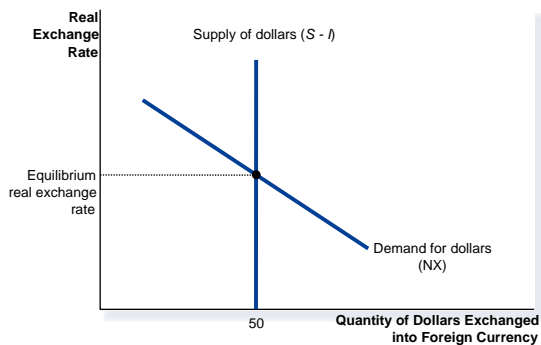
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**FIGURE 13.2: The Market for Foreign-Currency Exchange**




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### EQUILIBRIUM IN THE OPEN ECONOMY

- Prices in the loanable funds market and the foreign-currency exchange market adjust simultaneously to balance supply and demand in these two markets.
- As they do, they determine the macroeconomic variables of national saving, domestic investment, net foreign investment, and net exports.

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### HOW POLICIES AND EVENTS AFFECT AN OPEN ECONOMY

- The magnitude and variation in important macroeconomic variables depend on the following:
  - Increase in world interest rates
  - Government budget deficits and surpluses
  - Trade policies
  - Political and economic stability

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### HOW POLICIES AND EVENTS AFFECT AN OPEN ECONOMY

- Three steps in using the model to analyze these events
  - Determine which of the supply and demand curves each event affects
  - Determine which way the curves shift
  - Examine how these shifts alter the economy's equilibrium

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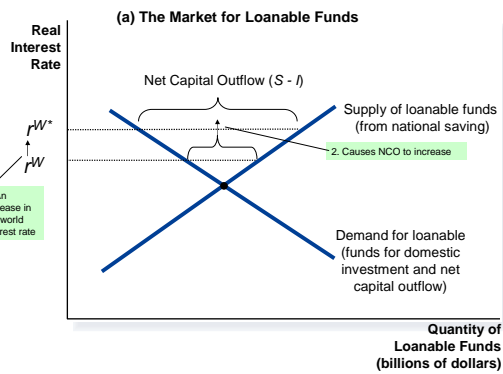
## Increase in World Interest Rates

- Events outside Canada that cause world interest rates to change can have important effects on the Canadian economy
- In a small open economy with perfect mobility, an increase in the world interest rate crowds out domestic investment, causes the dollar to depreciate, and causes net exports to rise.

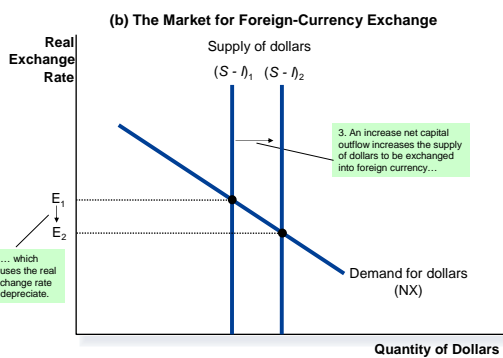
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**FIGURE 13.4: The Effects of an Increase in the World Interest Rate**



**FIGURE 13.4: The Market for Foreign-Currency Exchange**



## Government Budget Deficits and Surpluses

- Because a government budget deficit represents *negative* public saving, it reduces national saving, and therefore reduces. . .
  - the supply of loanable funds,
  - net capital outflow
  - the supply of Canadian dollars in the market for foreign-currency exchange

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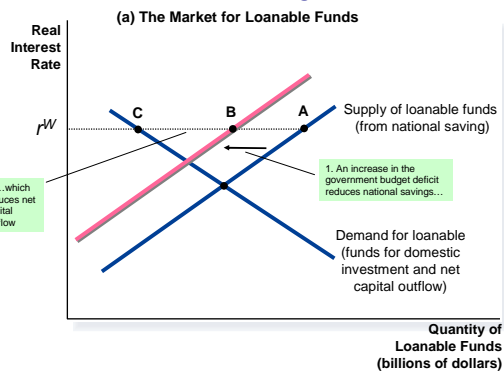
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**FIGURE 13.5: The Effects of an Increase in the Government Budget Deficit**




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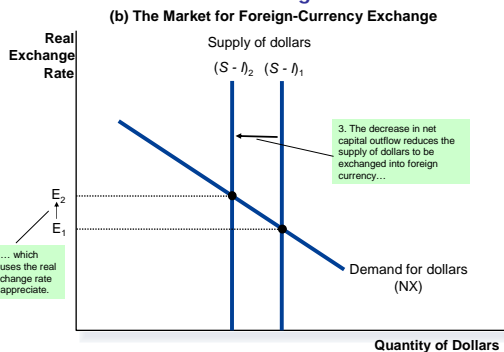
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**FIGURE 13.5: The Effects of an Increase in the Government Budget Deficit**




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## Trade Policy

- A *trade policy* is a government policy that directly influences the quantity of goods and services that a country imports or exports.
  - Tariff: A tax on an imported good.
  - Import quota: A limit on the quantity of a good produced abroad and sold domestically.

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## Trade Policy

- The effect of an import quota
  - The initial impact is on imports—which affects net exports
  - Net exports are the source of demand for dollars in the market for foreign-currency exchange, affecting demand in this market
  - Imports are reduced at any exchange rate, and net exports will rise
  - This increases the demand for dollars in the market for foreign-currency exchange

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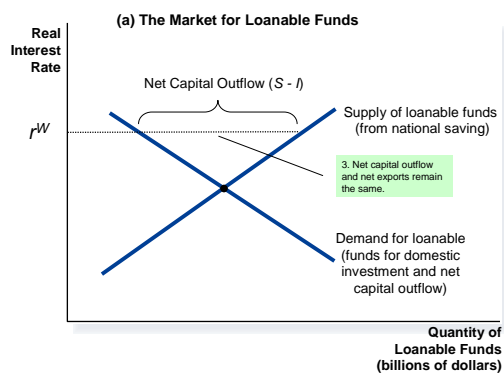
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**FIGURE 13.6: The Effects of an Import Quota**




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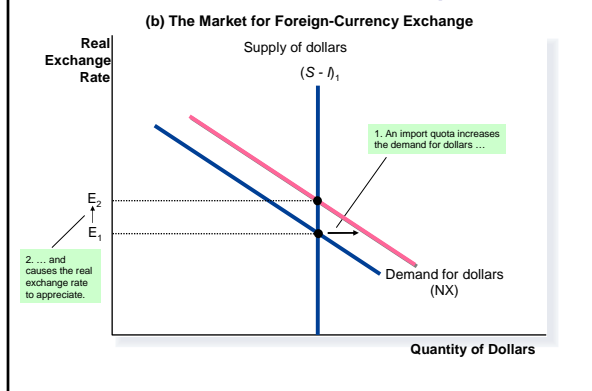
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**FIGURE 13.6: The Effects of an Import Quota**




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### Trade Policy

- Effect of an Import Quota
  - Because foreigners need dollars to buy Canadian net exports, there is an increased demand for dollars in the market for foreign-currency.
    - This leads to an appreciation of the real exchange rate.

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### Trade Policy

- Effect of an Import Quota
  - There is no change in the market for loanable funds, and therefore, no change in net capital outflow
  - There will be no change in net exports even though an import quota reduces imports.

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### Trade Policy

- Effect of an Import Quota
  - An appreciation of the dollar in the foreign exchange market encourages imports and discourages exports.
  - This offsets the initial increase in net exports due to import quota.
- Trade policies do not affect the trade balance

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### Political Instability and Capital Flight

- *Capital flight*
  - is a large and sudden reduction in the demand for assets located in a country.
  - has its largest impact on the country from which the capital is fleeing, but it also affects other countries.
- If investors become concerned about the safety of their investments, capital can quickly leave an economy.
  - Interest rates increase and the domestic currency depreciates.

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### Political Instability and Capital Flight

- When investors around the world observed political problems in Mexico in 1994, they sold some of their Mexican assets and used the proceeds to buy assets of other countries.

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### Political Instability and Capital Flight

- This increased Mexican net capital outflow.
  - The demand for loanable funds in the loanable funds market increased, which increased the interest rate.
  - This increased the supply of pesos in the foreign-currency exchange market.

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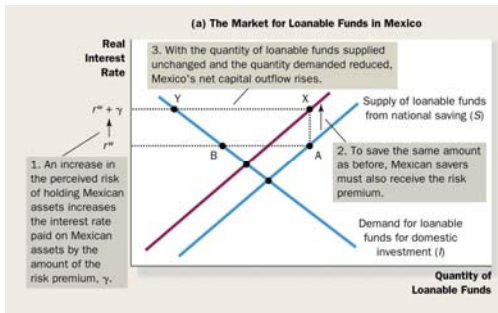
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**FIGURE 13.7: The Effects of Capital Flight**




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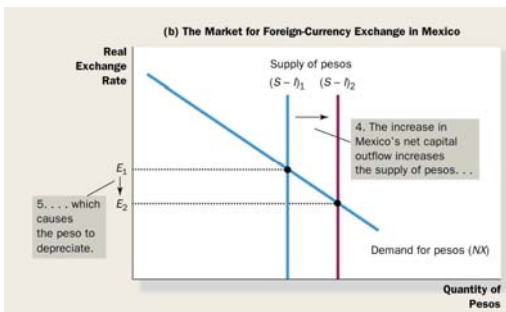
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**FIGURE 13.7: The Effects of Capital Flight**




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## CHAPTER SUMMARY

- Most economists prefer to use a model that describes Canada as a small open economy with perfect capital mobility.
- To analyze the macroeconomics of open economies, two markets are central—the market for loanable funds and the market for foreign-currency exchange.

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## CHAPTER SUMMARY

- In the market for loanable funds,
  - the interest rate adjusts to balance supply for loanable funds (from national saving) and demand for loanable funds (from domestic investment and net capital outflow).
- In the market for foreign-currency exchange,
  - the real exchange rate adjusts to balance the supply of dollars (for net capital outflow) and the demand for dollars (for net exports).
- Net capital outflow is the variable that connects the two markets.

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## CHAPTER SUMMARY

- A policy that reduces national saving, such as a government budget deficit, reduces the supply of loanable funds
- This reduces net capital outflow, reducing the supply of dollars in the market for foreign-currency exchange.
- The dollar appreciates, and net exports fall.

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## CHAPTER SUMMARY

- A trade restriction increases net exports for a given exchange rate and, therefore, increases the demand for dollars in the market for foreign-currency exchange.
- As a result, the dollar appreciates in value, making domestic goods more expensive relative to foreign goods.
- This appreciation offsets the initial impact of the trade restrictions on net exports.

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## CHAPTER SUMMARY

- When investors change their attitudes about holding assets of a country, the ramifications for the country's economy can be profound.
- Political instability in a country can lead to capital flight.
- Capital flight tends to increase interest rates and cause the country's currency to depreciate.

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## CHAPTER SUMMARY

- A budget deficit reduces national saving, drives up interest rates, reduces net capital outflow, reduces the supply of dollars in the foreign exchange market, appreciates the exchange rate, and reduces net exports.
- A policy that restricts imports does not affect net capital outflow, so it cannot affect net exports or improve a country's trade deficit. Instead, it drives up the exchange rate and reduces exports as well as imports.

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## End: Chapter 13

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