

Firms and markets

Sessions 9–10

PMAP 8141: Microeconomics for Public Policy
Andrew Young School of Policy Studies

Plan for today

Supply and demand

Demand and WTP

Supply and WTA

Elasticities of demand

Scale, location, networks, and time

Surplus, taxes, incidence, and DWL

Changes in supply and demand

Escaping the price taking world

Supply and demand





The Making of a Fly: The Genetics of Animal Design (Paperback)

by Peter A. Lawrence

[◀ Return to product information](#)

Always pay through Amazon.com's Shopping Cart or 1-Click.
Learn more about [Safe Online Shopping](#) and our [safe buying guarantee](#).

Price at a Glance

List \$70.00

Price:

Used: from **\$35.54**

New: from

\$1,730,045.91

Have one to sell? [Sell yours here](#)

All

New (2 from \$1,730,045.91)

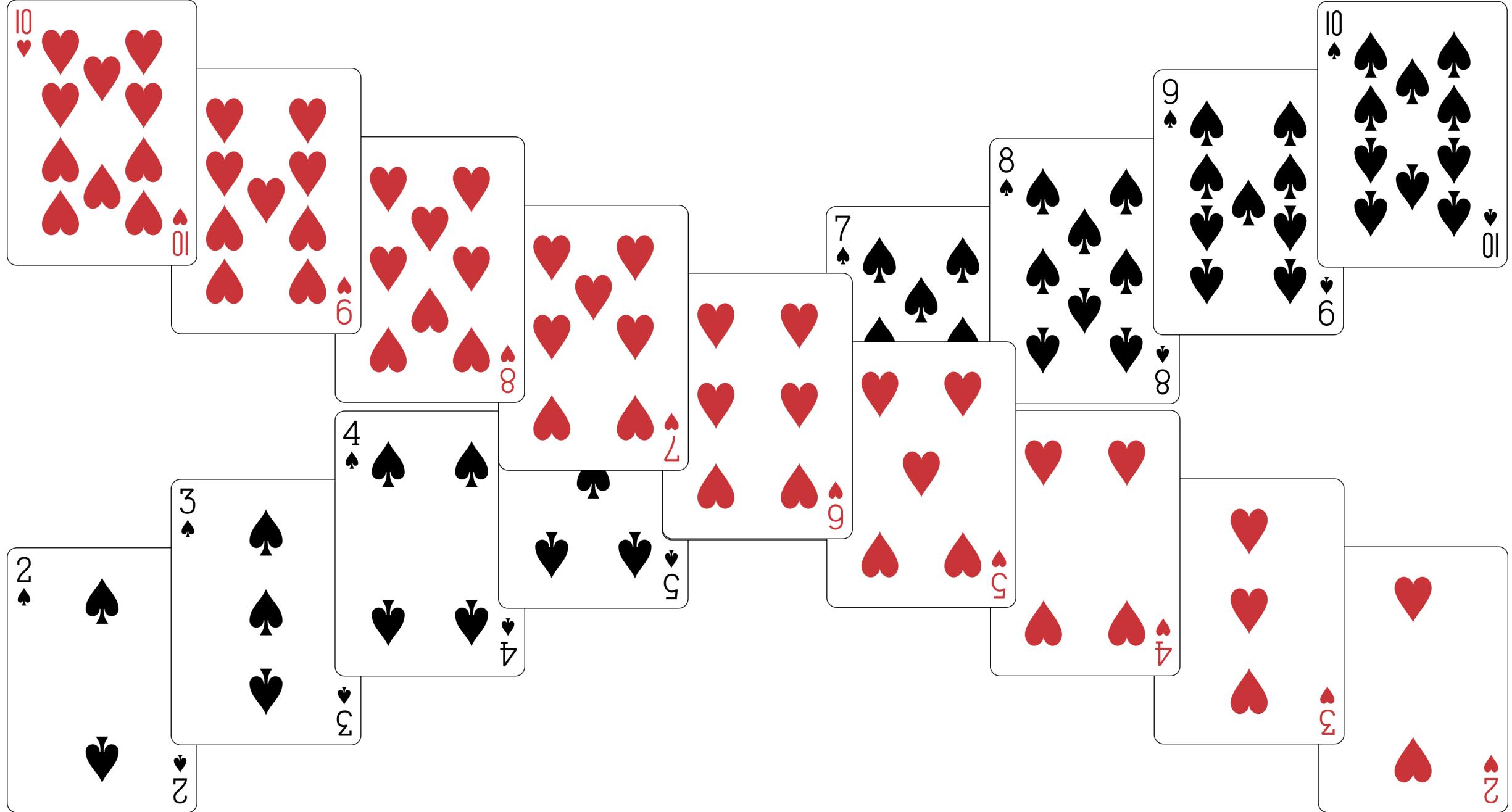
Used (15 from \$35.54)

Show New Prime offers only (0)

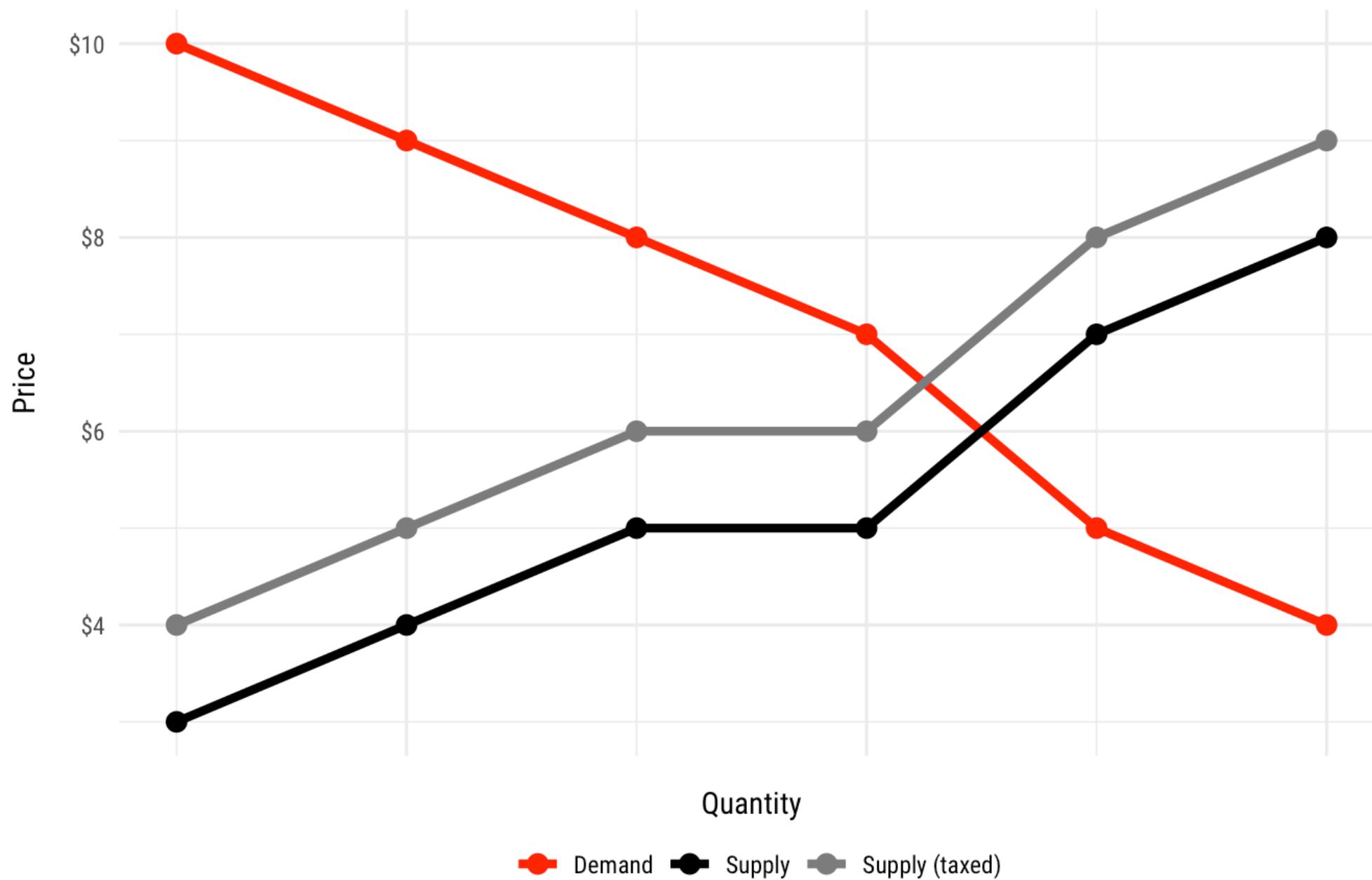
Sorted by [Price + Shipping](#)

New 1-2 of 2 offers

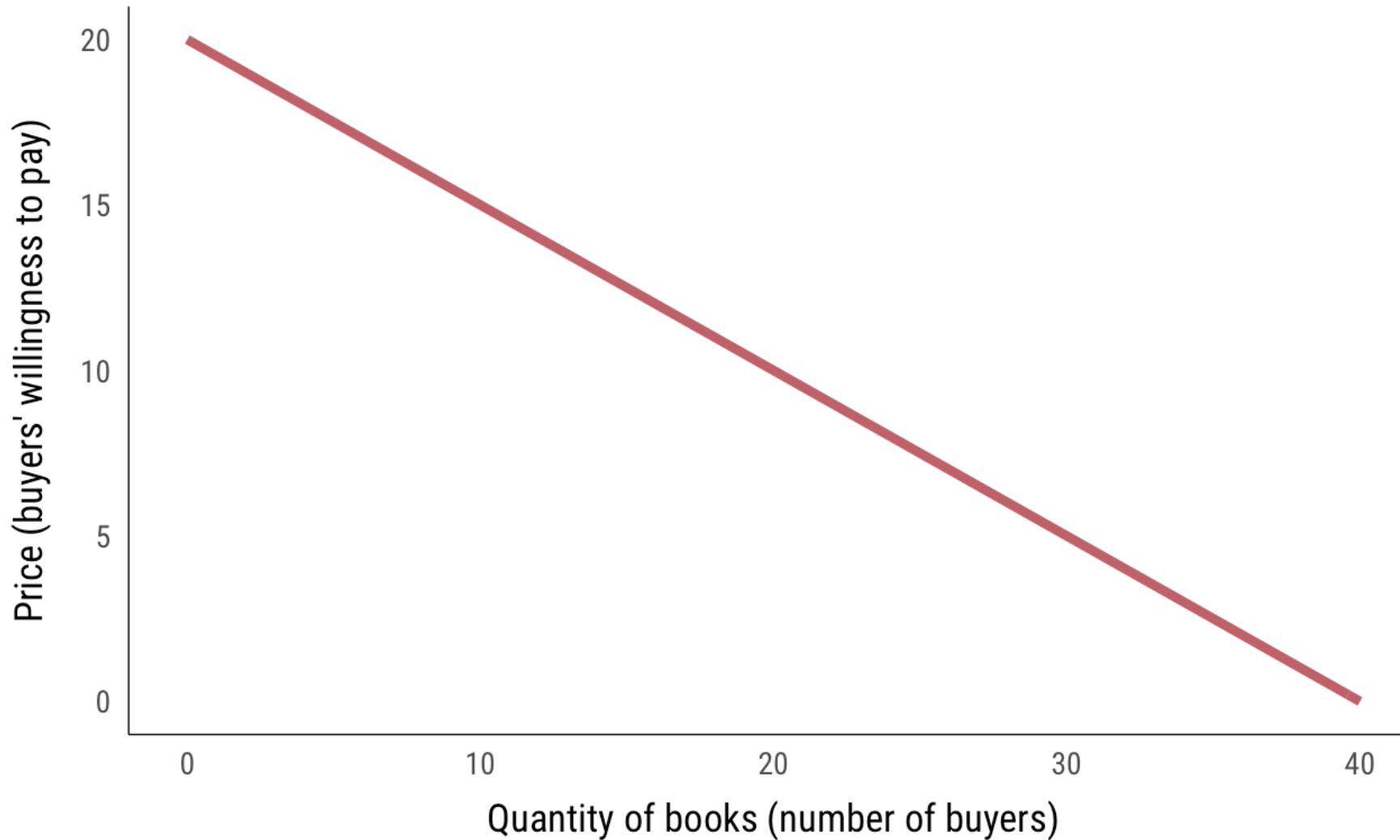
Price + Shipping	Condition	Seller Information	Buying Options
\$1,730,045.91 + \$3.99 shipping	New	Seller: profnath Seller Rating: 93% positive over the past 12 months. (8,193 total ratings) In Stock. Ships from NJ, United States. Domestic shipping rates and return policy . Brand new, Perfect condition, Satisfaction Guaranteed.	 Add to Cart or Sign in to turn on 1-Click ordering.
\$2,198,177.95 + \$3.99 shipping	New	Seller: borddeebook Seller Rating: 93% positive over the past 12 months. (125,891 total ratings) In Stock. Ships from United States. Domestic shipping rates and return policy . New item in excellent condition. Not used. May be a publisher overstock or have slight shelf wear. Satisfaction guaranteed!	 Add to Cart or Sign in to turn on 1-Click ordering.



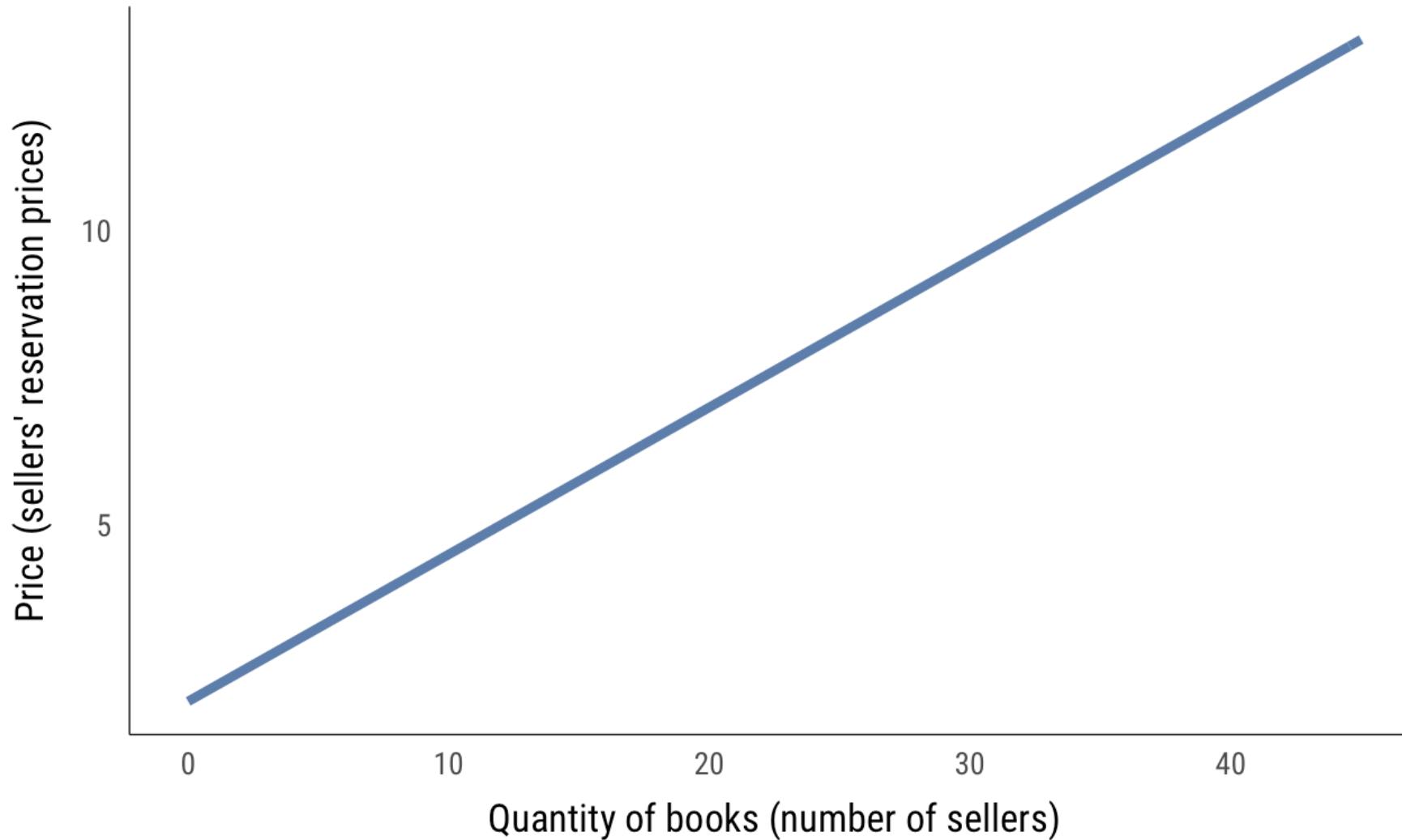
Supply, demand, and price for paper clips

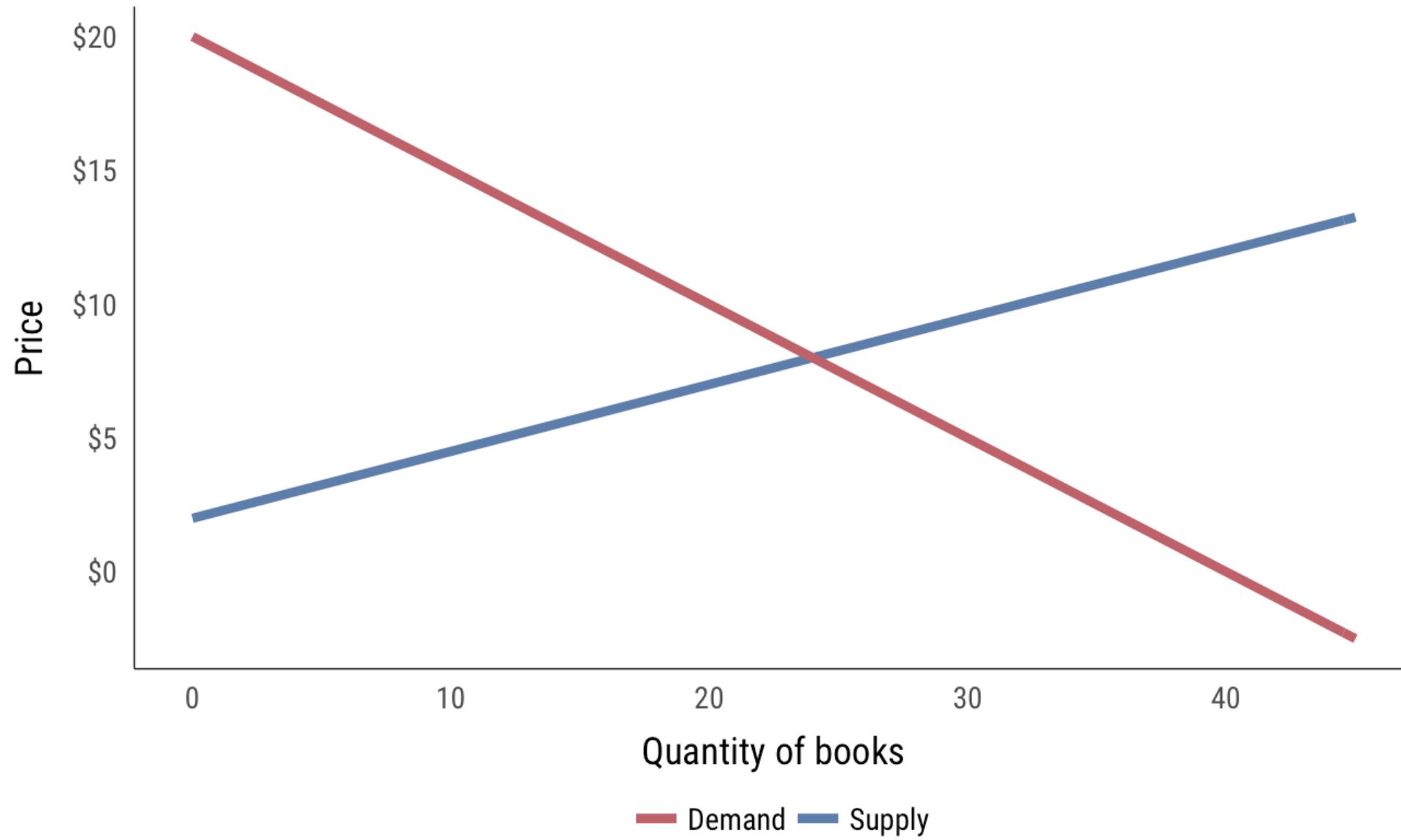


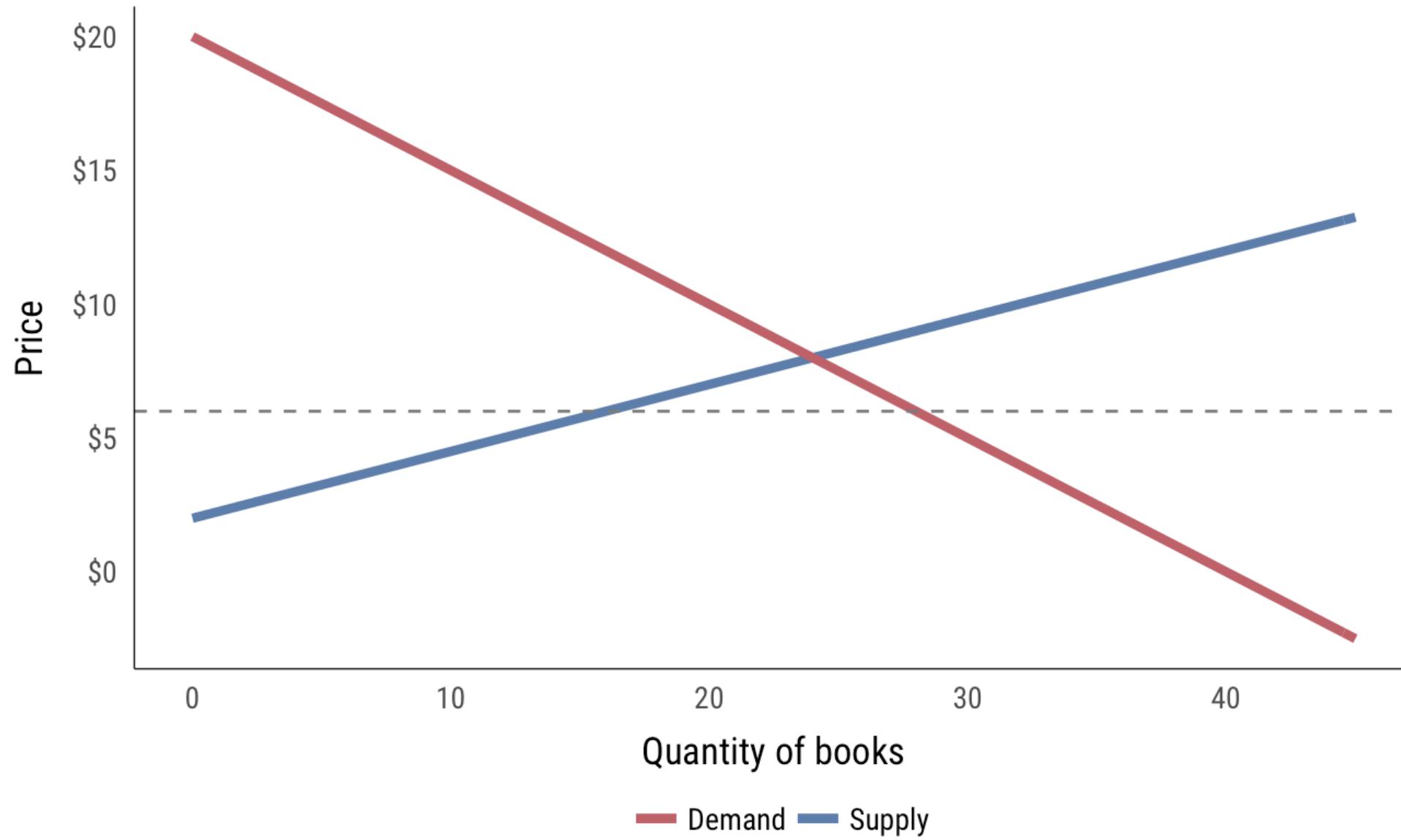
Demand = WTP = marginal benefit

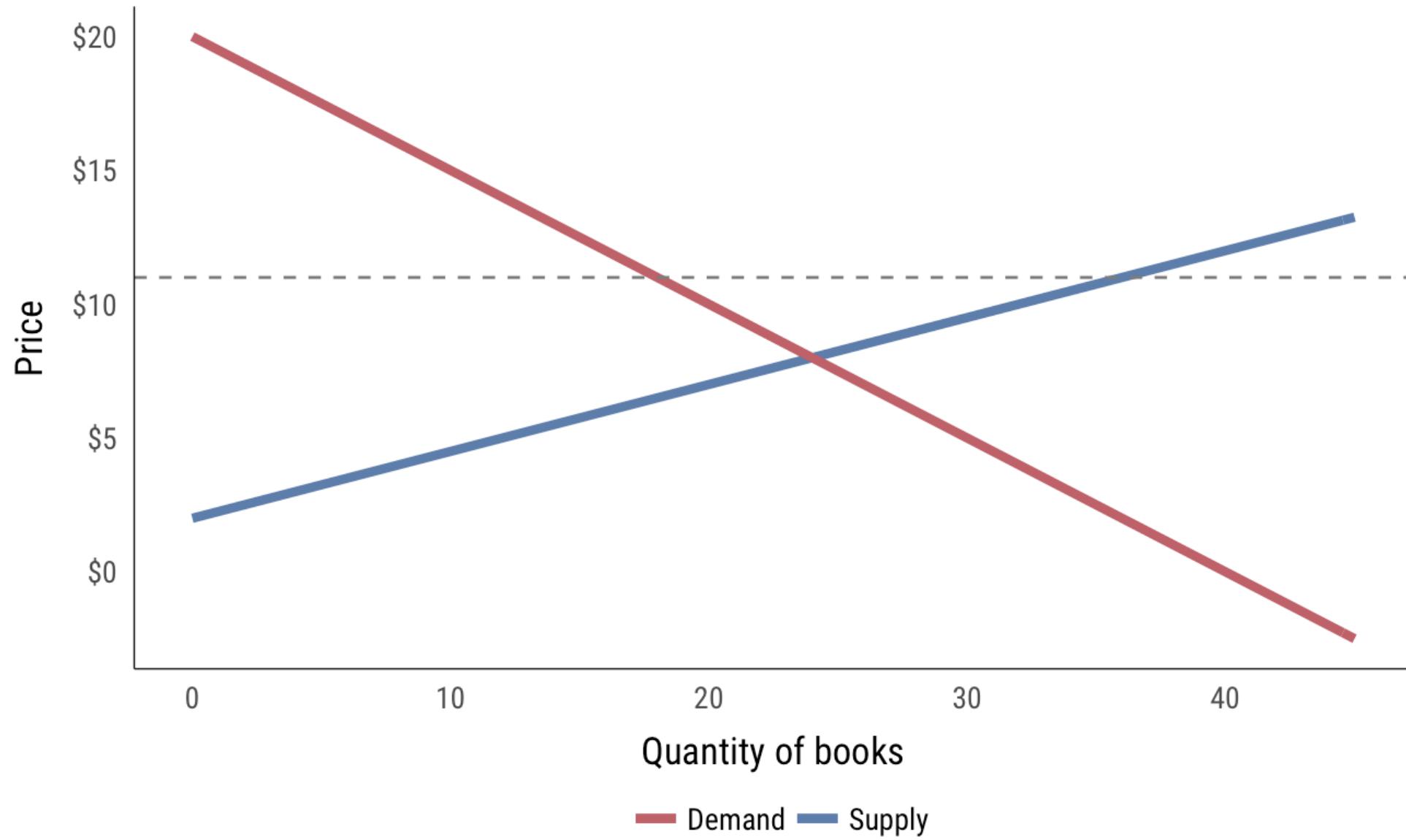


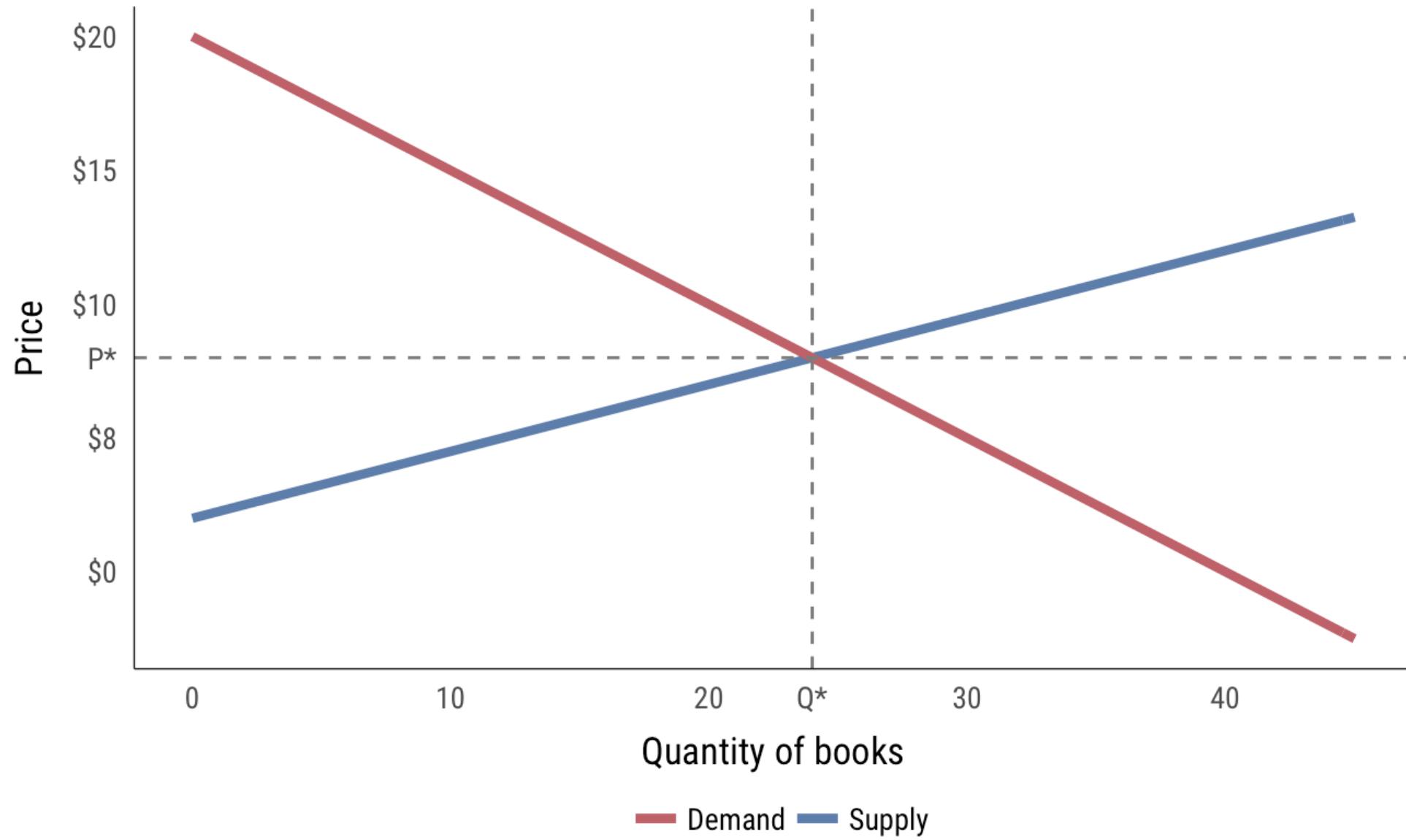
Supply = WTA = marginal cost







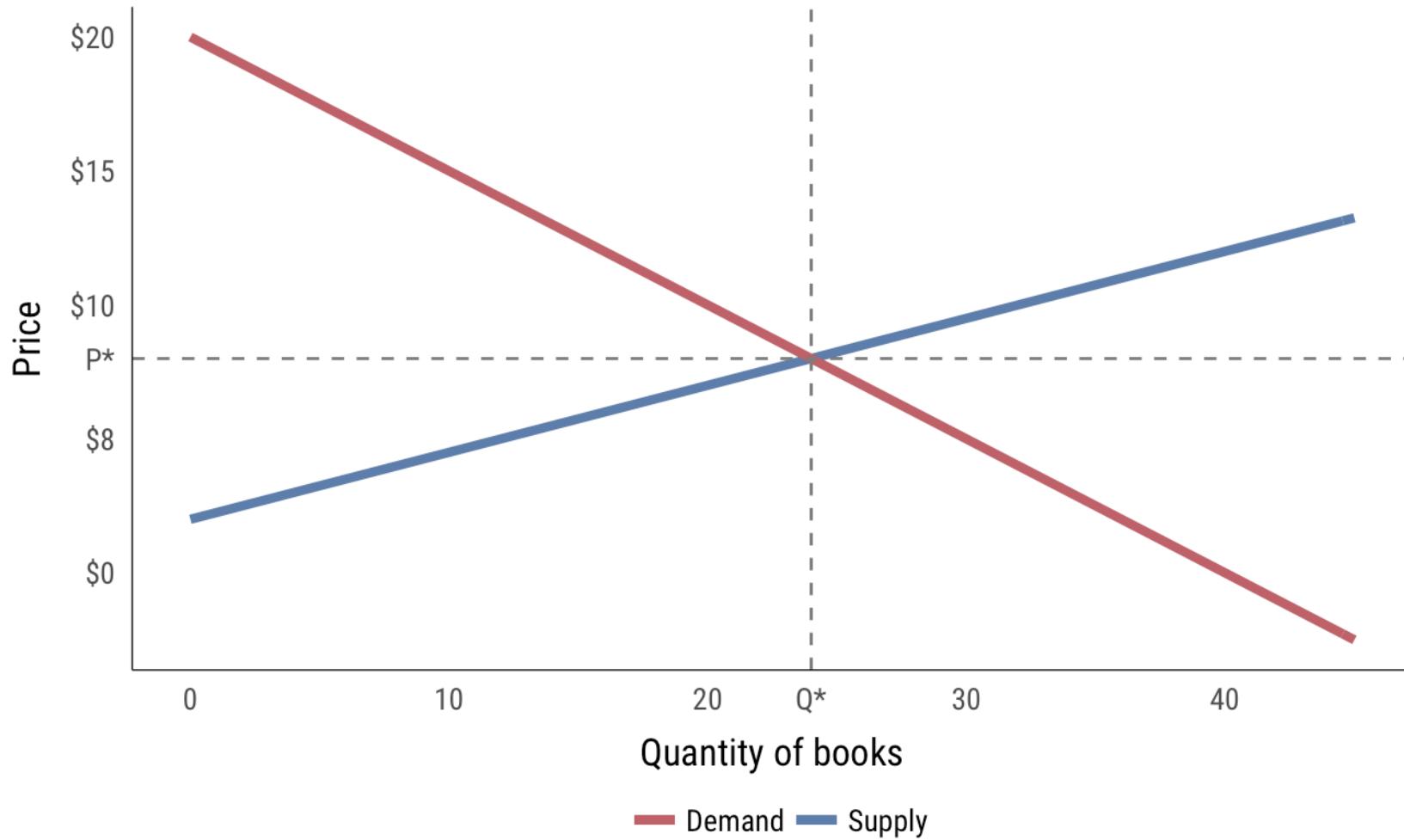




Demand: $P = -0.5Q + 20$

Supply: $P = 0.25Q + 2$

P = Y
Q = X



Supply and demand

Demand and
willingness to pay (WTP)

Willingness to pay (WTP)

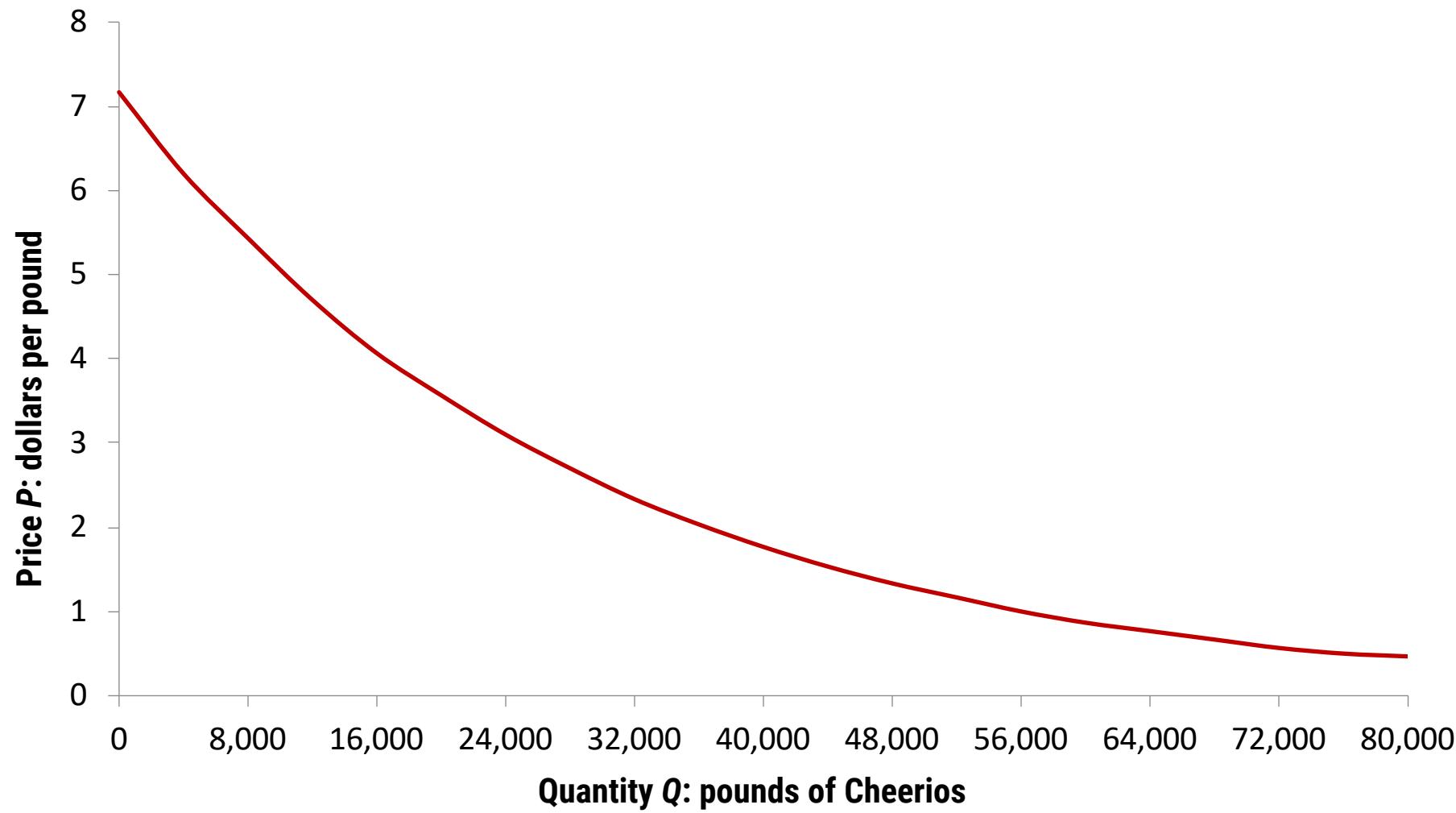
How much you value
(and would pay)
for something

Reflects aggregate preferences

Finding WTP

“Would you be willing
to spend \$X for Y?”

Count all the people
who are willing to pay
at each price



Willingness Toupee

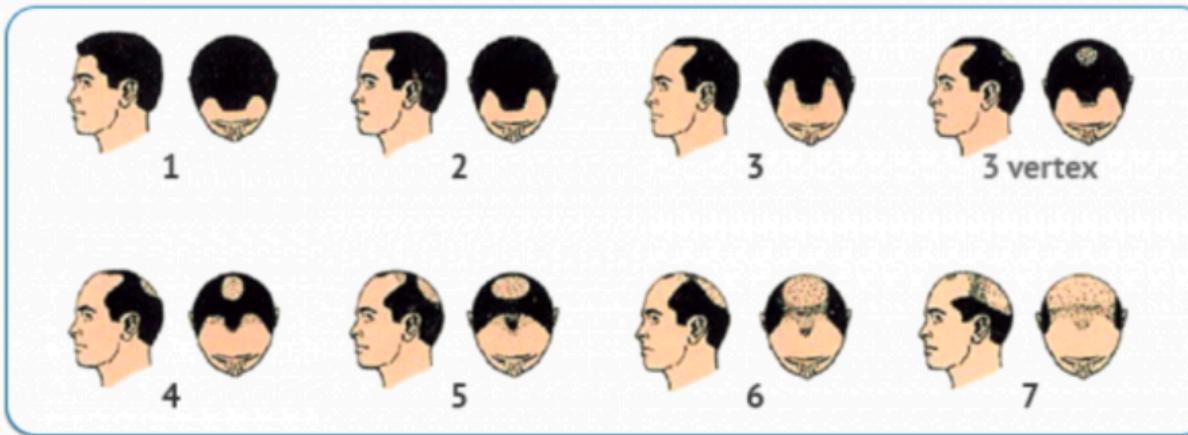
David M. McEvoy, O. Ashton Morgan and John C. Whitehead¹

Department of Economics
Appalachian State University
Boone, NC 28608

Abstract: In this paper we tackle the hairy problem of male pattern baldness. We survey balding men and elicit their willingness to pay to move from their current sad situation to a more plentiful one. Then we comb-over the results. What's the average willingness to pay to move from a glistening cue ball to a luscious mane? About \$30,000.

Keywords: mullet, skillet, comb-over, ducktail, Beatlemania, buzz cut, whiffle, pageboy, attribute non-attendance

You identified your current baldness as a Level 7 on the Norwood Scale. Suppose now that it is possible to improve your hair coverage to a Level 4.



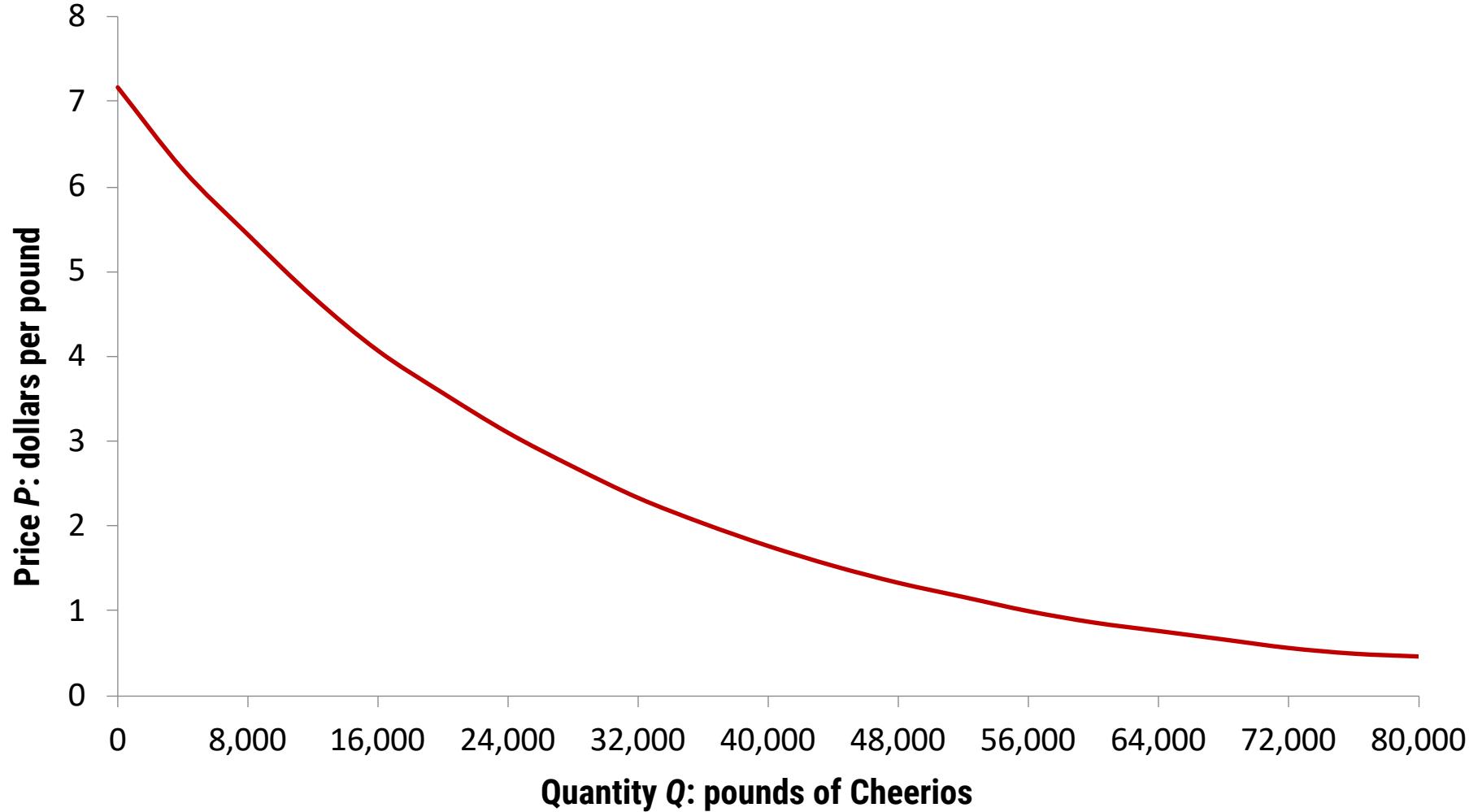
Would you be willing to pay a one-time fee of \$10,000 to improve your hair coverage to a Level 4?

Yes

No

I'll think about it

WTP = Demand



Supply and demand

Supply,
willingness to accept (WTA),
and costs

Different types of costs

Fixed costs

Stuff that costs money regardless of how many things you produce

Variable costs

Stuff that costs money for each thing you produce

Total cost

Fixed costs + variable costs

Average cost

Total cost / number of things you produce

Marginal cost

Cost to make one additional thing
(also slope or derivative of total cost)

Revenue vs. profits

Total revenue

Price × quantity

Marginal revenue

Revenue from selling one additional thing

Profit (π)

Total revenue – total cost

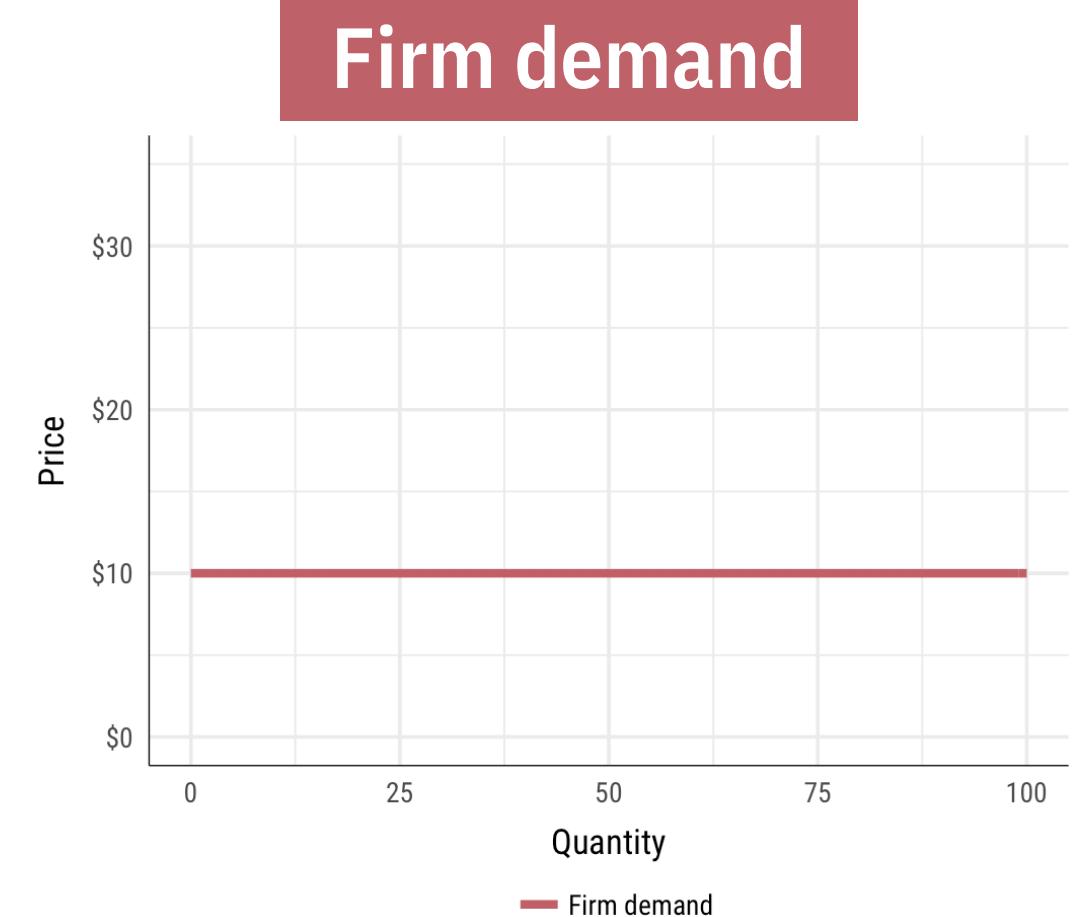
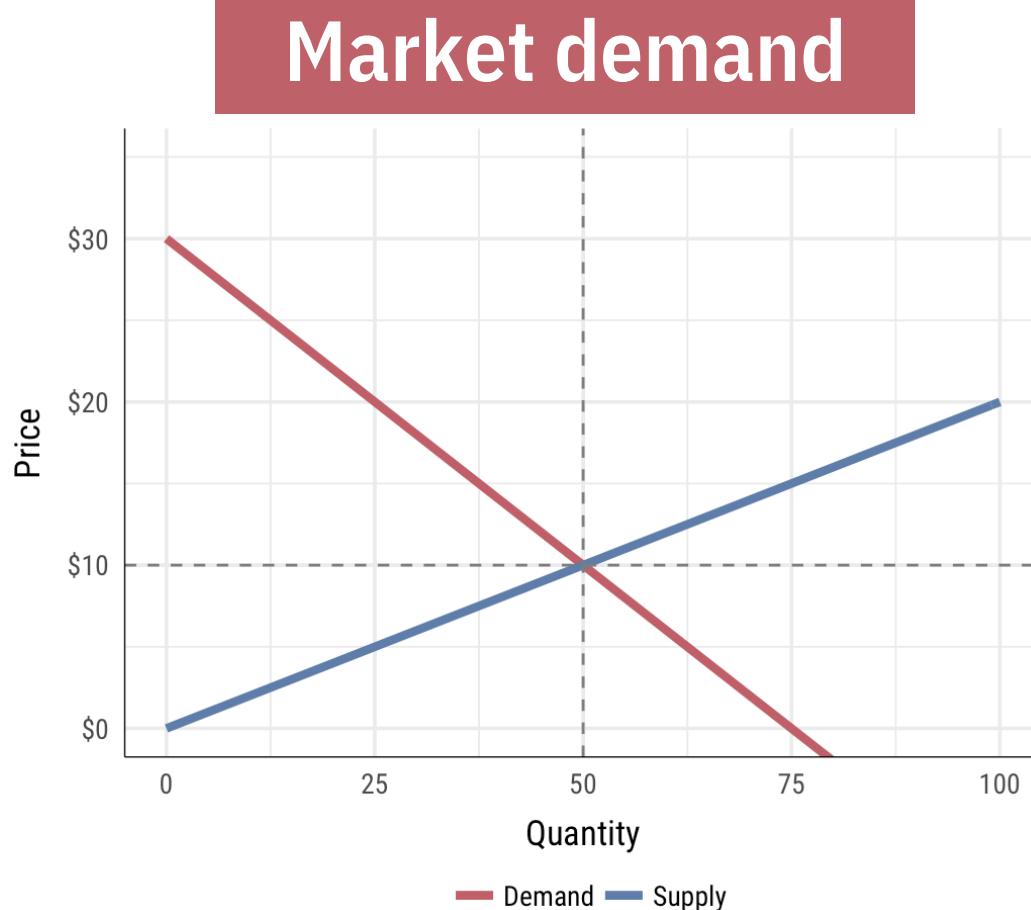
Max π : Find where $MR = MC$

Firms and markets

Market supply = all firms' MCs combined

Price comes from where supply
and demand meet in the world

Individual firms are price takers and can't change the price on their own!



Firms and markets

If the prevailing market price is lower than a firm's average variable costs (AVC), they'll shut down

Elasticities of demand

Elasticity and responsiveness

$$\varepsilon = -\frac{\% \text{ change in demand}}{\% \text{ change in price}} \quad \varepsilon = -\frac{\Delta Q}{\Delta P} \times \frac{P}{Q}$$

% change in demand that follows a 1% change in price

$Q \uparrow P \downarrow$
or
 $Q \downarrow P \uparrow$

$\epsilon = 2$: "If price increases by 10%, quantity decreases by 20%"

$\epsilon = 0.5$: "If price increases by 10%, quantity decreases by 5%"

$\epsilon = \infty$ = Perfectly elastic

Any change in price moves quantity to 0

Identical goods
Two vending machines

$\epsilon > 1$ = Elastic

Changes in price change the quantity a lot

Goods with substitutes
Diet Coke

$\epsilon = 1$ = Unit elastic

Changes in price change the quantity the same

$\epsilon < 1$ = Inelastic

Changes in price change the quantity a little

Goods with few substitutes
AIDS medicine

$\epsilon = 0$ = Perfectly inelastic

Changes in price do nothing to the quantity

Survival goods
Water in the desert

Why do elasticities matter in policy?

Taxing things changes their prices

Changing prices changes quantities

Taxing elastic goods will make quantities go down a lot and decrease tax revenues

Taxing inelastic goods will make quantities go down slightly and not hurt revenues



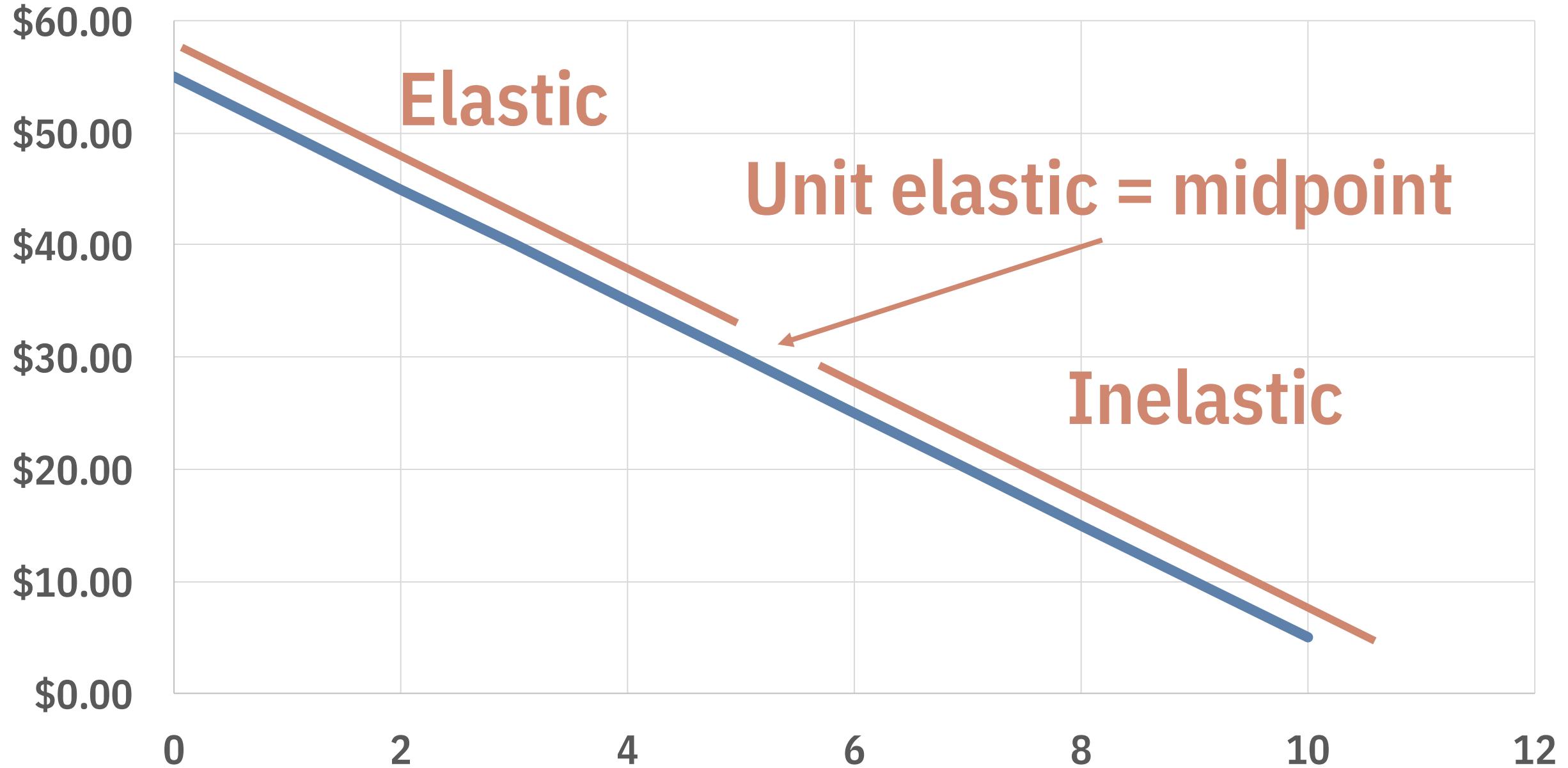
Warning!

Elasticities are not the same
as the demand curve

They're not even slopes or
anything calculus-y!

A linear demand curve
has lots of elasticities!

Demand



Scale, location,
networks and time

Size and location

Economies of scale

Cost to make stuff goes down as you make more stuff

Economies of agglomeration

Cost to make stuff goes down as you clump together

Network effects

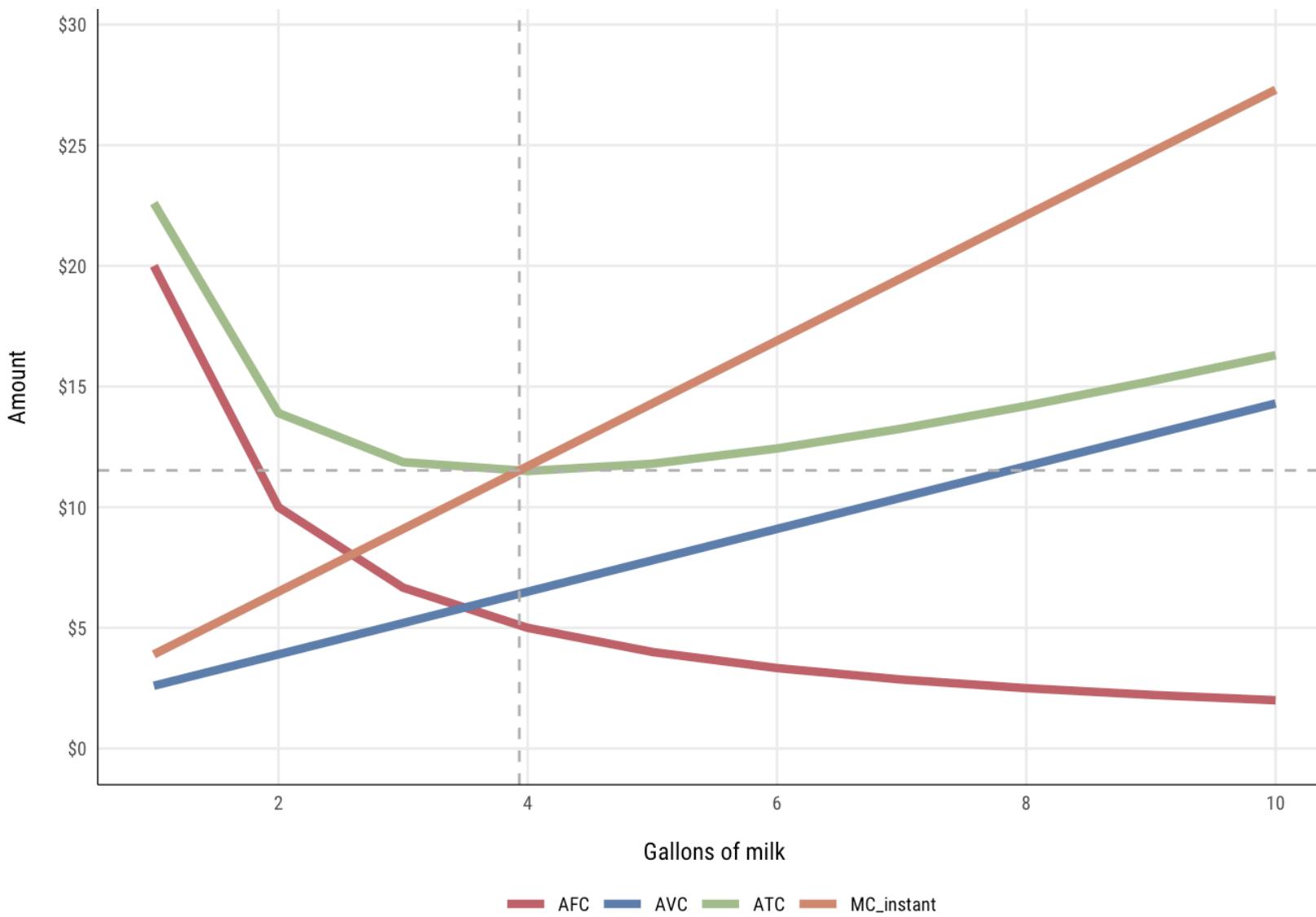
Cost to make stuff goes down when everyone uses your stuff

Economies of scale

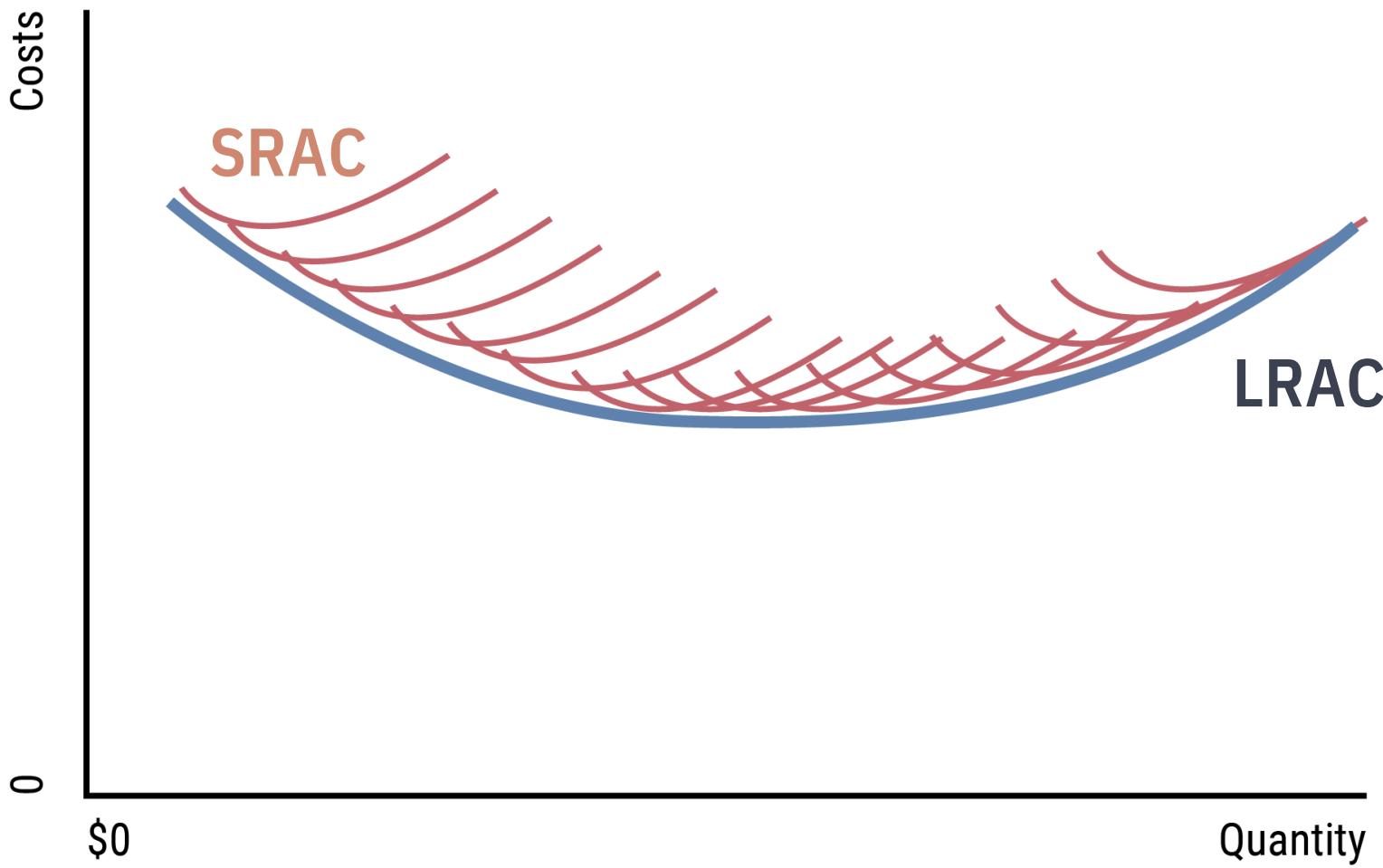
If you double the inputs,
you get more than double
the outputs

If you {{increase}} the inputs, you get more
than {{that increase in}} the outputs

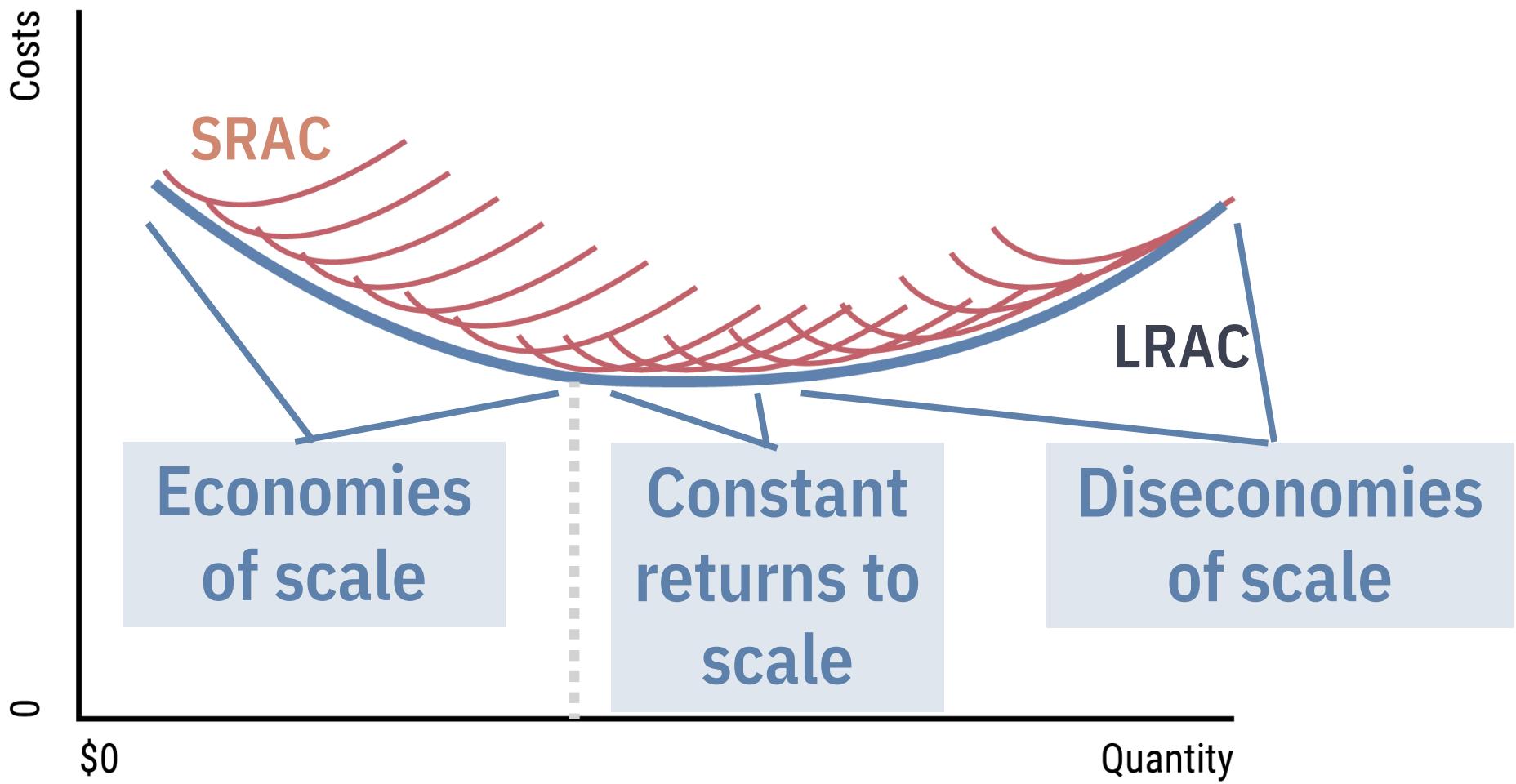
Average costs and scale



Time and scale



Time and scale



Scale, location, network, or nothing?

eBay and PayPal

Doubling a recipe

QWERTY and
Dvorak keyboards

Walmart's distribution network

Costco

Henry Ford's assembly line

Rural Chinese moving to cities

Surplus, taxes, incidence, and deadweight loss

Consumer surplus

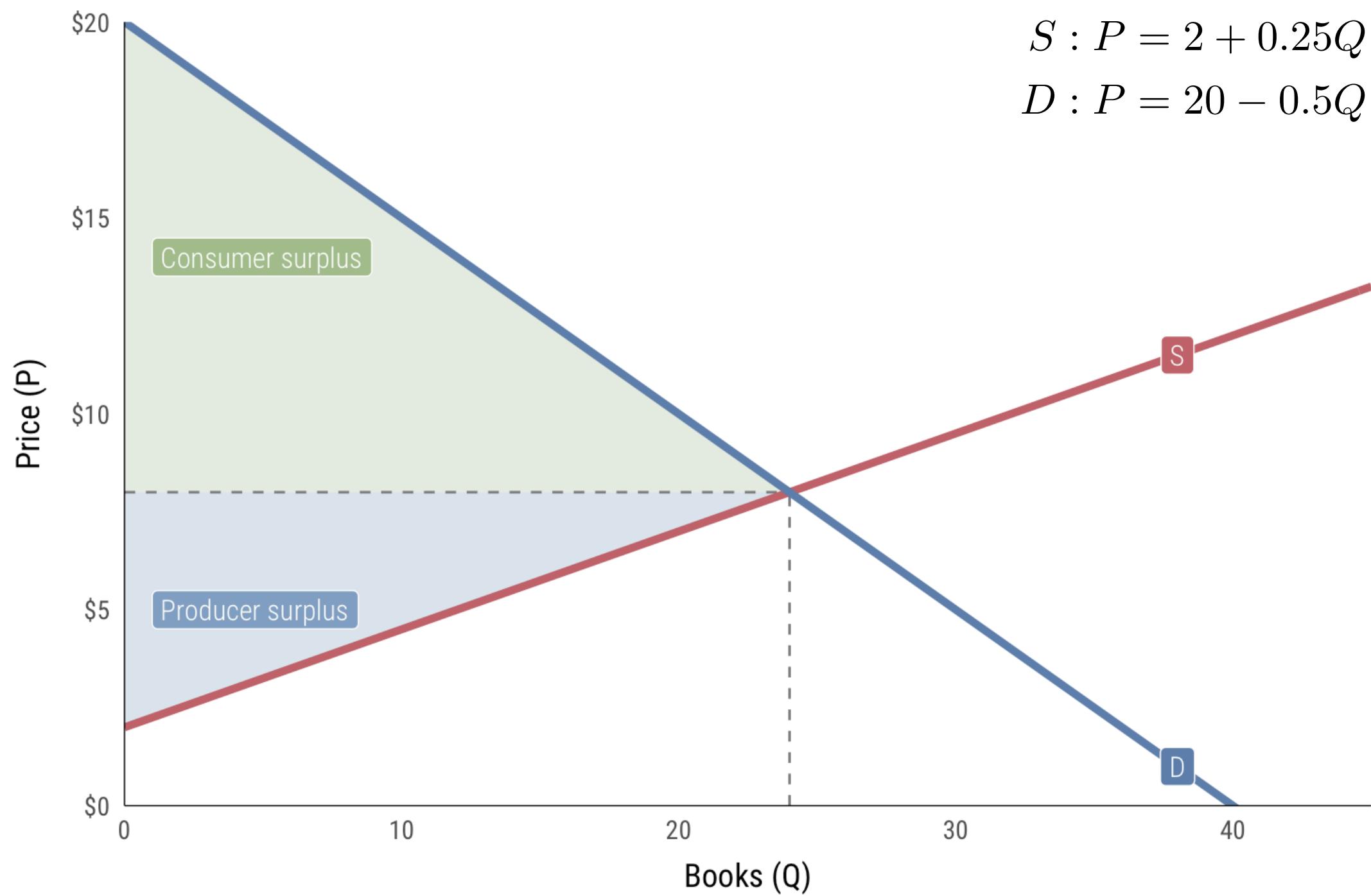
Difference between WTP and price

How good of a deal consumer gets

Producer surplus

Difference between price and WTA

How good of a deal producer gets



Why do governments tax?

Raise revenue for services

Redistribute resources

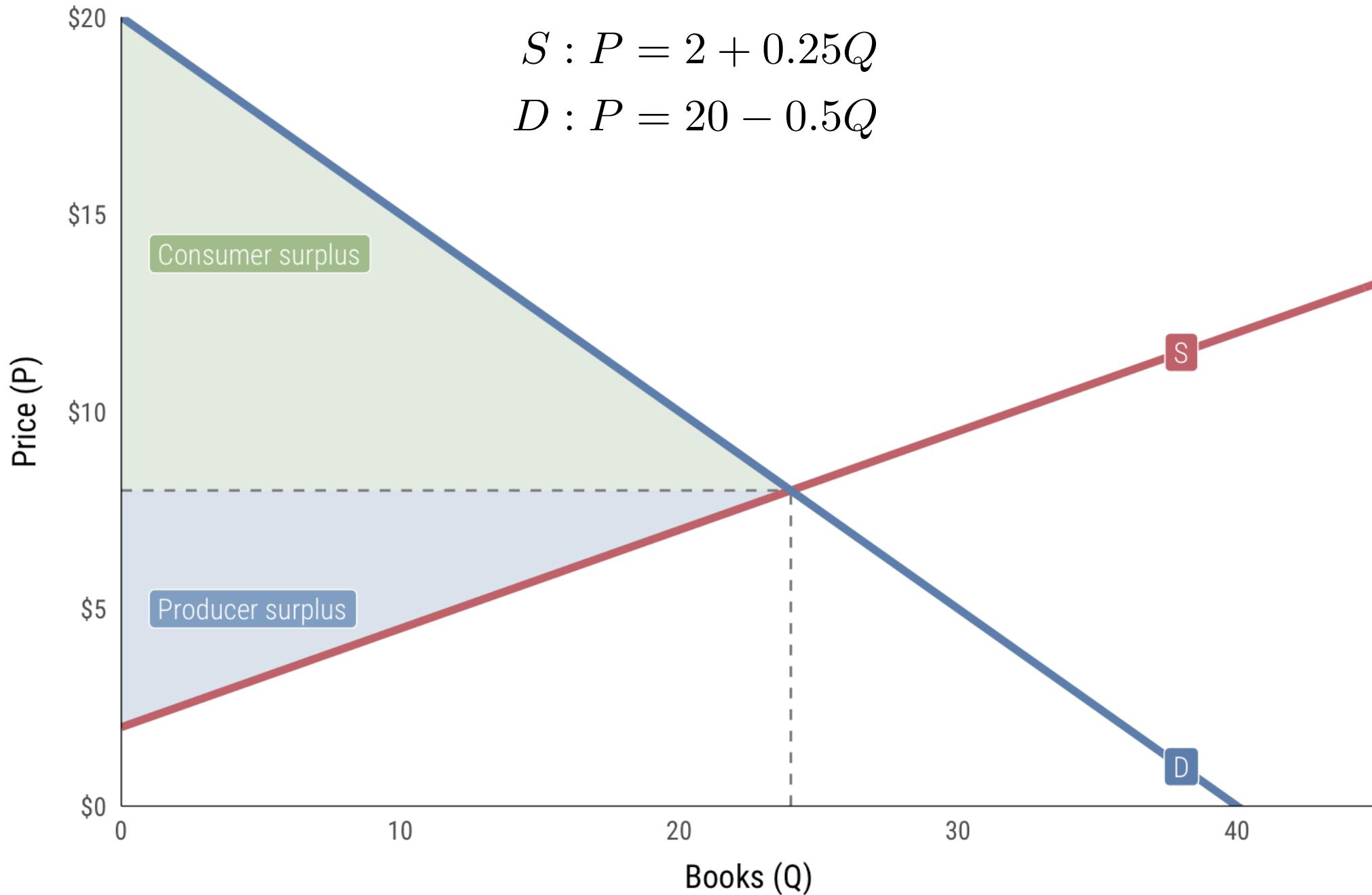
Encourage or
discourage consumption

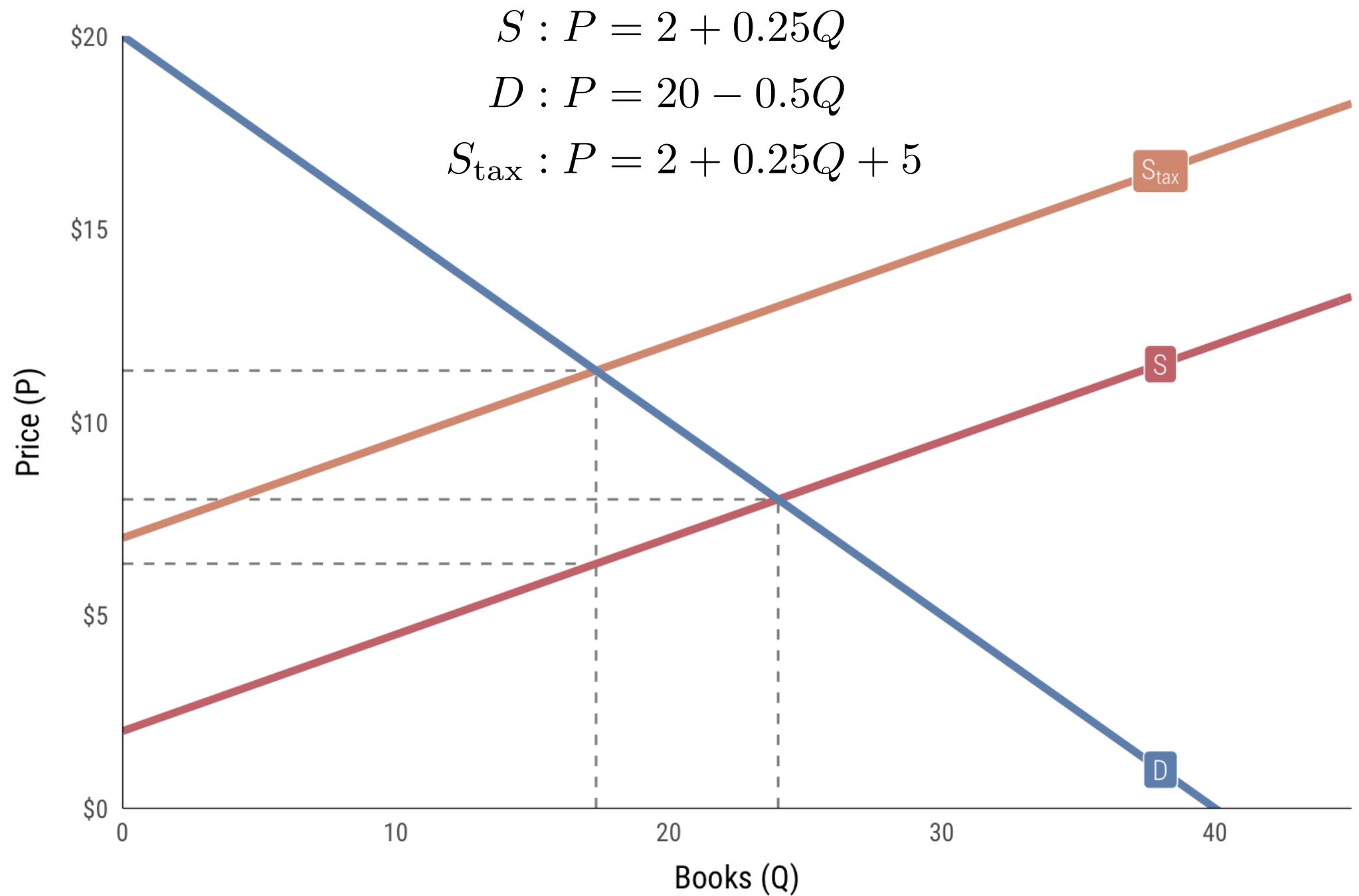
What happens when governments tax?

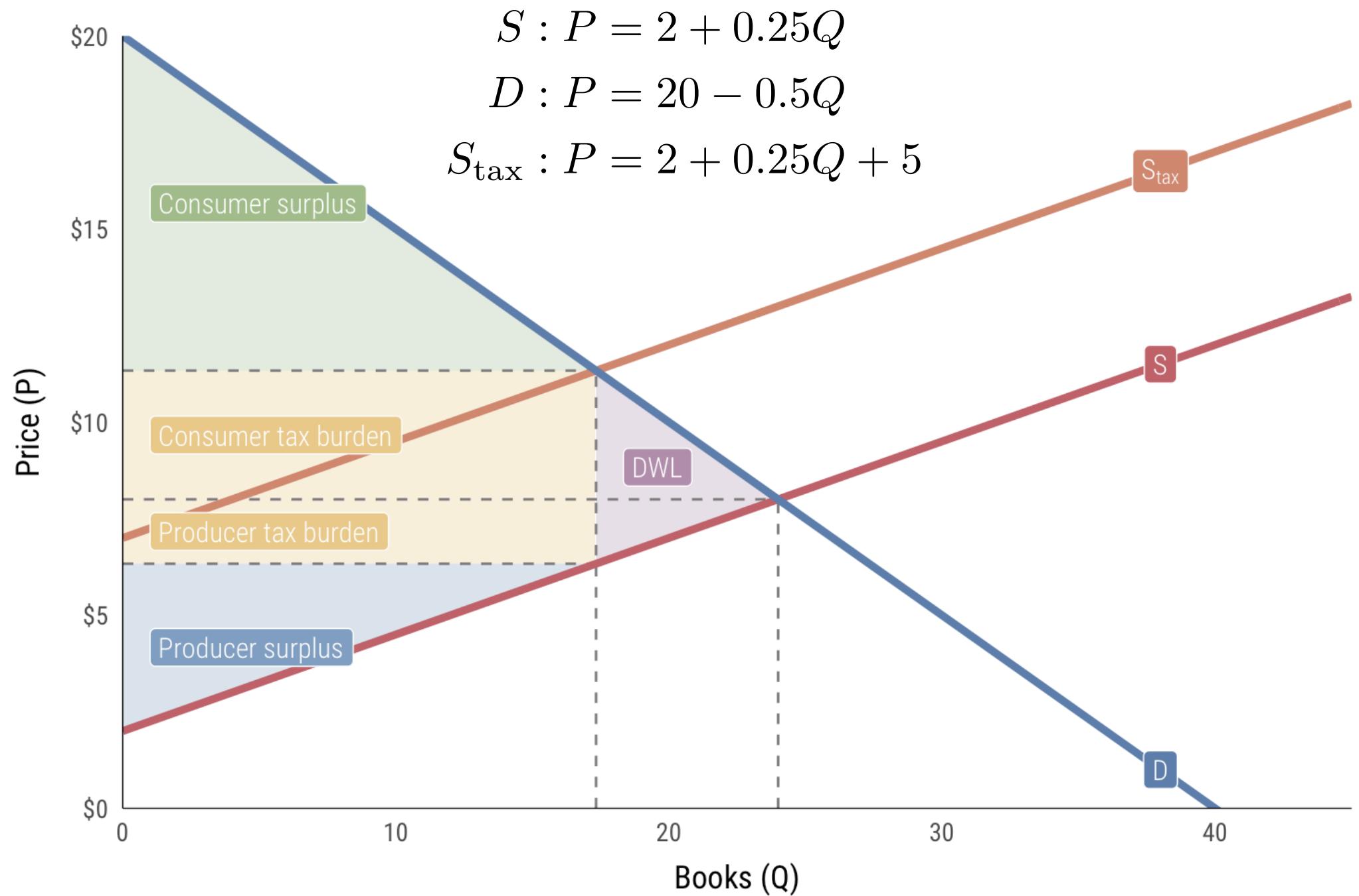
Revenue raised for public goods

Resources redistributed

Markets distorted;
loss of efficiency







Tax incidence and ϵ

Incidence depends on elasticity
of supply or demand

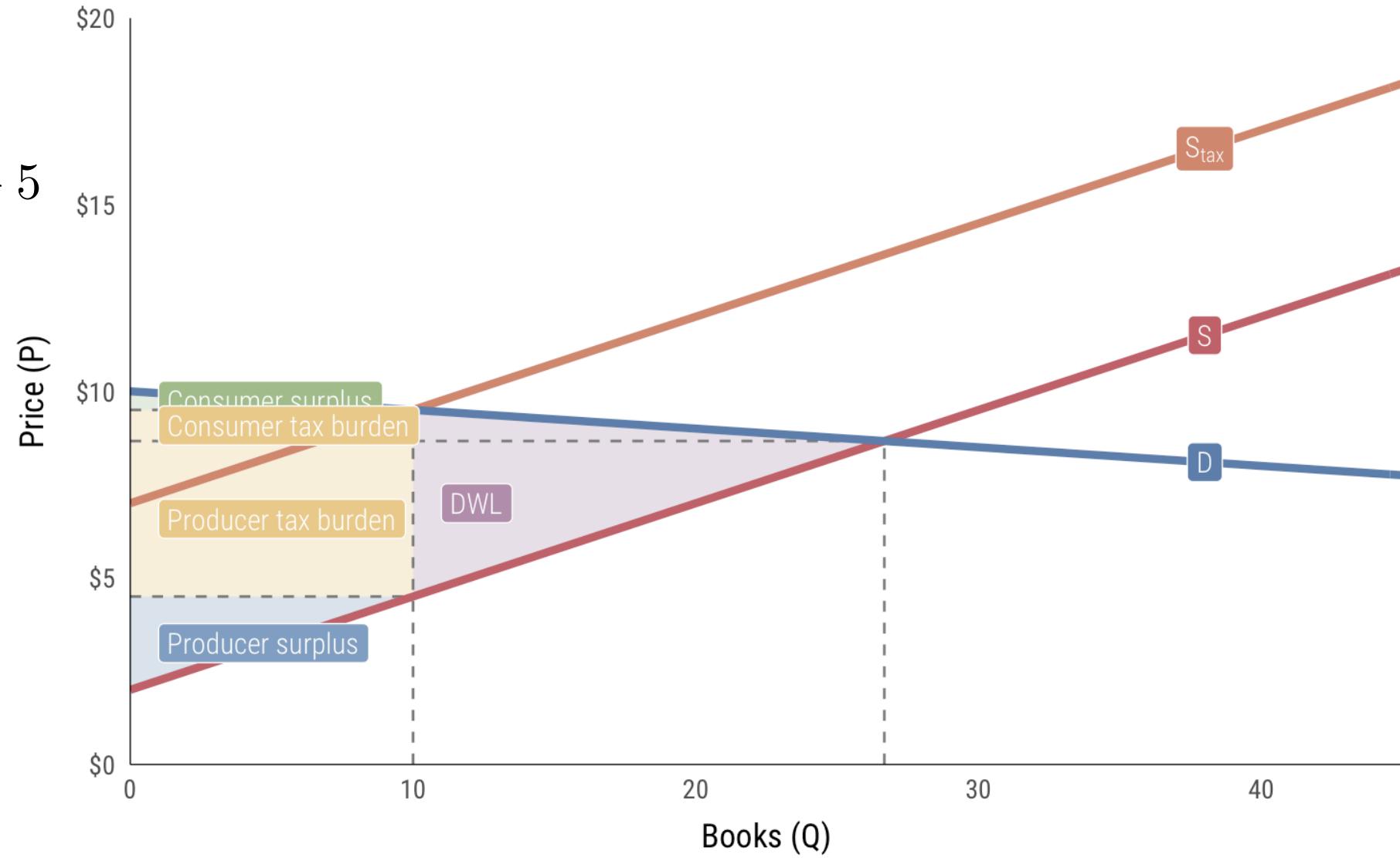
Tax burden falls on those
least able to escape it

$$S_1 : P = 2 + 0.25Q$$

$$D_1 : P = 10 - 0.05Q$$

$$S_{1 \text{ tax}} : P = 2 + 0.25Q + 5$$

1: Elastic demand

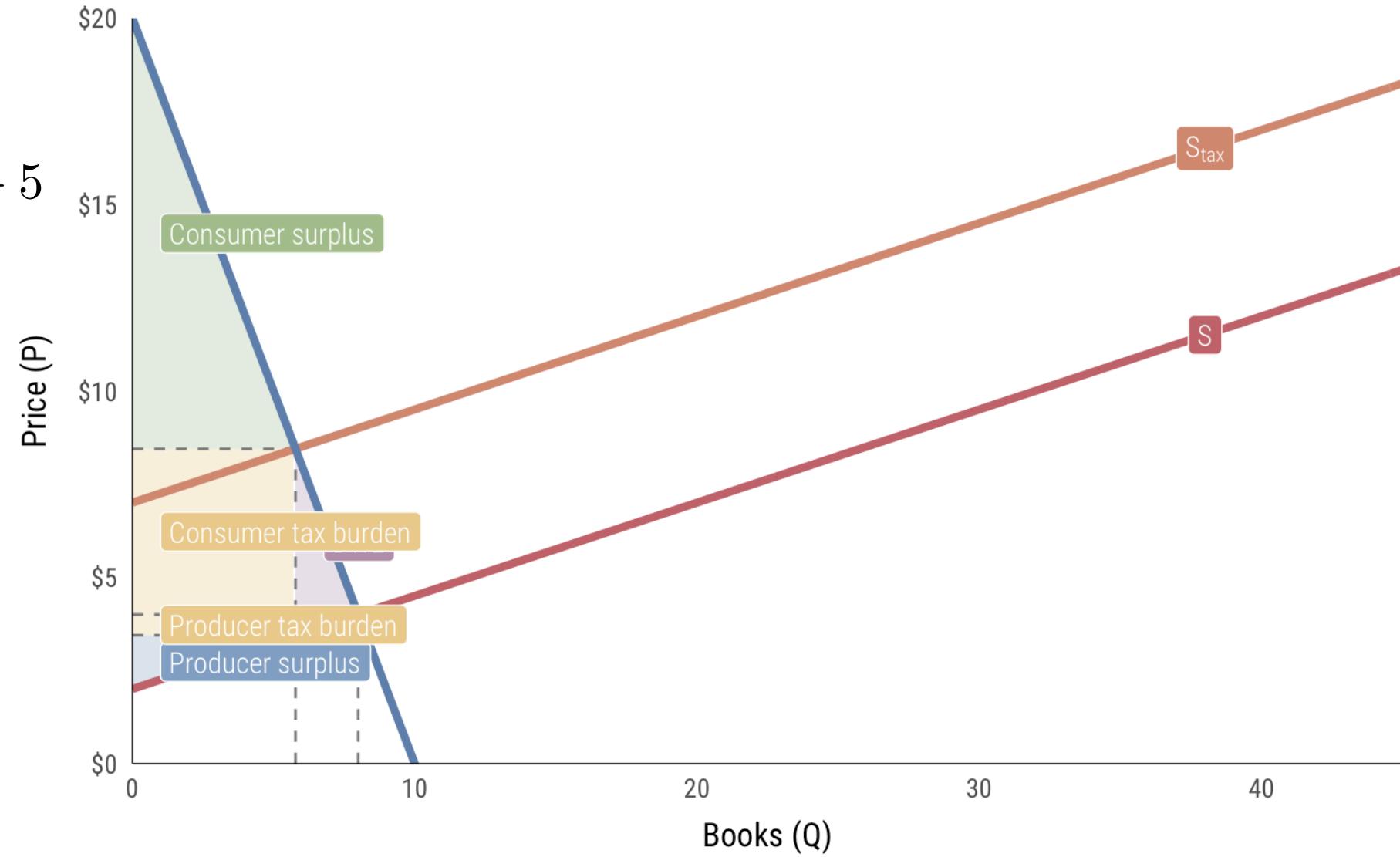


$$S_2 : P = 2 + 0.25Q$$

$$D_2 : P = 20 - 2Q$$

$$S_{2 \text{ tax}} : P = 2 + 0.25Q + 5$$

2: Inelastic demand

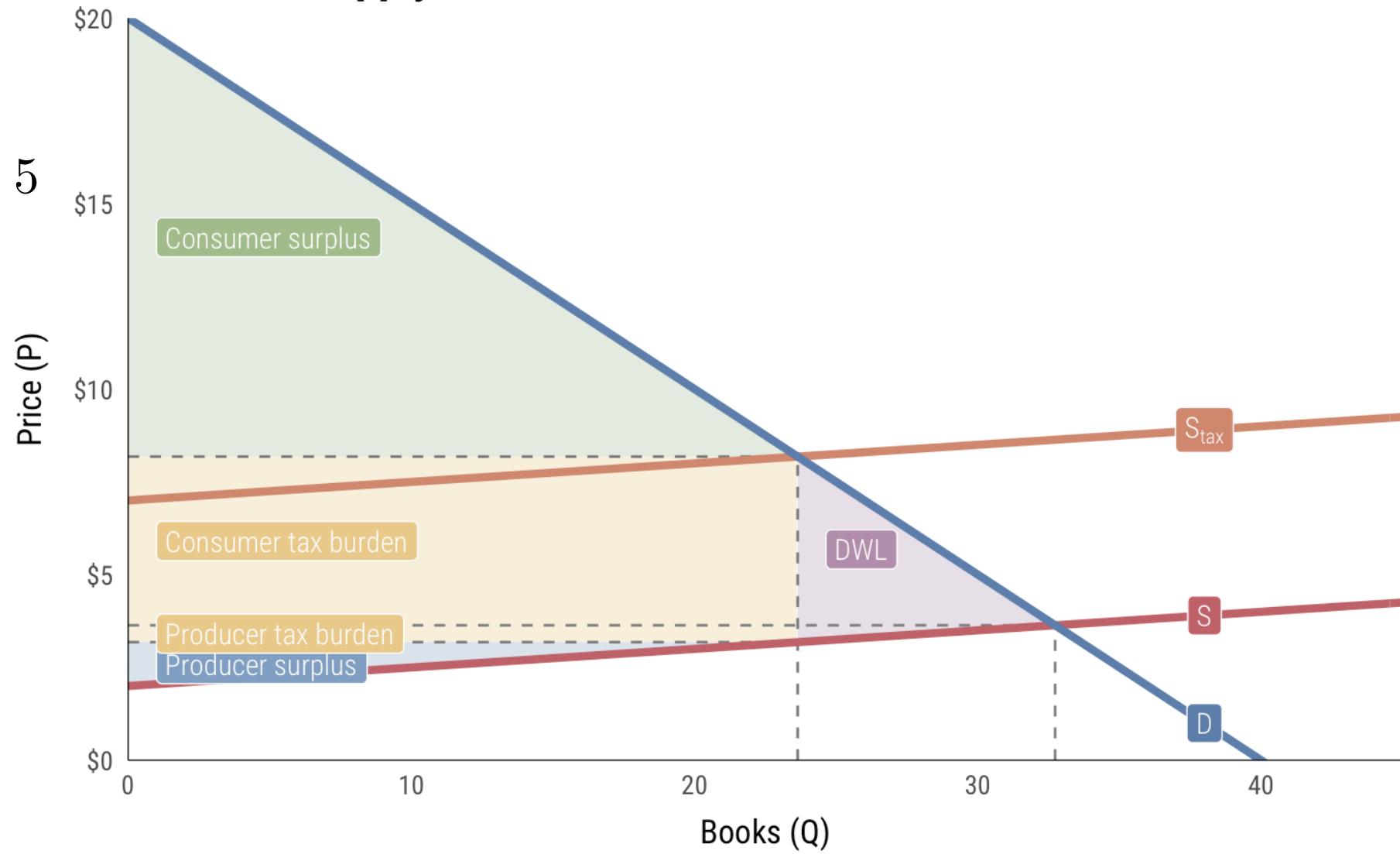


$$S_3 : P = 2 + 0.05Q$$

$$D_3 : P = 20 - 0.5Q$$

$$S_{3 \text{ tax}} : P = 2 + 0.05Q + 5$$

3: Elastic supply

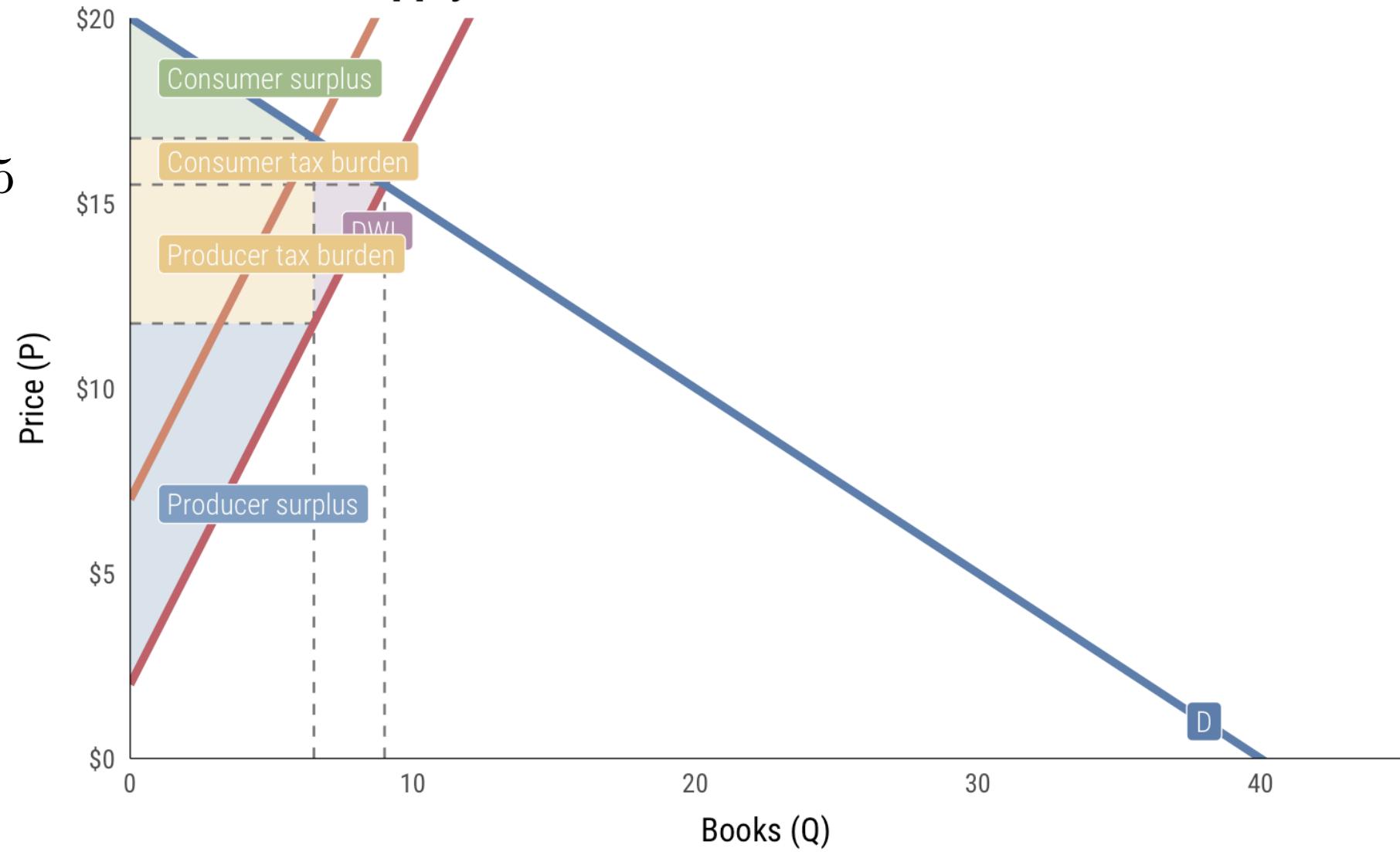


$$S_4 : P = 2 + 1.5Q$$

$$D_4 : P = 20 - 0.5Q$$

$$S_{4 \text{ tax}} : P = 2 + 1.5Q + 5$$

4: Inelastic supply



Incidence for consumers

Progressive taxes

Rich pay more

Income taxes (but loopholes)

Regressive taxes

Poor pay more

Sales taxes, payroll taxes

Tax fairness

Benefits principle

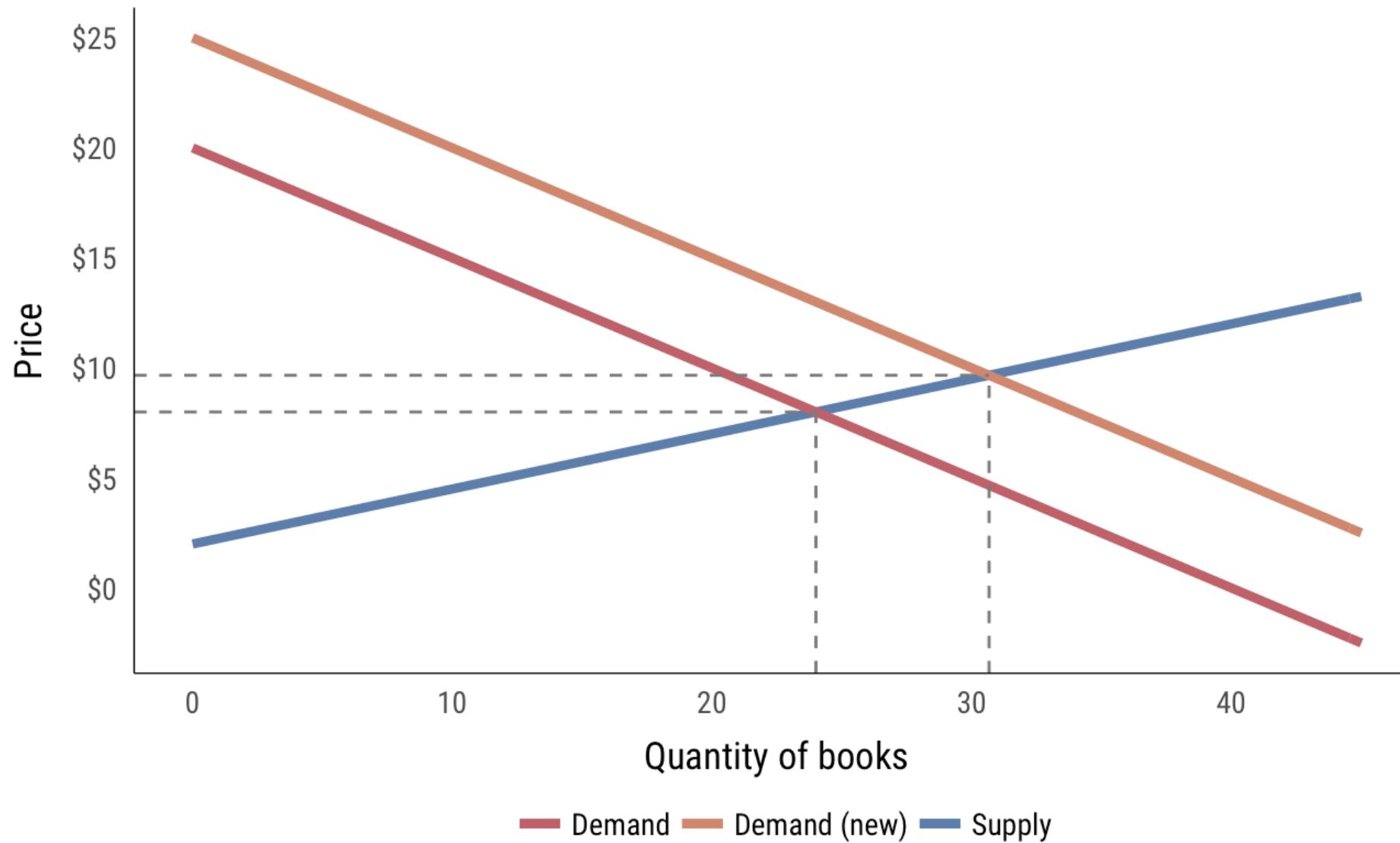
Those who benefit from public spending
should bear the burden of the tax

Ability-to-pay principle

Those with a greater ability to
pay a tax should pay more tax

Changes in supply and demand

Change in demand



Change in demand

Demand higher at every possible point

Structural change

Price increases; quantity increases
(or decreases/decreases)

Supply remains the same

People start preferring hamburgers over pizza

Change in quantity demanded

Prices and quantity change...

...but not because of structural issues

Movement along demand curve

Supply remains the same

Price of pizza changes

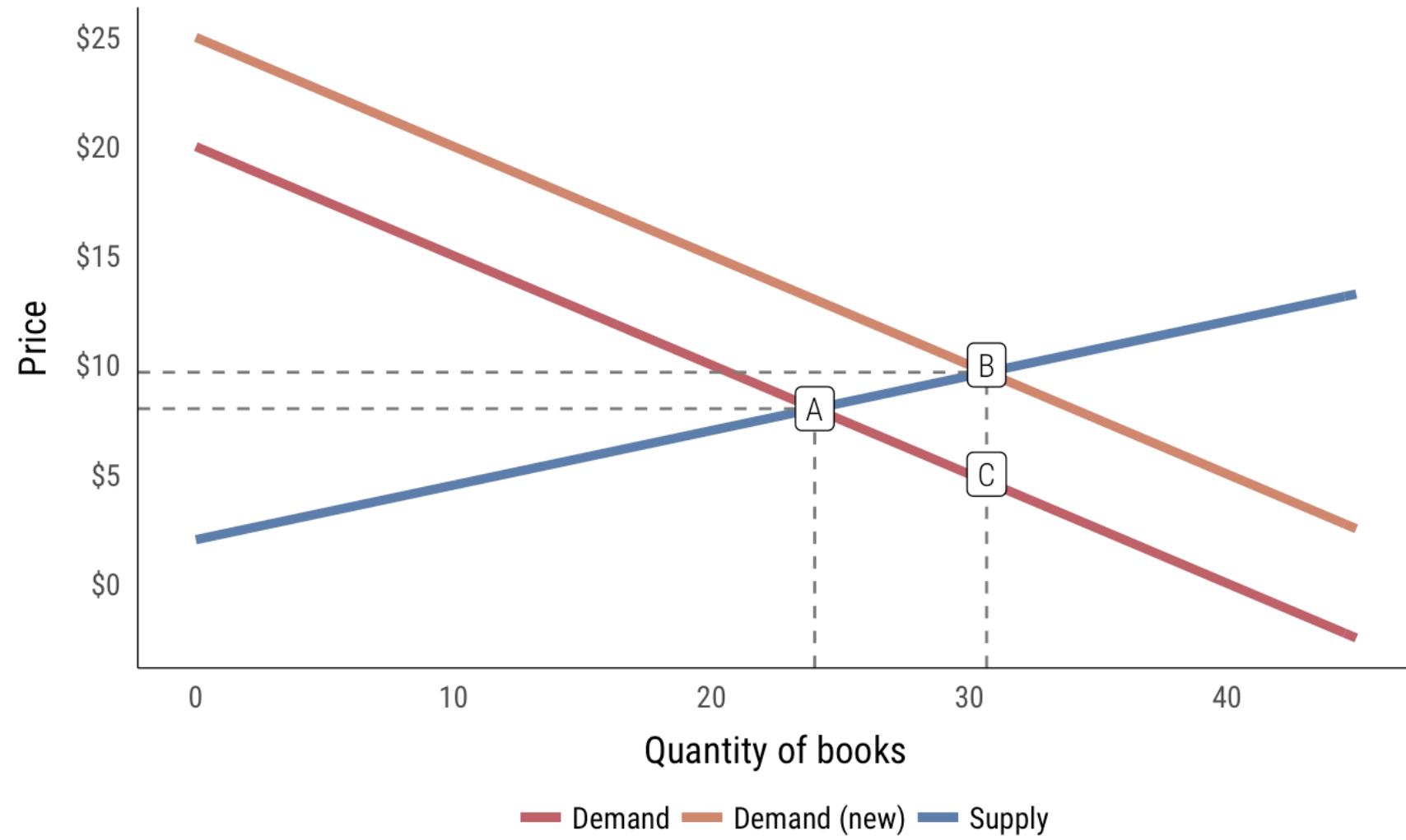
Two ways to get from 24 to 31ish

A → C

Change in quantity demanded
Only price changes

A → B

Change in demand
New demand curve



Causes of shifting demand

Change in price of complementary goods

Change in price of substitute goods

Change in population of buyers

Change in income

Change in preferences

Orange market

Dr. Oz promotes new fad diet where everyone eats 10 oranges a day

Car market

Consumer income rises

Car market

Gas prices double

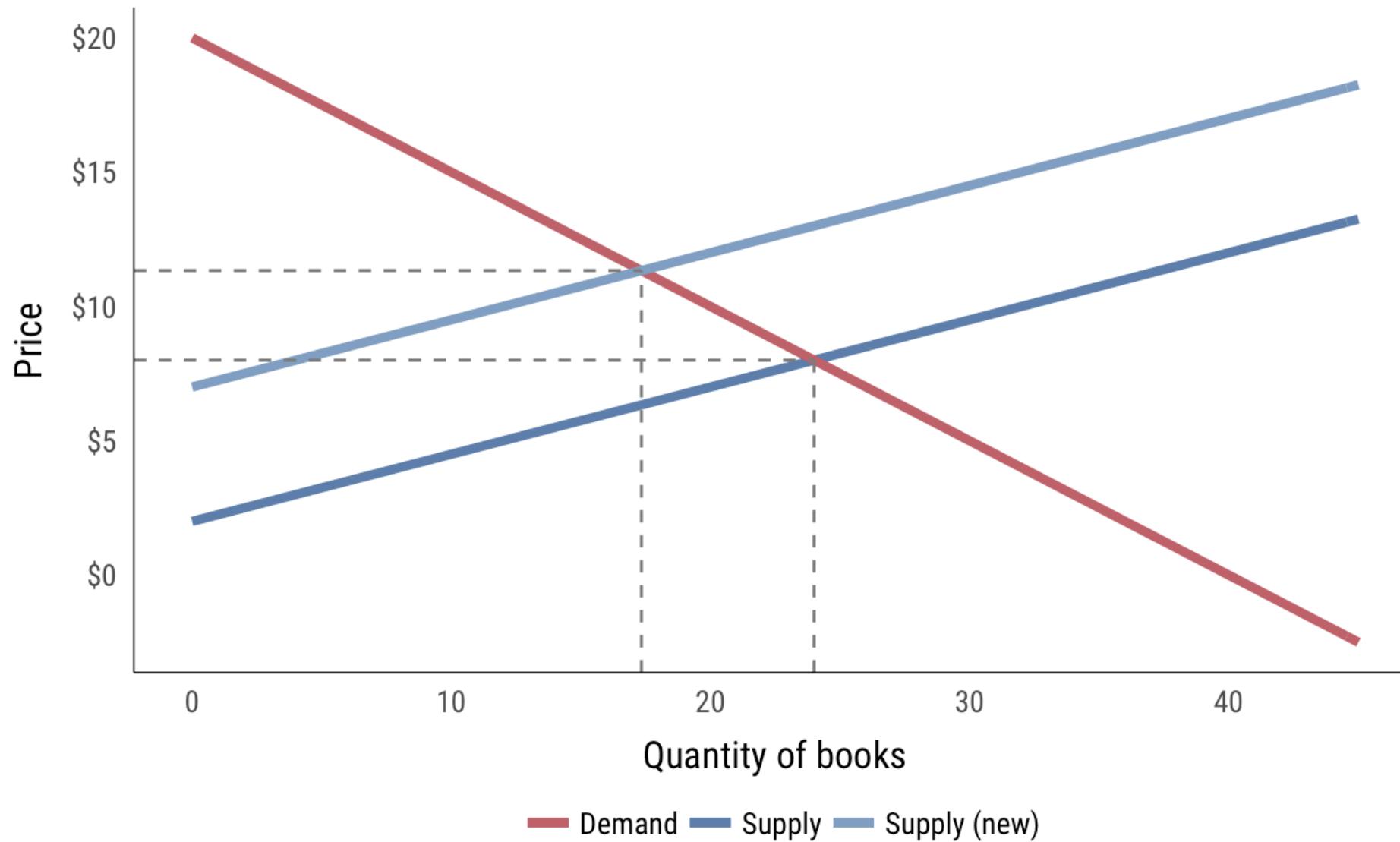
Shoe market

More manufacturers make shoes

Lettuce market

Price drops by 10 cents

Change in supply



Change in supply

Supply higher at every possible point

Structural change

Price increases; quantity increases
(or decreases/decreases)

Demand remains the same

Cost of production changes because of technology or input costs

Change in quantity supplied

Prices and quantity change...

...but not because of structural issues

Movement along supply curve

Demand remains the same

Price of product changes

Two ways to get from 24 to 17ish

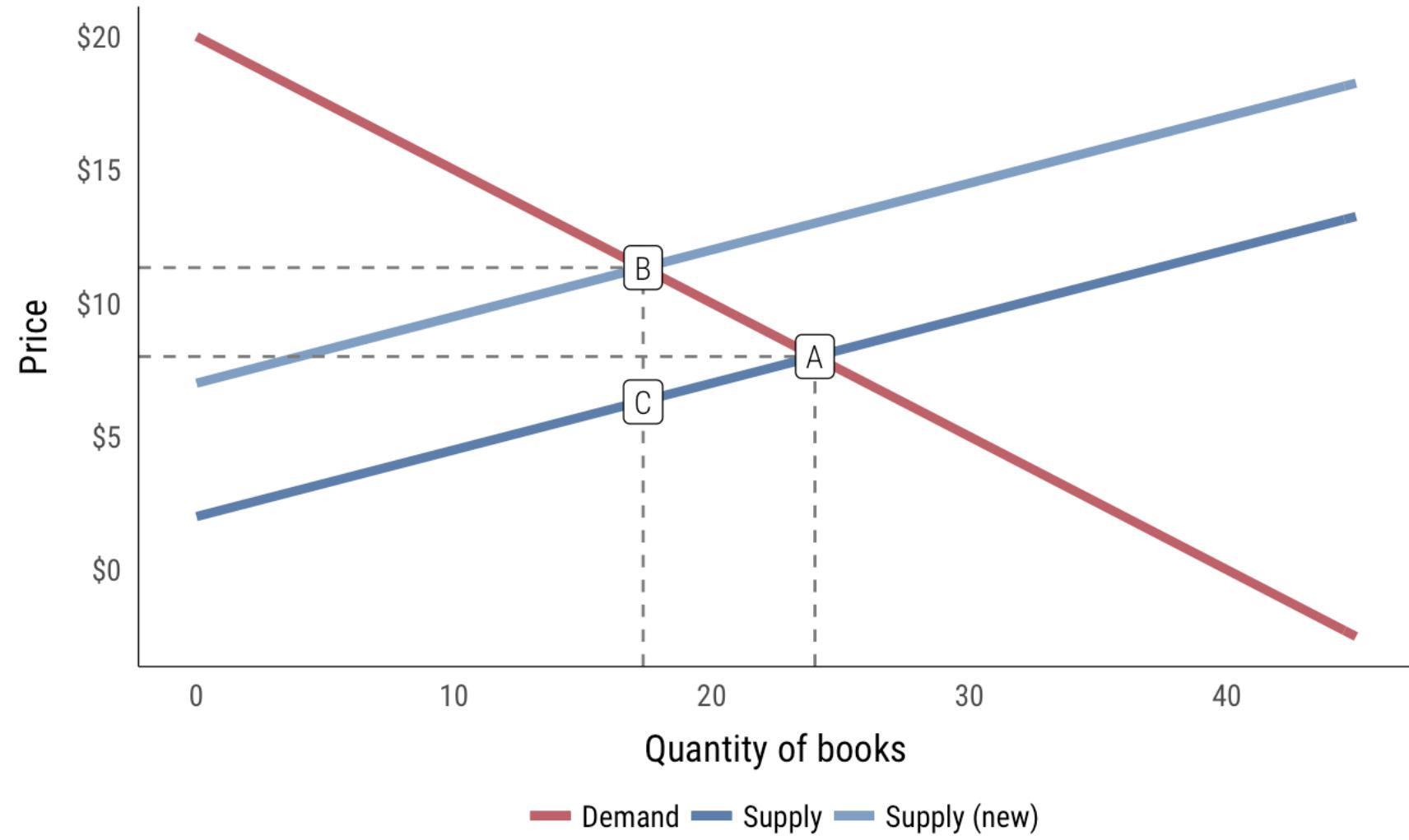
A → C

Change in quantity supplied

Only price changes

A → B

Change in supply
New supply curve



Causes of shifting supply

Change in cost of inputs

Change in cost of production

Change in weather

Change in number of suppliers

Expectation of lower prices

Car market

New engine design reduces production costs

Orange market

Freeze in Florida kills 50% of the crop

Shoe market

Price of shoes increases

Shoe market

Price of leather increases

Escaping the
price taking world

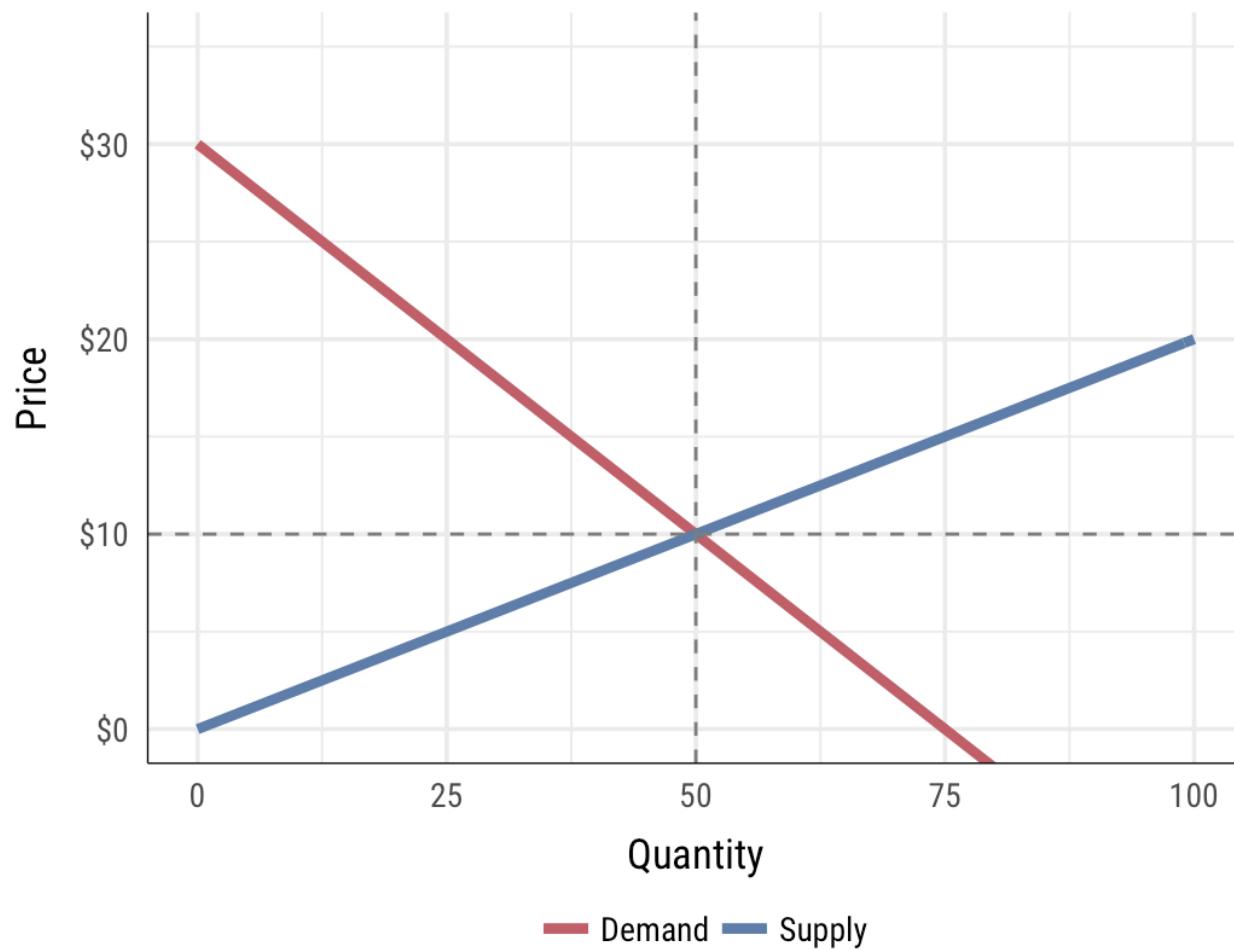
Optimal things

Max π : $MC = MR$

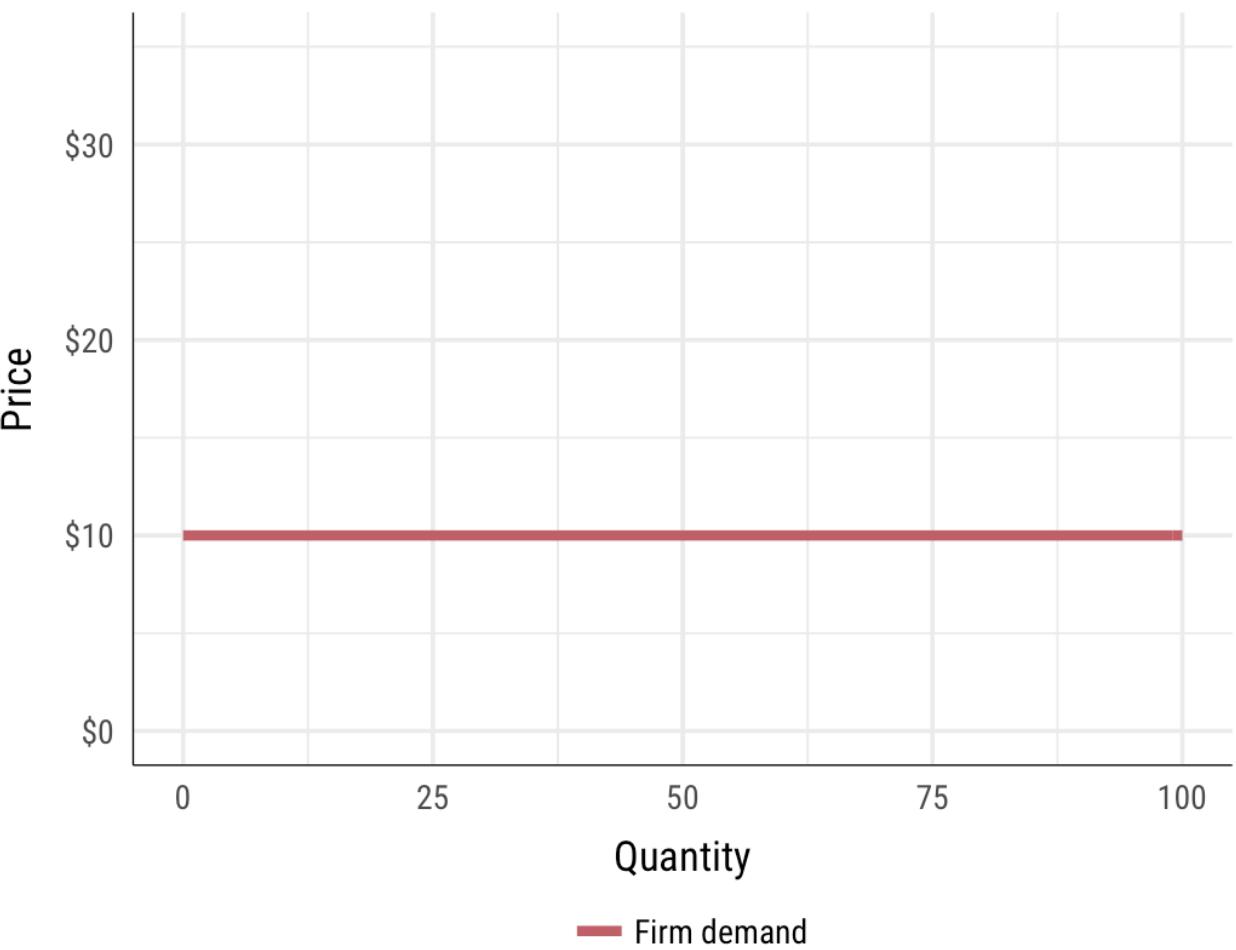
Best Q: Demand = MC

In perfect competition,
Demand = MC = MR = P

Market demand



Firm demand



Price taking

Firm decisions have no impact
on the price of a good

You're stuck with whatever the prevailing
market price is \pm some markup

But what if???

What if you could affect the price?

Would you want to?

Costs matter.

Set the price to *your* MC, maximize *your* profit.

Escape with market power!

Ability to influence
market prices

This is why people get MBAs;
move market away from perfect competition price

Ways to escape existing prices

Price discrimination

Monopolies

Switching costs

Branding and differentiation

Cost and input controls

Government regulation

Price discrimination

With perfect information, firms can set individualized demand curves for customers

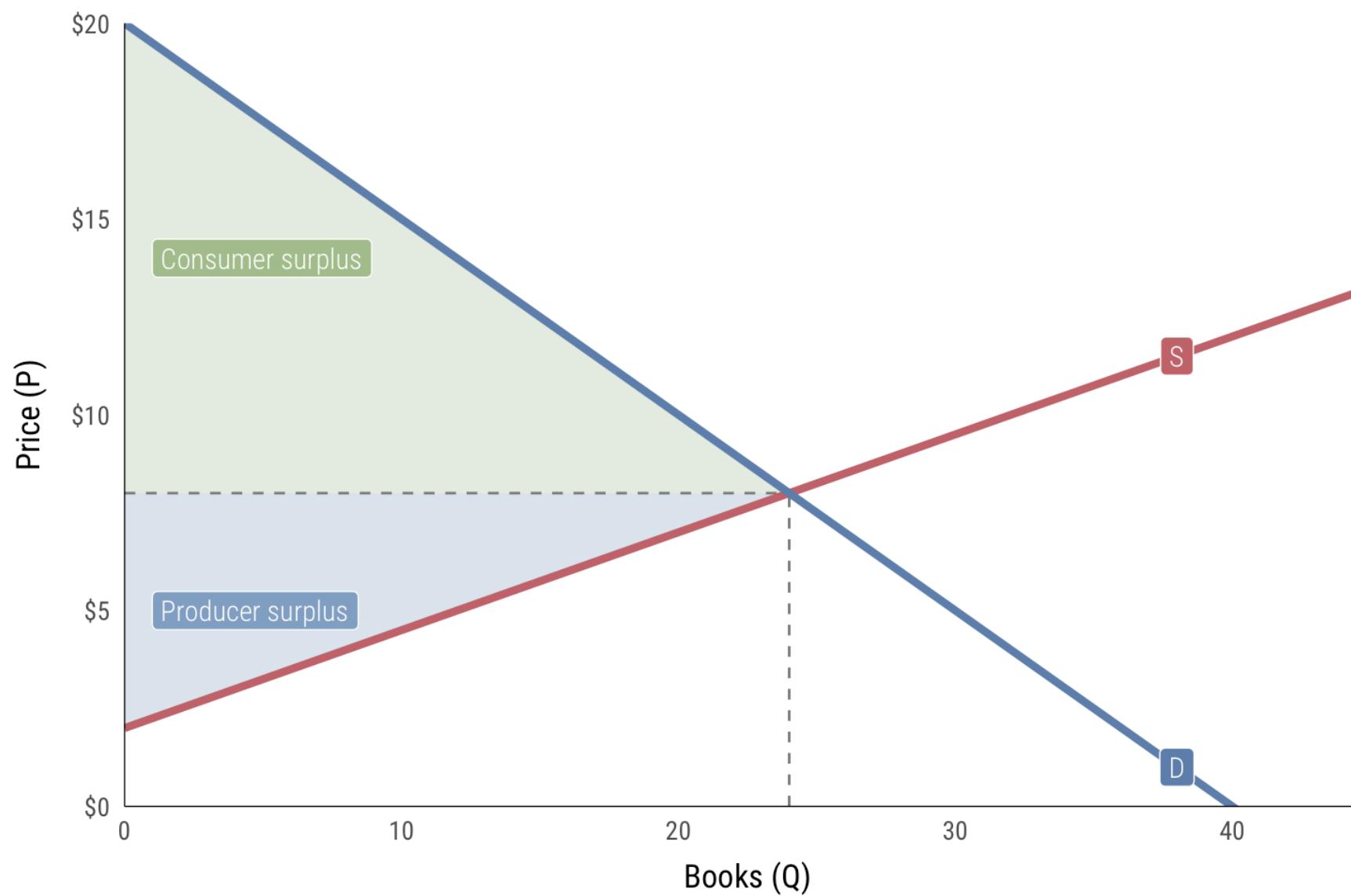
Price = WTP

Lyft/Uber

Airplane tickets

Amazon

Price discrimination

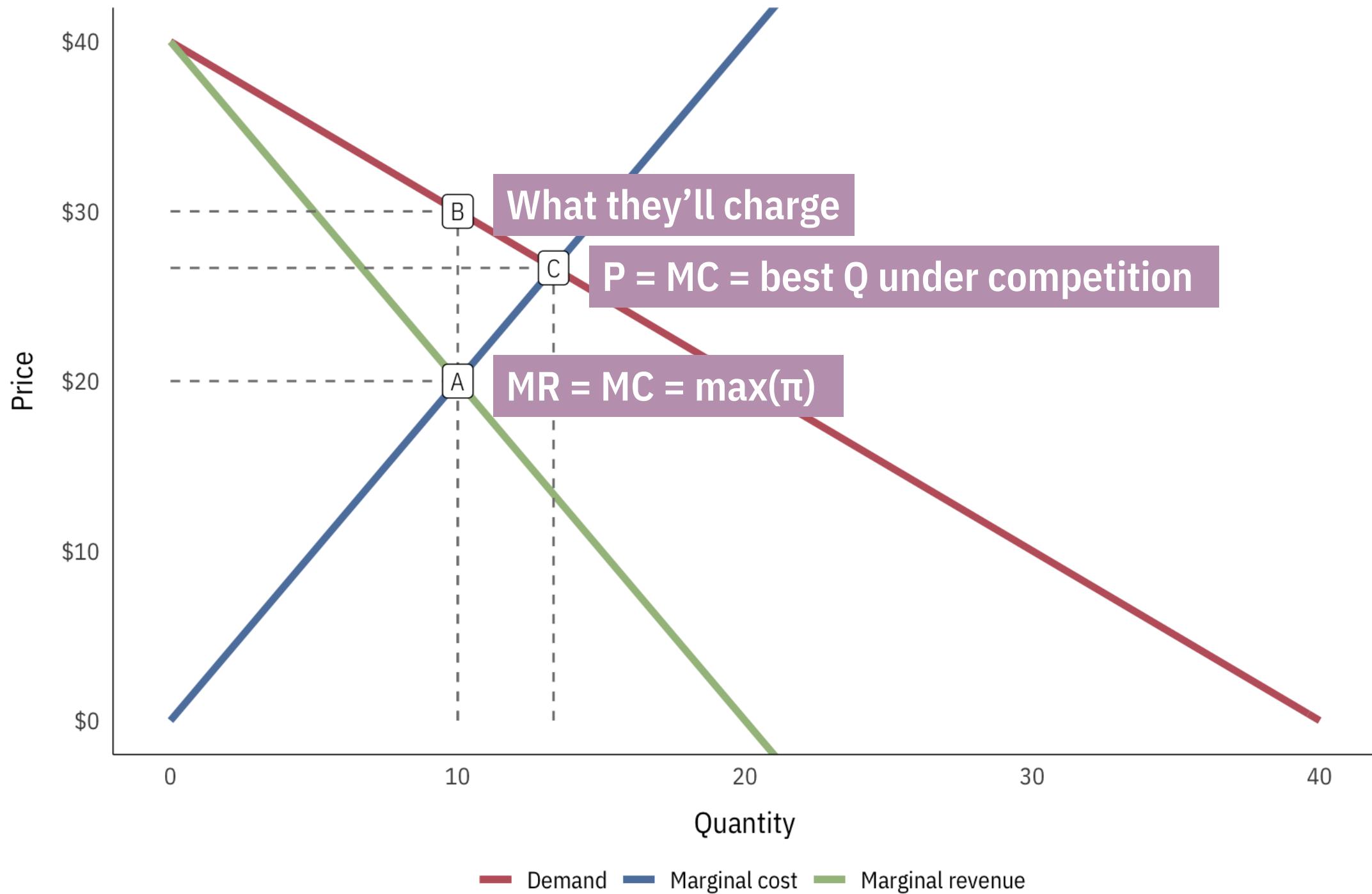


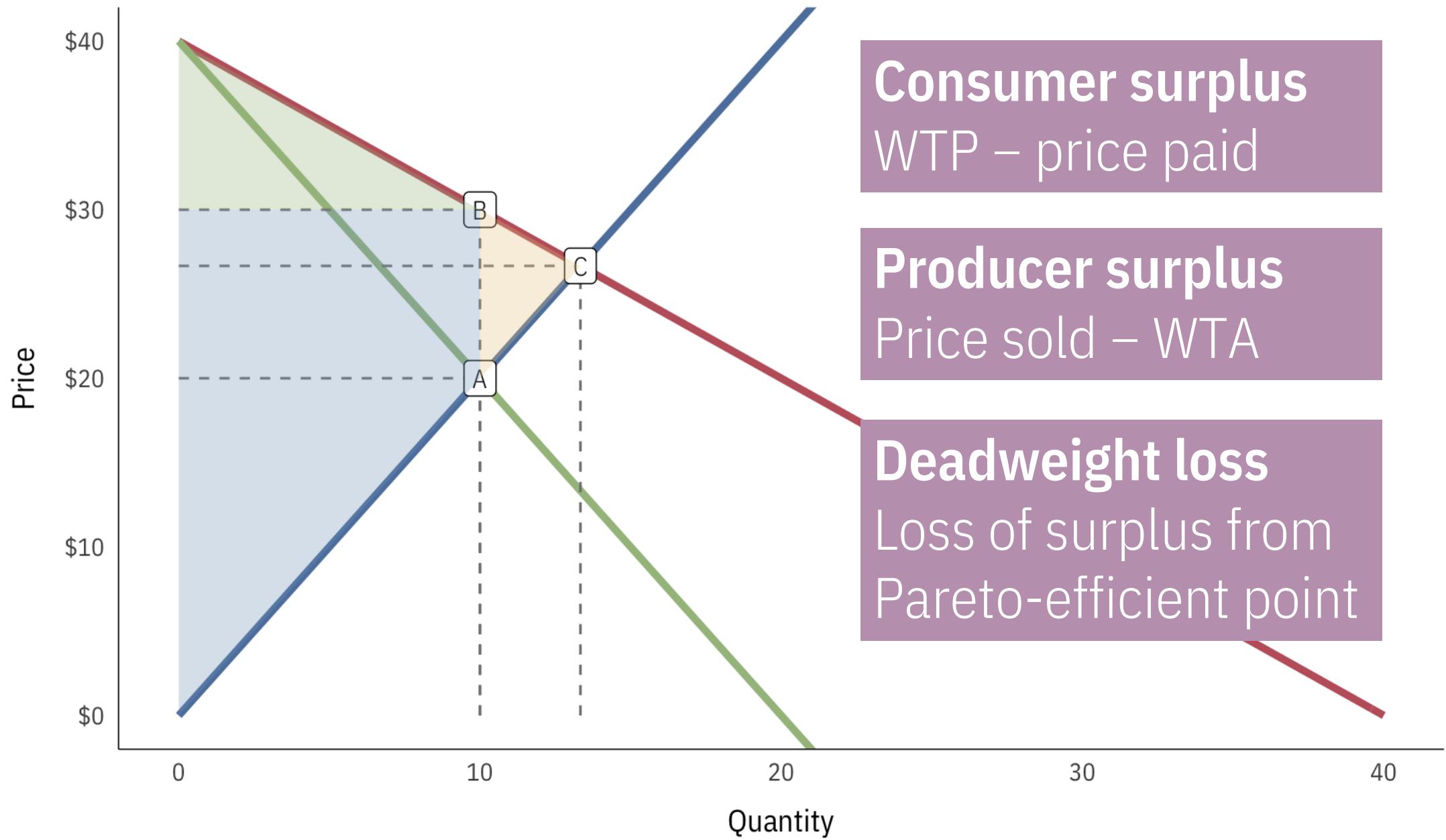
Monopolies

**The whole market is only one firm, so
market demand is firm demand**

Monopolists will naturally produce less quantity at higher prices than firms in competitive markets

Creates deadweight loss, just like taxes





Consumer surplus
WTP – price paid

Producer surplus
Price sold – WTA

Deadweight loss
Loss of surplus from
Pareto-efficient point

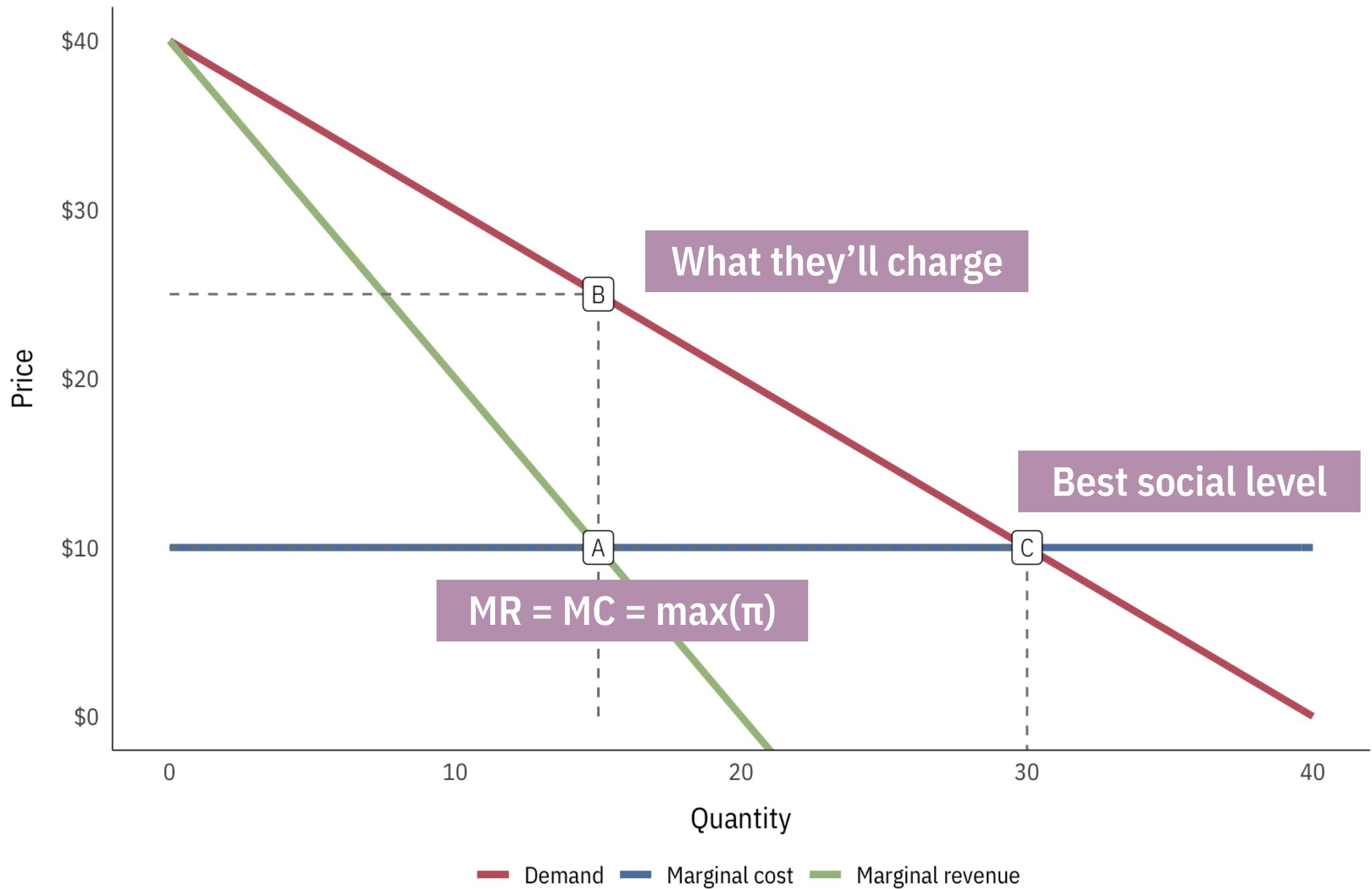
Natural monopolies

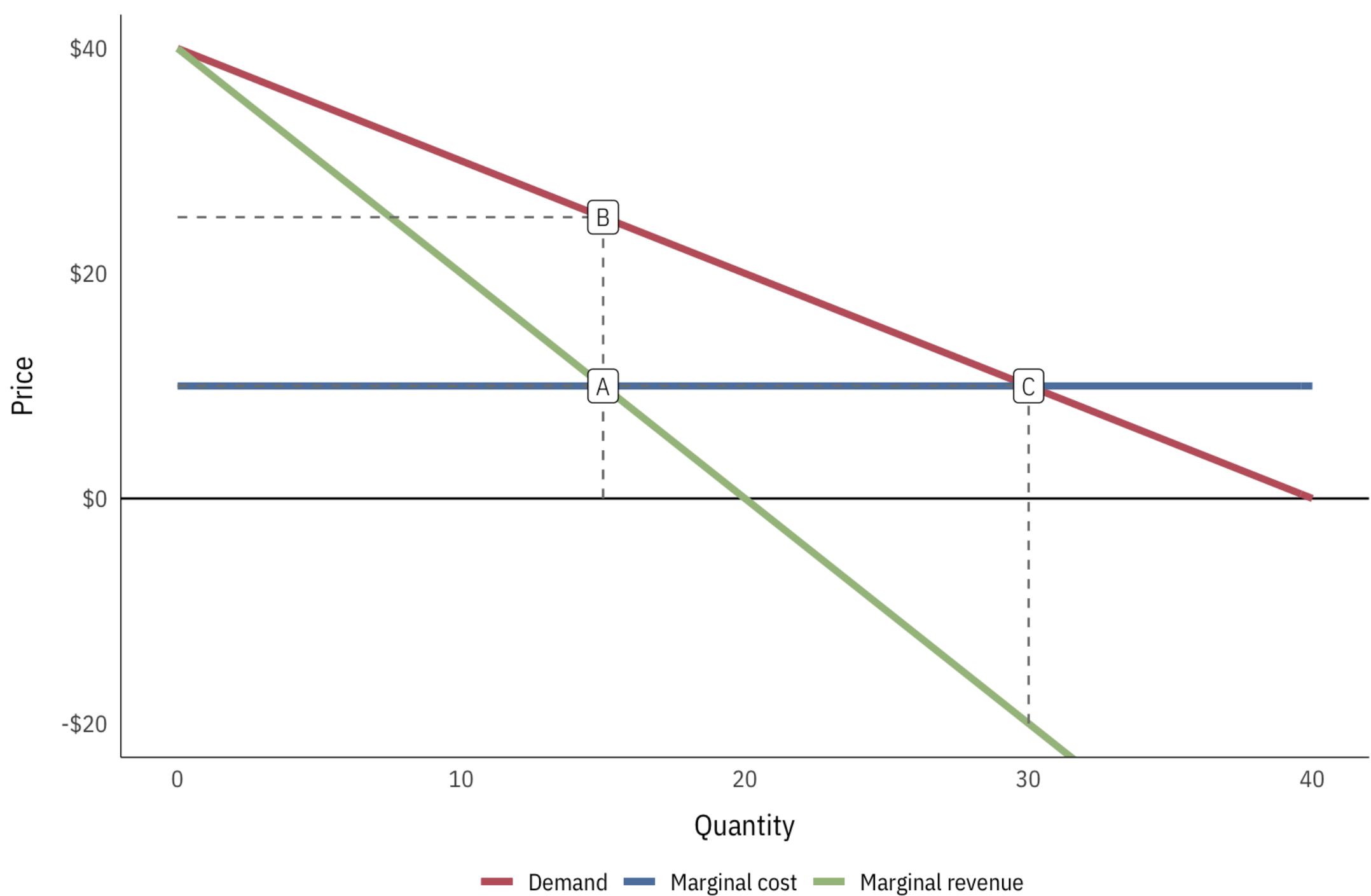
Big expensive things with large capital outlays and low marginal cost

Generally more efficient to just have one firm handle it

Utilities

Public transportation





Switching costs

Make it harder for consumers
to switch away from you

Brand-exclusive benefits

Technology constraints

Search costs

Network costs

Branding + differentiation

Make your stuff nonsubstitutable

Advertising

Brand loyalty

Branding + differentiation

If people are stuck with you
(or like you a lot, or believe in your product,
or if your stuff generally isn't substitutable)
you can charge them more

Markup depends
on elasticity

Cost and input controls

Owning the means of production

Controlling scarce inputs

Controlling cheap supply chains

Government regulation

Make the government stop others
from competing with you

Patents and intellectual property

Licensing

Prohibition of competition