

Paul Krugman and Robin Wells

Microeconomics

Third Edition

Chapter 5

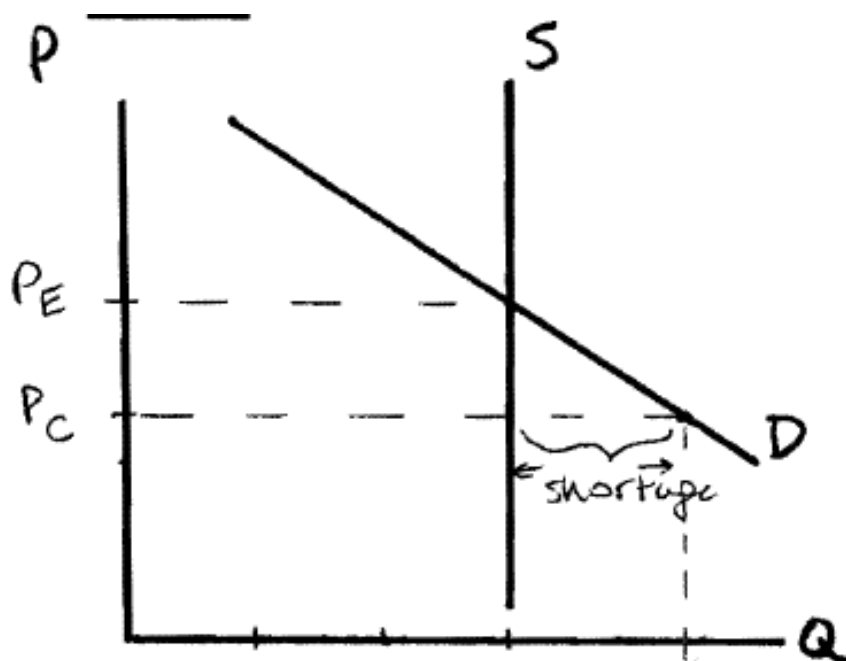
Price Controls and Quotas: Meddling with Markets

1. Introduction: Equilibrium vs. price ceilings/price floors

- A. "Free market" regulates quantities by price: equilibrium price, P_E , *ration*s the available quantity
- B. changing/fixing price at something *other than* the equilibrium price, P_E , regulates/ration^s quantities by other means ("non-price rationing"): rationing, waiting lists, bribes, etc.
- C. price ceilings: examples include gas price ceiling, rent controls
price ceiling says that P may not exceed a *maximum* level or *upper limit*, P_E
binding price ceiling means that $P_C < P_E$
- D. to analyze the effects of a price ceiling, use...
 - * supply and demand curves
(note: *elasticity* of supply and demand matter a lot here)
 - * consumer's and producer's surplus

2. First consider rental price ceiling (rent control) in the short run: demand curve is at least somewhat elastic, but supply of rental housing is totally inelastic (why?)

A. Set price ceiling P_C at a level below the equilibrium price P_E . Then quantity demanded exceeds the (fixed) quantity supplied and a shortage occurs.
(But price can't rise to "ration" the available housing -- the rent control law prohibits that.)



short run

B. Since price can't adjust to ration the available supply, other forms of rationing ("non-price rationing") will occur:

- \$100 bills slipped to doormen
- secret payments to landlords
- bribes to occupants who are moving
- discrimination against some prospective tenants, relative to others
- etc. etc.

...and then there's the case of the deathly vacancy!

Note that all of these things represent a back-door or disguised increase in rent.

REAL ESTATE

Deathly Vacancy

Some New Yorkers will do anything for a cheap apartment. Last Wednesday, **NEWSWEEK** learned, a New York City medical investigator was summoned to a building on Manhattan's West 43rd Street where a longtime tenant had suffered a fatal heart attack. After pronouncing the man dead, the investigator discovered the deceased's rent-stabilized, one-bedroom apartment rented for about



Apartment

\$300 a month. Without missing a beat, the investigator, Jules Lisner, notified the building's management company of the death—then asked if he could put a deposit down on the apartment. "It was bad judgment," admitted Lisner, who has been reprimanded by his superiors. ■

Newsweek

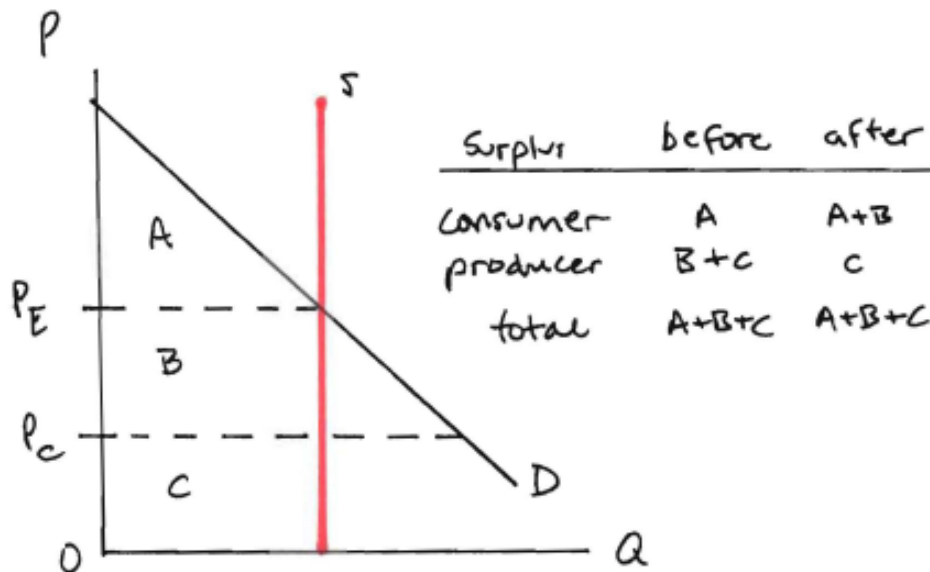
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C. What about the effect on surplus (and "efficiency")?

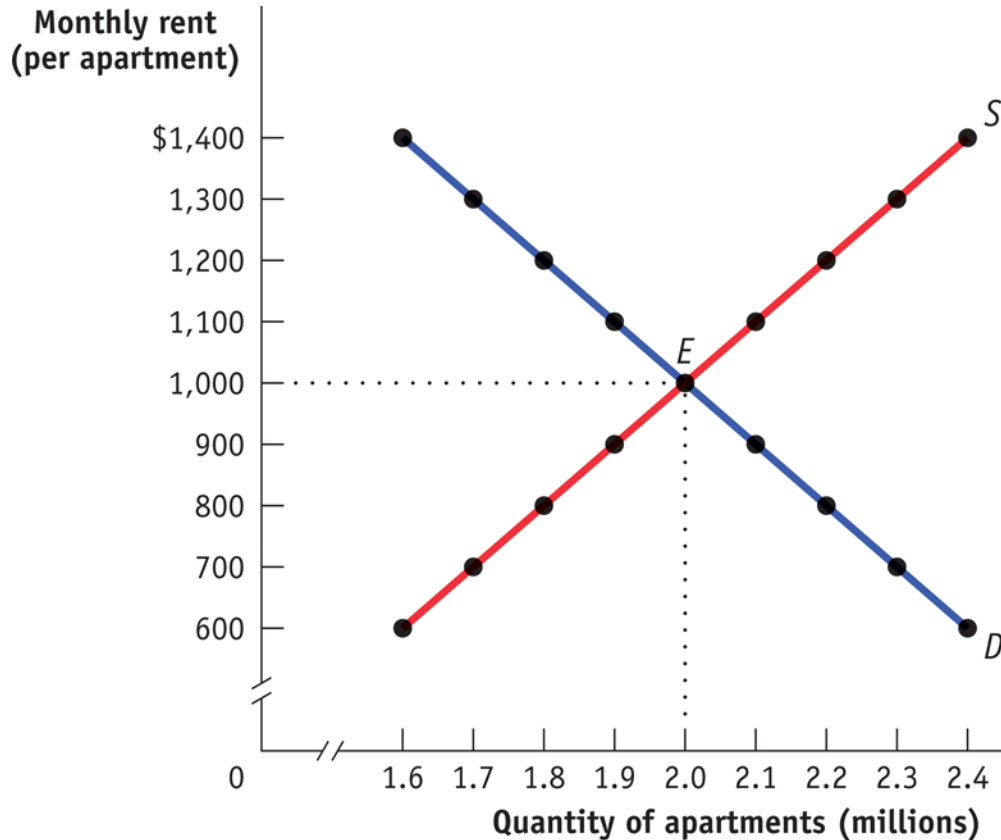
The total available supply is fixed in the short run.
(Remember, we're assuming that short-run supply of housing is completely inelastic.)

So *in the short run*, rent control doesn't affect *total* surplus, because it can't affect output of housing.

However, it does *redistribute* the surplus -- away from landlords and towards renters:



3. Now consider effects of rental price ceiling in the *long run*: in this case, supply of rental housing is *elastic* (why?).



Monthly rent (per apartment)	Quantity of apartments (millions)	
	Quantity demanded	Quantity supplied
\$1,400	1.6	2.4
1,300	1.7	2.3
1,200	1.8	2.2
1,100	1.9	2.1
1,000	2.0	2.0
900	2.1	1.9
800	2.2	1.8
700	2.3	1.7
600	2.4	1.6

A. First consider equilibrium with no rental price ceiling: equilibrium $P_E = 1000$; equilibrium $Q_E = 2.0$

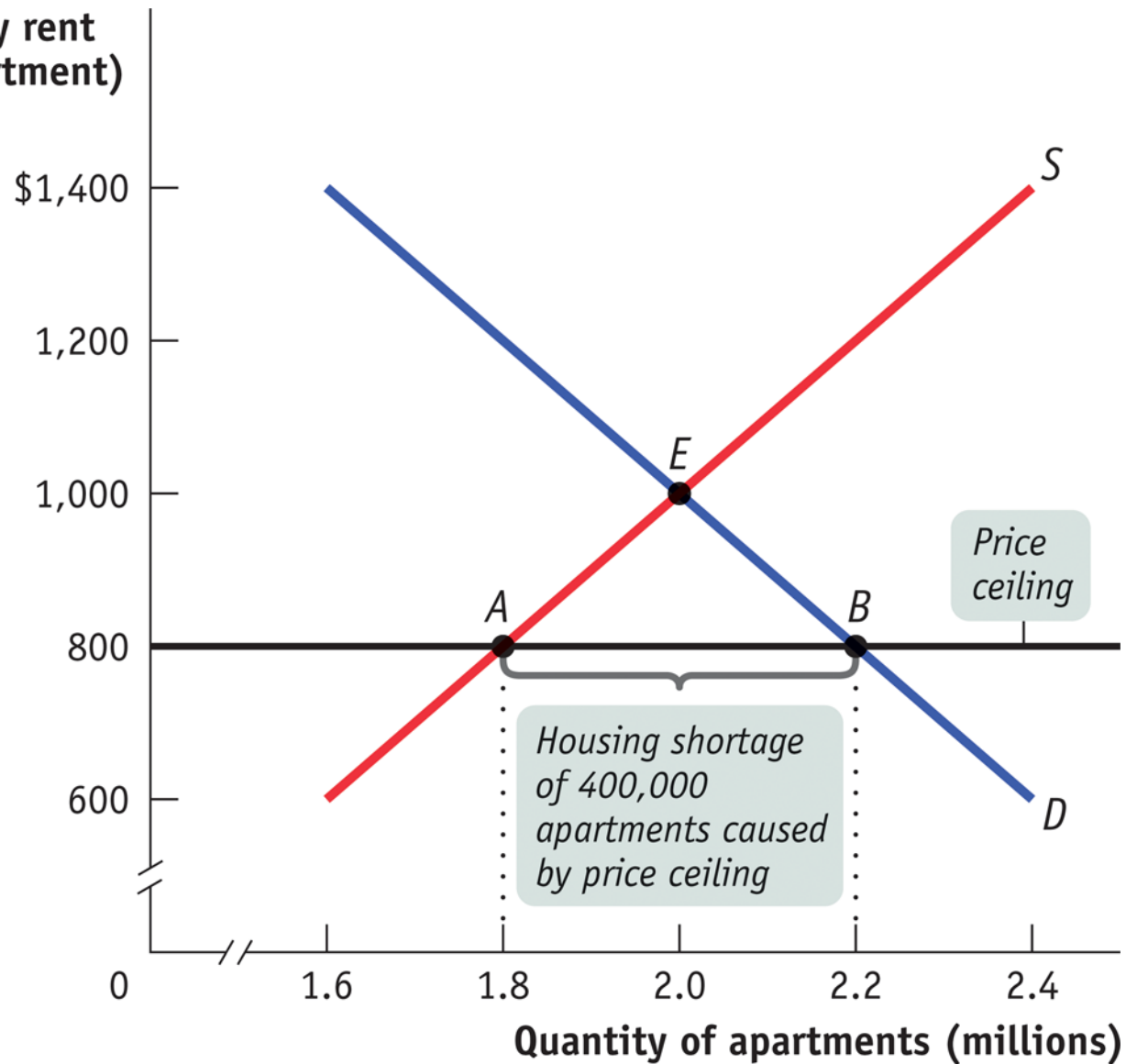
Figure 5.1 The Market for Apartments in the Absence of Price Controls
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B. Now impose a price ceiling, $P_C = 800$.

Note that this is less than the equilibrium price, $P = 1000$.

At the ceiling price, quantity demanded is 2.2 (above the original equilibrium), but quantity *supplied* is only 1.8 (below the original equilibrium).

So there is a housing shortage of $2.2 - 1.8 = 0.4$ units:



"The short side of the market rules."

C. Effects on rationing:

As before, because quantity demanded exceeds quantity supplied, available supply will be distributed among the (excessive number of) demanders by various kinds of non-price rationing -- \$100 bills for doormen, bribes to tenants who are moving, side payments to landlords, etc.

D. Also, here, "output" of rental services actually *falls* due to rent control:

landlords abandon buildings, convert them to offices or parking lots, etc.

E. Effects on surplus:

Because output falls, total surplus will also fall.

The decline in total surplus is called the "deadweight loss" of the rent control.

Also, since output falls, producer and consumer surpluses change: rent control *redistributes* the total surplus, because it divides the (shrinking) pie up differently.

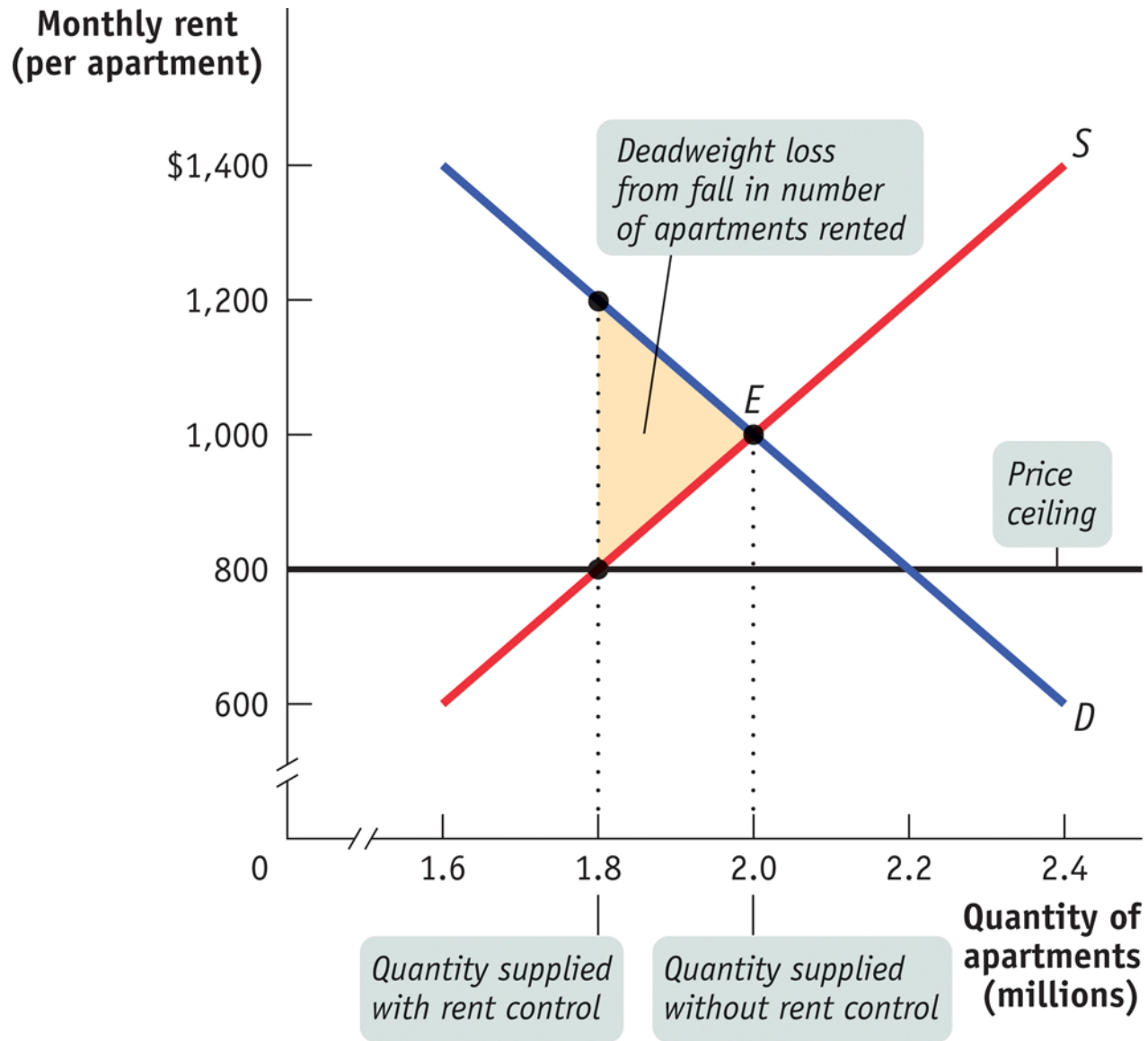


Figure 5.3 A Price Ceiling Causes Inefficiently Low Quantity
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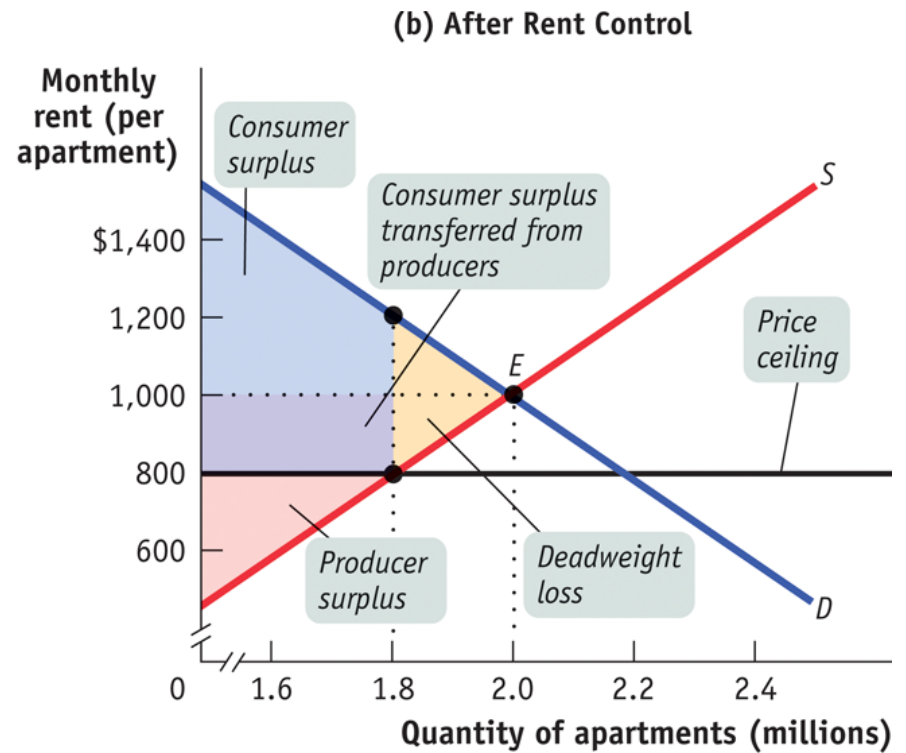
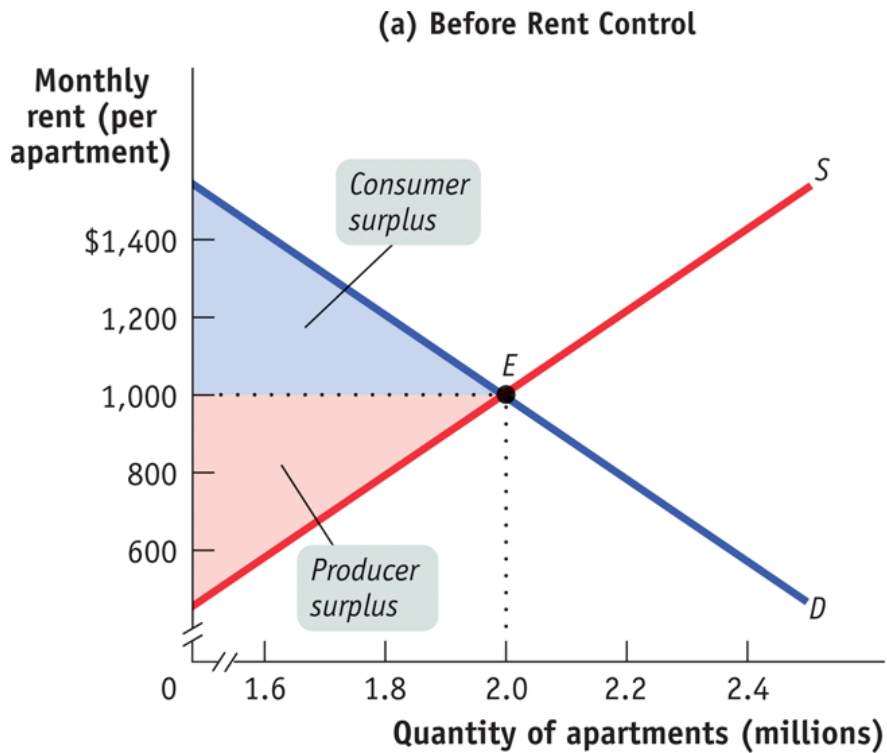


Figure 5.4 Winners and Losers from Rent Control
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TOTAL surplus falls

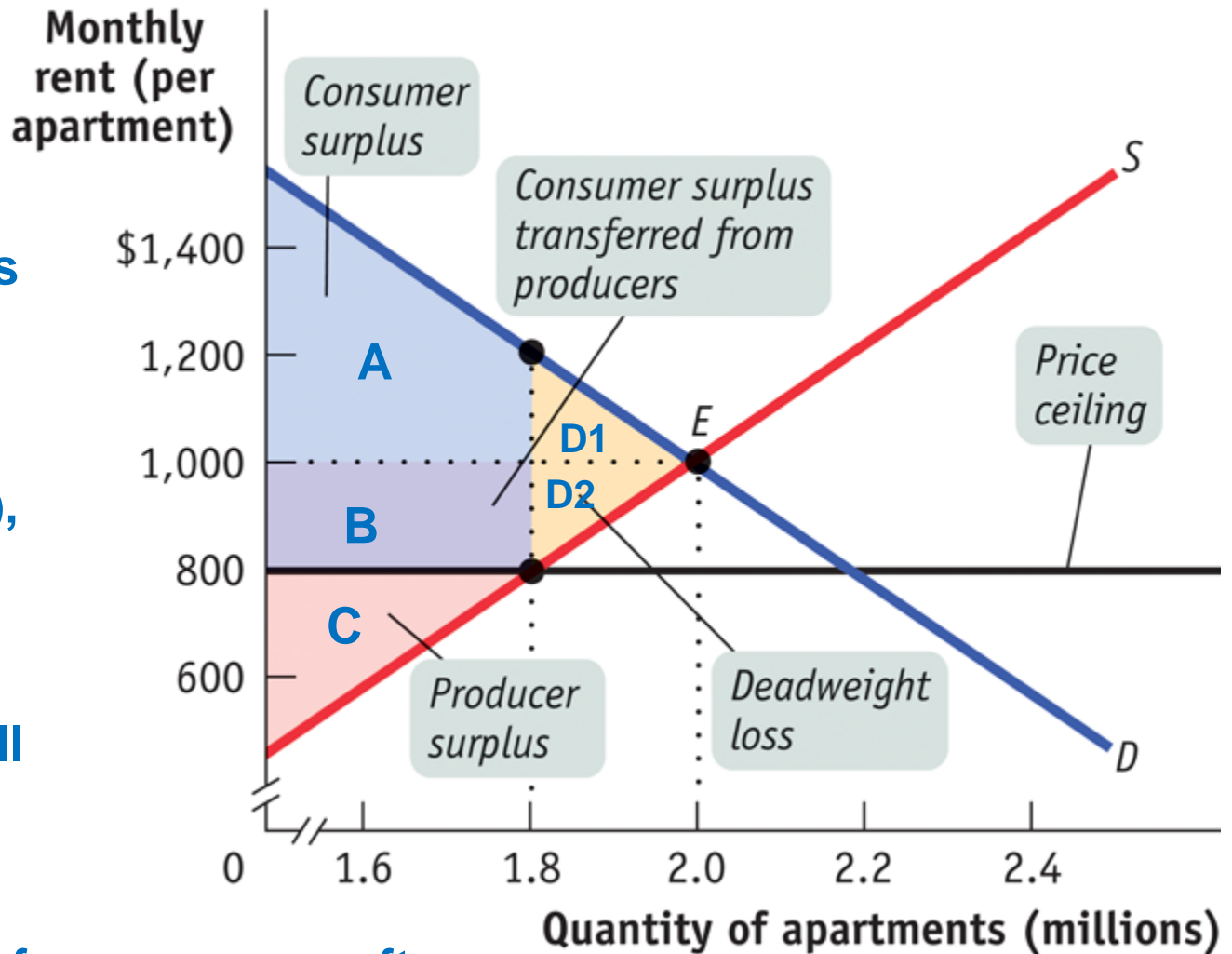
Producers surplus definitely falls

Consumers surplus rises if $B > D1$, falls if $B < D1$

Some consumers lose (housing falls), but others gain (price falls).

(So, winners as well as losers.)

(b) After Rent Control



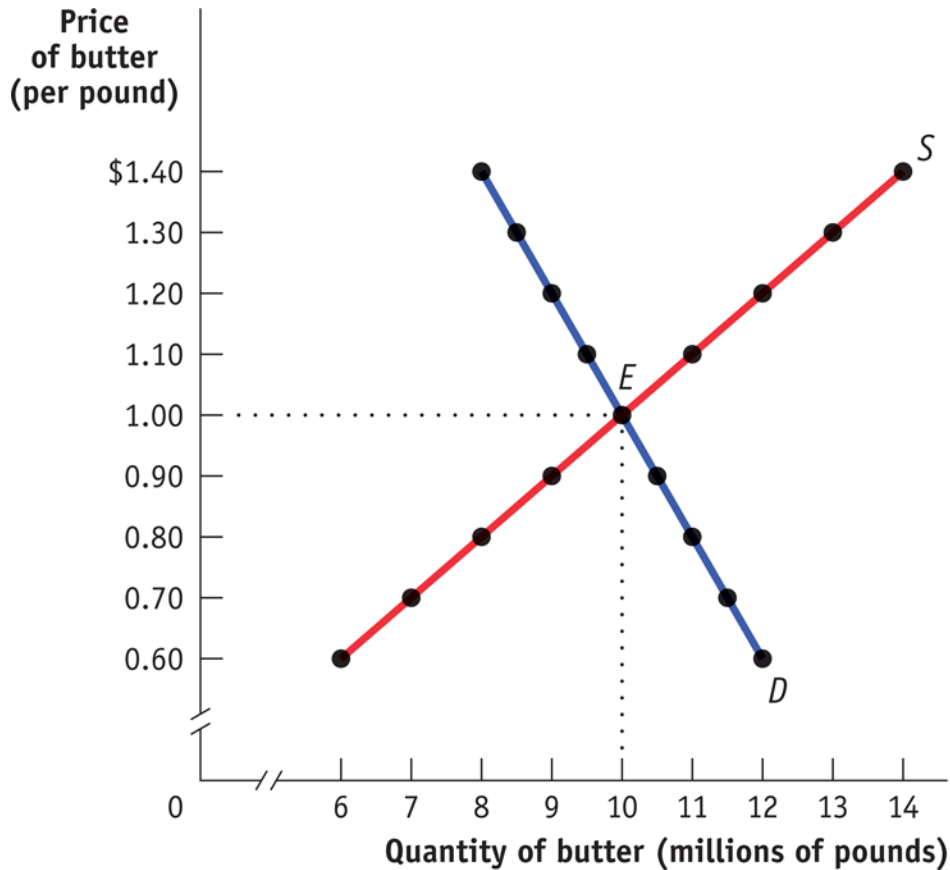
surplus	before	after
consumers	A+D1	A+B
producers	B+C+D2	C
<u>total:</u>	A+B+C+D1+D2	A+B+C

4. Price floors (e.g., farm "price supports," minimum wages)

- A. price floor says that P may not be less than a *minimum level* or *lower limit*, P_F
binding price floor means that $P_F < P_E$, the equilibrium price

- B. to analyze effects of a price floor,
(like effects of a price ceiling), use...
 - * supply and demand curves
(note: *elasticity* of supply and demand matter a lot here)
 - * consumer's and producer's surplus

First consider equilibrium *without* a price floor:



Price of butter (per pound)	Quantity of butter (millions of pounds)	
	Quantity demanded	Quantity supplied
\$1.40	8.0	14.0
1.30	8.5	13.0
1.20	9.0	12.0
1.10	9.5	11.0
1.00	10.0	10.0
0.90	10.5	9.0
0.80	11.0	8.0
0.70	11.5	7.0
0.60	12.0	6.0

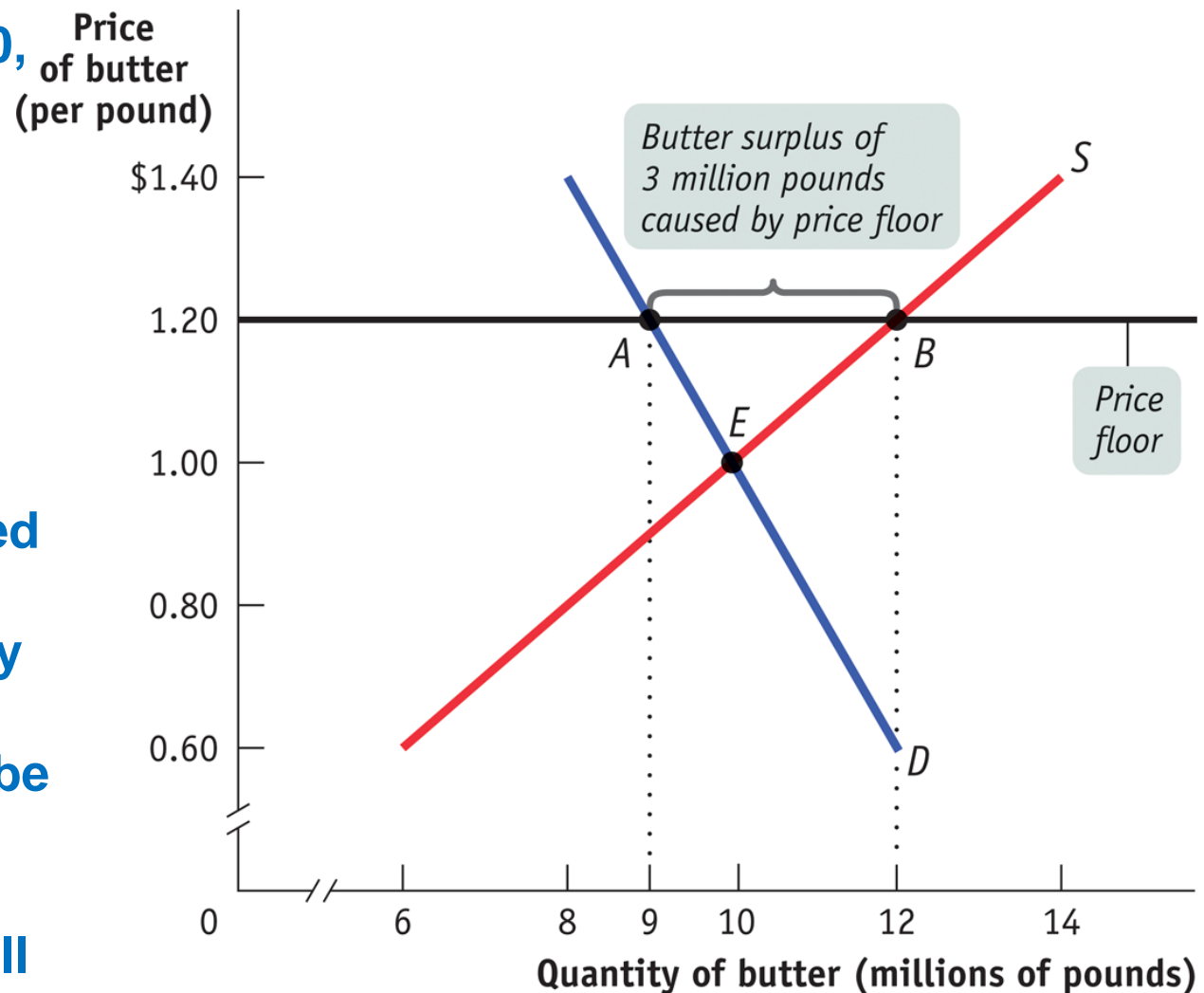
With *no* price floor, equilibrium $P_E = 1.00$; equilibrium $Q_E = 10.0$

With a price floor of 1.20, quantity supplied (12) exceeds quantity demanded (9).

Thus, there is excess supply of $12 - 9 = 3$.

Since quantity demanded is only 9, only 9 will be sold. The excess supply of 3 will pile up on shelves, or will have to be stored.

Note also that output will fall from 10 to 9 -- thus, a deadweight loss.



(Again: "The short side of the market rules.")

C. Effects on surplus:

Because output falls, we can be sure that total surplus will also fall.

The decline in total surplus is called the "deadweight loss" of the price ceiling.

Also, since output falls, producer and consumer surplus change: price ceiling *redistributes* the total surplus, because it divides the (smaller) pie up differently.

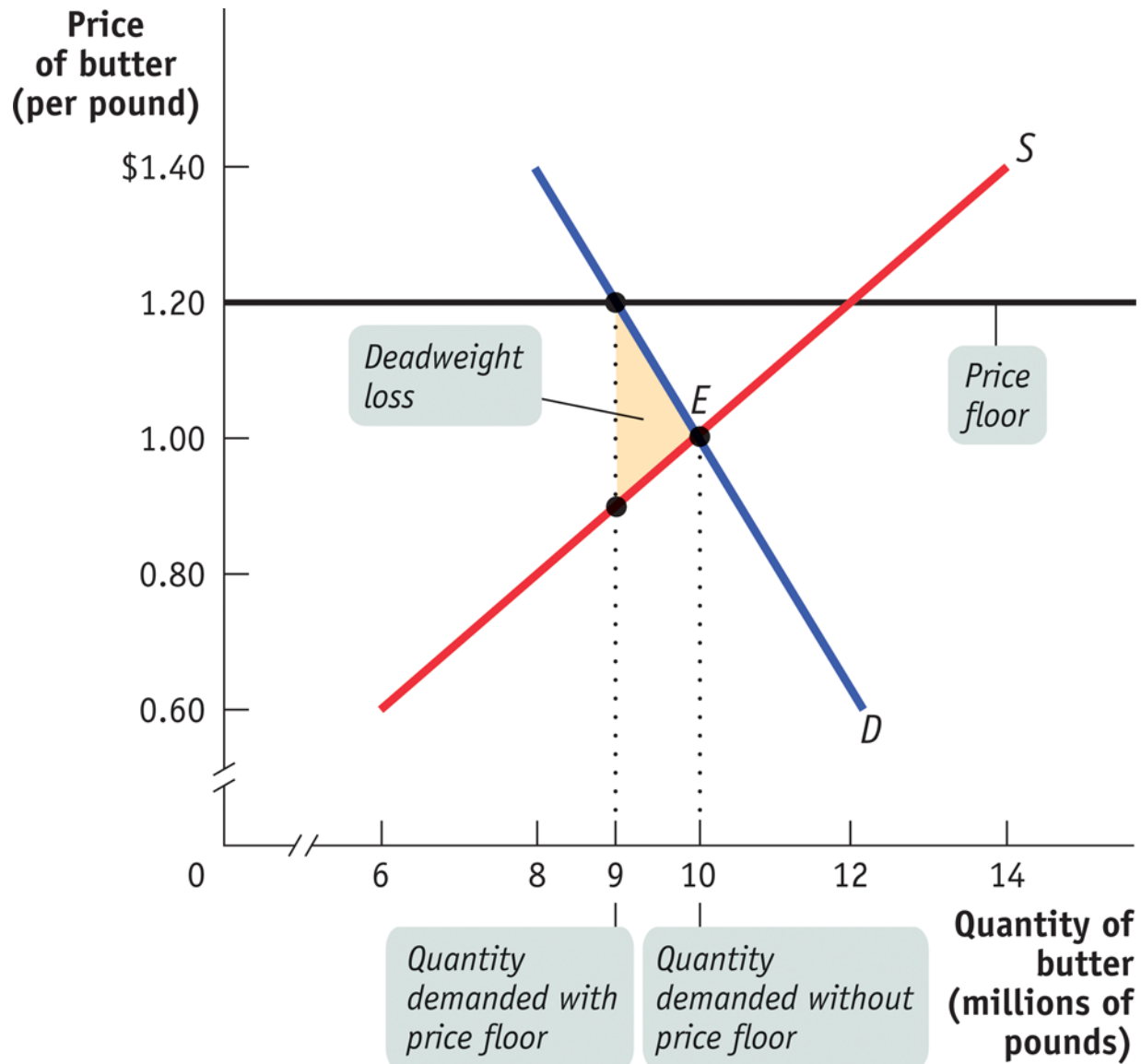


Figure 5.7 A Price Floor Causes Inefficiently Low Quantity
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As a result of the price floor...

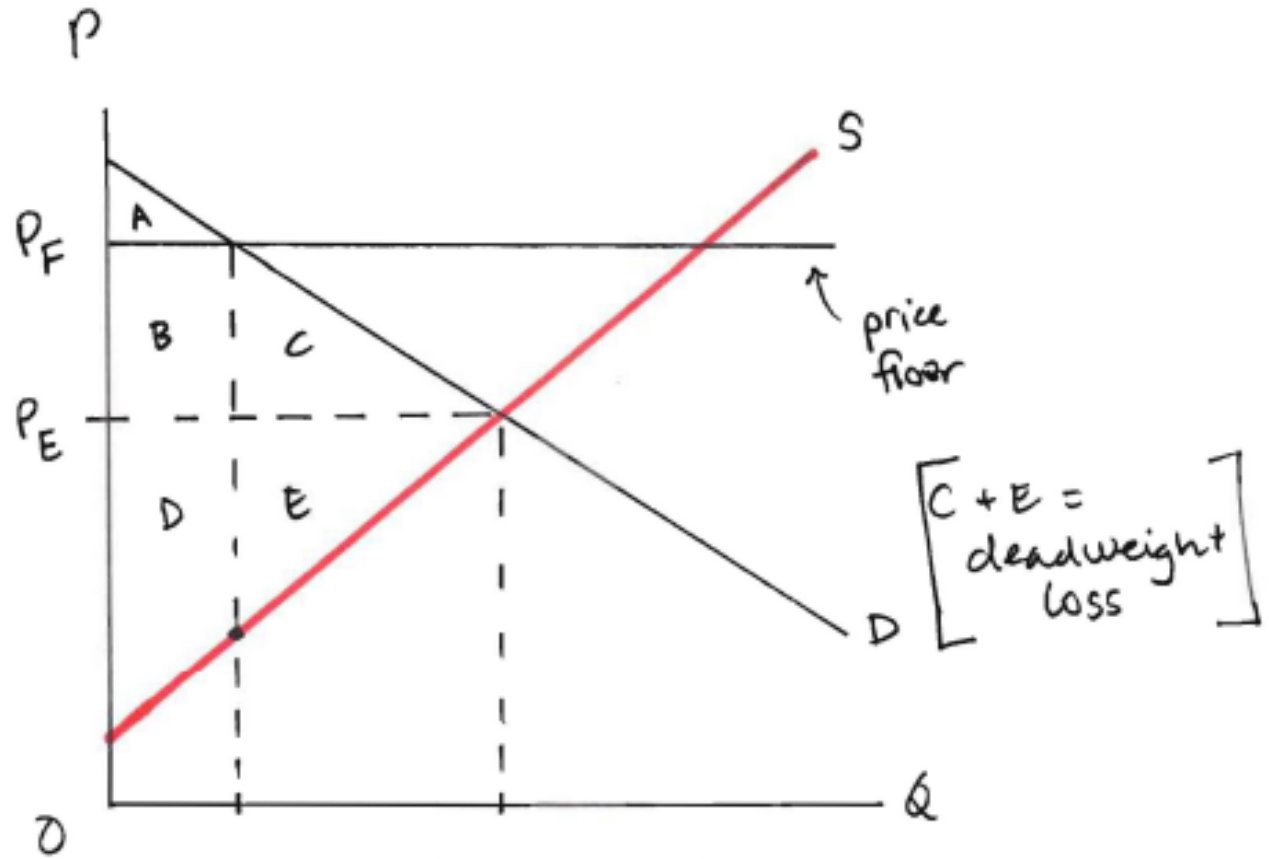
TOTAL surplus falls

Consumers surplus definitely falls

Producers surplus rises if $B > E$, falls if $B < E$

Some producers lose (output falls), but others gain (price rises)

(So, again, winners as well as losers.)



surplus	before	after
consumer	A+B+C	A
producer	D+E	B+D
total	A+B+C+ D+E	A+B+D

5. Output quotas

A. quotas limit the quantity that can be produced (e.g., by issuing licenses – taxi licenses, liquor licenses, etc.) i.e., specify that no more than X taxis can operate, no more than X liquor stores may operate, etc. etc.

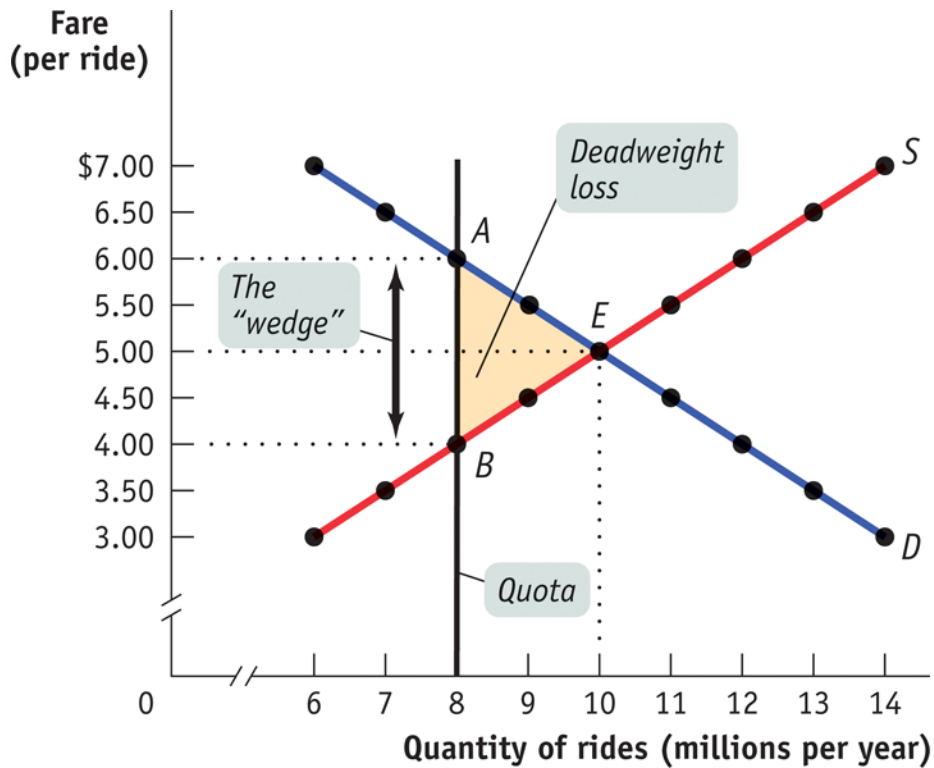
B. A *binding* output quota – i.e., below equilibrium Q ($Q_Q < Q_E$) – will ...

- cause reduced output and higher price,
- drive a “wedge” between what producers would charge and what consumers would be willing to pay

So at the quota output level (Q_Q), producers set their price at A, but their costs will only be at B (see graph, next page)

C. Thus,

- reduction in output to $Q_Q (< Q_E)$
- a deadweight loss (equal to area ABE)
- changes in both consumers' and producers' surplus



Fare (per ride)	Quantity of rides (millions per year)	
	Quantity demanded	Quantity supplied
\$7.00	6	14
6.50	7	13
6.00	8	12
5.50	9	11
5.00	10	10
4.50	11	9
4.00	12	8
3.50	13	7
3.00	14	6

Figure 5.9 Effect of a Quota on the Market for Taxi Rides
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TOTAL surplus falls

Consumers surplus definitely falls

Producers surplus rises if $B > D2$, falls if $B < D2$

Some producers lose (output falls), but others gain (price rises).

(So, winners as well as losers.)

