

# PART 2

## How Markets Function

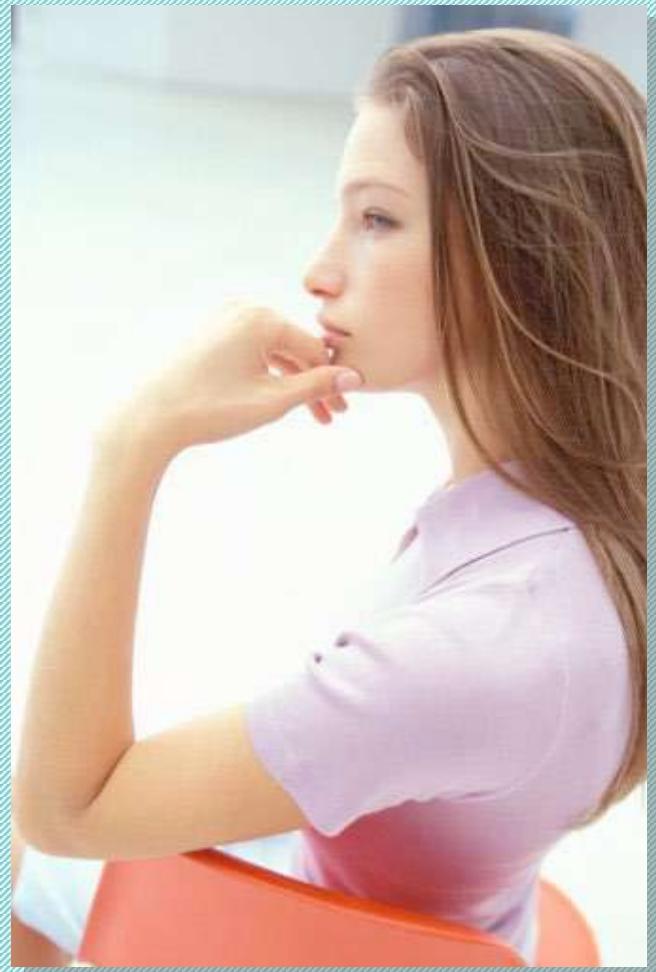
PRINCIPLES OF

# Microeconomics

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# *Chapter 10: Applications of Welfare Economics*



# Chapter 10: Applications of Welfare Economics

- Despite the possibility of market failure, the invisible hand of the market remains extremely important. In many markets, the assumptions we made in Chapter 9 hold true, and the conclusions about market efficiency are directly applicable.
- Furthermore, we can use welfare economics and market efficiency to analyze and explain the effects of various government policies. In Chapter 10, we use the tools from Chapter 9 to study the welfare effects of two important policy issues: taxation and international trade.

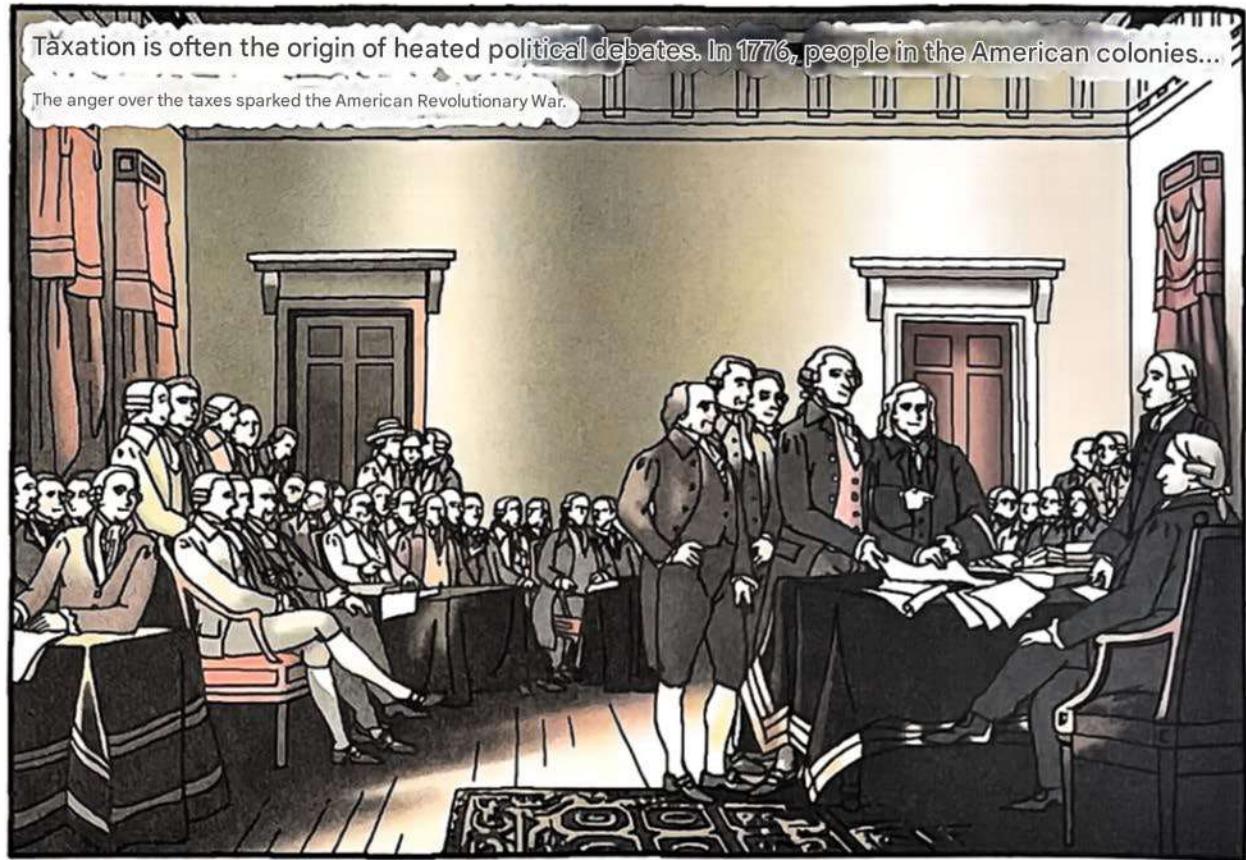
# Chapter 10: Applications of Welfare Economics

- **The cost of taxation**

- International trade

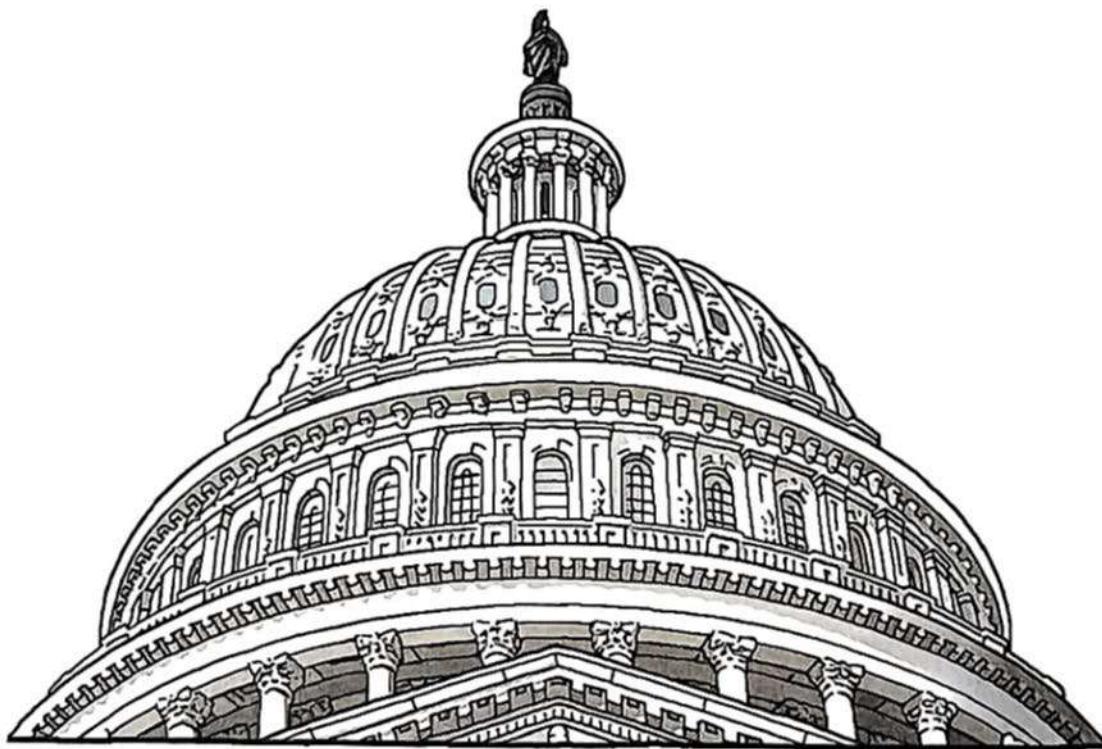
# The cost of taxation

cost of tax

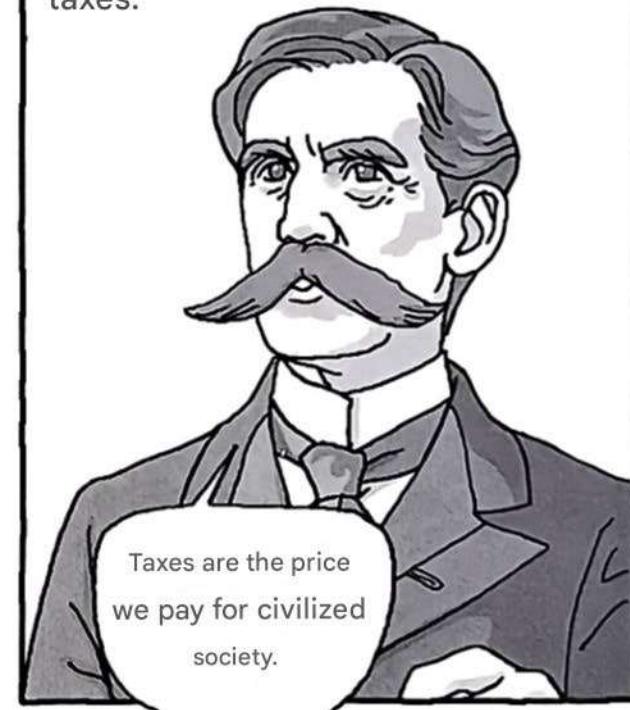


# The cost of taxation

More than 200 years later, American political parties are still debating the appropriate size and form of the tax system.



The renowned jurist Oliver Wendell Holmes never denied the necessity of certain taxes.



# The cost of taxation

We need to examine how taxation affects the economic welfare of market participants.

In other words, we need to figure out how high the cost of civilized society is.

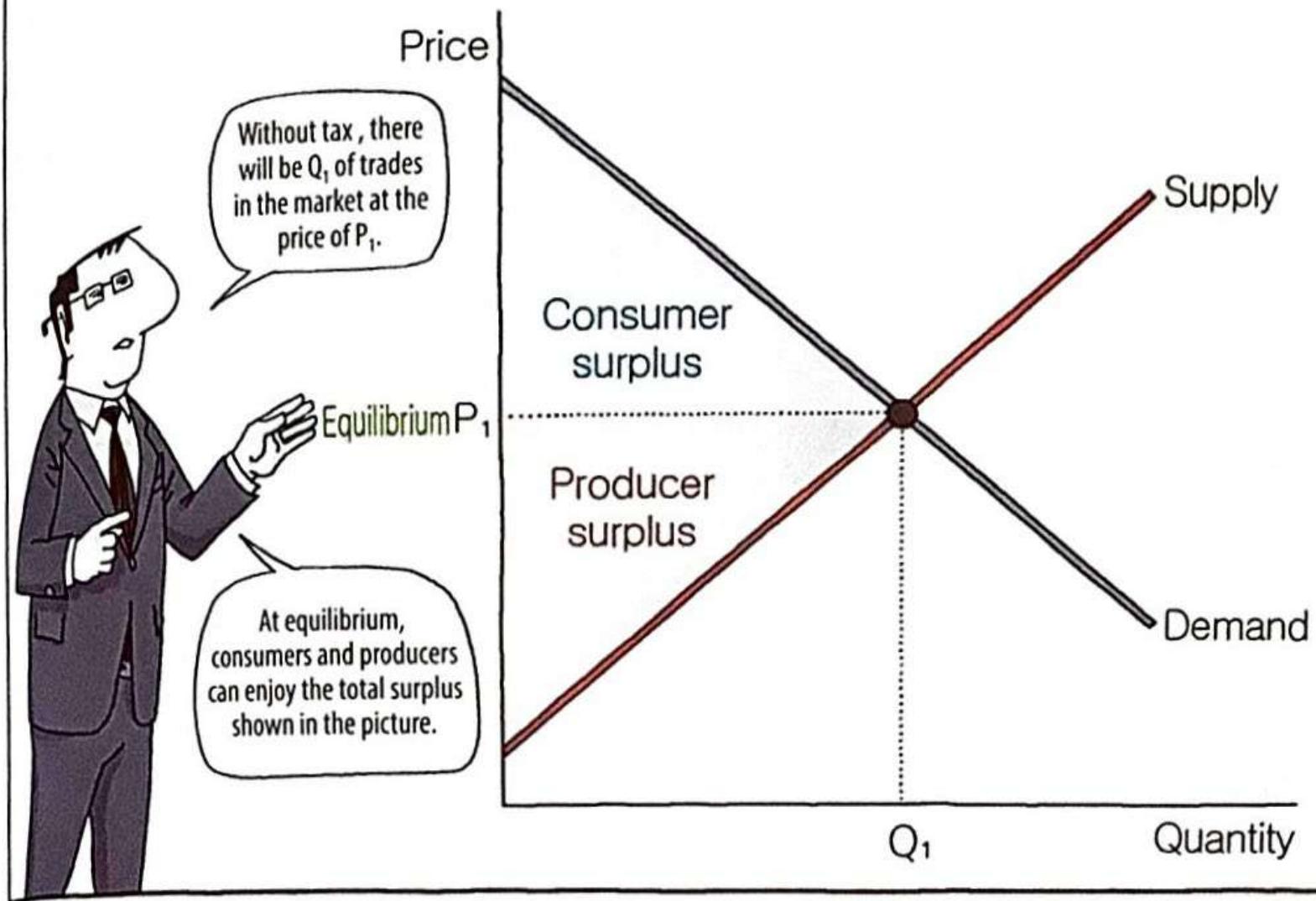


At first glance, the impact of taxes on people's welfare seems obvious.

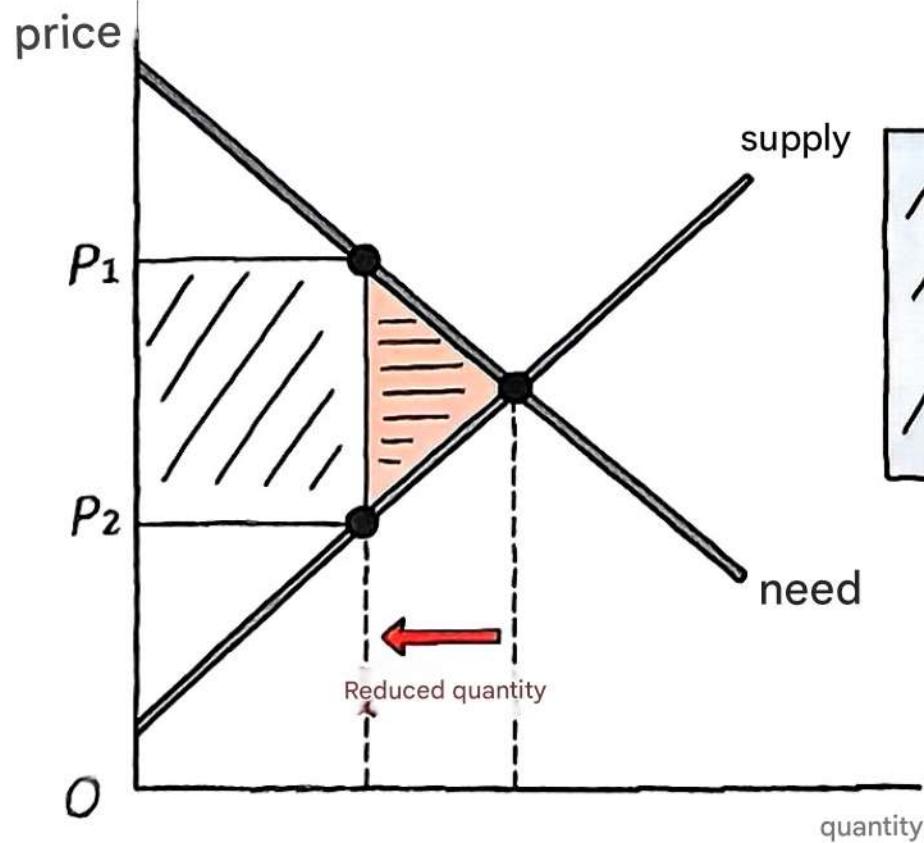


Because government taxes inevitably come from someone's pocket.

However, to have a deeper understanding of how taxes affect economic well-being, we must compare the reduced welfare of buyers and sellers to the amount of revenue that the government raises.



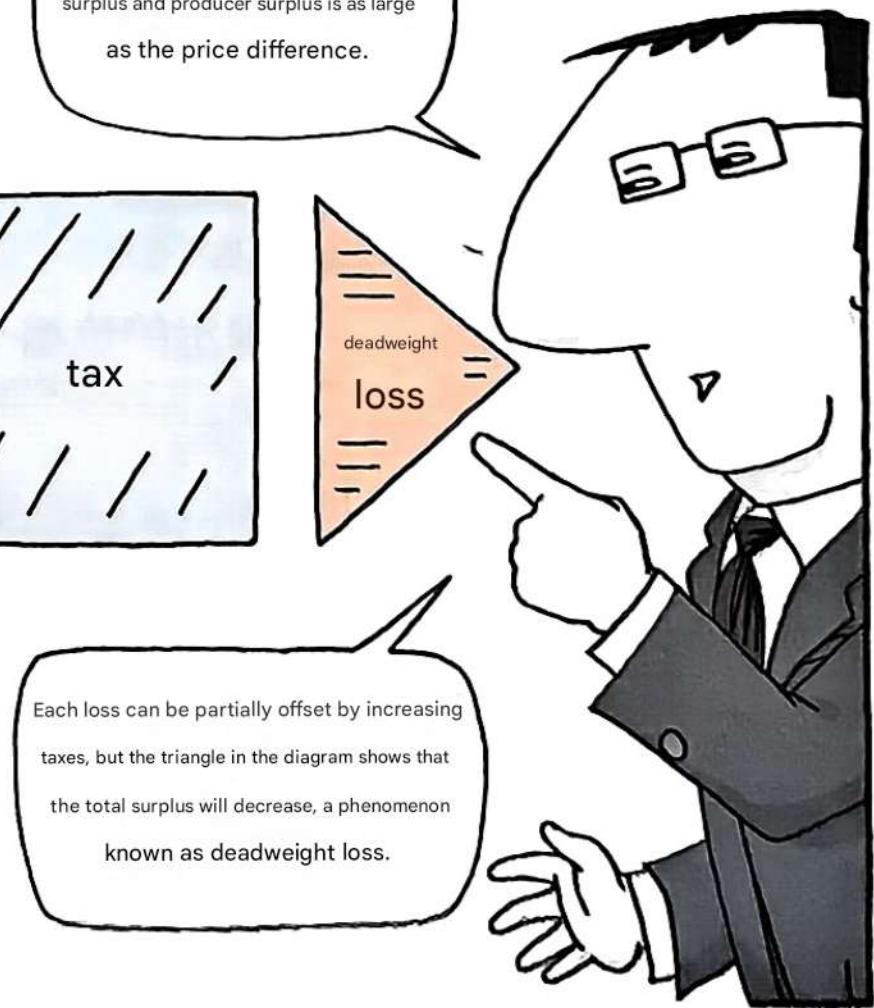
Taxes cause a decrease in both consumer and producer surplus because consumers pay more than before, while producers receive less.



After the tax is levied, consumers pay  $P_1$ , and producers receive  $P_2$ .

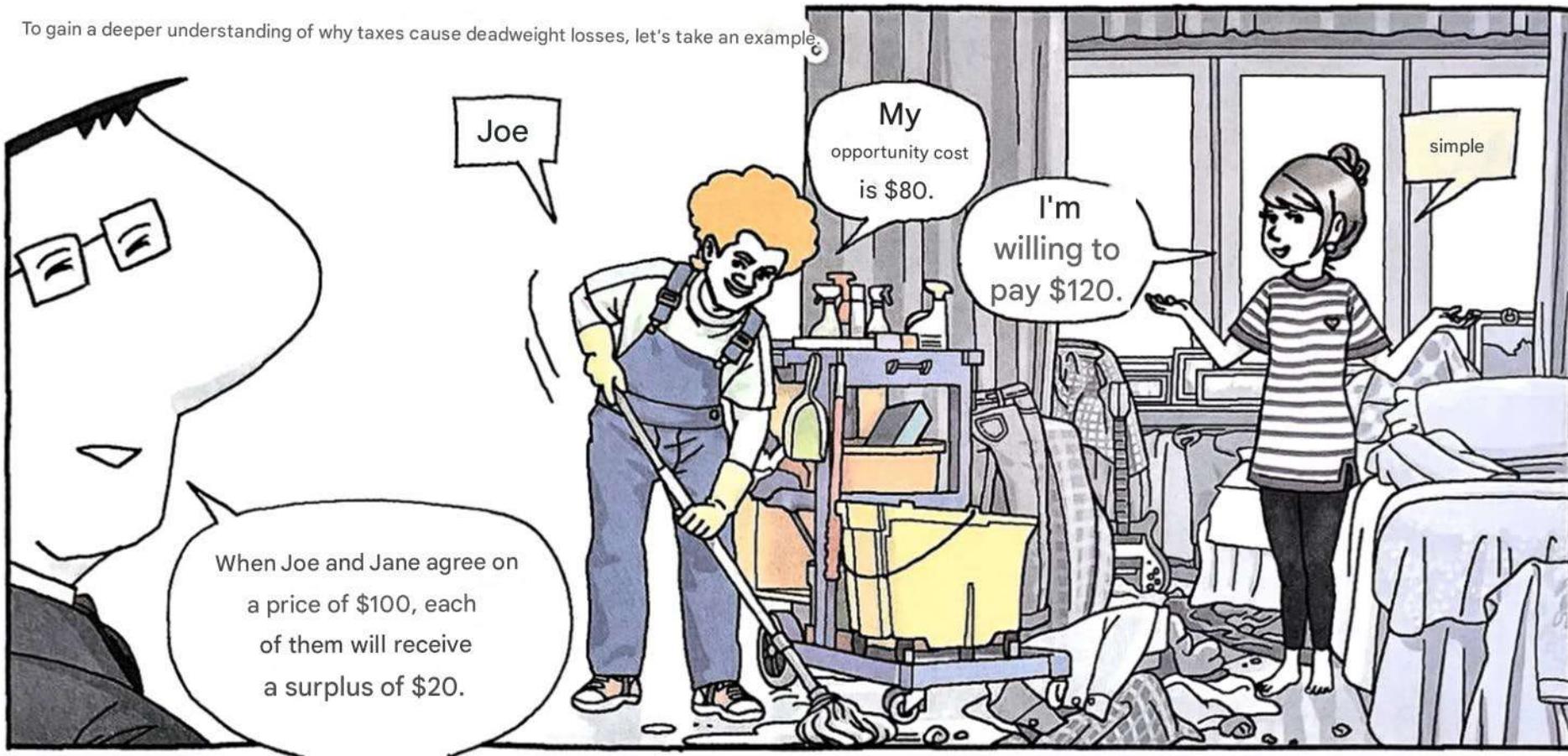
Therefore, the decrease in consumer surplus and producer surplus is as large as the price difference.

Each loss can be partially offset by increasing taxes, but the triangle in the diagram shows that the total surplus will decrease, a phenomenon known as deadweight loss.



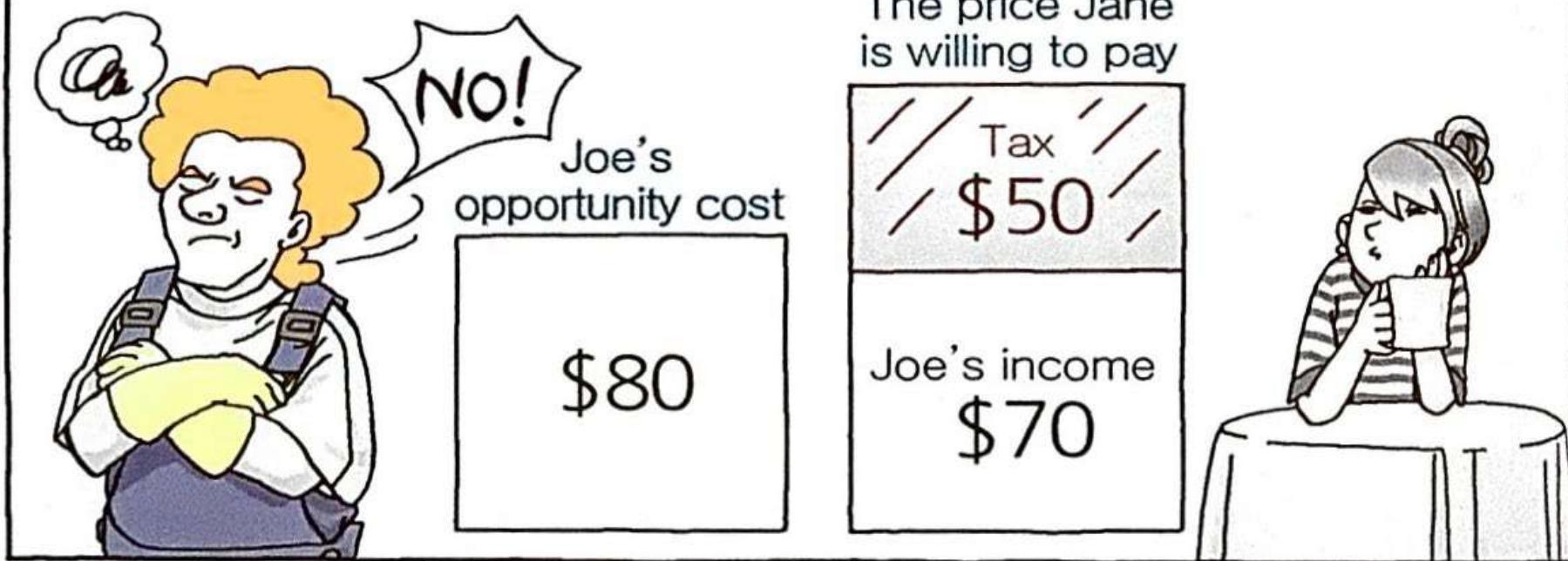
# The cost of taxation

To gain a deeper understanding of why taxes cause deadweight losses, let's take an example.



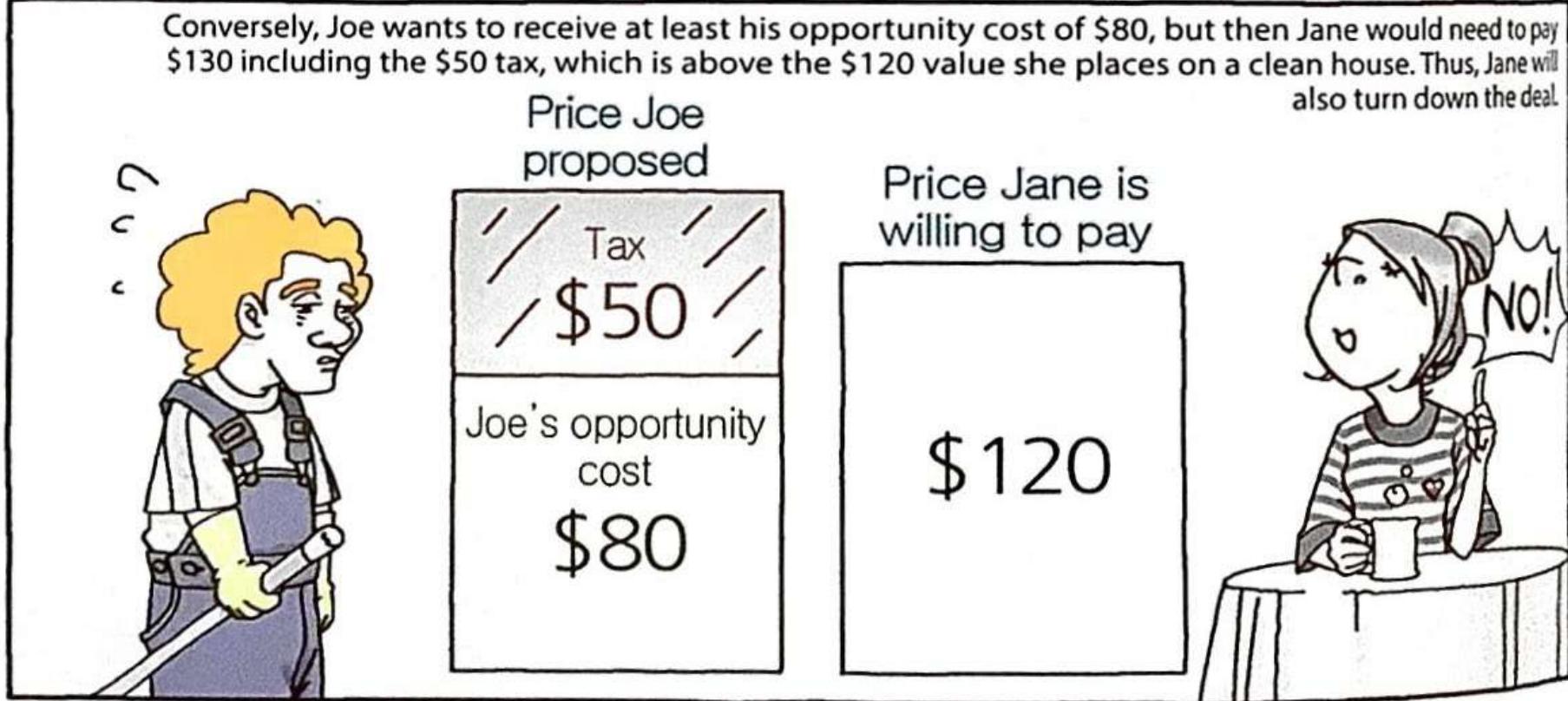
# The cost of taxation

Now suppose that the government levies a \$50 tax on the providers of cleaning services. The most Jane would be willing to pay is \$120, but then Joe would be left with only \$70 after paying the tax, which is less than his \$80 opportunity cost. He will refuse to make the deal.



# The cost of taxation

Conversely, Joe wants to receive at least his opportunity cost of \$80, but then Jane would need to pay \$130 including the \$50 tax, which is above the \$120 value she places on a clean house. Thus, Jane will also turn down the deal.



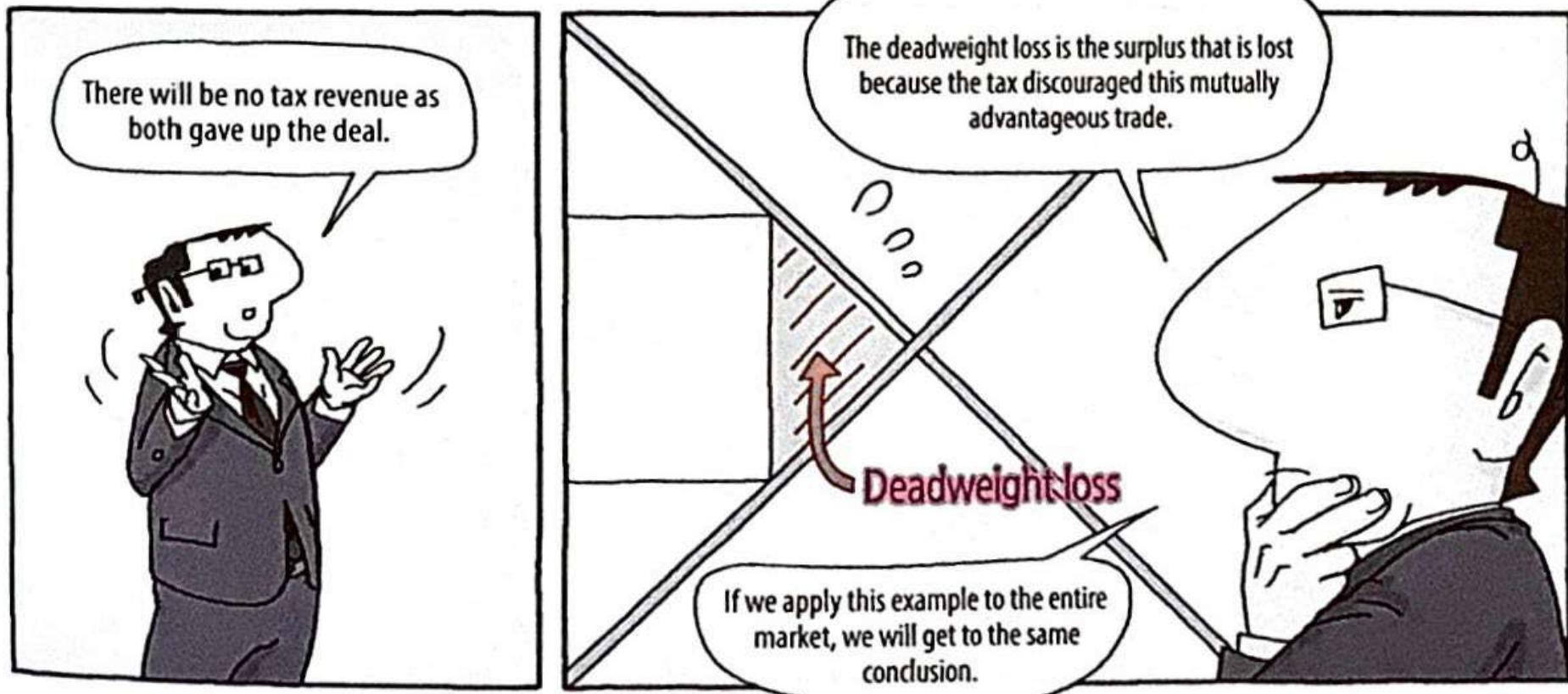
# The cost of taxation



# The cost of taxation



# The cost of taxation

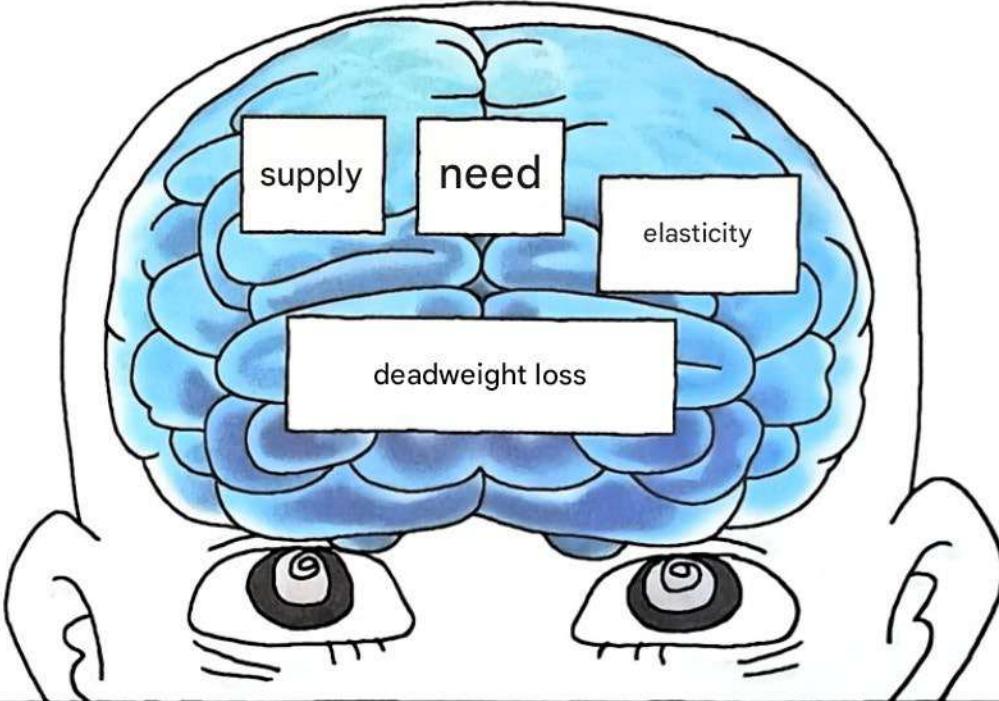


# The debate about deadweight loss

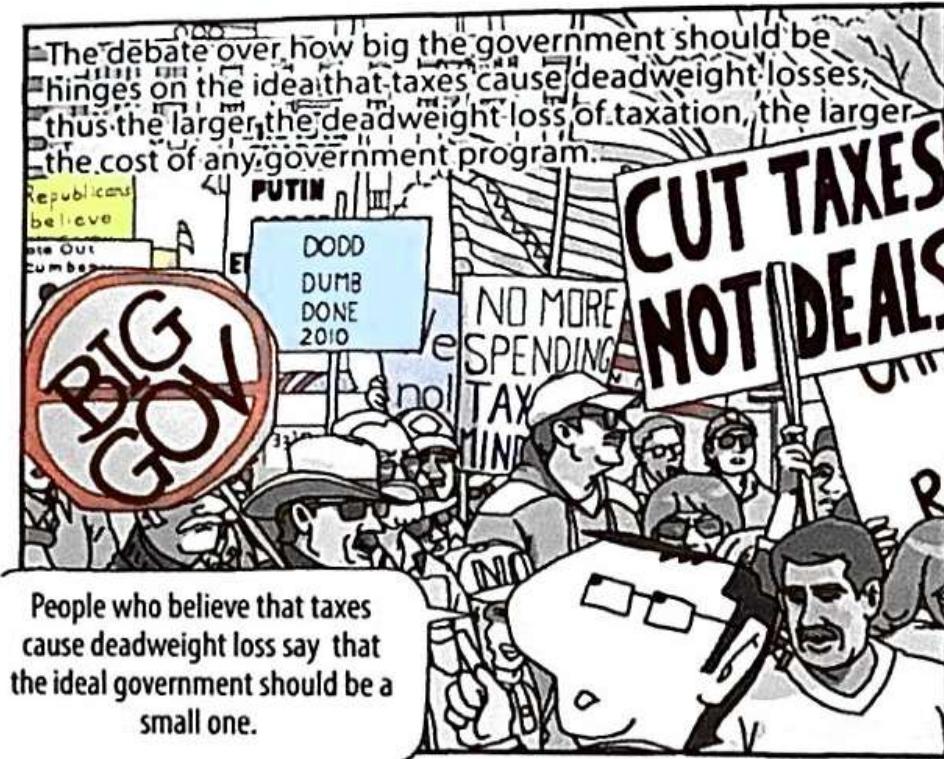
deadweight loss

argument

Many economic theories are dizzying enough. But surprisingly, these ideas touch upon...  
At the heart of a profound political issue.



# The debate about deadweight loss



Those who contradict this idea believe that the government should impose a tax to solve problems because that will reduce social costs.



# The debate about deadweight loss

So how big is the deadweight loss of taxation?  
Economists disagree on the answer to this question.



To see the nature of this  
disagreement, consider one of the  
most important taxes in the U.S.  
economy: the tax on labor.

28.7¢  
Health

25.4¢  
Pentagon & Military

13.7¢  
Interest on  
Federal Debt

8¢  
Unemployment  
& Labor

4.6¢  
Food &  
Agriculture

2.9¢  
Government

1.9¢  
Housing &  
Community

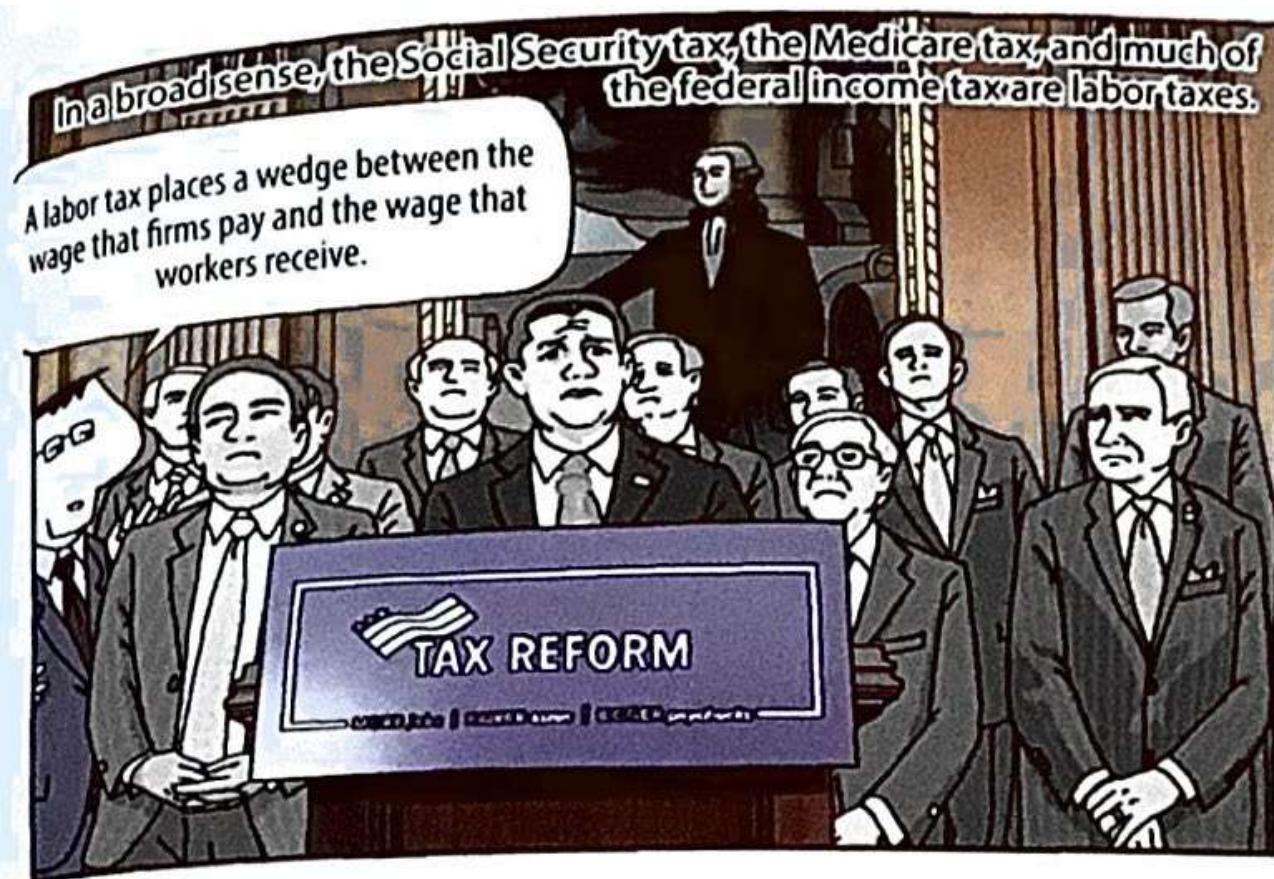
1.6¢  
Energy &  
Environment

1.5¢  
International  
Affairs

1.2¢  
Transportation

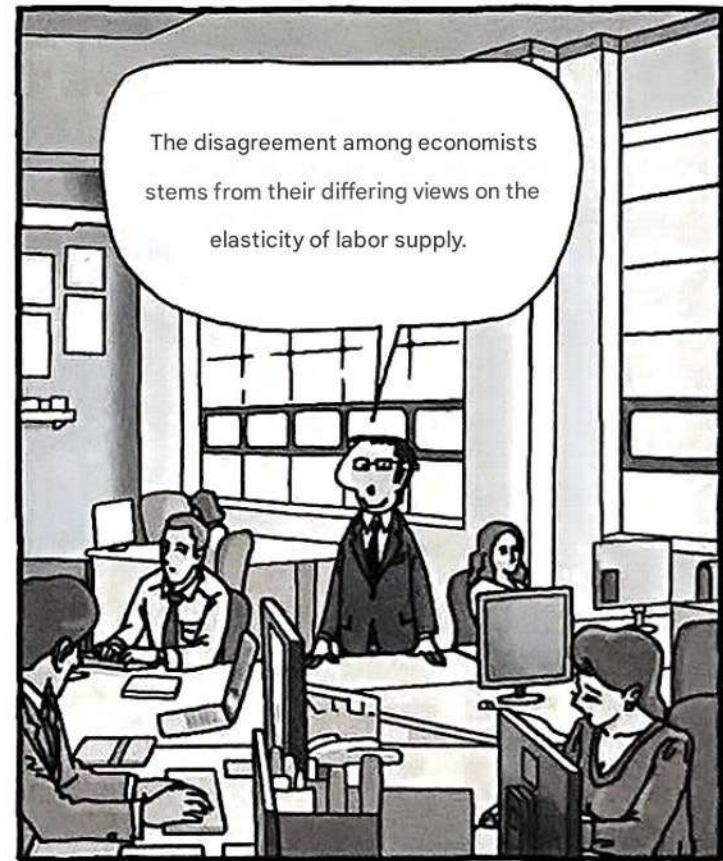
1.1¢  
Science

# The debate about deadweight loss

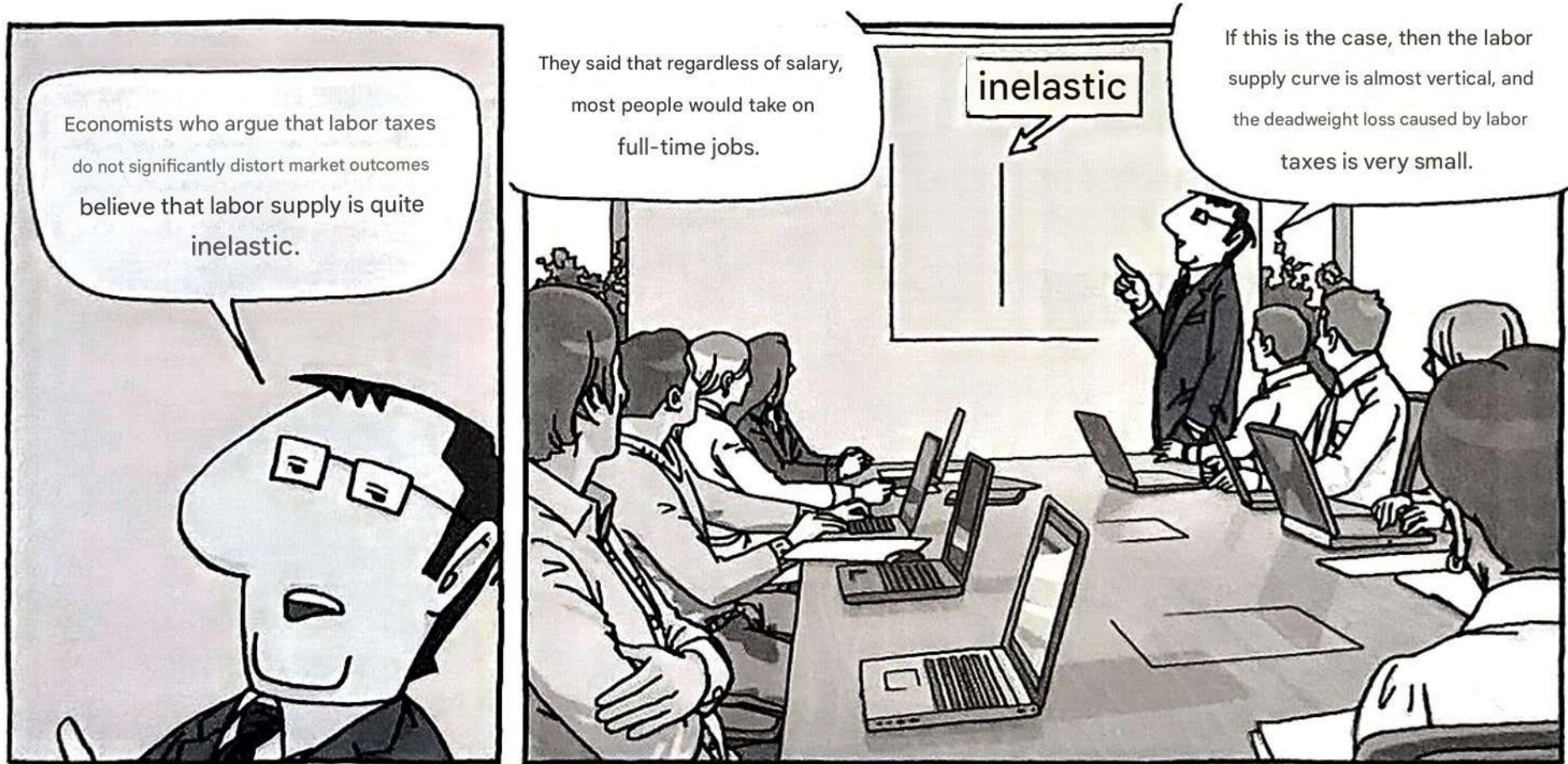


# The debate about deadweight loss

The size of a labor tax is easy to determine, but the deadweight loss from such a tax is not so obvious.



# The debate about deadweight loss



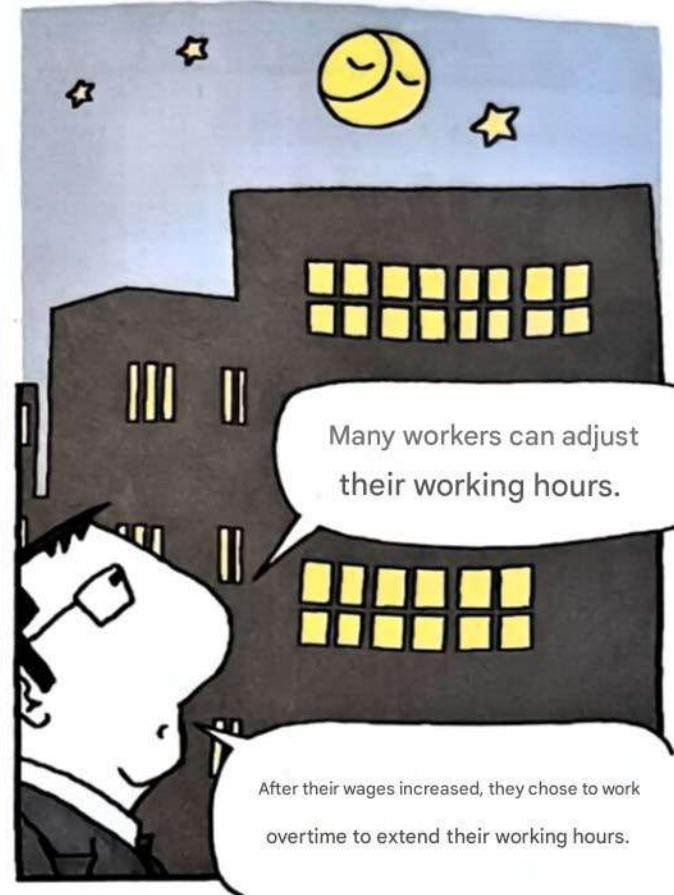
# The debate about deadweight loss

Economists who argue that labor taxes severely distort the market believe that labor supply is relatively elastic.



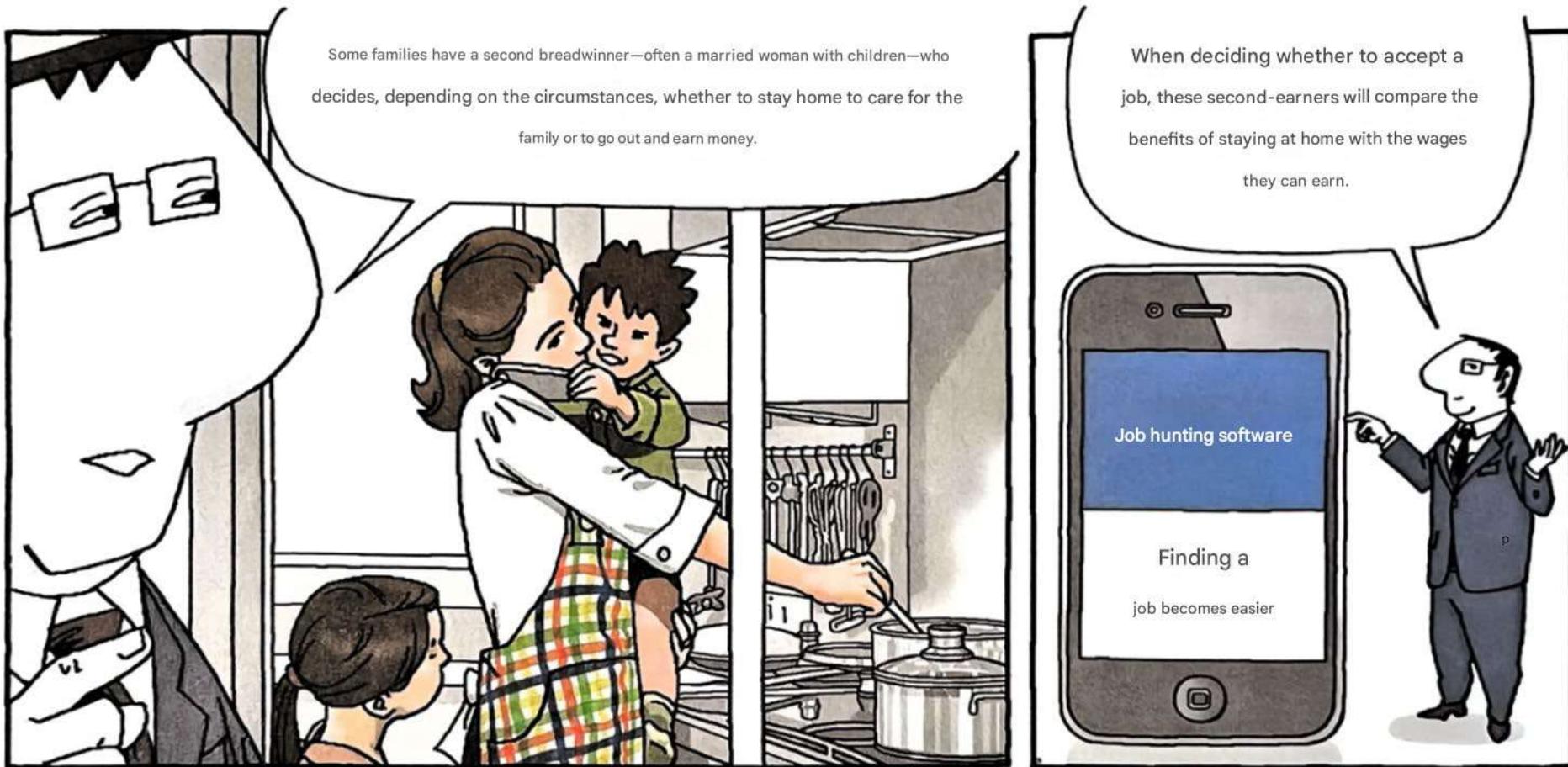
While the workload of some worker groups may not change much, many other groups respond more strongly to incentives.

Dollar

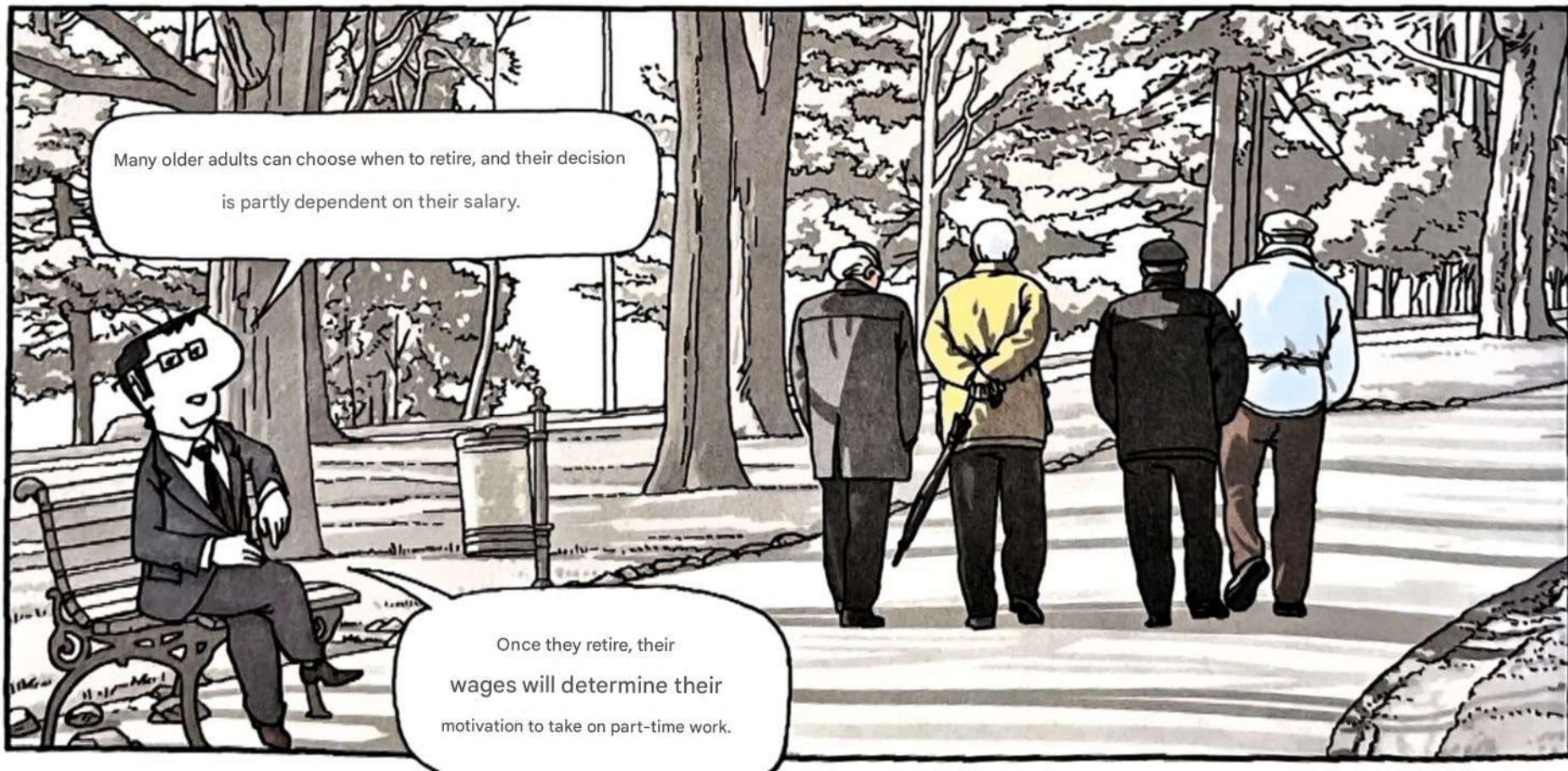


After their wages increased, they chose to work overtime to extend their working hours.

# The debate about deadweight loss

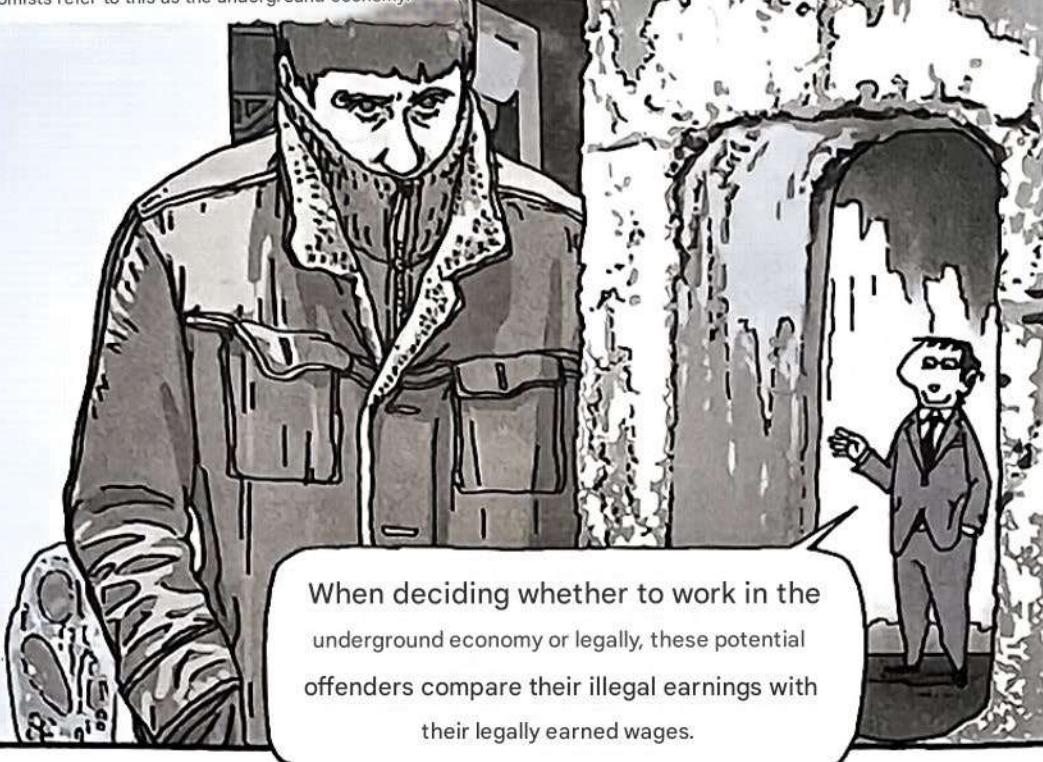


# The debate about deadweight loss



# The debate about deadweight loss

Some people may consider engaging in illegal economic activities to generate income, such as drug trafficking or tax evasion. Economists refer to this as the underground economy.



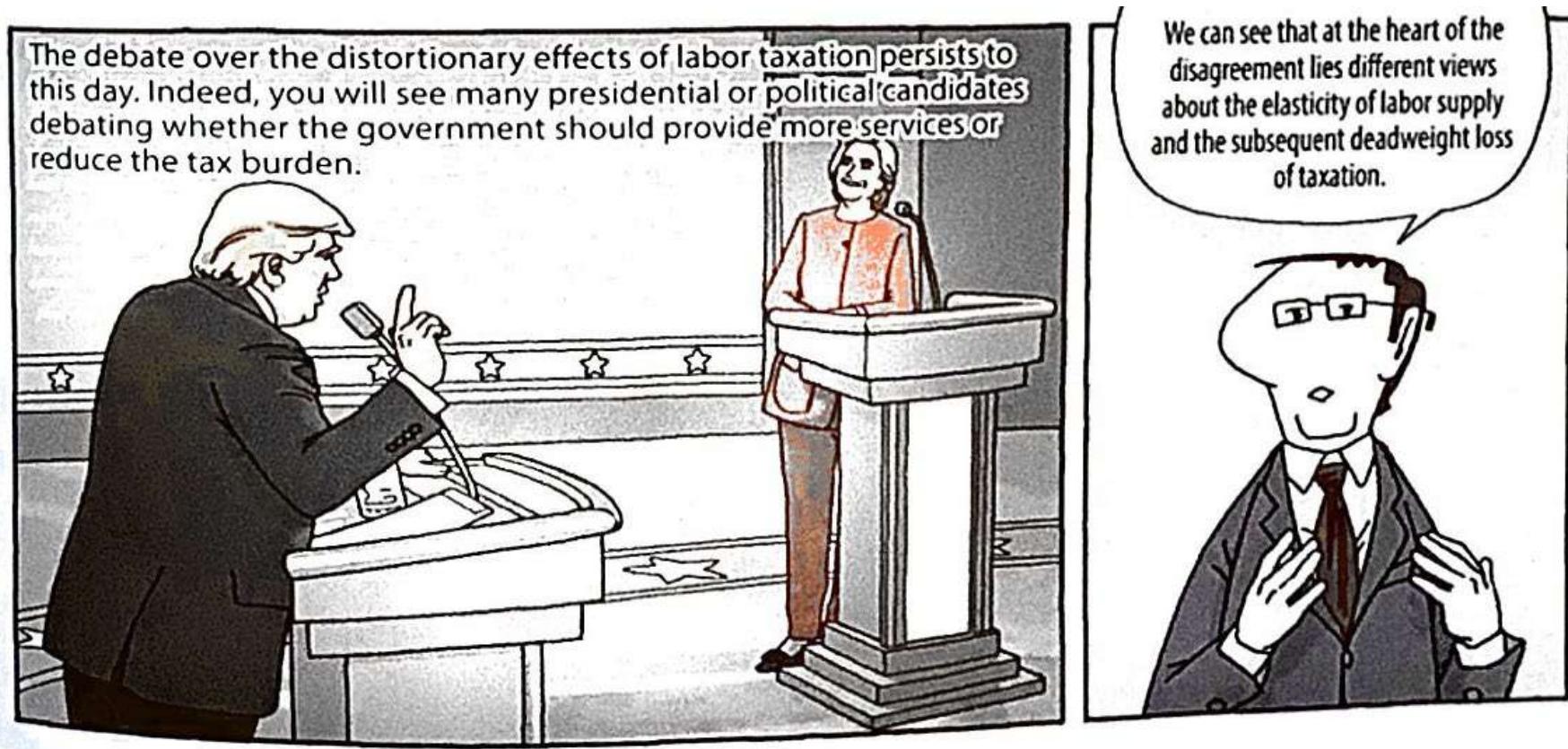
Because the amount of labor provided is related to wages, taxing workers' earnings can distort their decision-making.



# The debate about deadweight loss



# The debate about deadweight loss

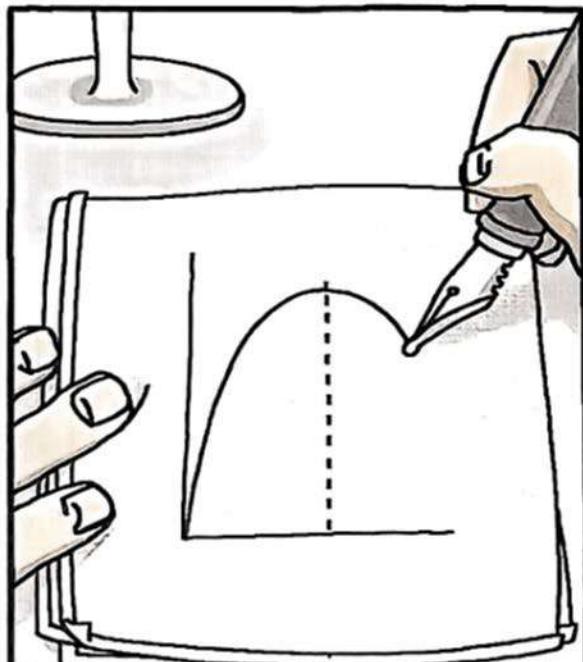


# The Laffer Curve and Supply-Side Economics

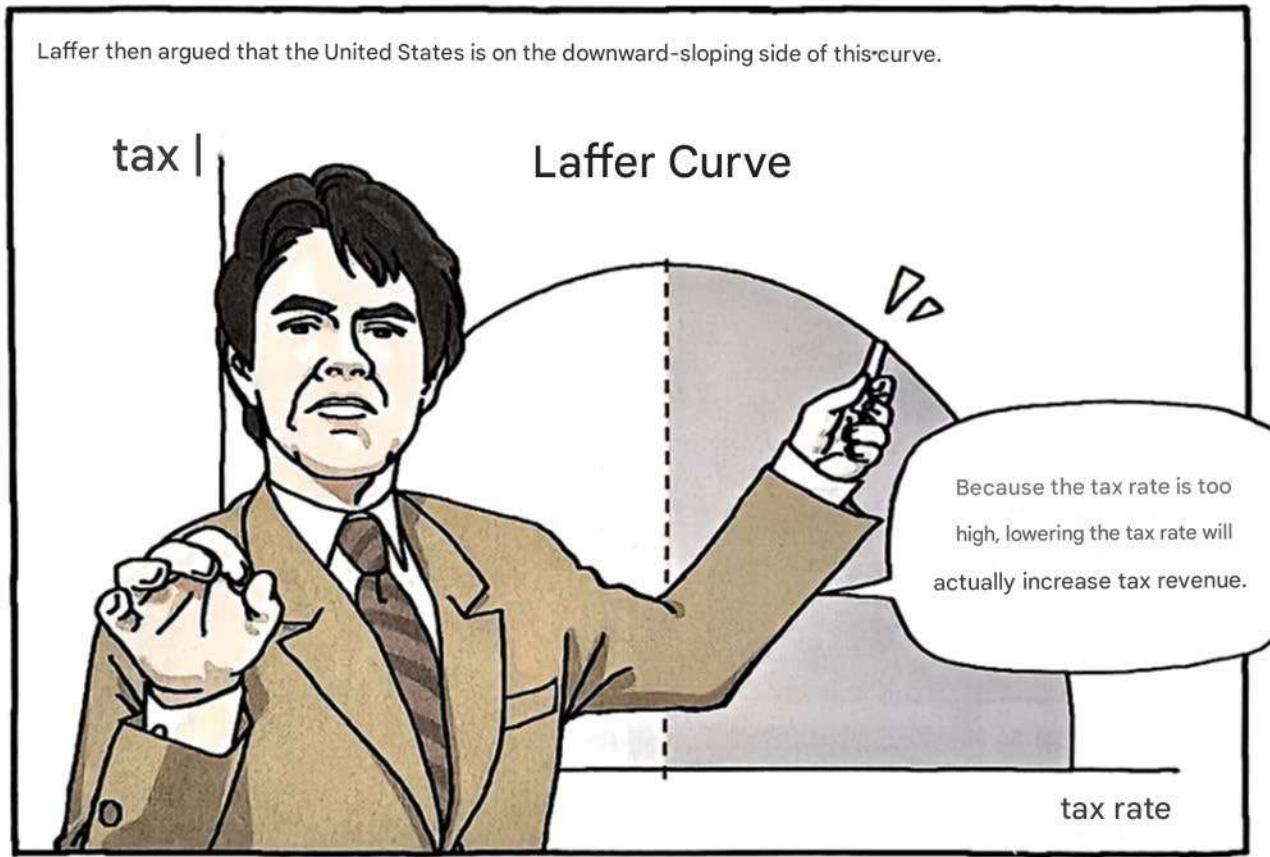
Laffer Curve and  
Supply-Side Economics



# The Laffer Curve and Supply-Side Economics



Laffer took out-a-napkin and drew a diagram on it-to illustrate how tax rates affect tax revenue.



# The Laffer Curve and Supply-Side Economics

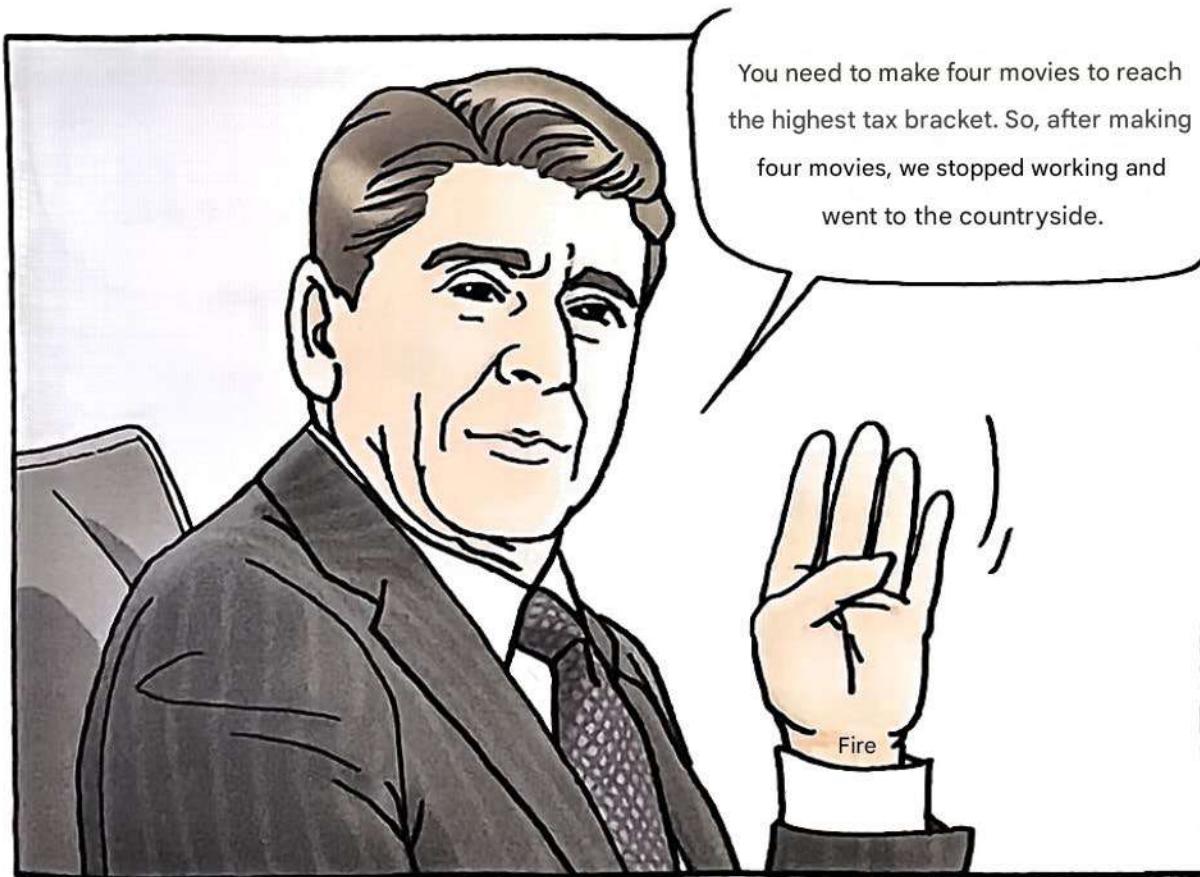
Most economists are skeptical of Laffer's suggestion, responding that while it may be correct in economic theory, it is questionable whether it will actually work in practice.



# The Laffer Curve and Supply-Side Economics



# The Laffer Curve and Supply-Side Economics



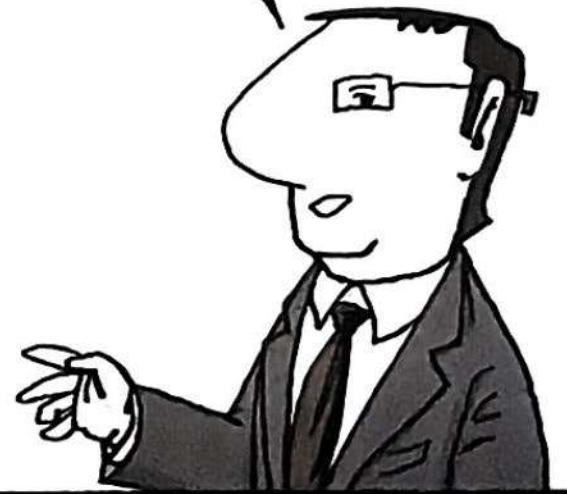
Reagan said that high tax rates make people work less, while low tax rates make people work more.

# The Laffer Curve and Supply-Side Economics

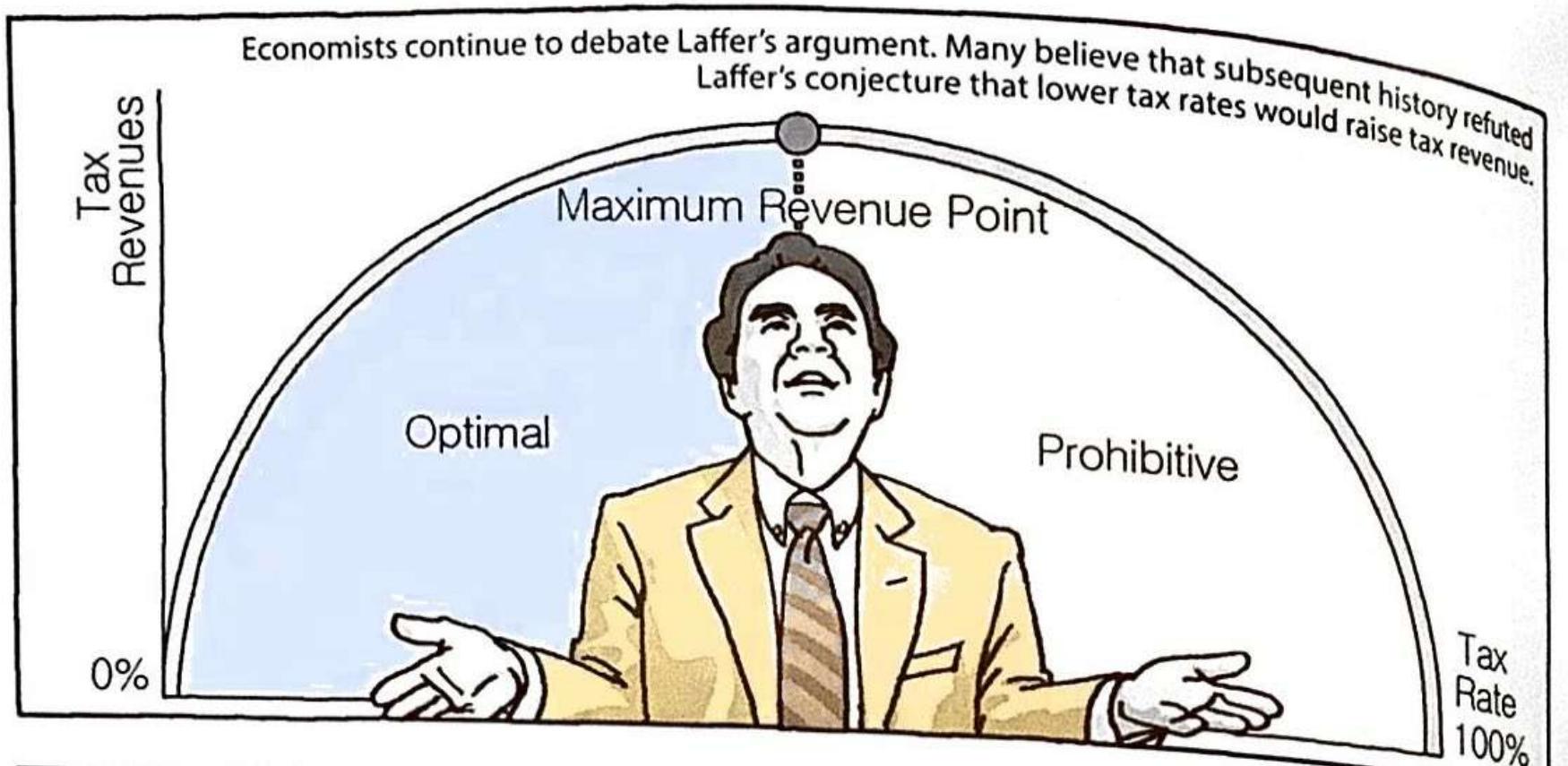
When Reagan ran for president in 1980, he included tax cuts as part of his policy platform. Reagan believed that excessively high taxes would discourage people from working hard.



Because lowering tax rates was intended to encourage people to increase the amount of labor they supplied, Laffer and Reagan's views are known as supply-side economics.



# The Laffer Curve and Supply-Side Economics

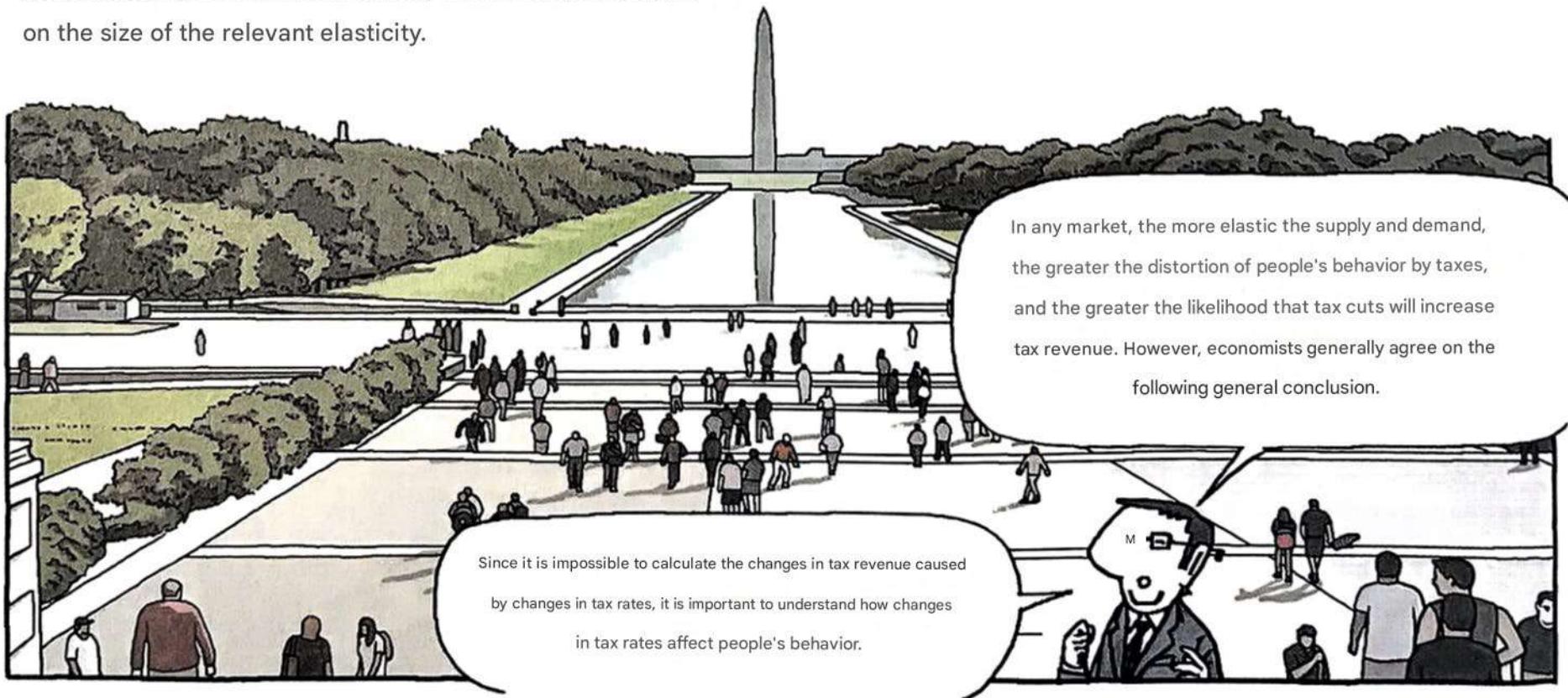


# The Laffer Curve and Supply-Side Economics



# The Laffer Curve and Supply-Side Economics

Economists disagree on these issues, partly because they cannot agree on the size of the relevant elasticity.



# SUMMARY



- Taxation is often the source of intense political debate. In 1776, the anger of the American colonists over British taxation sparked the American Revolutionary War. More than 200 years later, American political parties are still debating the appropriate size and form of the tax system.
- Taxation reduces consumer and producer surplus because consumers pay more than before, and producers receive less. However, to understand more deeply how taxation affects economic welfare, we must compare the reduction in welfare for buyers and sellers with the amount of revenue gained by the government.

# SUMMARY



- Taxing a good reduces the welfare of both buyers and sellers of that good, and the reduction in consumer and producer surplus generally exceeds the amount of revenue the government collects. The decrease in total surplus—the sum of consumer surplus, producer surplus, and tax revenue—is called the deadweight loss of taxation.

# SUMMARY



- Taxes cause deadweight loss because they alter the behavior of buyers and sellers. Taxes raise the price buyers pay, thus reducing their consumption. At the same time, taxes lower the price sellers receive, thus reducing their production. As a result of these behavioral changes, the equilibrium quantity in the market shrinks below the optimal level. The greater the responsiveness of buyers and sellers to price changes, the greater the reduction in equilibrium quantity. Therefore, the greater the elasticity of supply and demand, the greater the deadweight loss of taxation.

# Chapter 10: Applications of Welfare Economics

- The cost of taxation
- International trade

# The advantages and disadvantages of free trade

The gains and losses of  
free trade

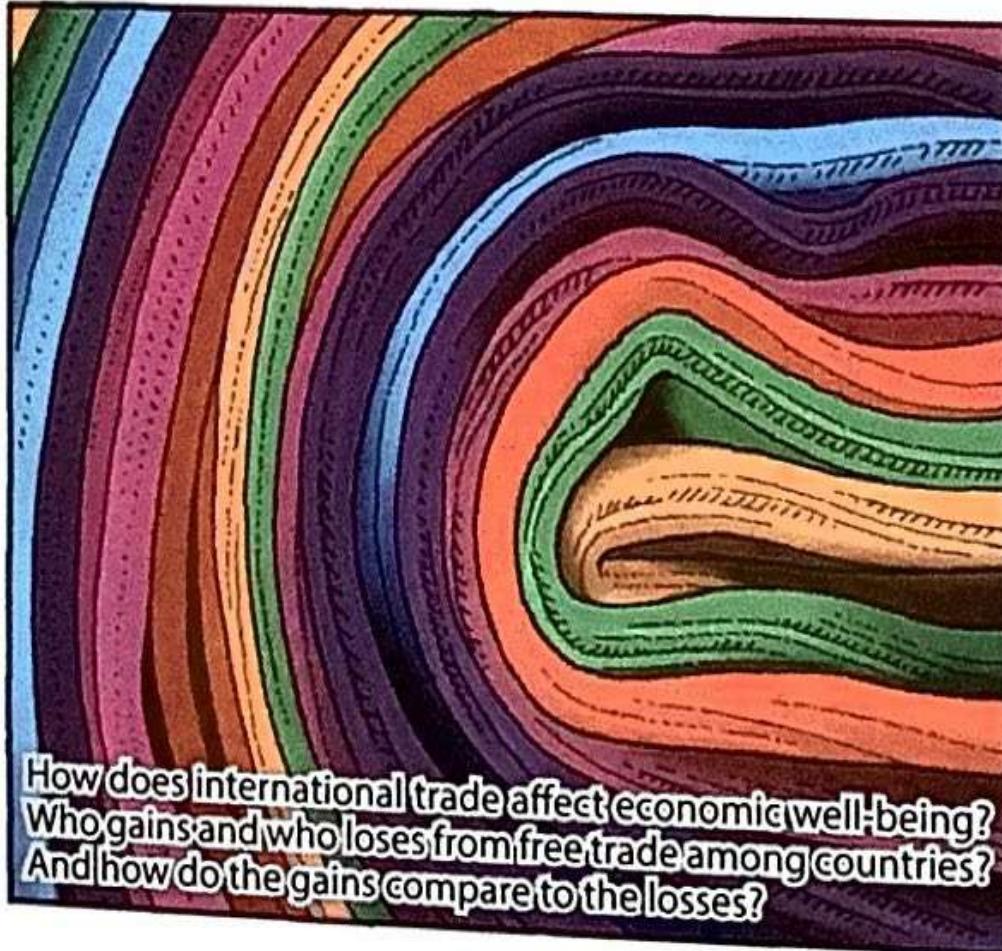
If you look at the labels on the clothes Americans wear today, you might find that some of them are made in other countries.



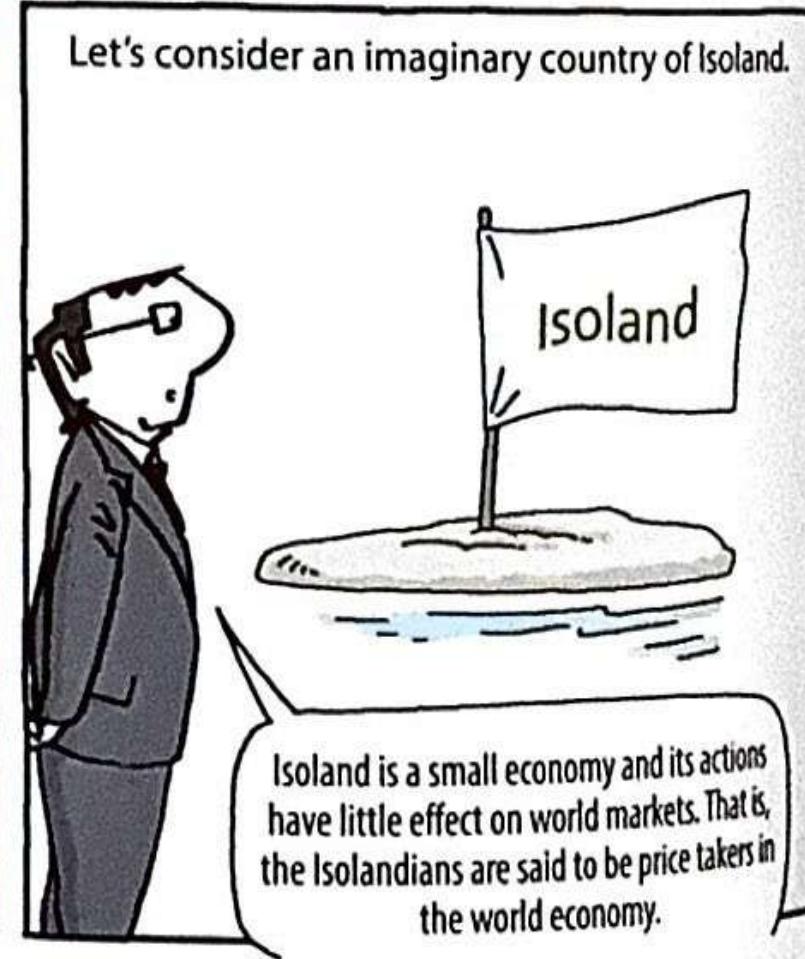
# The advantages and disadvantages of free trade



# The advantages and disadvantages of free trade



How does international trade affect economic well-being?  
Who gains and who loses from free trade among countries?  
And how do the gains compare to the losses?



# The advantages and disadvantages of free trade

If the domestic equilibrium price of textiles in Isoran is lower than the world price before international trade is permitted, then once trade is allowed, its domestic price will rise to equal the world price.

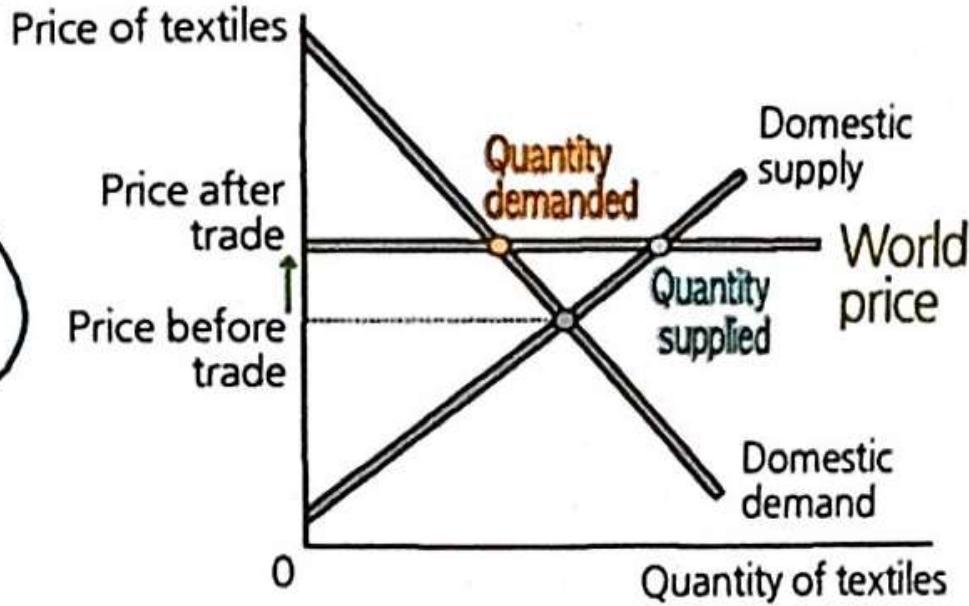
No textile seller will accept a price lower than the world price, and no buyer will pay a price higher than the world price.



Sellers (domestic producers) can sell on the world market at the world price, so they will not accept a price lower than the world price, because they can sell at the world price if they choose to. Similarly, buyers (domestic consumers) can buy on the world market at the world price, so they will not pay a price higher than the world price, because they can buy at the world price. Therefore, the price in the domestic market is fixed at the world price.

# The advantages and disadvantages of free trade

Now, if the domestic price is equal the world price, the domestic quantity supplied will differ from the domestic quantity demanded.

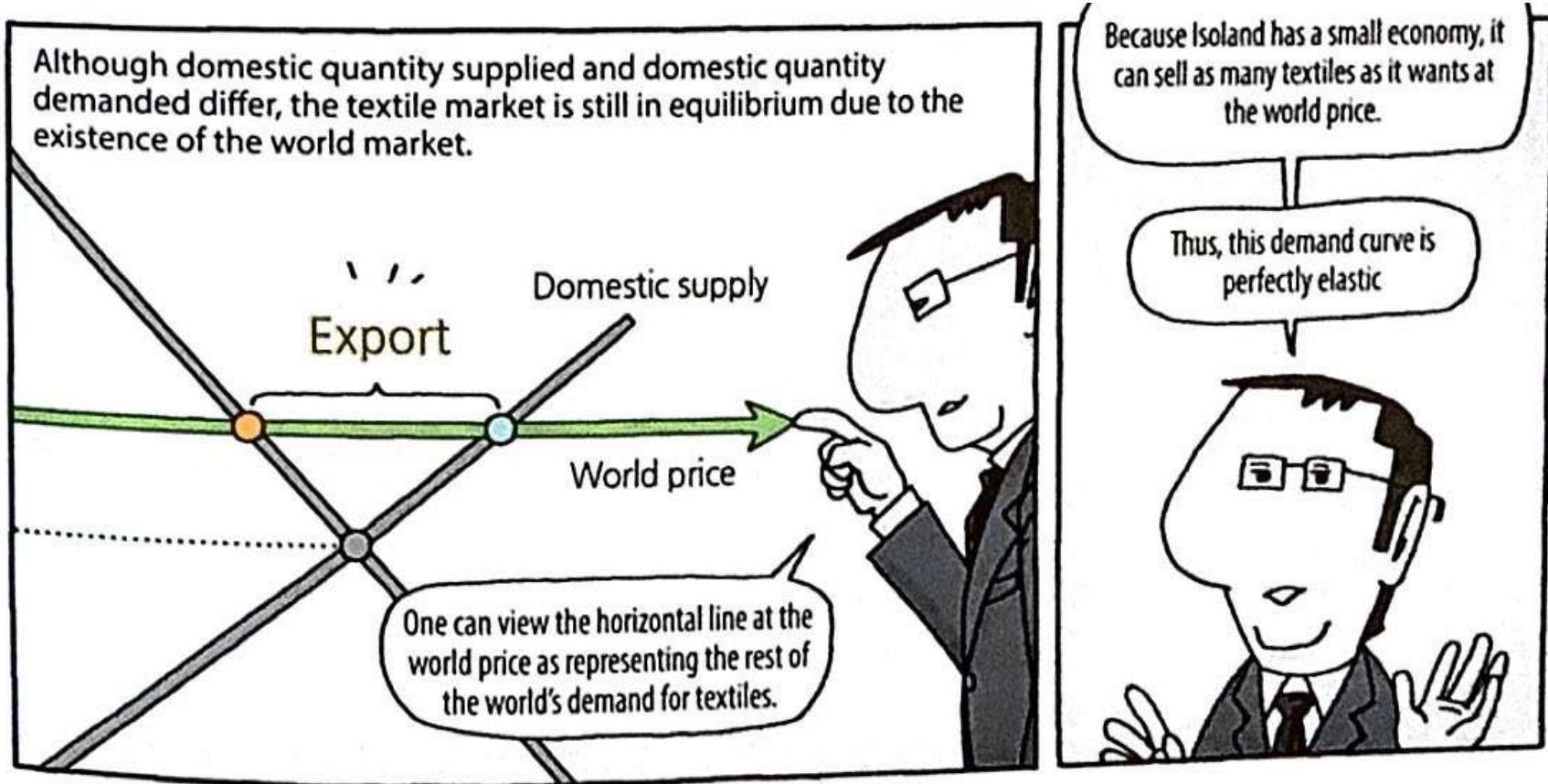


The supply curve shows the quantity of textiles supplied by Isolandian sellers, and the demand curve shows the quantity of textiles demanded by Isolandian buyers.

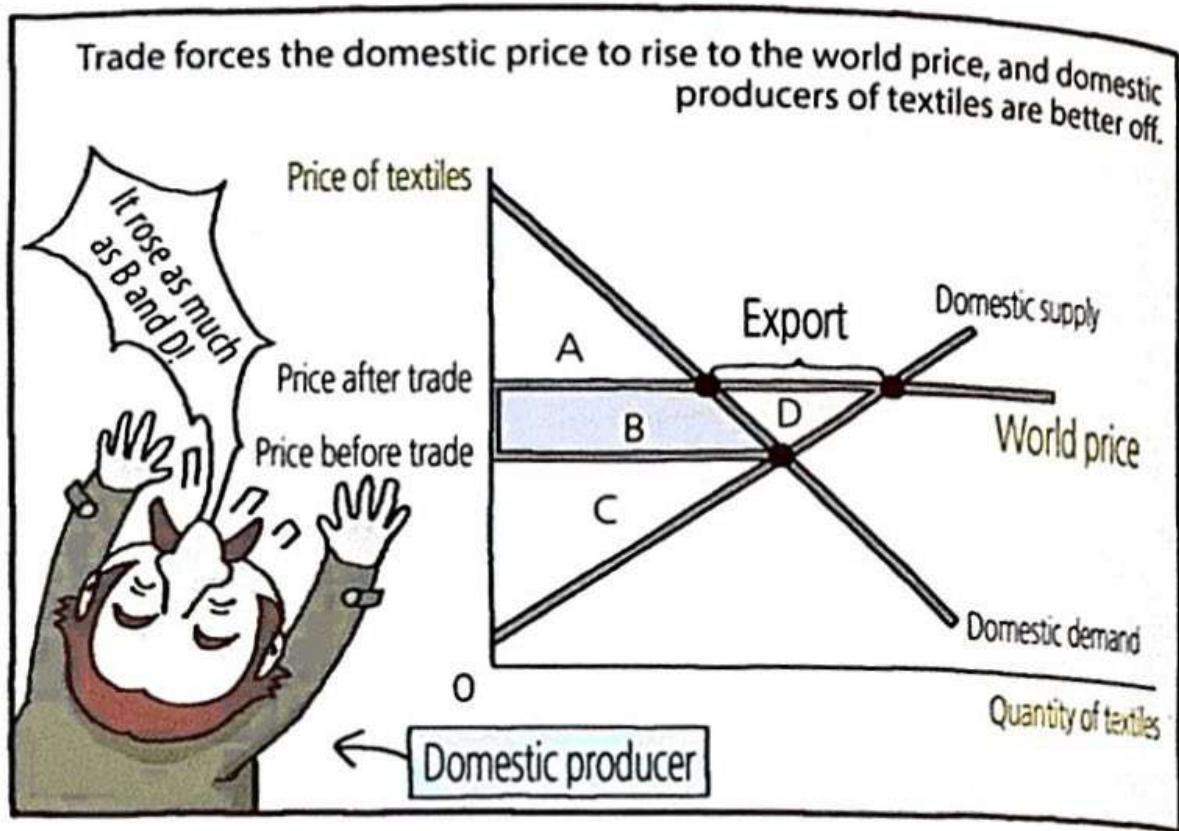
Because the domestic quantity supplied is greater than the domestic quantity demanded, Isoland sells textiles to other countries.



# The advantages and disadvantages of free trade

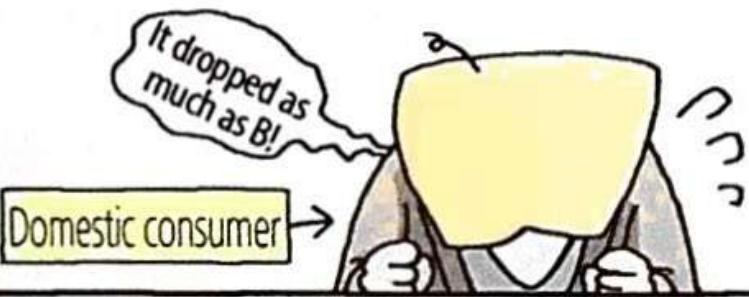
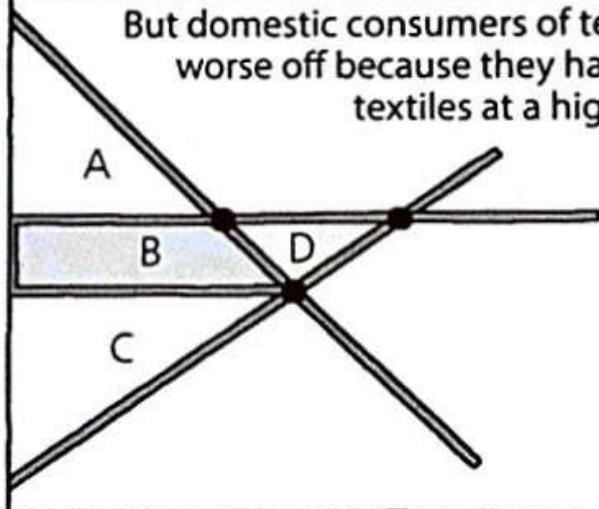


# The advantages and disadvantages of free trade

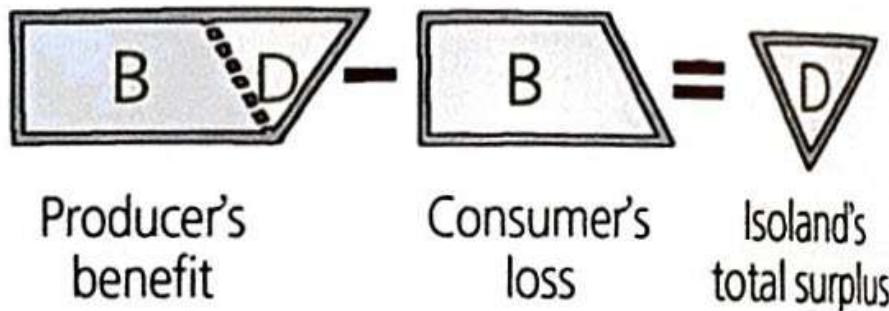


# The advantages and disadvantages of free trade

But domestic consumers of textiles are worse off because they have to buy textiles at a higher price.



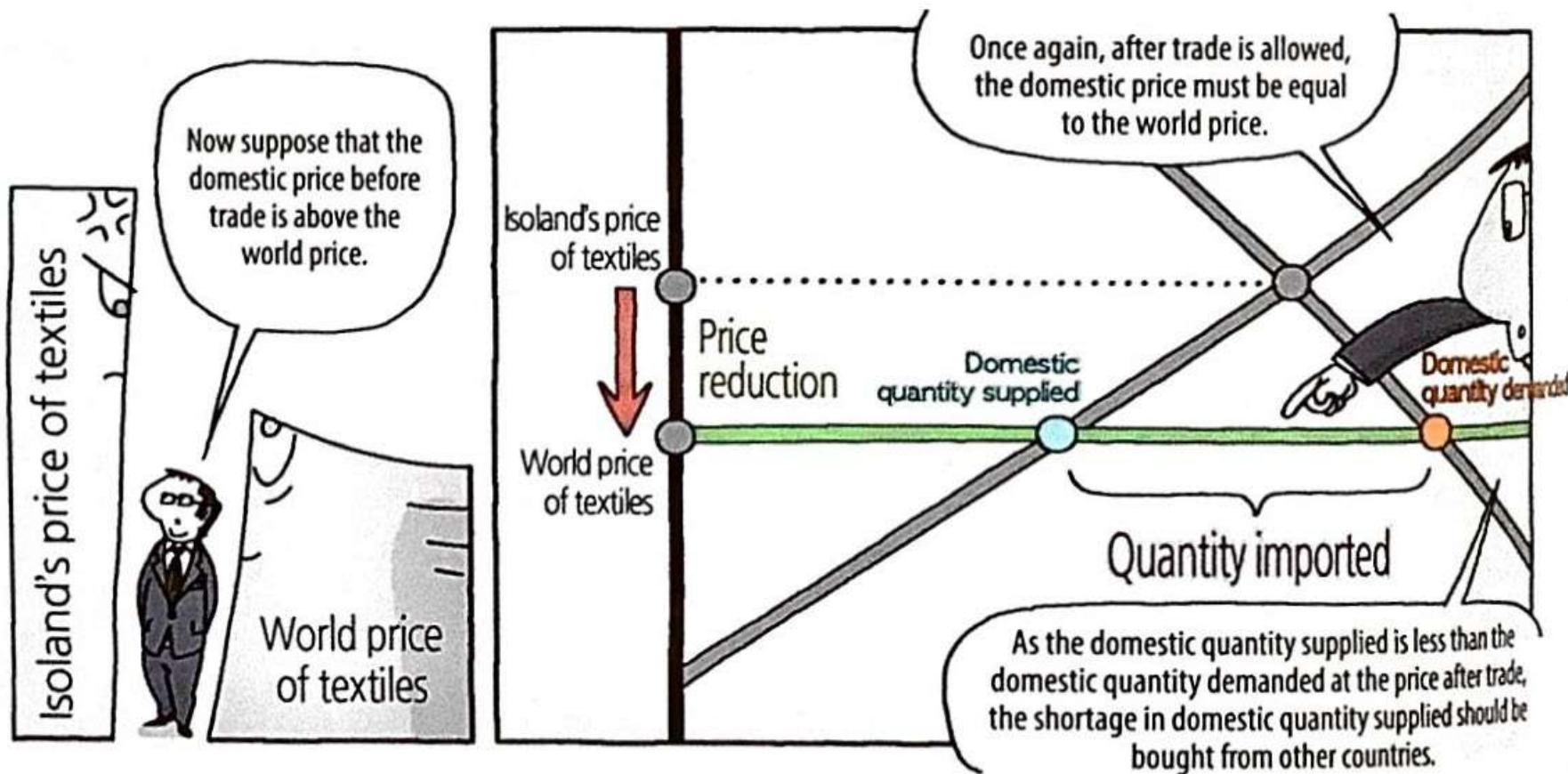
When a country becomes an exporter of a good, domestic producers of the good are better off, and domestic consumers of the good are worse off.



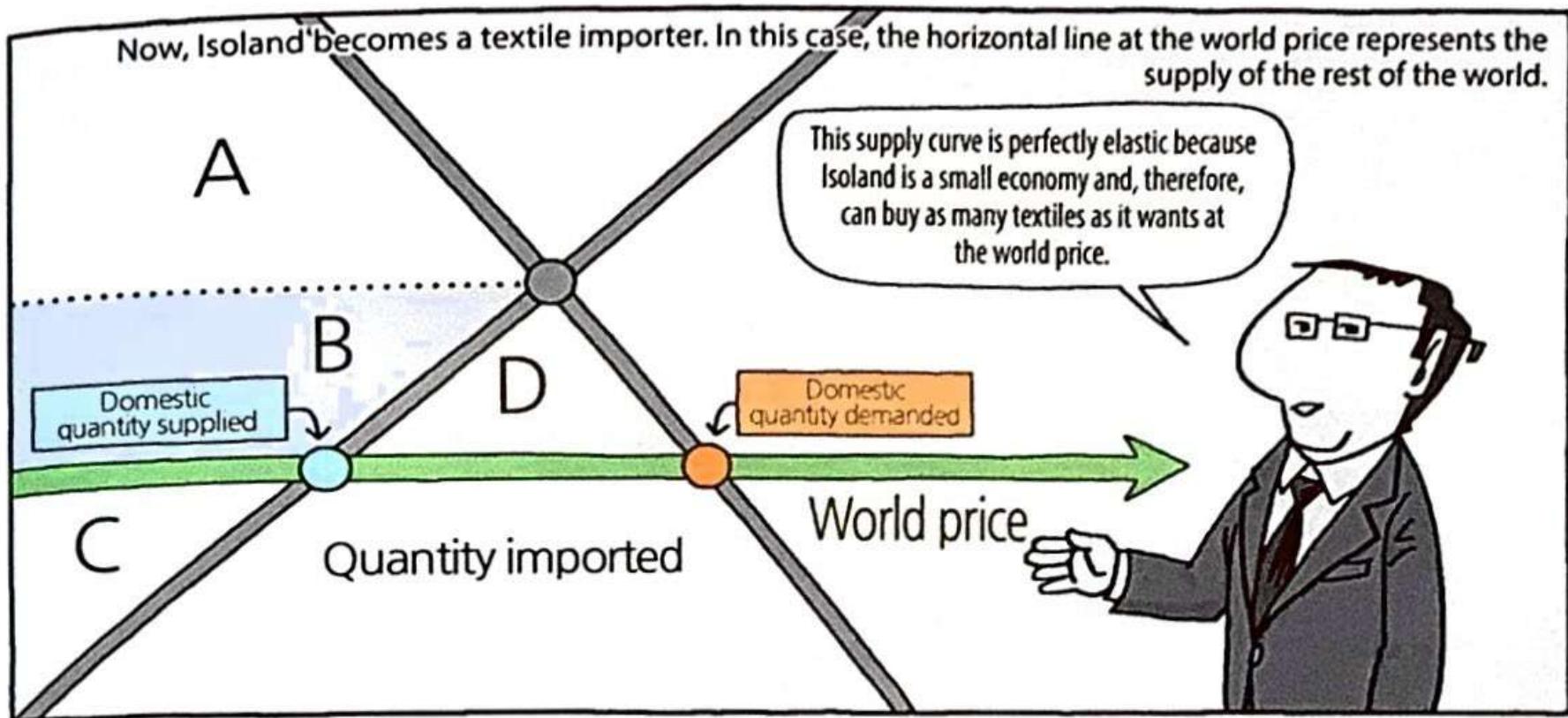
However, trade raises the economic well-being of a nation because the gains of producer surplus exceed the losses of consumer surplus.



# The advantages and disadvantages of free trade



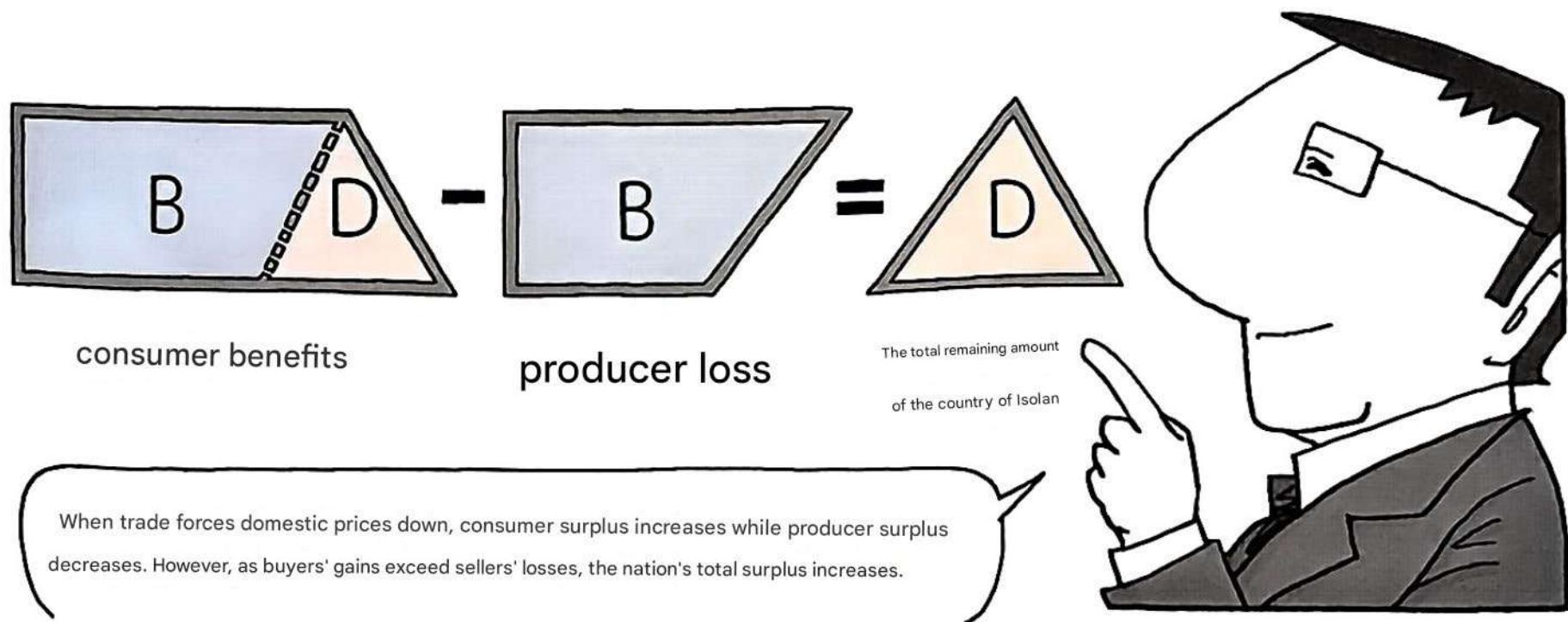
# The advantages and disadvantages of free trade



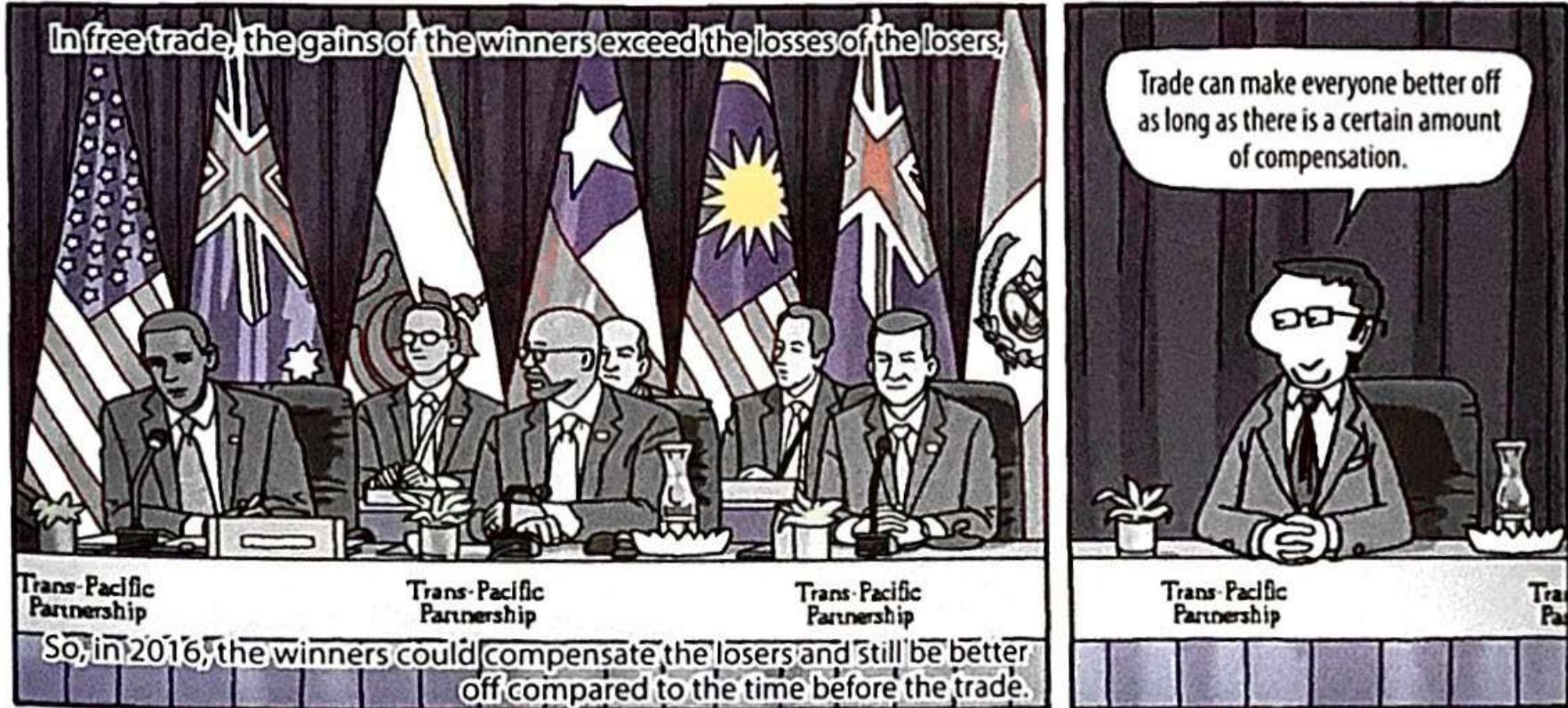
# The advantages and disadvantages of free trade

Because it's free trade, when domestic prices fall, domestic consumers are better off, while domestic producers are worse off. This leads to consumer surplus.

The magnitude of gains and losses is measured by changes in producer surplus.



# The advantages and disadvantages of free trade



# The advantages and disadvantages of free trade



# The advantages and disadvantages of free trade



# The impact of tariffs

## Impact of tariffs

In order to help the losers in free trade, Isoran decided to implement tariffs.



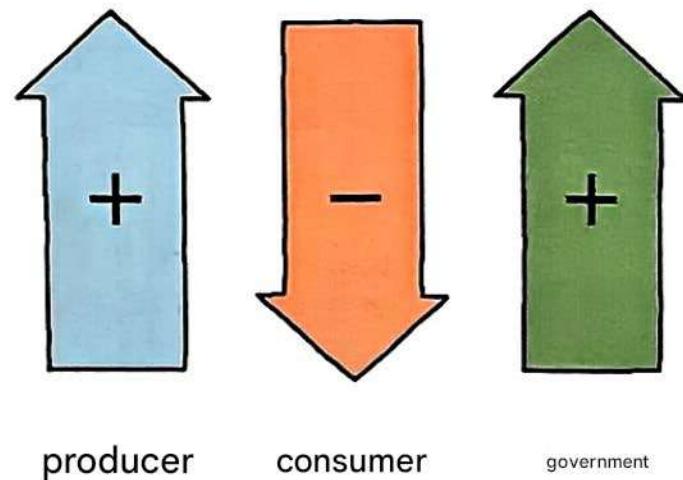
# The impact of tariffs

Under free trade conditions, domestic prices equal world prices.

This is because domestic textile suppliers can now sell their textiles at the world price plus tariffs.



Because tariffs increased domestic prices, domestic sellers fared better, while domestic buyers fared worse. Furthermore, the government also profited from the tariffs.



# The impact of tariffs

Ultimately, the total surplus of the Isoran market decreased, and it faced deadweight losses due to tariffs.



Tariffs can cause deadweight loss because tariffs are a form of taxation.



Like most taxes, tariffs reduce the volume of trade, thereby reducing the total surplus.

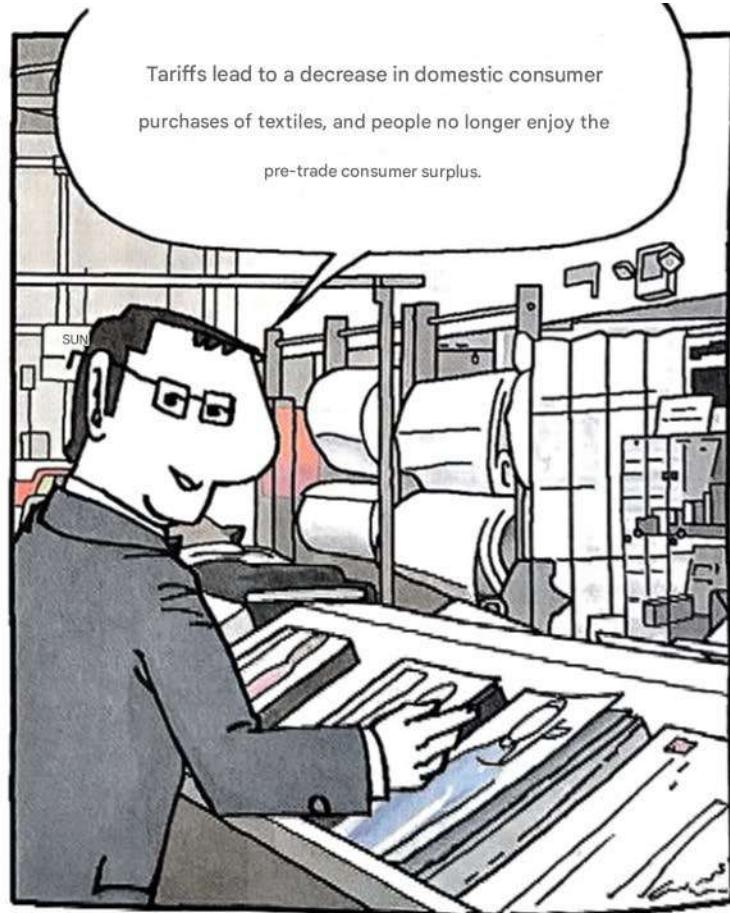


# The impact of tariffs

How tariffs play a role in reducing the total surplus of Isoran can be explained from two perspectives.

First, when tariffs make the domestic price of textiles higher than the world price, it will incentivize domestic producers to increase output.

# The impact of tariffs

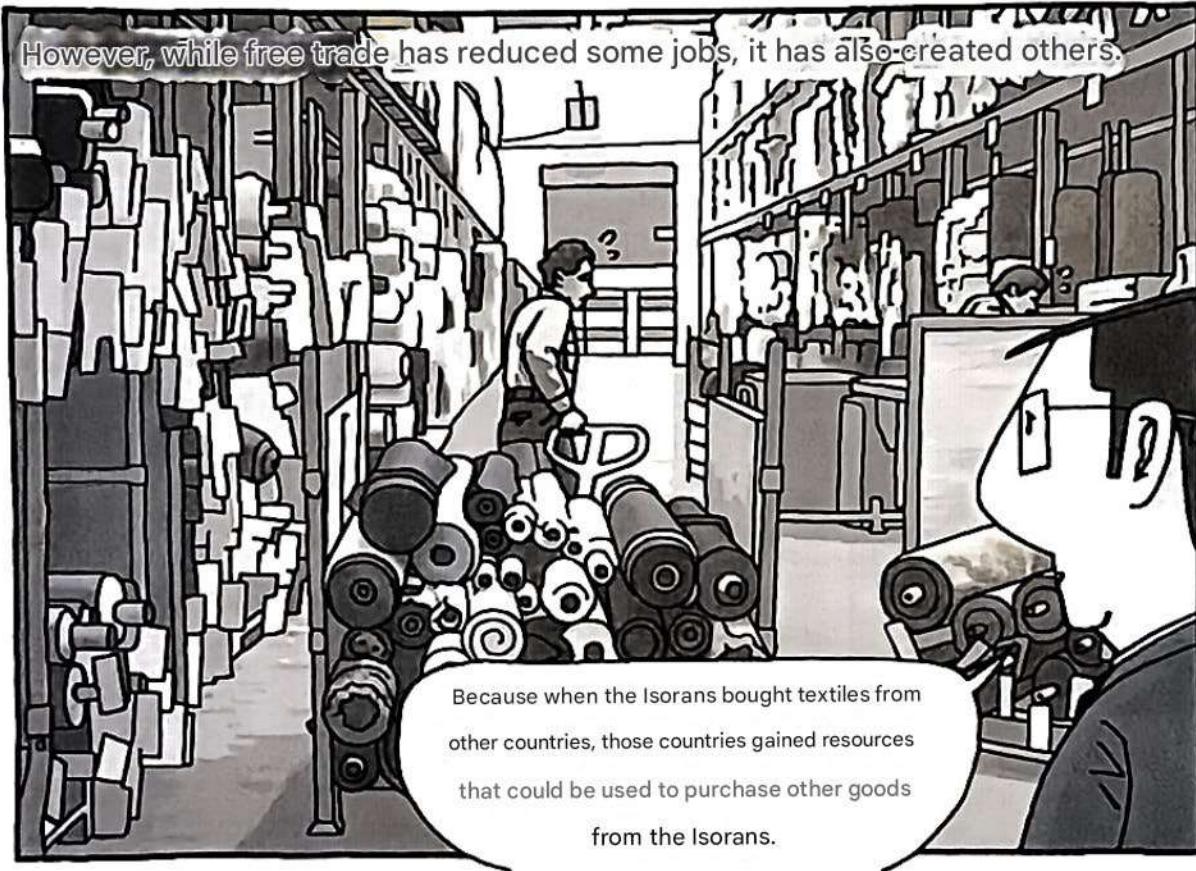


# Reasons for restricting trade

restrictive of trade  
reason



# Reasons for restricting trade



# Reasons for restricting trade



Opponents of trade are often skeptical of the idea that trade creates jobs.

They would argue that in free trade, Isoran industry cannot survive as long as cheaper products can be produced abroad.



# Reasons for restricting trade

However, the benefits of trade are based on comparative advantage, not absolute advantage.



Even if one country has an advantage over another in producing every single item, they can still benefit from mutual trade.

The two countries can still benefit from

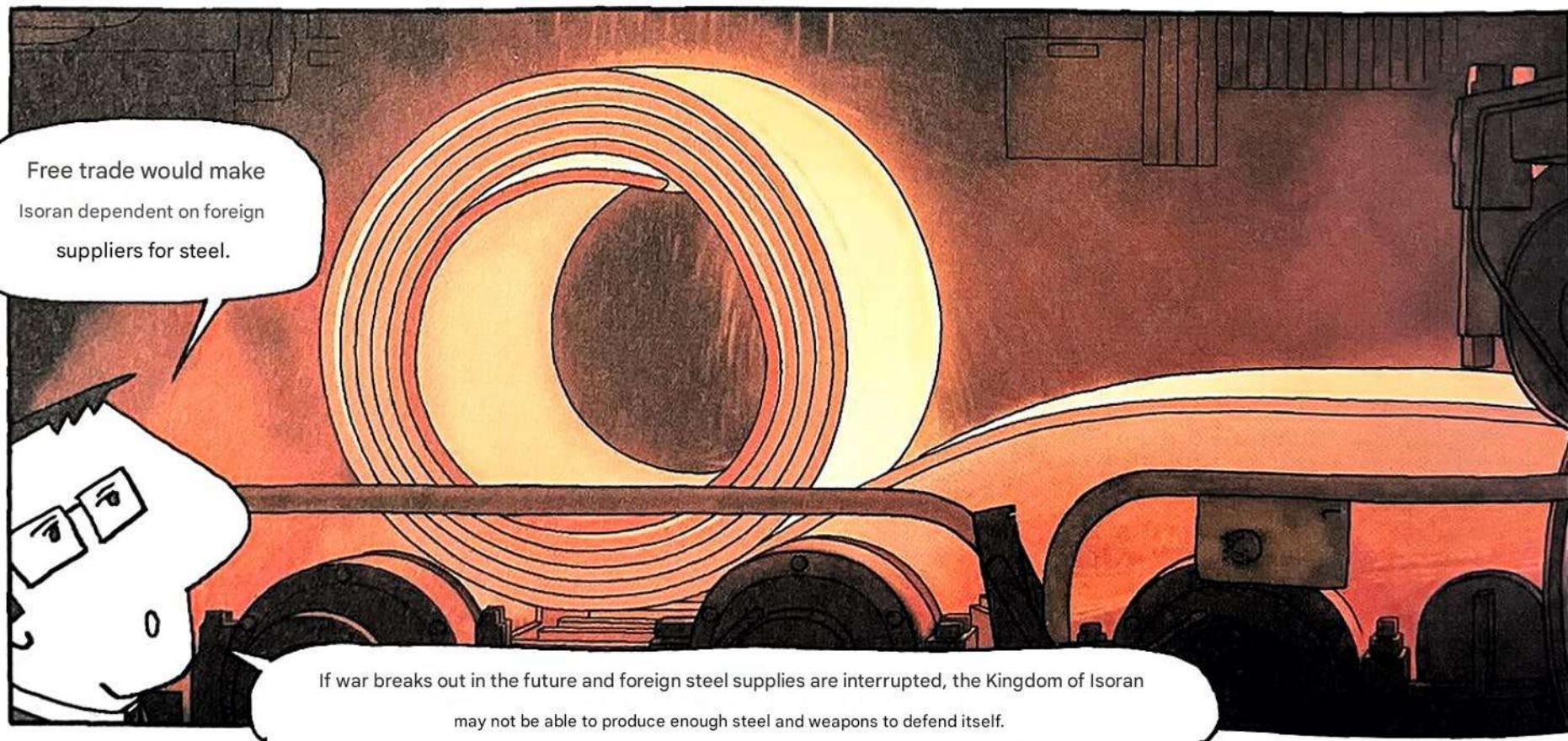


# Reasons for restricting trade

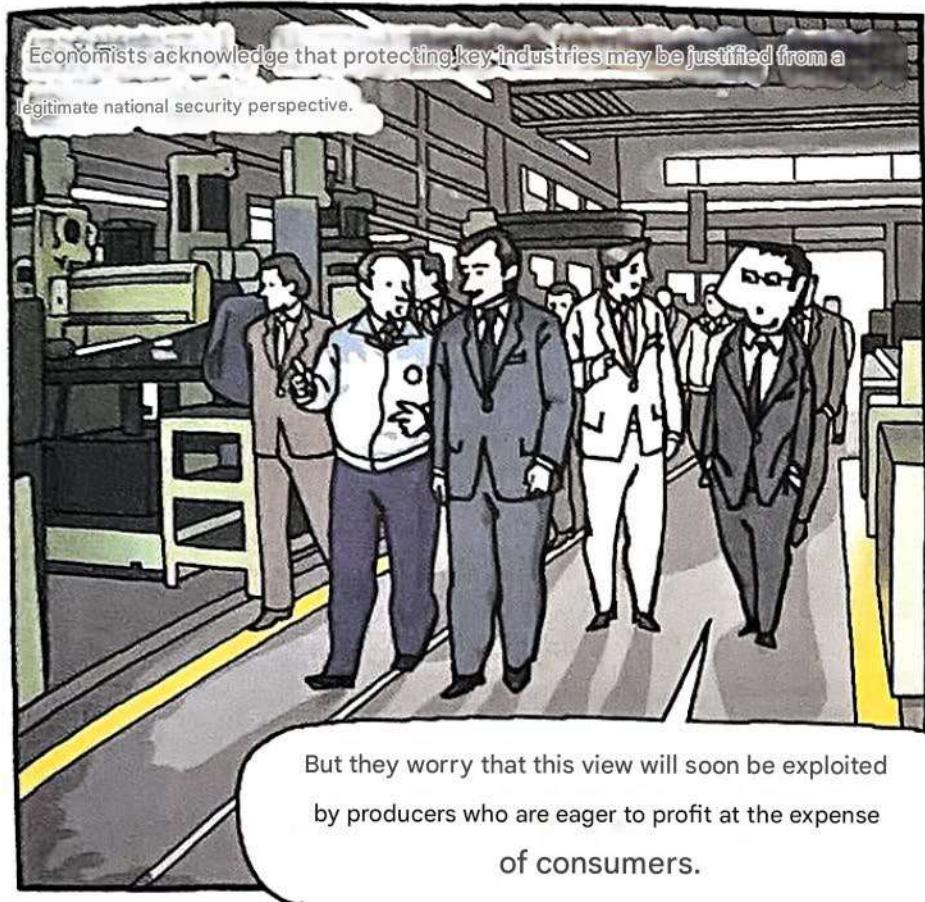
Opponents of free trade often argue that certain industries are crucial to national security.

For example, if the State of Isoran were to consider implementing free trade in steel, domestic steel companies would point out that steel is used to produce guns and tanks.

# Reasons for restricting trade



# Reasons for restricting trade



In order to gain protection from foreign competition, companies have an incentive to exaggerate their role in defense.



# Reasons for restricting trade



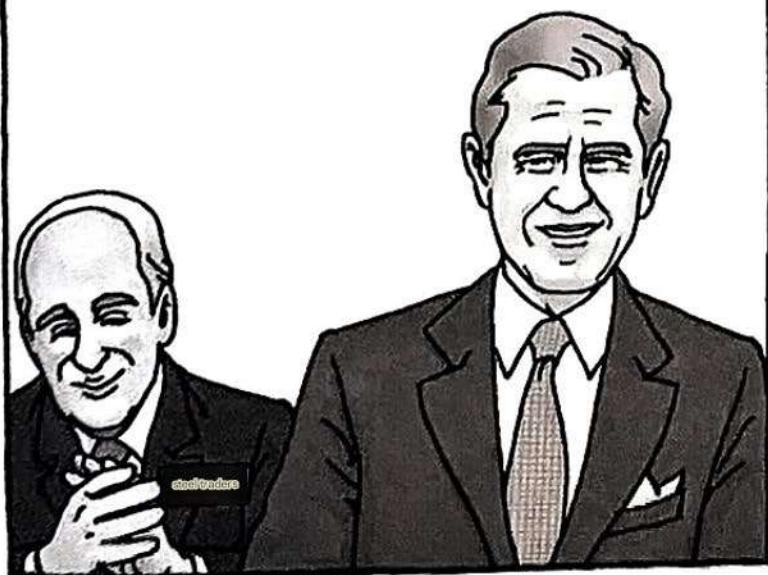
Emerging industries sometimes argue that temporary trade restrictions should be implemented to help the industry grow.



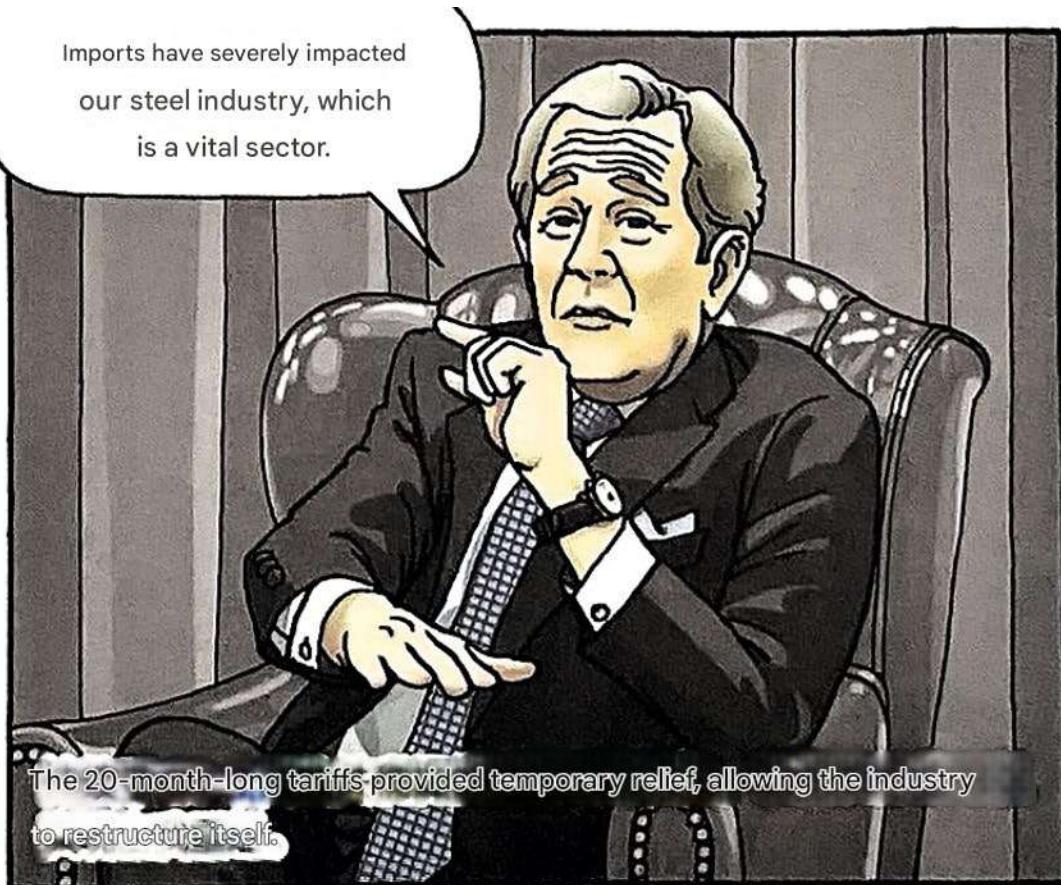
# Reasons for restricting trade

Similarly, older industries sometimes see the need for temporary protection, which also helps them adapt to new circumstances.

For example, in 2002, President Bush imposed temporary tariffs on imported steel.



Imports have severely impacted our steel industry, which is a vital sector.

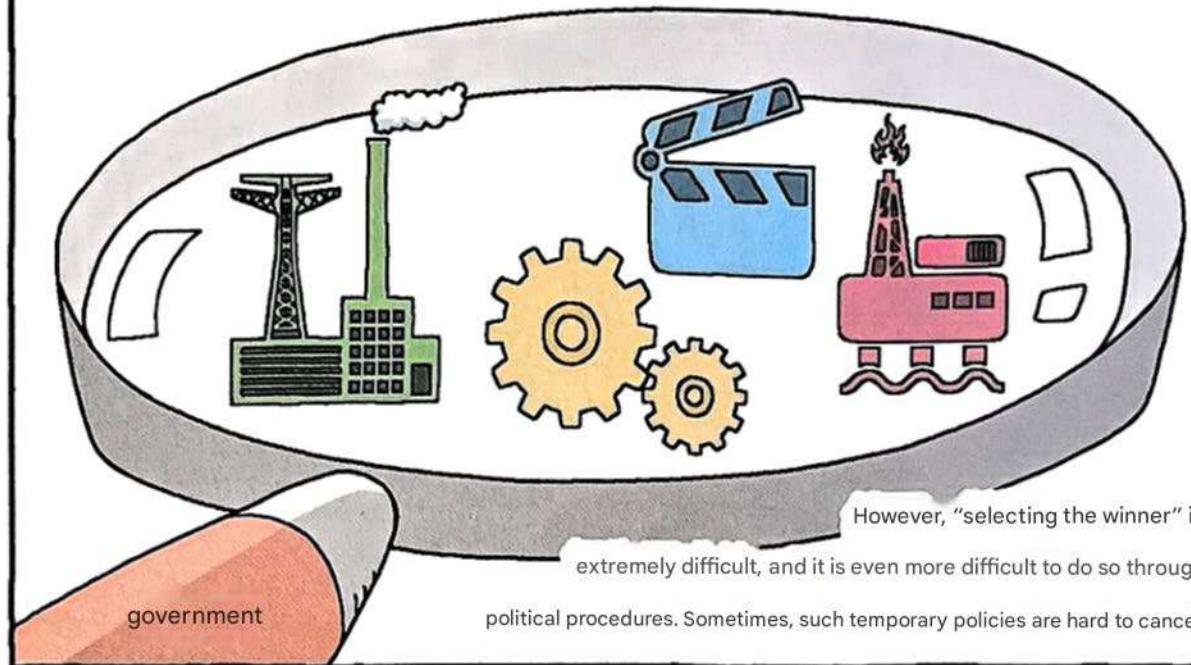


# Reasons for restricting trade

Economists are often skeptical of these requirements, mainly because the idea of emerging industries is difficult to implement in practice.



In order to successfully implement protection, the government must determine which industries would ultimately be profitable to implement such protection, and determine whether the benefits of establishing these industries outweigh the costs to consumers of implementing the protection.



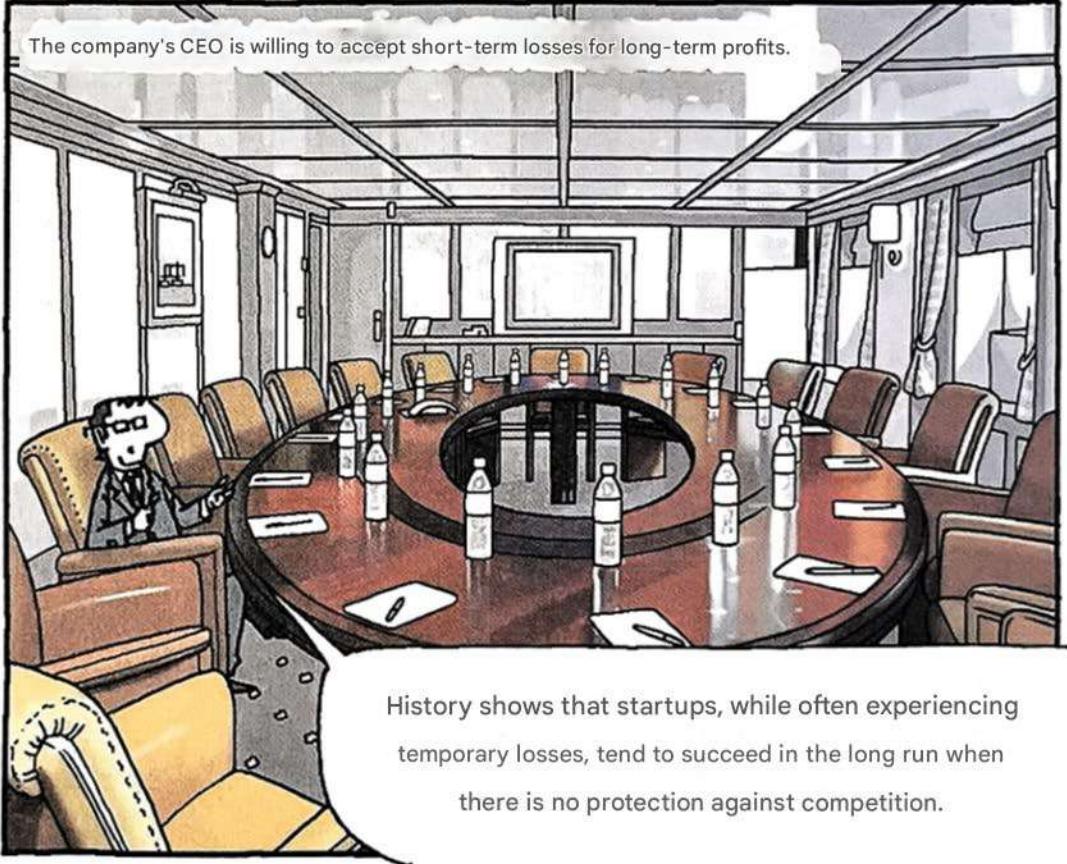
However, "selecting the winner" is extremely difficult, and it is even more difficult to do so through political procedures. Sometimes, such temporary policies are hard to cancel.

# Reasons for restricting trade

In practice, many industries survive not through government support, but through well-thought-out decisions by their CEOs.

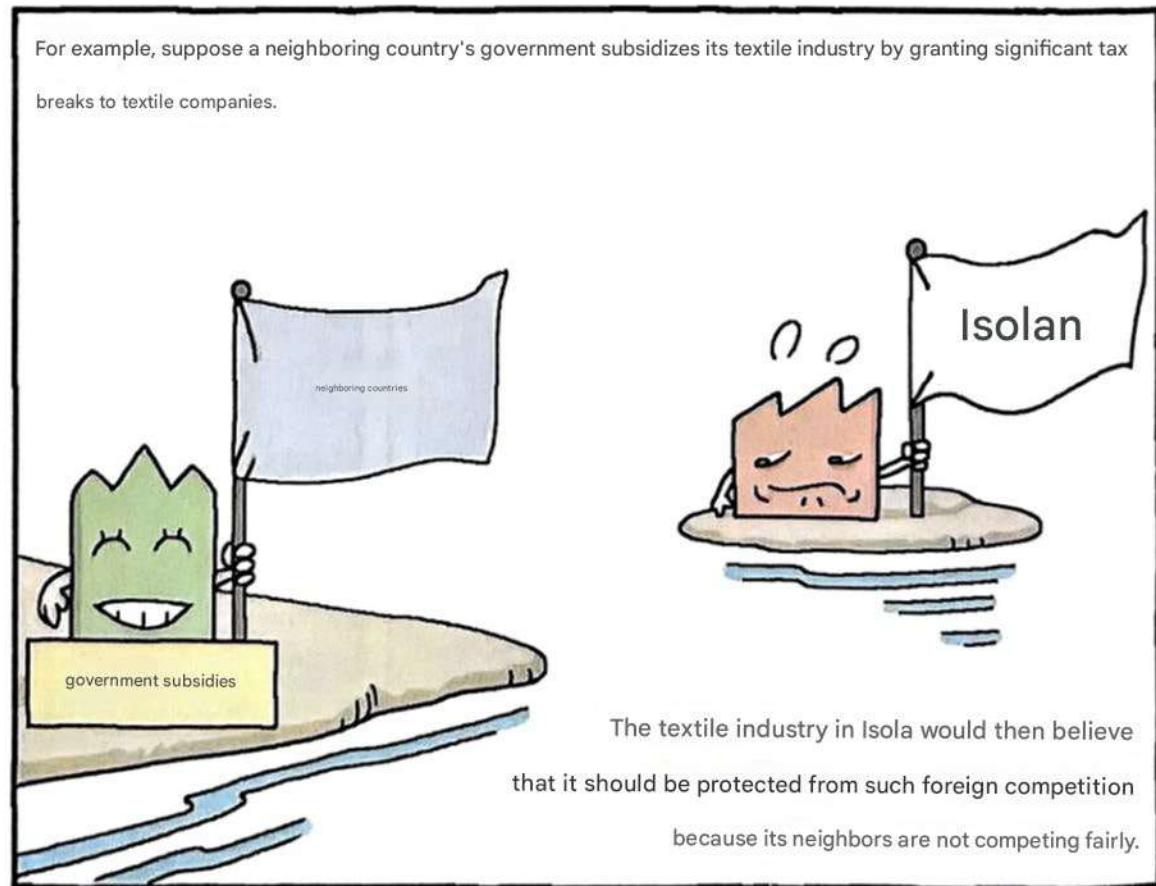
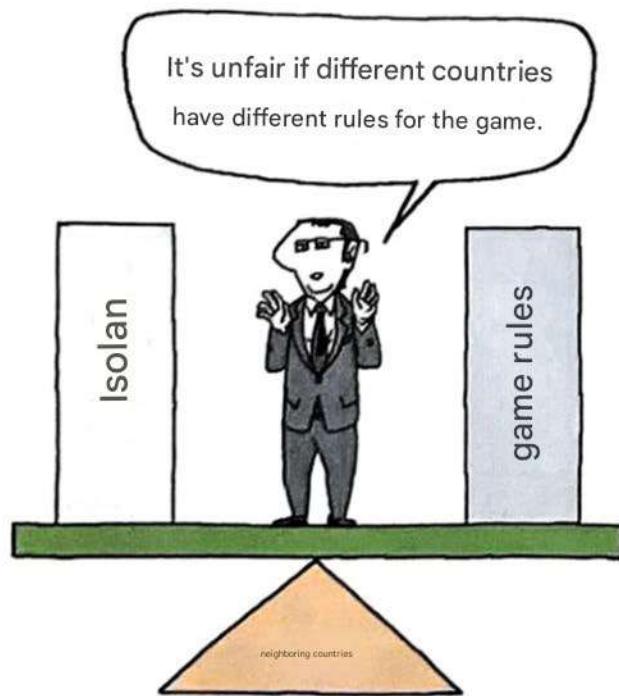


The company's CEO is willing to accept short-term losses for long-term profits.



# Reasons for restricting trade

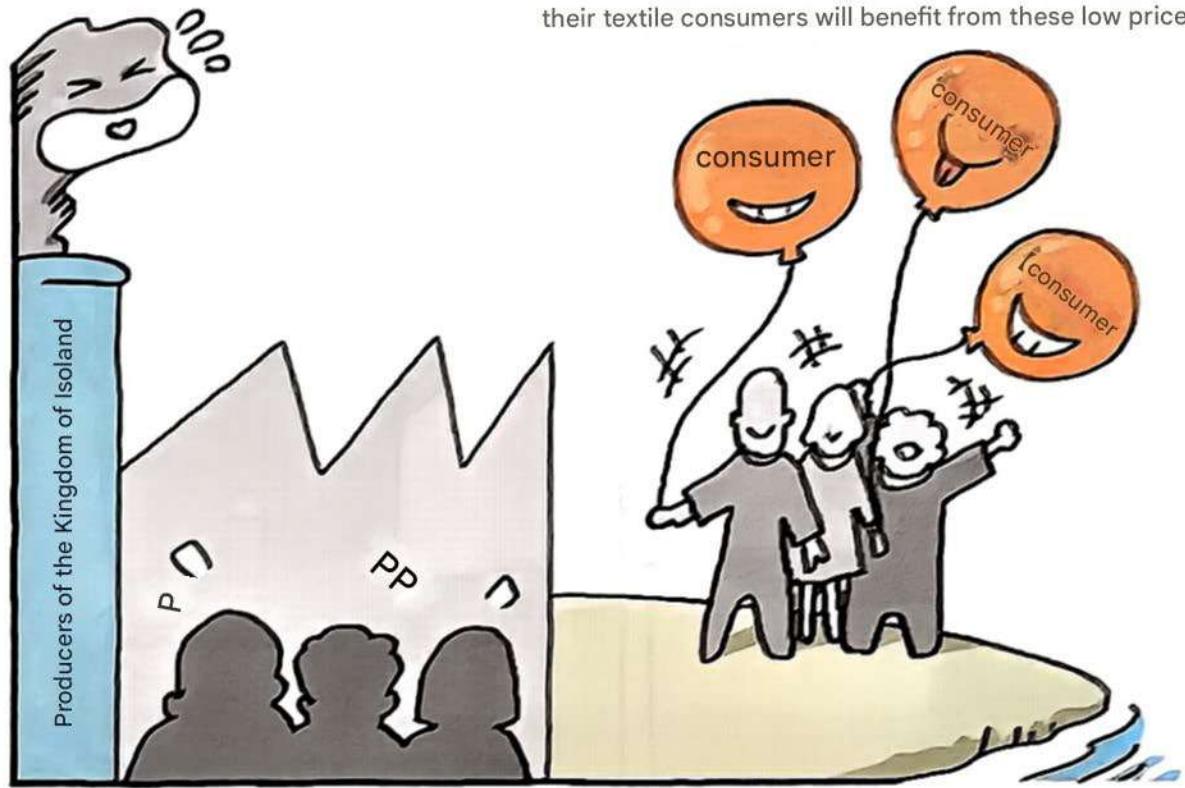
Another common view is that free trade is desirable only if all countries follow the same rules.



Subsidies reduce the price of imported textiles, allowing consumers to purchase products at lower prices.

# Reasons for restricting trade

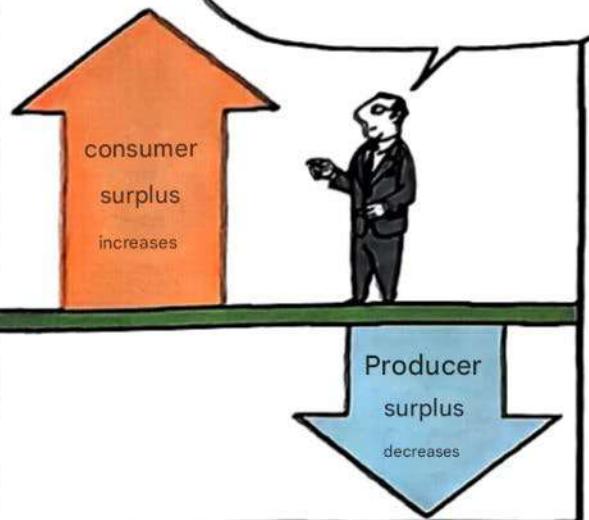
In reality, would purchasing textiles from another country at subsidized prices actually harm the interests of Isoran?



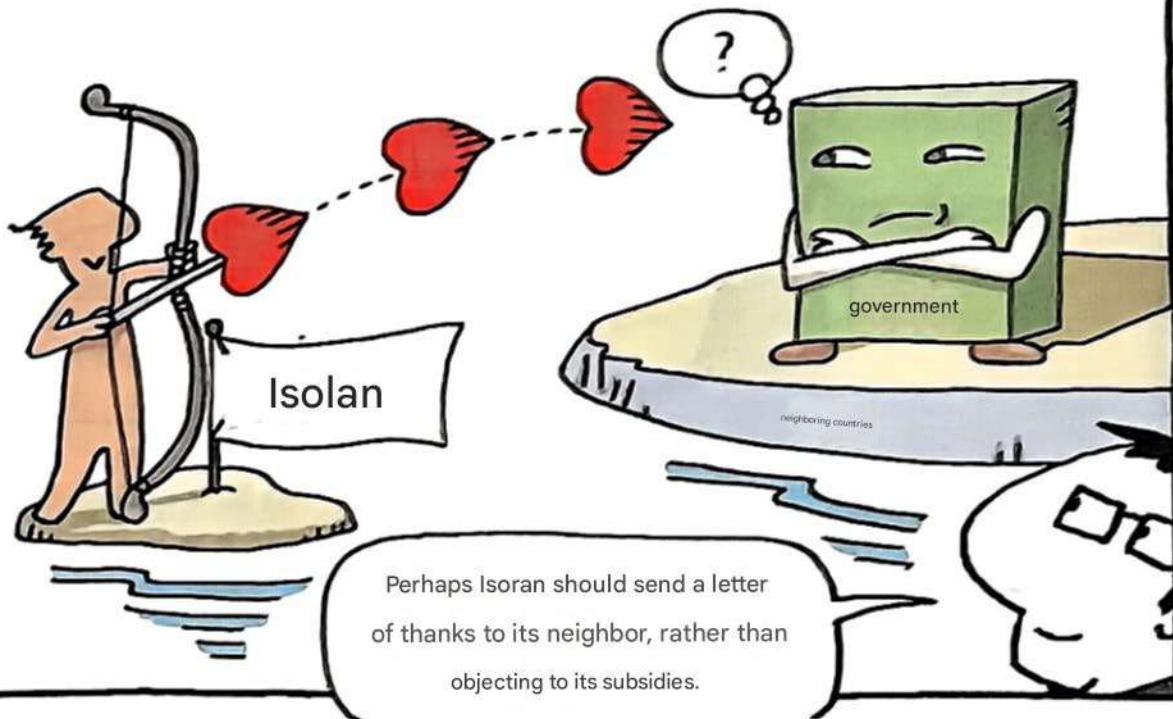
# Reasons for restricting trade

The benefits of free trade remain the same, unchanged.

The benefits consumers gain from buying at a low price outweigh the losses for producers.



Subsidizing a neighboring country's textile industry could be a poor policy, as the tax burden falls on the country's taxpayers. Isoran could benefit from the opportunity to purchase textiles at subsidized prices.



# Reasons for restricting trade

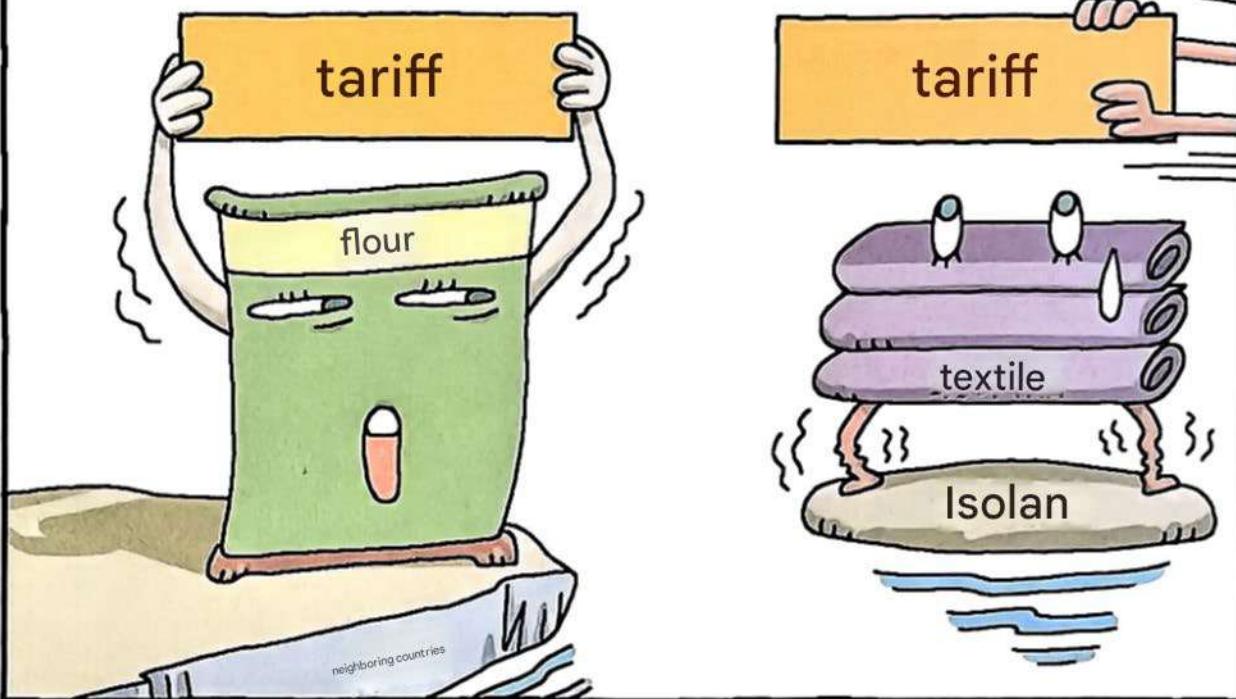


# Reasons for restricting trade

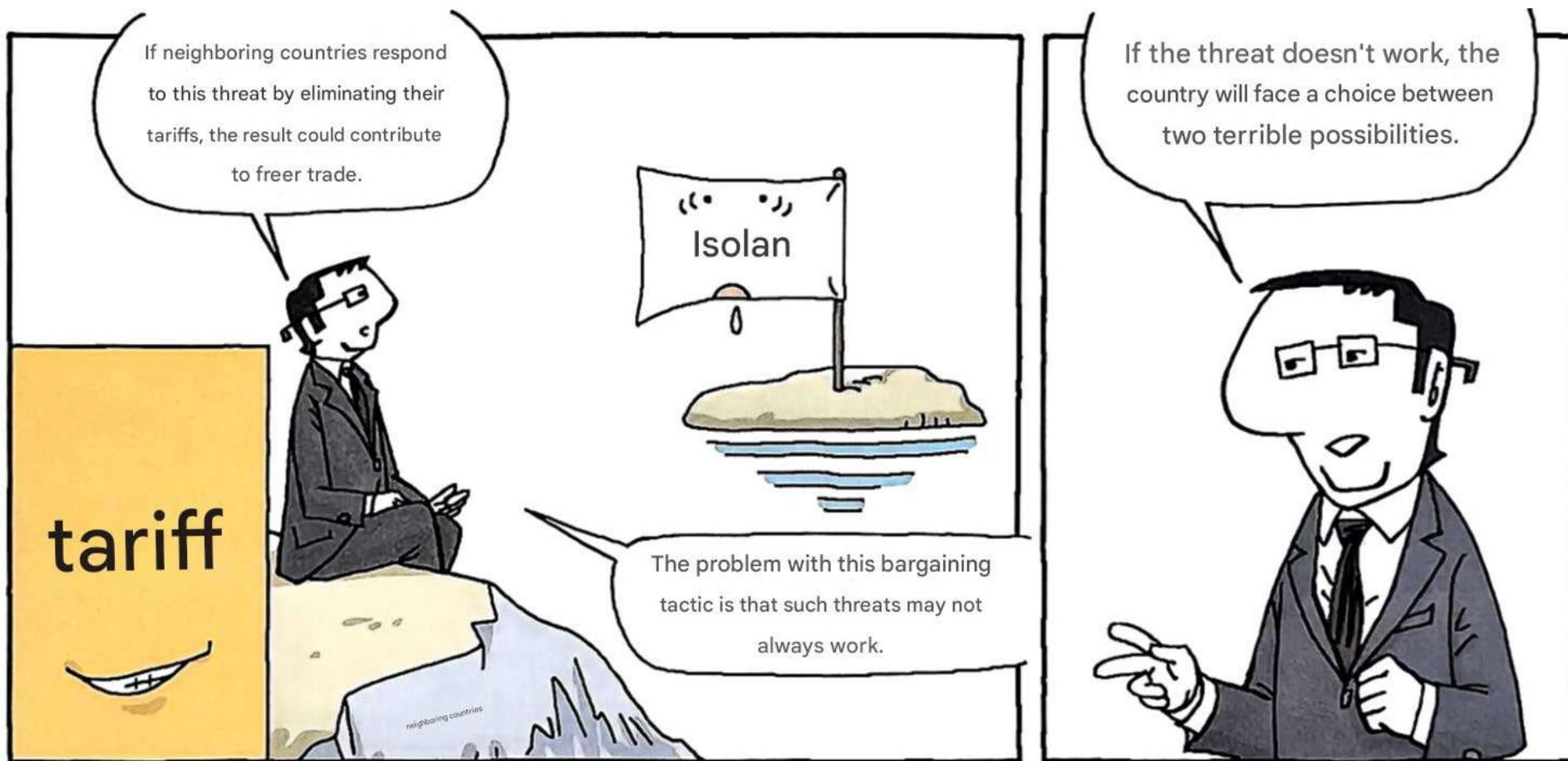
They claim that the threat of trade restrictions helps to eliminate trade restrictions already imposed by foreign governments.



For example, the State of Isoran could threaten to impose tariffs on textiles unless its neighboring countries remove tariffs on its flour.



# Reasons for restricting trade



# Reasons for restricting trade

It can make threats, which reduces its own economic welfare. Or, it can withdraw the threat.

This will cause it to lose credibility in international affairs.

Faced with this choice, the country might wish it hadn't made that threat in the first place.

# SUMMARY



- The effects of free trade can be determined by comparing domestic prices in the absence of trade with world prices. Low domestic prices indicate that the country has a comparative advantage in producing a particular good, and that the country will become an exporter. High domestic prices indicate that the rest of the world has a comparative advantage in producing that good, and that country will become an importer.

# SUMMARY



- When a country allows trade and becomes an exporter of a good, the situation of domestic producers of the good improves due to increased producer surplus, while the situation of domestic consumers of the good worsens due to decreased consumer surplus. However, because the gains for producers outweigh the losses for consumers, the country's total surplus increases.
- When a country allows trade and becomes an importer of a good, increased consumer surplus improves the situation for buyers, while decreased producer surplus worsens the situation for sellers. However, because the gains for buyers outweigh the losses for sellers, total surplus increases.

# SUMMARY



- In other words, in the importing country, domestic consumers of goods are in a better position, while domestic producers are in a worse position. However, the increase in consumer surplus exceeds the decrease in producer surplus. Therefore, trade improves the overall economic welfare of the country.
- Like most taxes, tariffs distort economic incentives, causing the allocation of goods and services to deviate from market equilibrium. When tariffs increase the price of domestic textiles, they incentivize domestic producers to increase output.

# SUMMARY



- Although the cost of producing these incremental units exceeds the cost of purchasing them at world prices, tariffs make textile production profitable for domestic producers. When tariffs increase the price that domestic textile consumers must pay, they incentivize consumers to reduce textile consumption. Although domestic consumers value these incremental units higher than world prices, tariffs prompt them to reduce their purchases. The total deadweight loss from tariffs is the sum of the deadweight loss from overproduction and underconsumption of textiles.

# SUMMARY



- The reasons for restricting trade are numerous: protecting jobs, safeguarding national security, supporting emerging industries, preventing unfair competition, and countering restrictions on foreign trade. While some of these arguments have merit in certain situations, economists generally argue that free trade is the superior policy.

## 思考题

1. Taxing a good will result in deadweight loss if \_\_\_\_\_.
  - a. The decrease in consumer surplus and producer surplus is greater than the tax revenue.
  - b. Tax revenue is greater than the decrease in consumer surplus and producer surplus.
  - c. The decrease in consumer surplus is greater than the decrease in producer surplus.
  - d. The decrease in producer surplus is greater than the decrease in consumer surplus.

## 思考题

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2. The supply curve for eggs is linear and upward-sloping, while the demand curve is linear and downward-sloping. If the tax on each egg is increased from 2 cents to 3 cents, the deadweight loss from the tax will \_\_\_\_\_.  
a. increase by less than 50%, or even decrease  
b. increase by exactly 50%  
c. increase by more than 50%  
d. depend on whether supply or demand is more elastic

## 思考题

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3. The supply curve for peanut butter is upward sloping, and the demand curve is downward sloping. If the tax on peanut butter is increased from 10 cents to 15 cents per pound, then the government's tax revenue will \_\_\_\_\_.
- a. Increase by less than 50%, or even decrease
  - b. Increase by exactly 50%
  - c. Increase by more than 50%
  - d. Depend on whether supply or demand is more elastic

## 思考题

4. The Laffer Curve shows that, in some cases, the government can reduce taxes on a good and increase \_\_\_\_\_.
- a. deadweight loss
  - b. government tax revenue
  - c. equilibrium quantity
  - d. the price paid by consumers

## 思考题

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5. If a policymaker wants to increase revenue by taxing goods while minimizing deadweight losses, he should examine goods with \_\_\_\_ demand elasticity and \_\_\_\_ supply elasticity.
- a. small, small
  - b. small, large
  - c. large, small
  - d. large, large

## 思考题

6. If a country is not allowed to engage in international steel trade, and its domestic steel prices are lower than world prices, then \_\_\_\_\_
- a. The country has a comparative advantage in steel production; if it opens up trade, it will become a steel exporter.
  - b. The country has a comparative advantage in steel production; if it opens up trade, it will become a steel importer.
  - c. The country does not have a comparative advantage in steel production; if it opens up trade, it will become a steel exporter.
  - d. The country does not have a comparative advantage in steel production; if it opens up trade, it will become a steel importer.

## 思考题

7. When a country opens its coffee bean trade to the world, the price of coffee beans in that country falls. Which of the following describes this situation?
- a. Domestic coffee production increases, and the country becomes a coffee importer.
  - b. Domestic coffee production increases, and the country becomes a coffee exporter.
  - c. Domestic coffee production decreases, and the country becomes a coffee importer.
  - d. Domestic coffee production decreases, and the country becomes a coffee exporter.

## 思考题

8. When a country opens its market to a good and becomes an importer, \_\_\_\_\_
- a. Producer surplus decreases, but consumer surplus and total surplus both increase.
  - b. Producer surplus decreases, consumer surplus increases, therefore the effect on total surplus is unclear.
  - c. Producer surplus and total surplus increase, but consumer surplus decreases.
  - d. Producer surplus, consumer surplus, and total surplus all increase.

# 思考题

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9. If a country imposes a tariff on an imported item, it will increase \_\_\_\_\_.
- a. Domestic demand
  - b. Domestic supply
  - c. Quantity imported from abroad
  - d. All of the above

## 思考题

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10. Which of the following trade policies would benefit producers, harm consumers, and increase trade volume?
- a. Importing countries increase tariffs
  - b. Importing countries decrease tariffs
  - c. Trade is permitted when world prices are higher than domestic prices
  - d. Trade is permitted when world prices are lower than domestic prices