

FIRMS AND MARKETS II

MPA 612: Economy, Society, and Public Policy

March 6, 2019

*Fill out your reading report
on Learning Suite*

PLAN FOR TODAY

elasticities of demand

Supply and demand

Changes in supply and demand

Surplus, taxes, incidence, and DWL

Price taking

Escaping the price taking world

Competition and regulation

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 ↑ P ↓
or
Q ↓ P ↑**

$\epsilon = 2$: "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

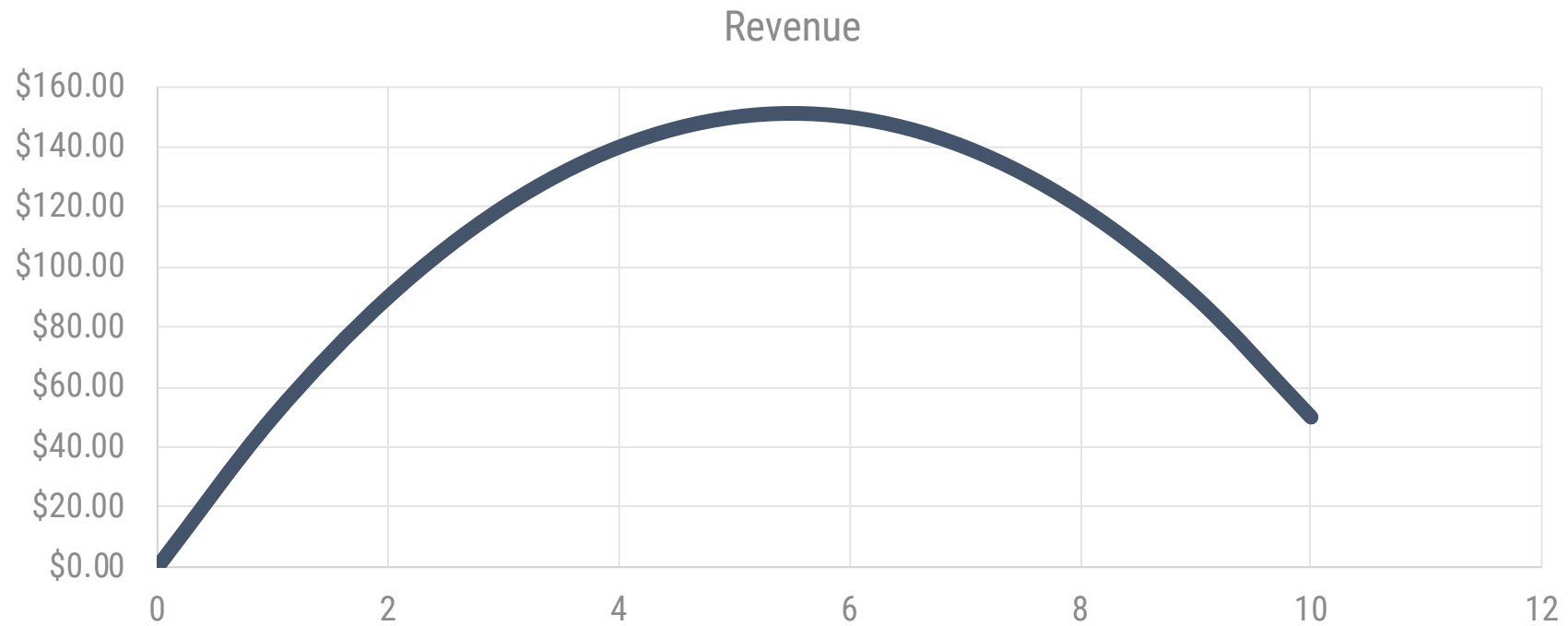
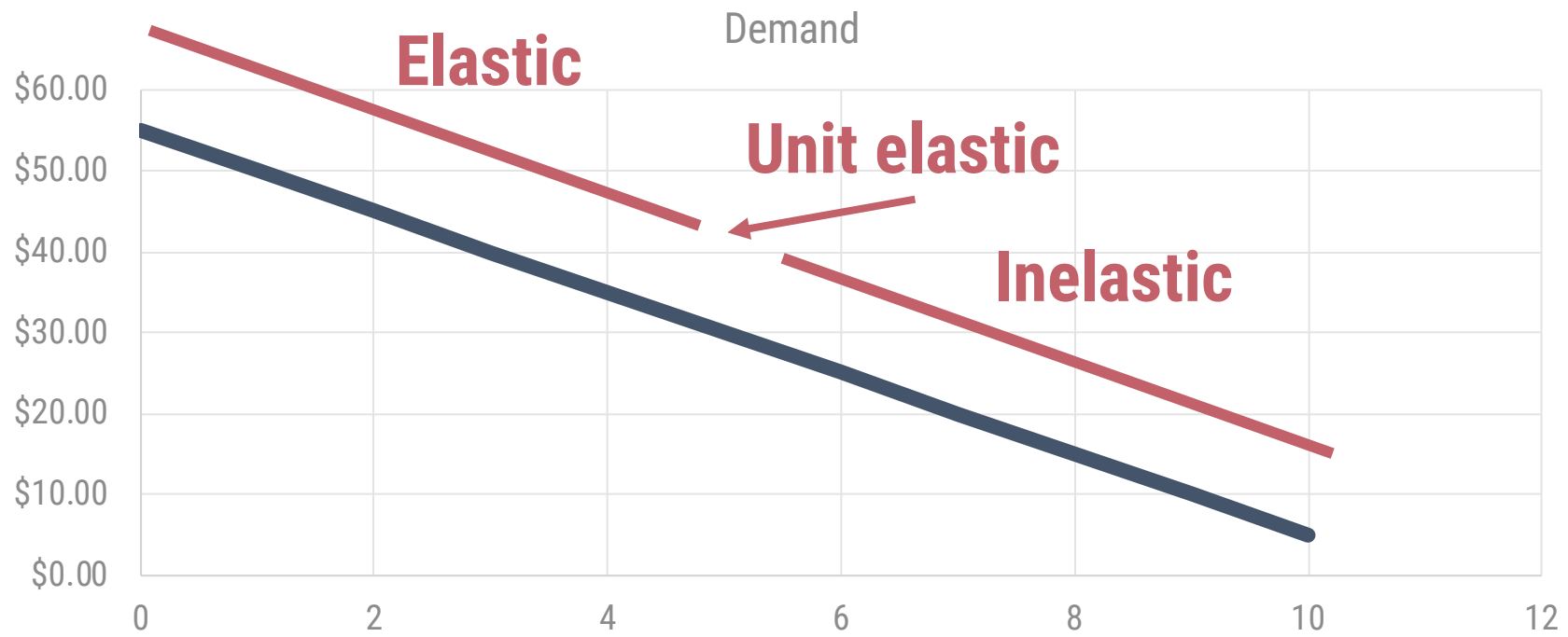


WARNING



**Elasticities are not the
same as the demand curve**

A linear demand curve
has lots of elasticities!



WHY DO ELASTICITIES MATTER IN PA?

Taxing things changes their prices

Changing prices changes quantities

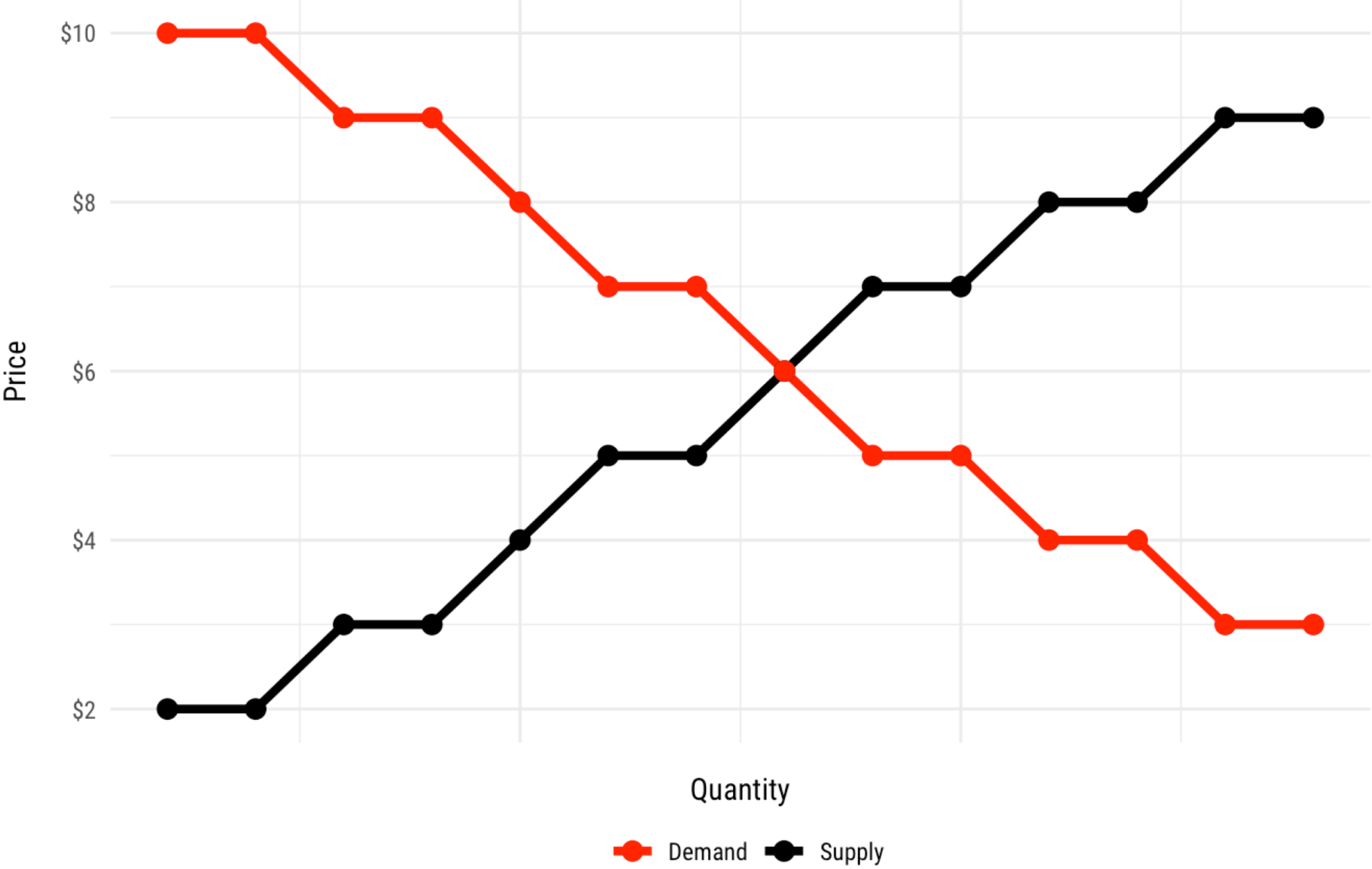
Taxing elastic goods will make quantities go down a lot and decrease tax revenues

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

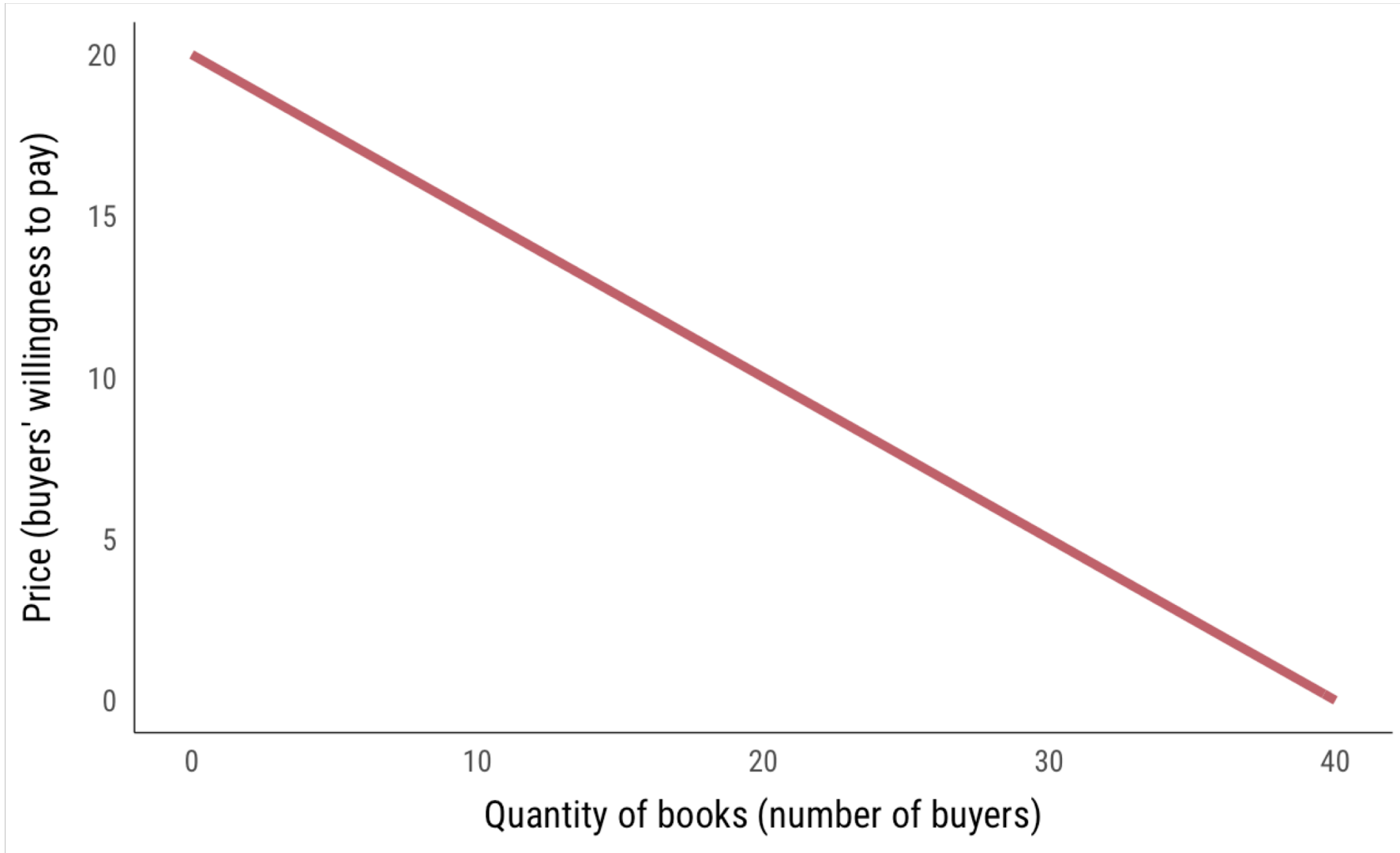
SUPPLY AND DEMAND



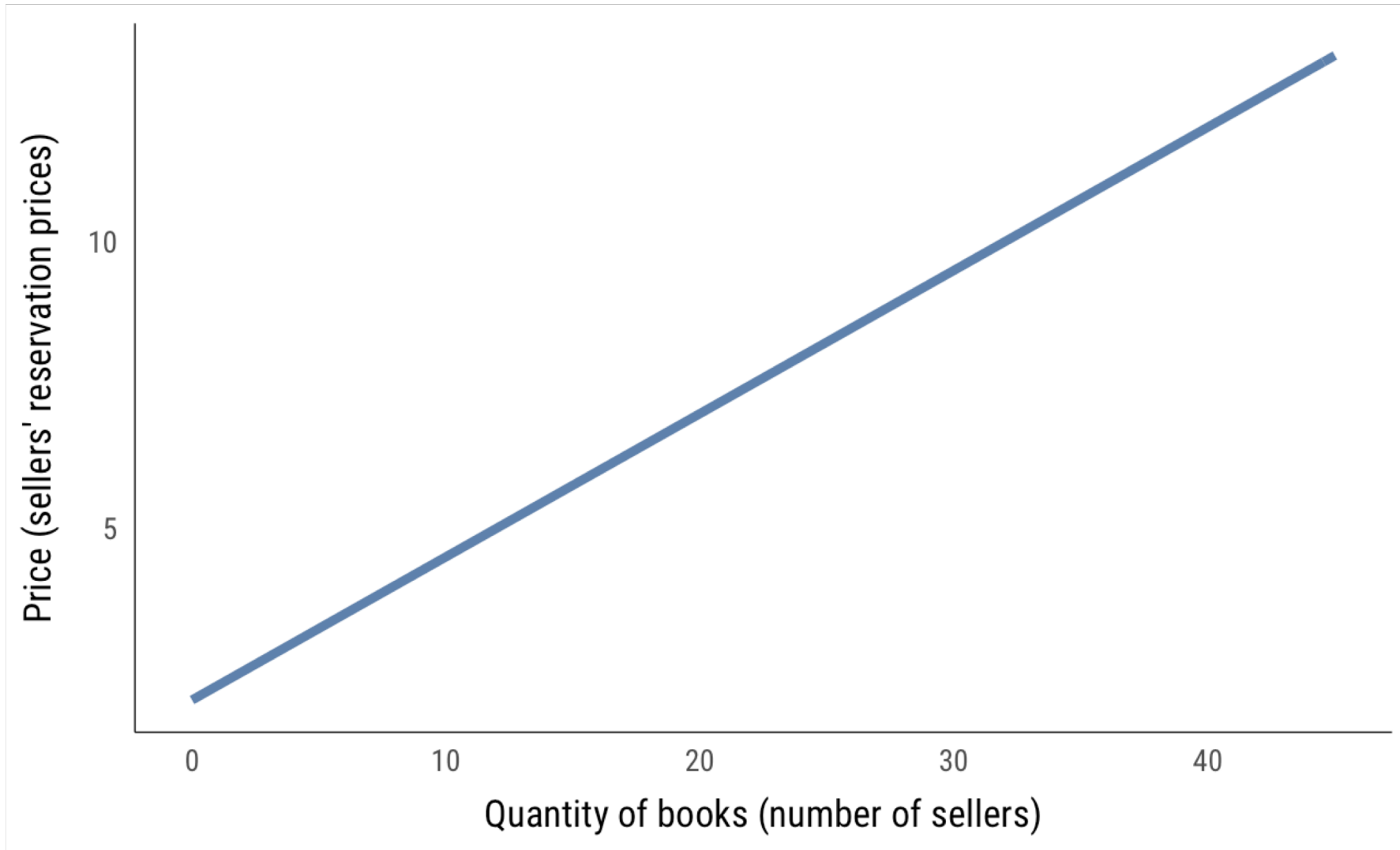
Supply, demand, and price for paper clips

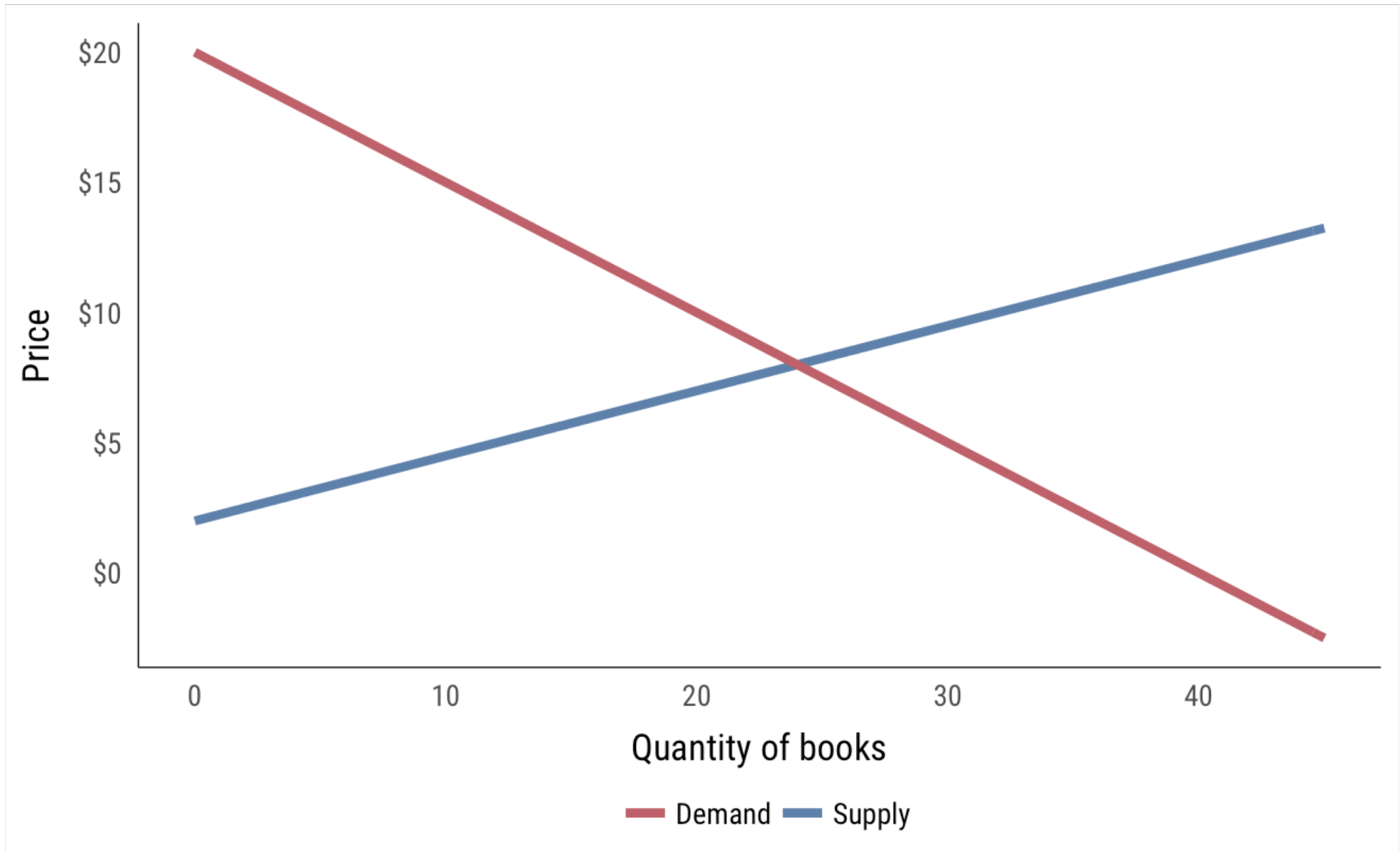


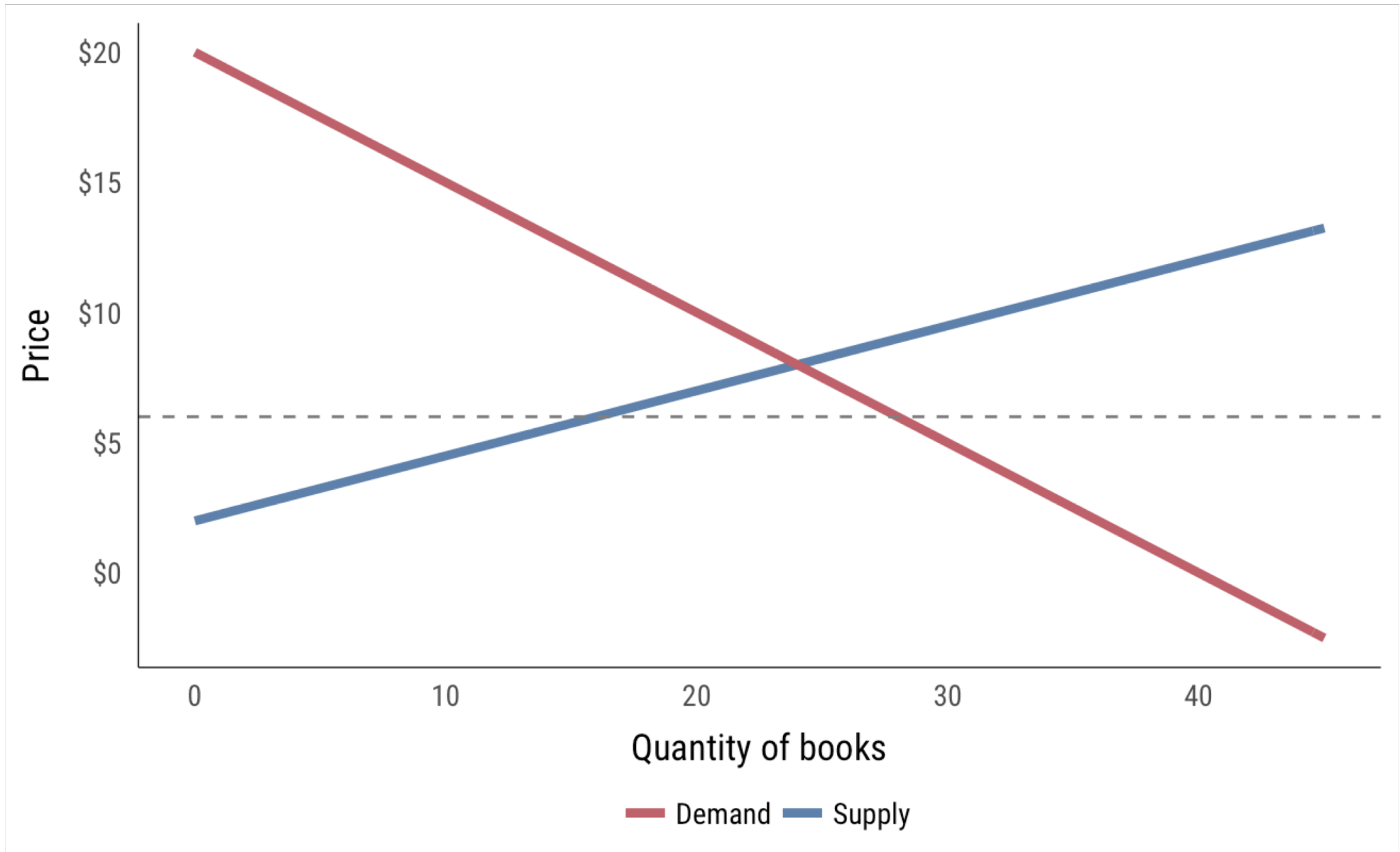
$$\text{DEMAND} = \text{WTP} \\ = \text{MARGINAL BENEFIT}$$

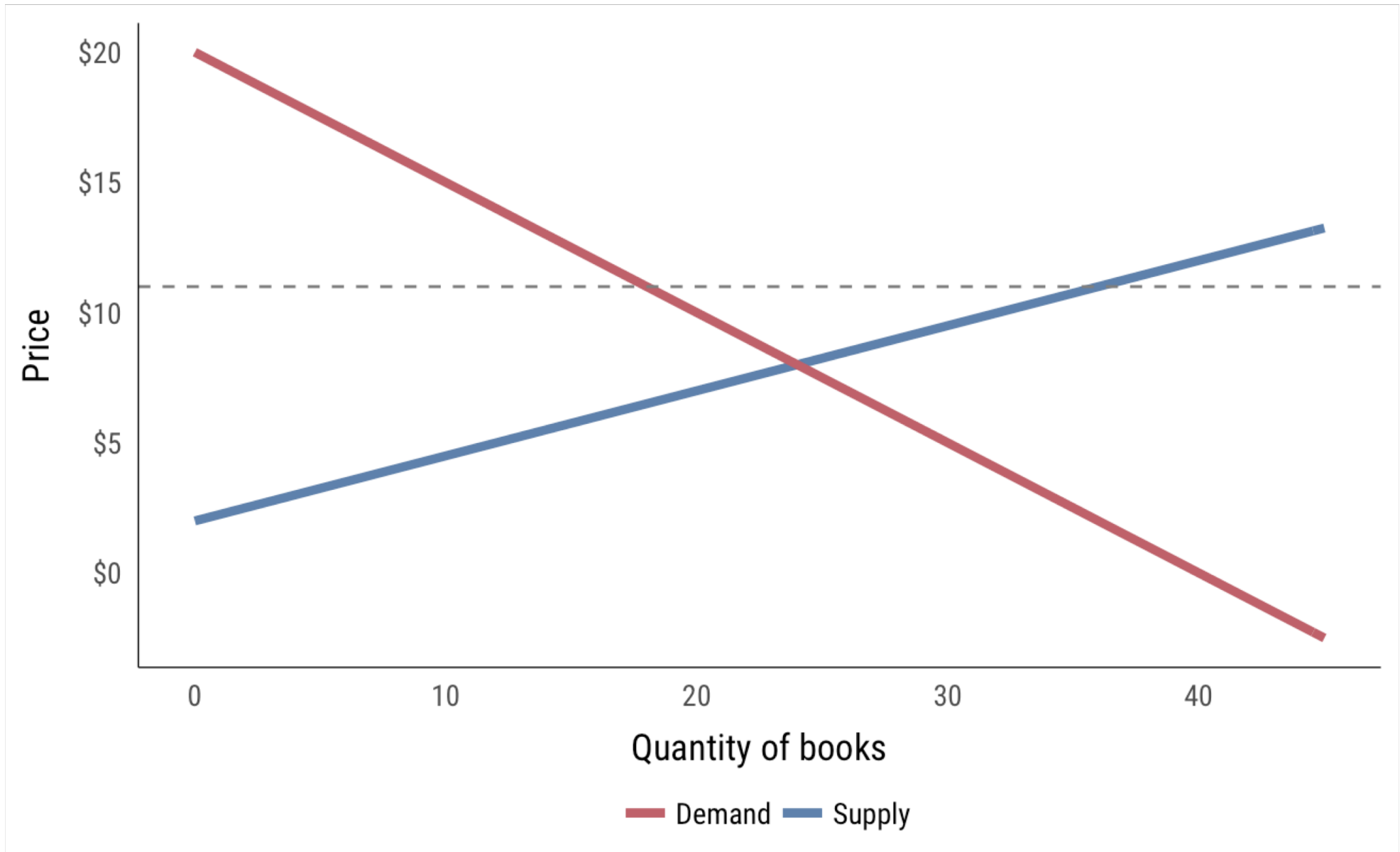


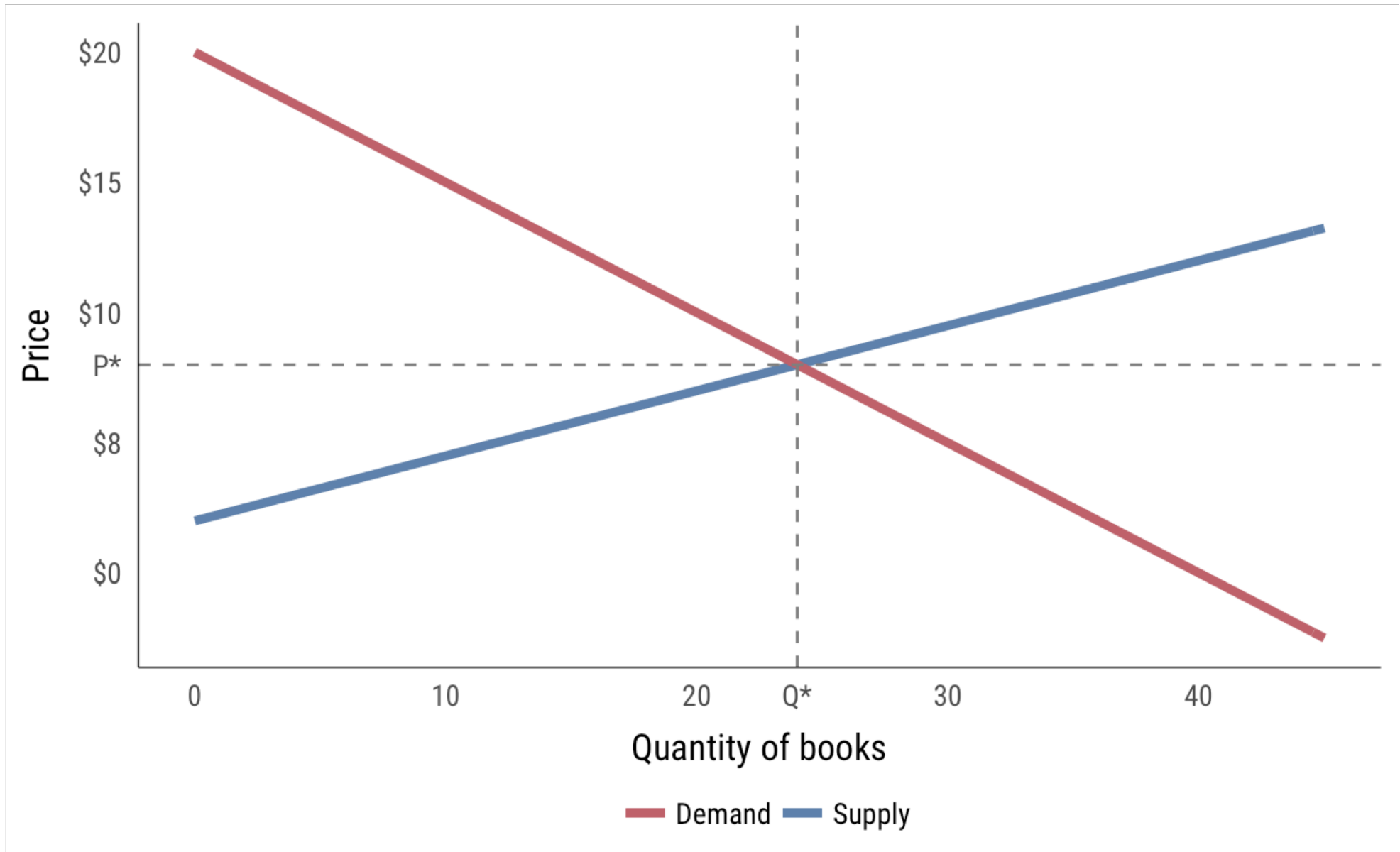
$$\text{SUPPLY} = \text{WTA} \\ = \text{MARGINAL COST}$$





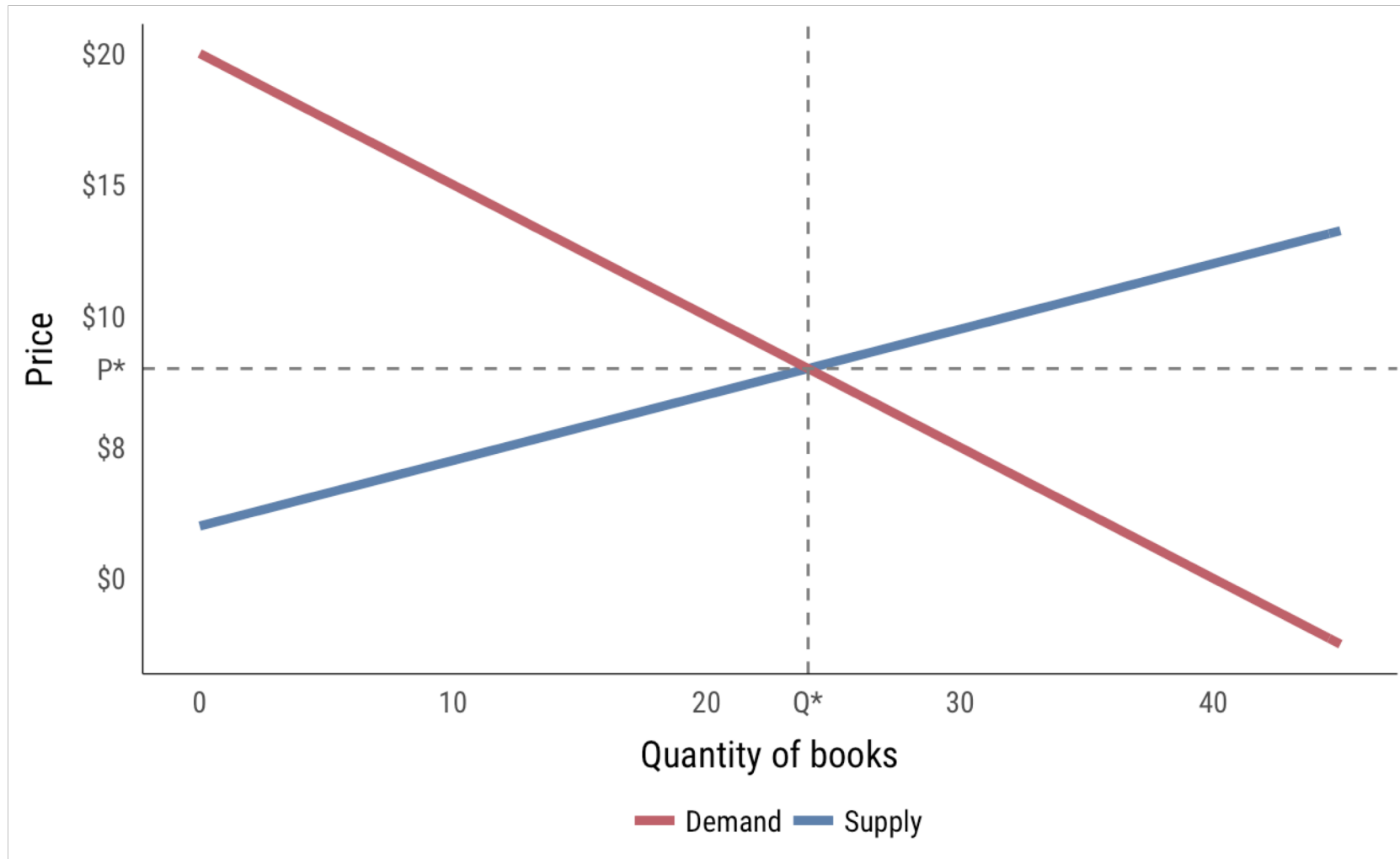






Demand: $P = -0.5Q + 20$

Supply: $P = 0.25Q + 2$





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

by Peter A. Lawrence

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Price at a Glance

List Price: \$70.00

Used: from **\$35.54**

New: from **\$1,730,045.91**

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All

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

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



Paperclips: 212

Business

Available Funds: \$ 6.65

Unsold Inventory: 15

Price per Clip: \$ 0.14

Public Demand: 57%

Level: 1

Cost: \$ 100.00

Manufacturing

Clips per Second: 3

788 inches

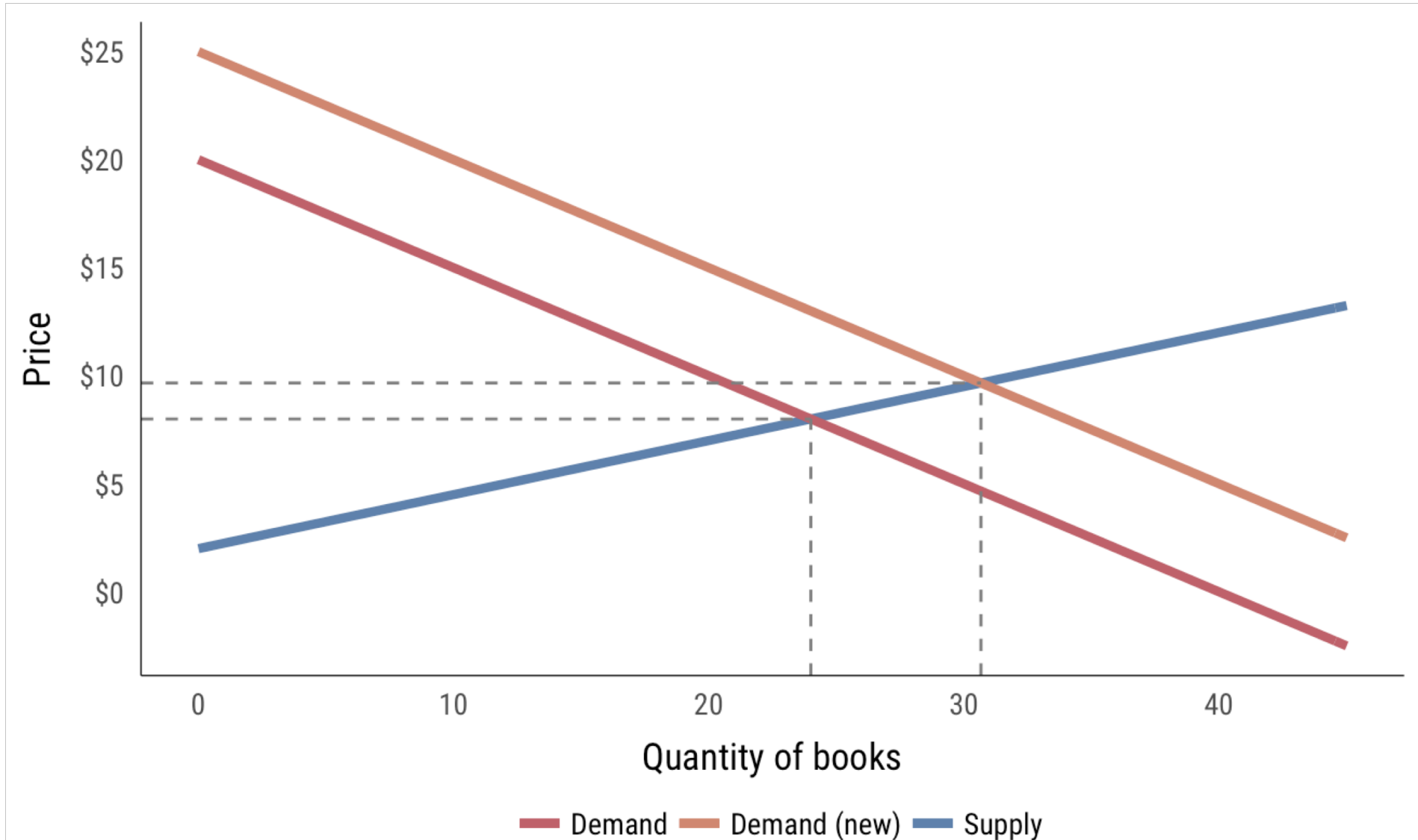
Cost: \$ 15

3

Cost: \$ 6.33

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

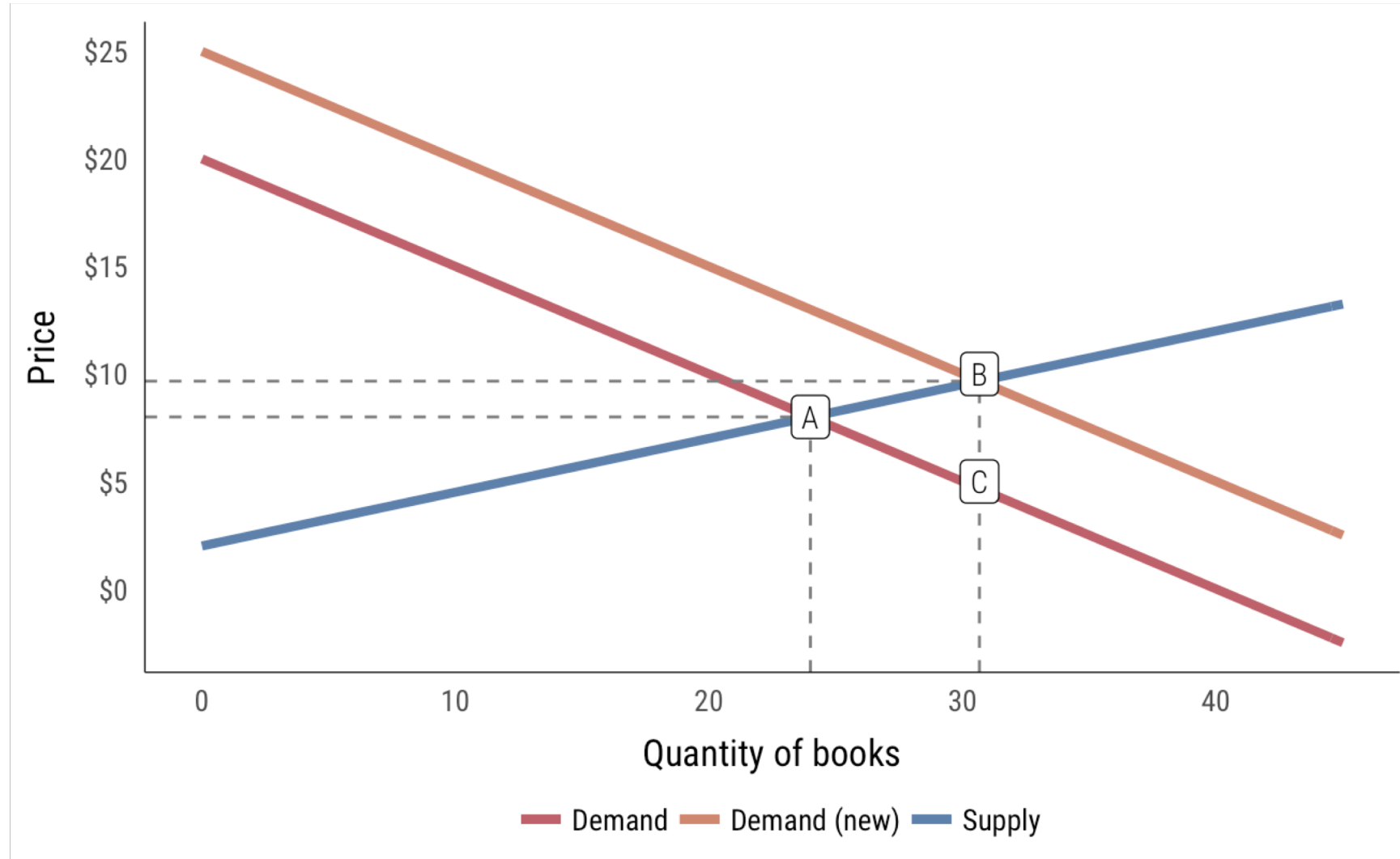
Two ways to get
from 24 to 31ish

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

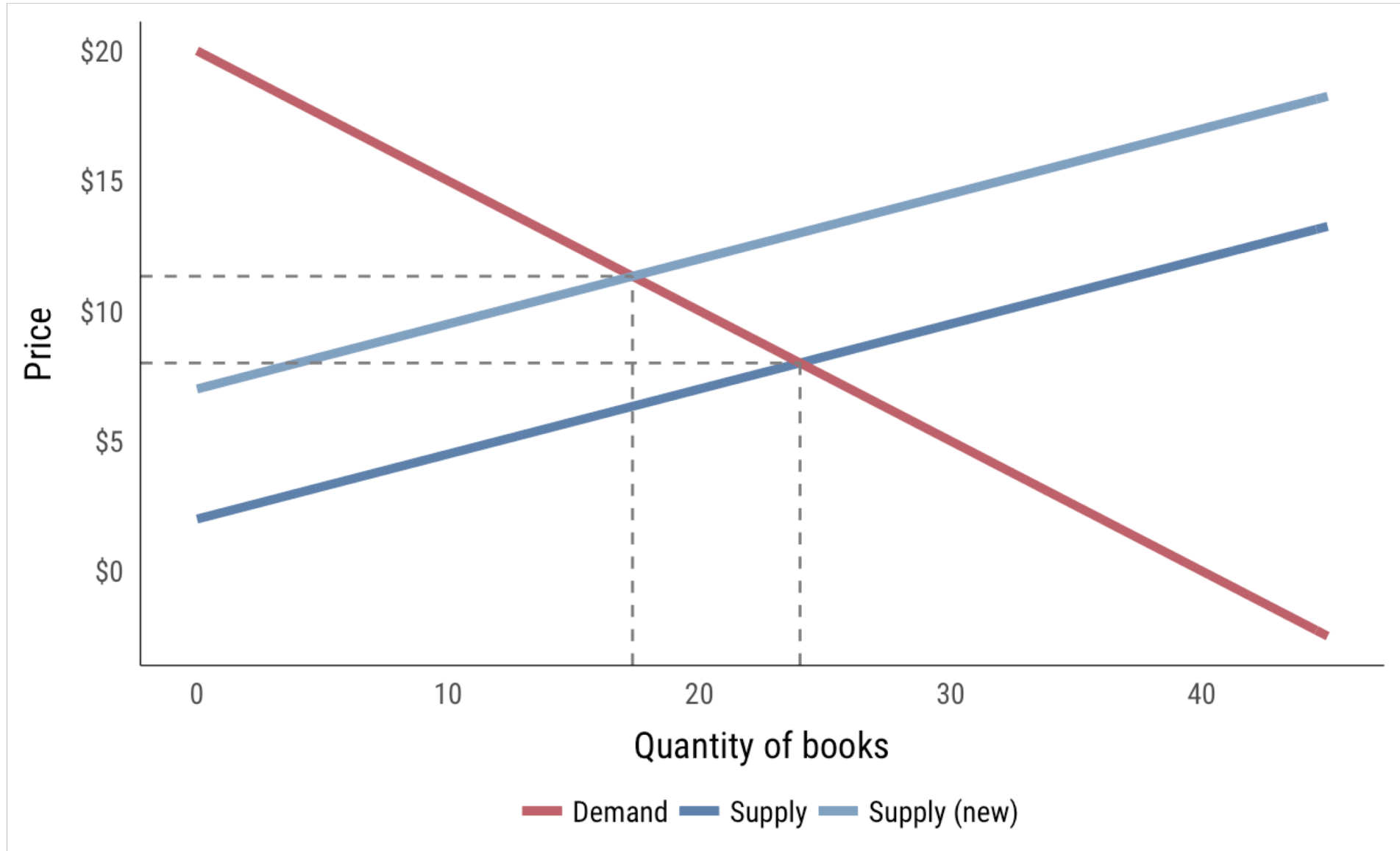
Shoe market

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

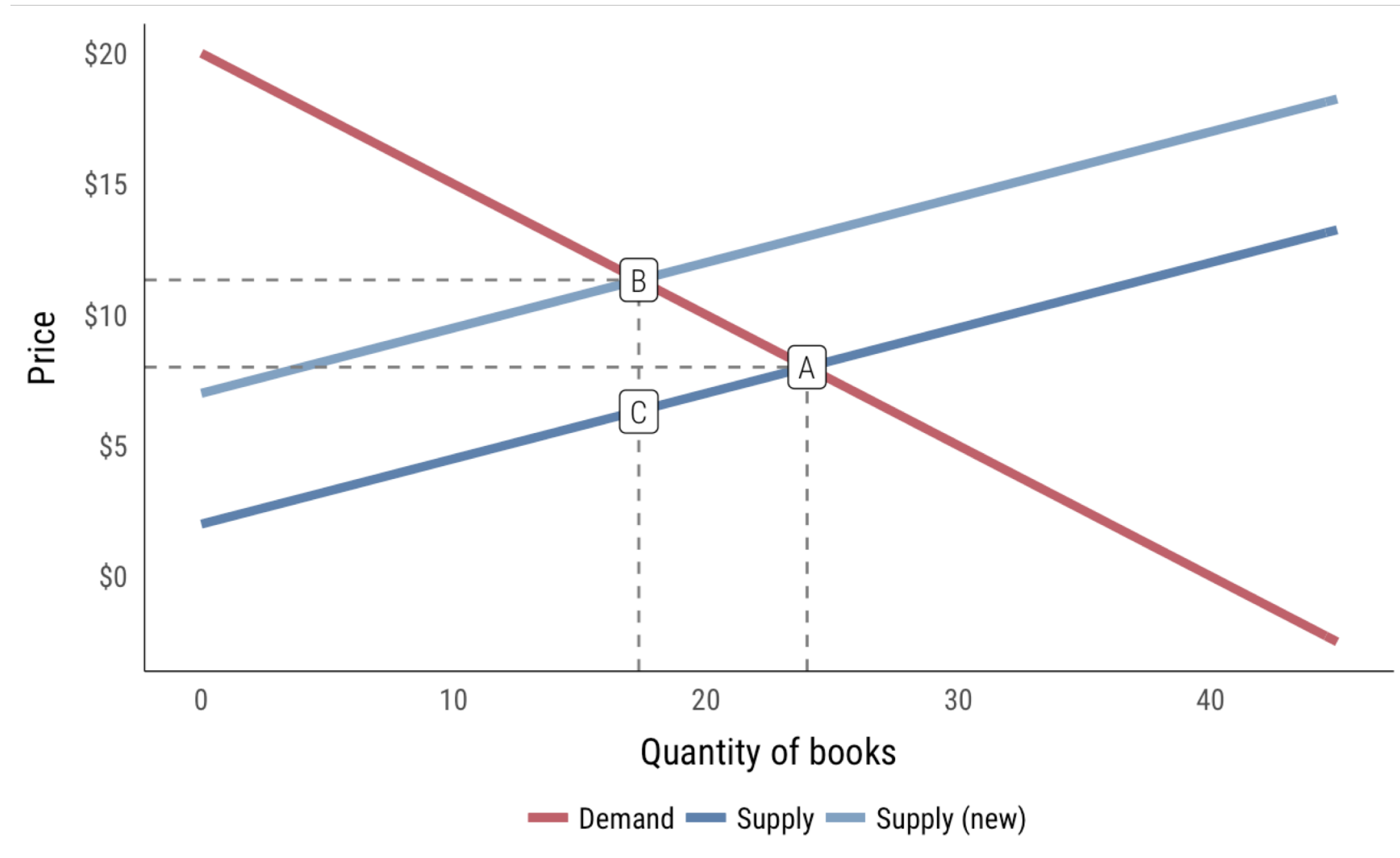
Two ways to get
from 24 to 17ish

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

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



SURPLUS, TAXES, INCIDENCE, AND DWL

Consumer surplus

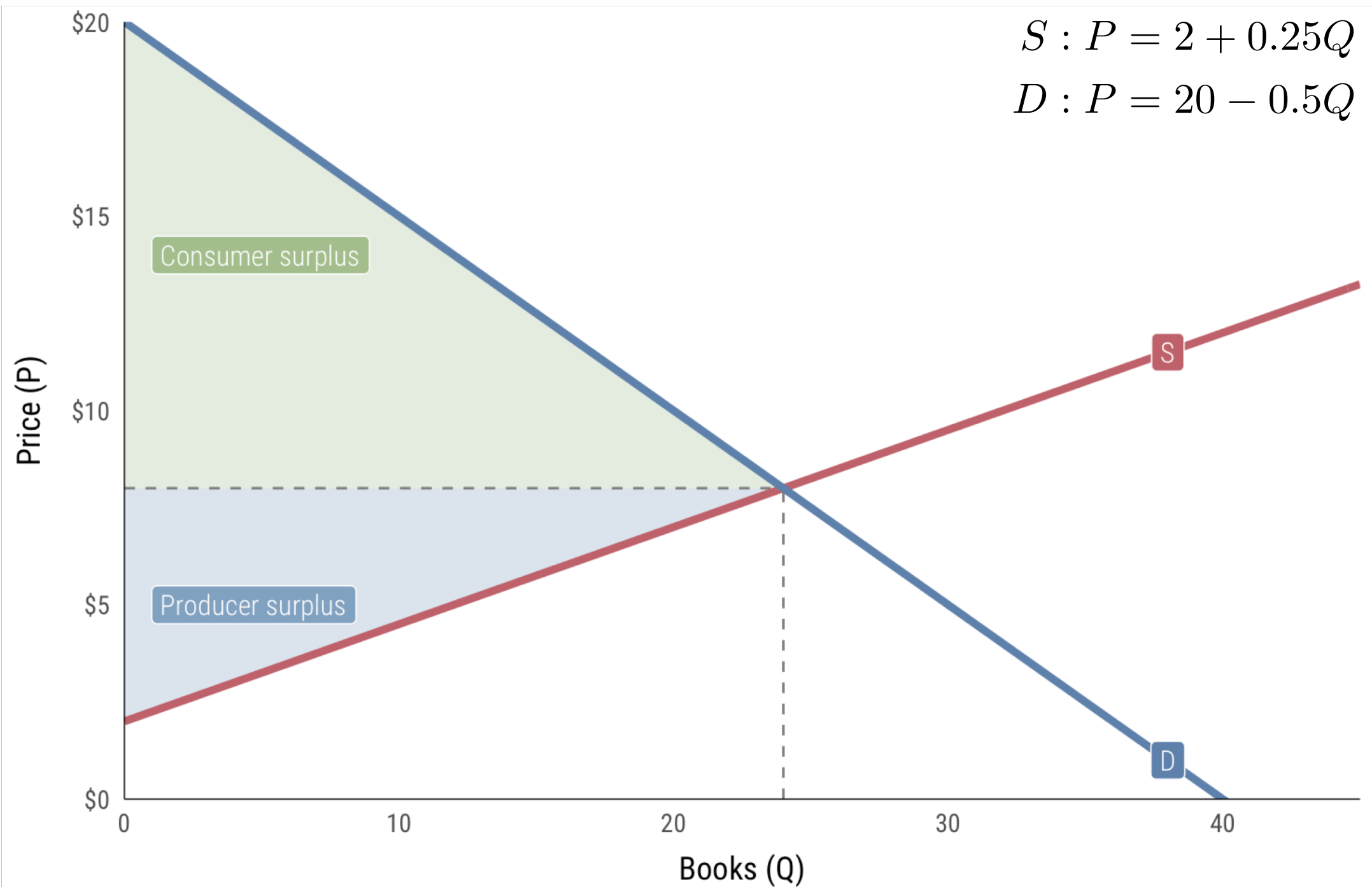
Difference between WTP and price

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

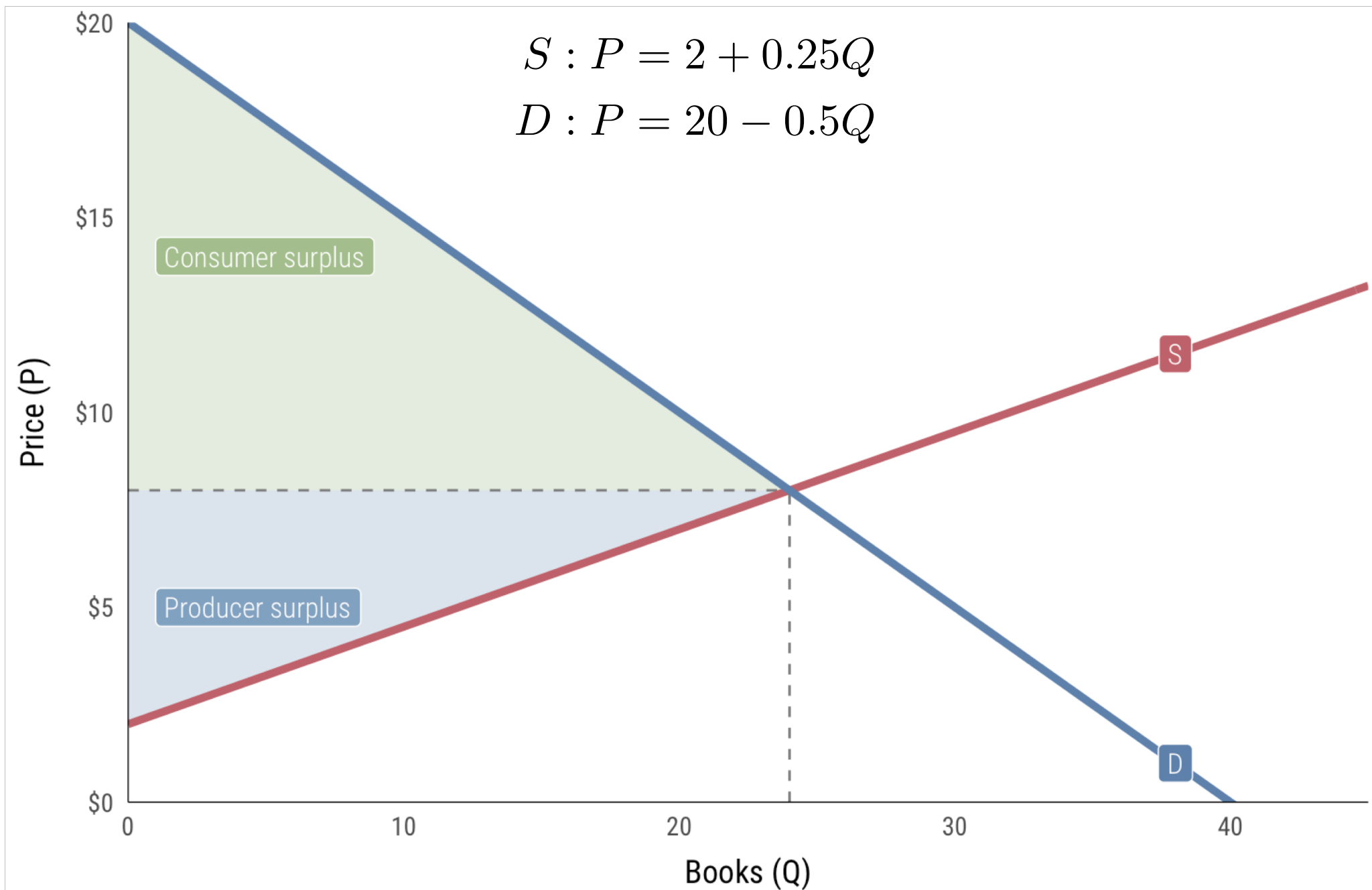
**Encourage or
discourage consumption**

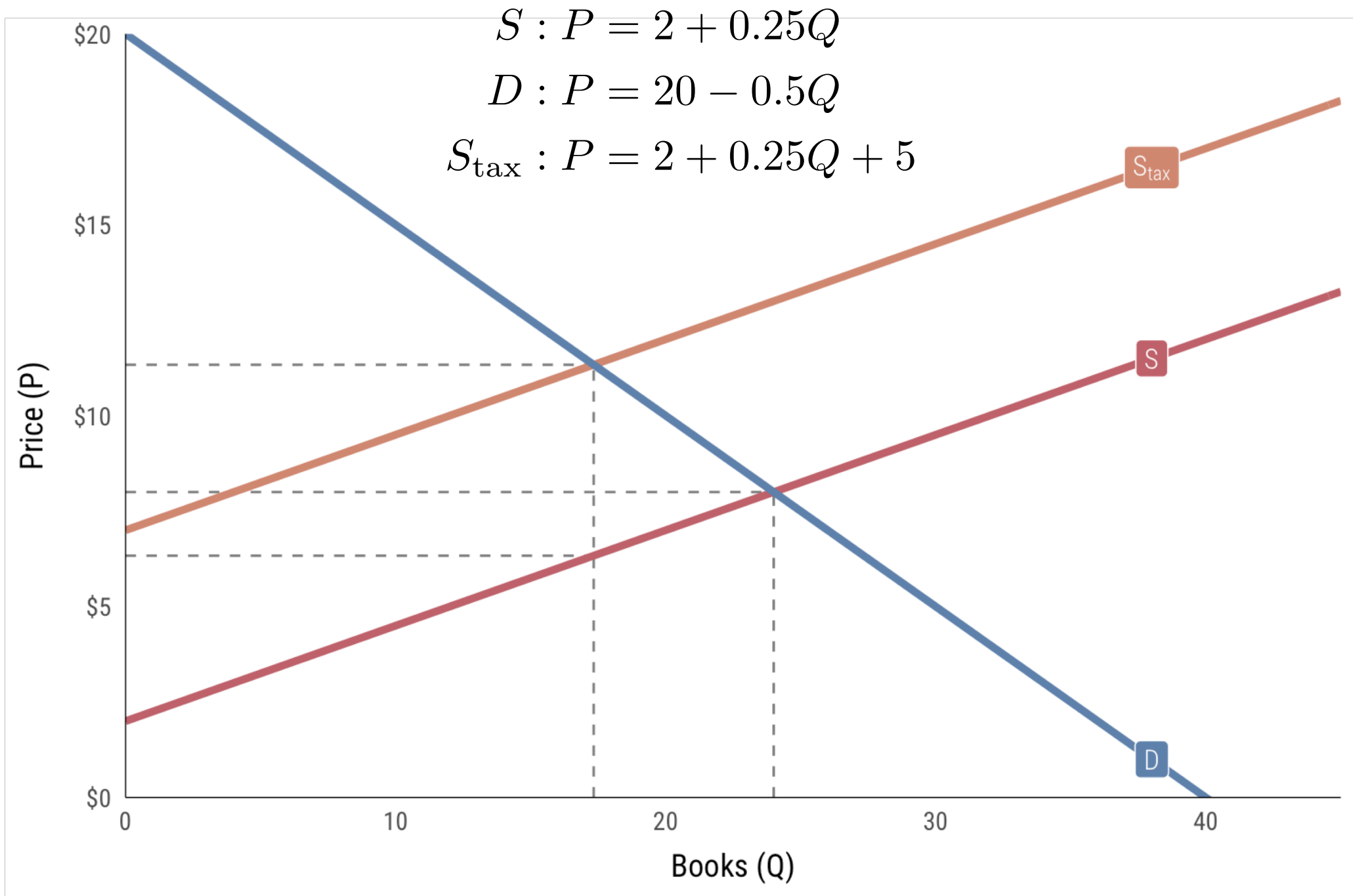
WHAT HAPPENS WHEN GOVERNMENTS TAX?

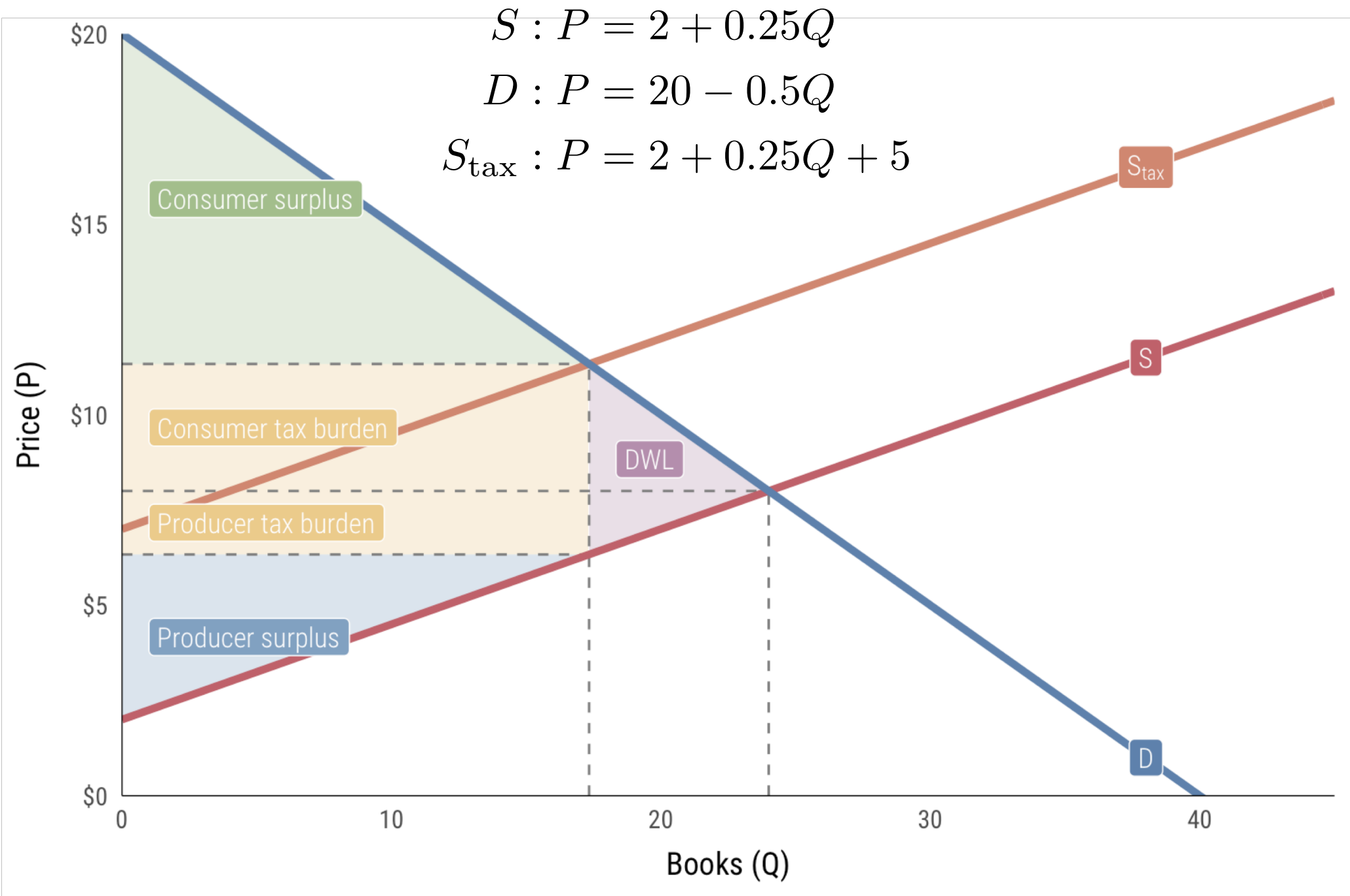
Revenue raised for public goods

Resources redistributed

Markets distorted;
loss of efficiency





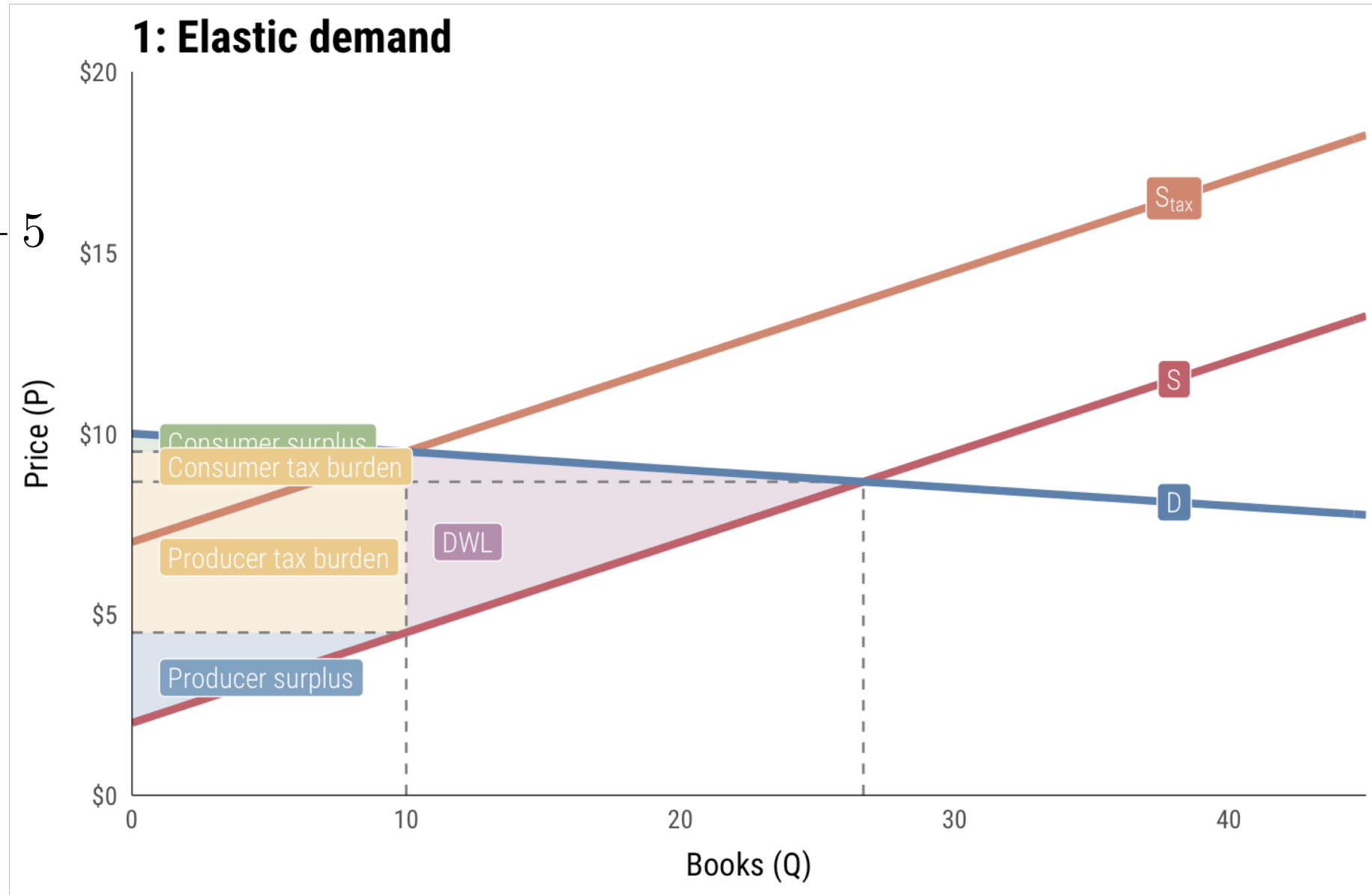


1: Elastic demand

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

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

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

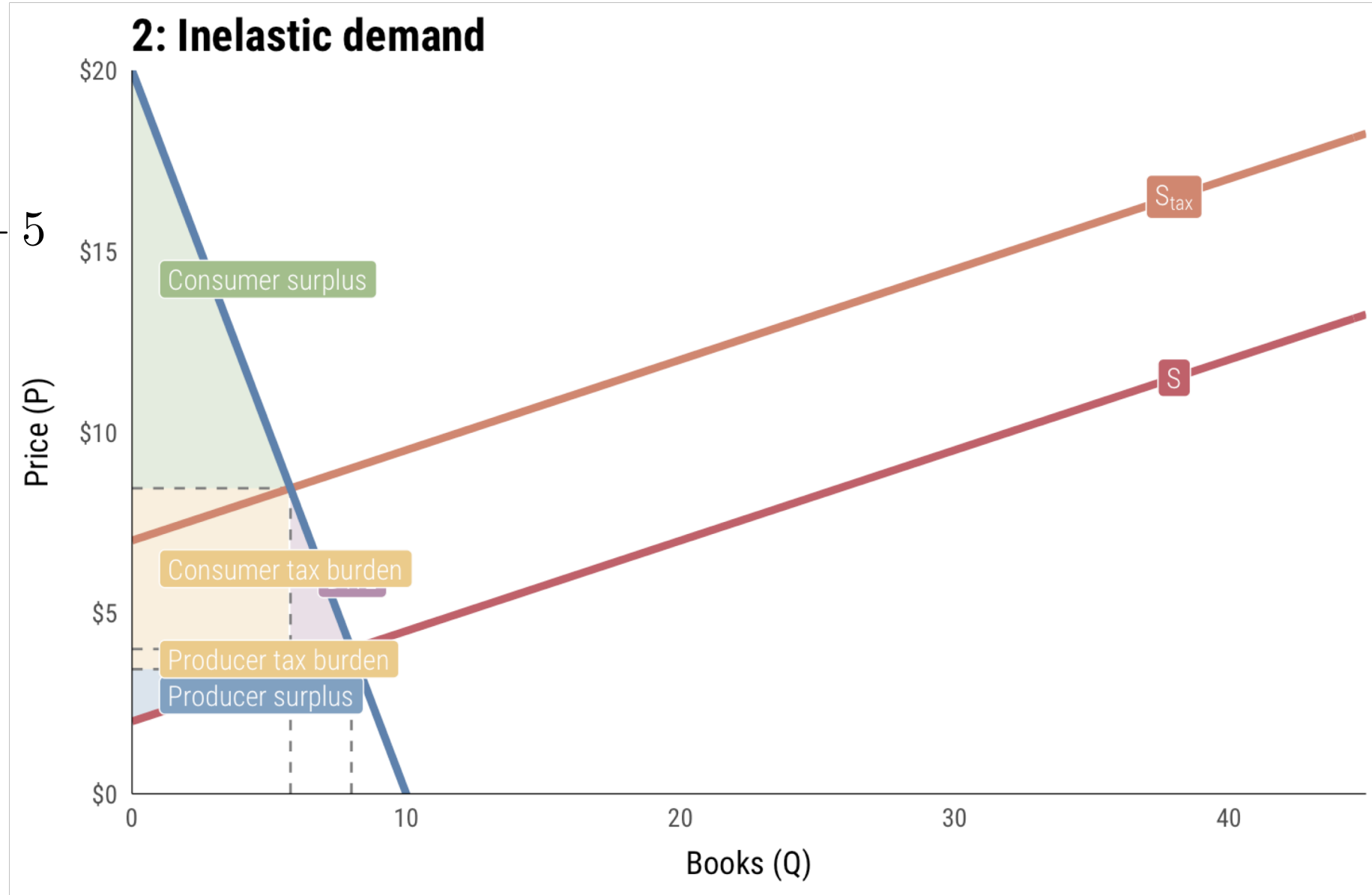


2: Inelastic demand

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

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

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

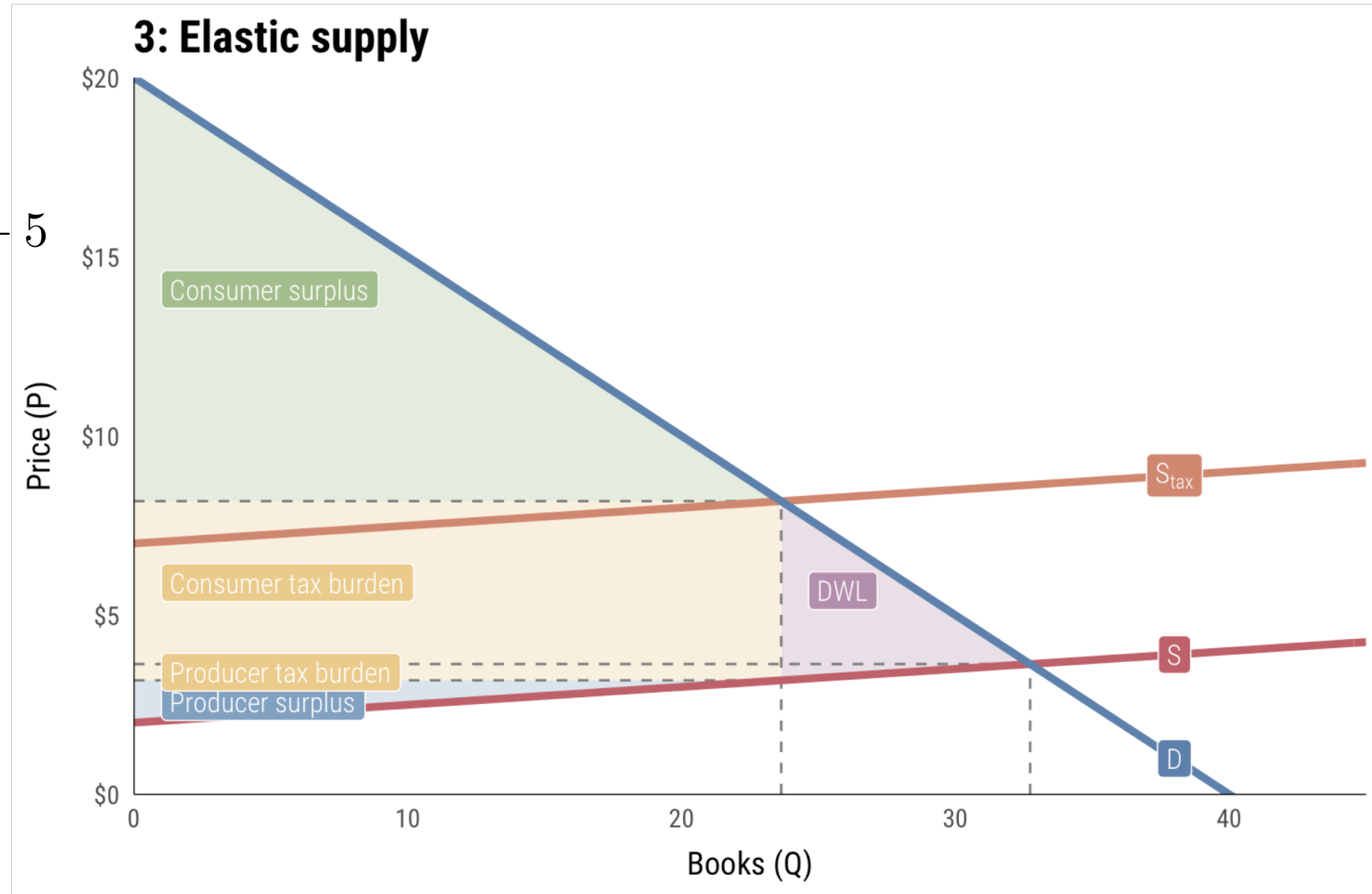


3: Elastic supply

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

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

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

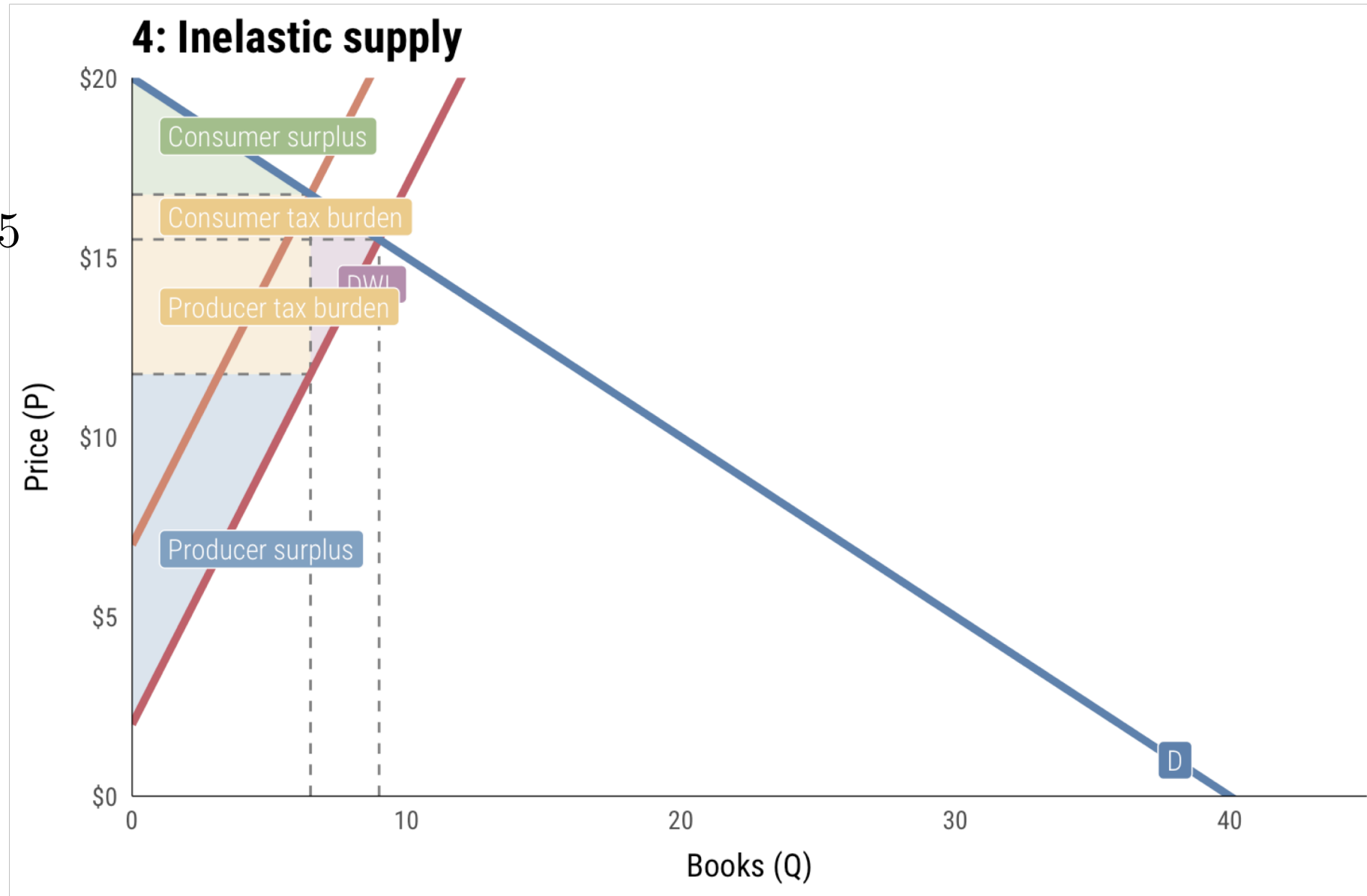


4: Inelastic supply

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

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

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



TAX INCIDENCE AND €

**Incidence depends on
elasticity of supply or demand**

**Tax burden falls on those
least able to escape it**

INCIDENCE WITHIN CONSUMERS

Progressive taxes

Rich pay more

Income taxes (but loopholes)

Regressive taxes

Poor pay more

Sales taxes, payroll taxes

TAX FAIRNESS

Benefits principle

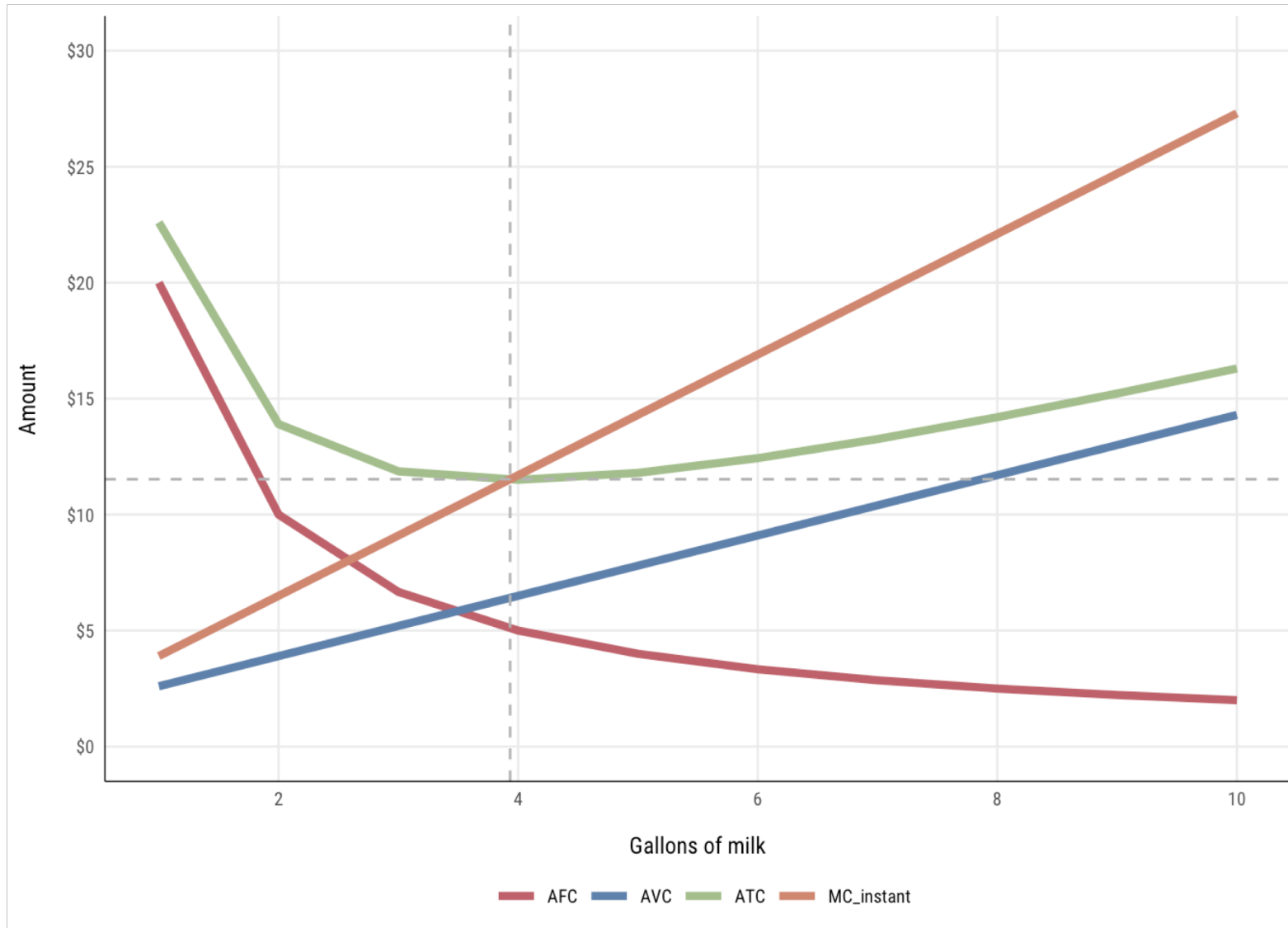
Those who benefit from public spending should bear the burden of the tax

Ability-to-pay principle

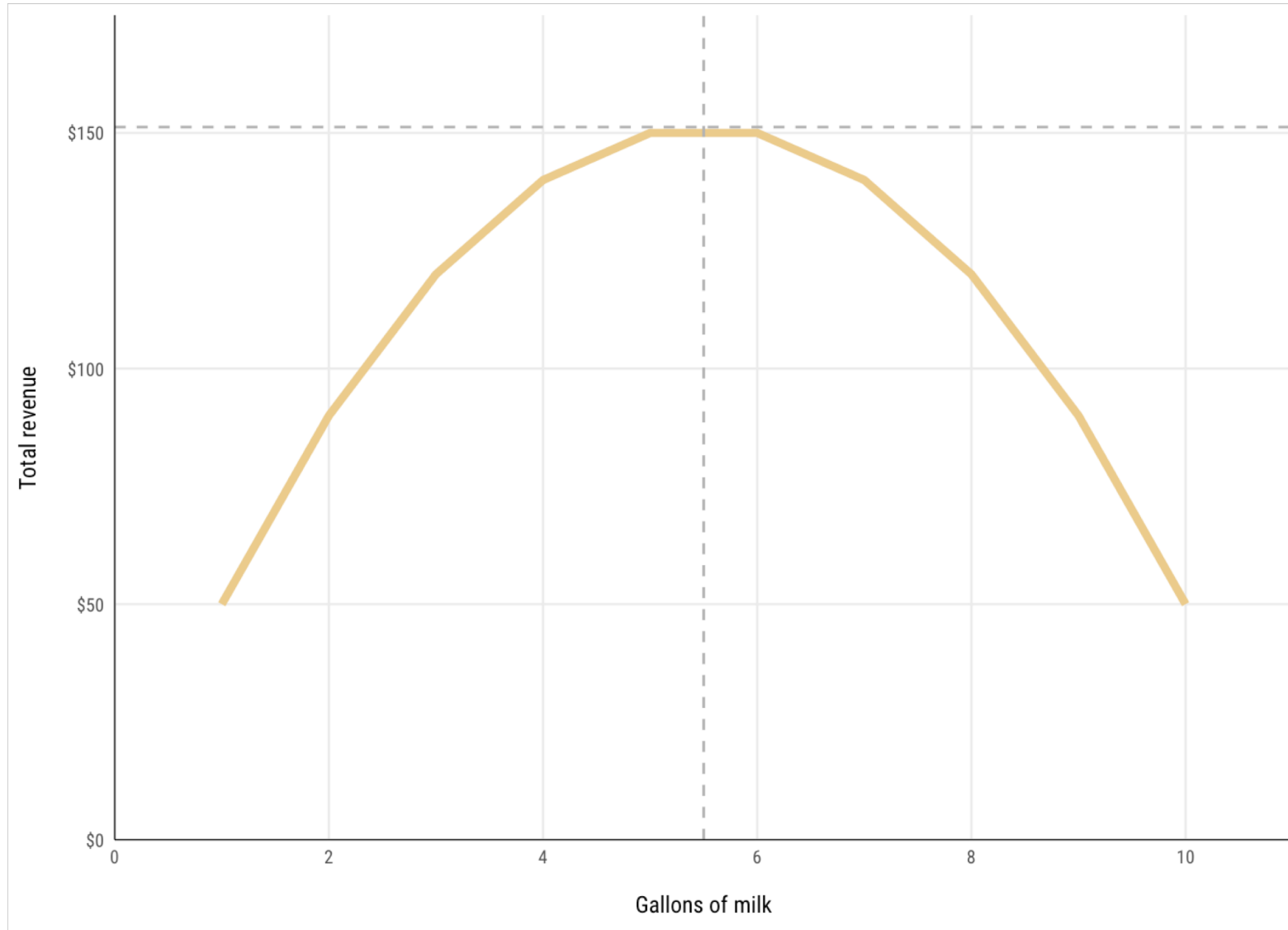
Those with a greater ability to pay a tax should pay more tax

PRICE TAKING

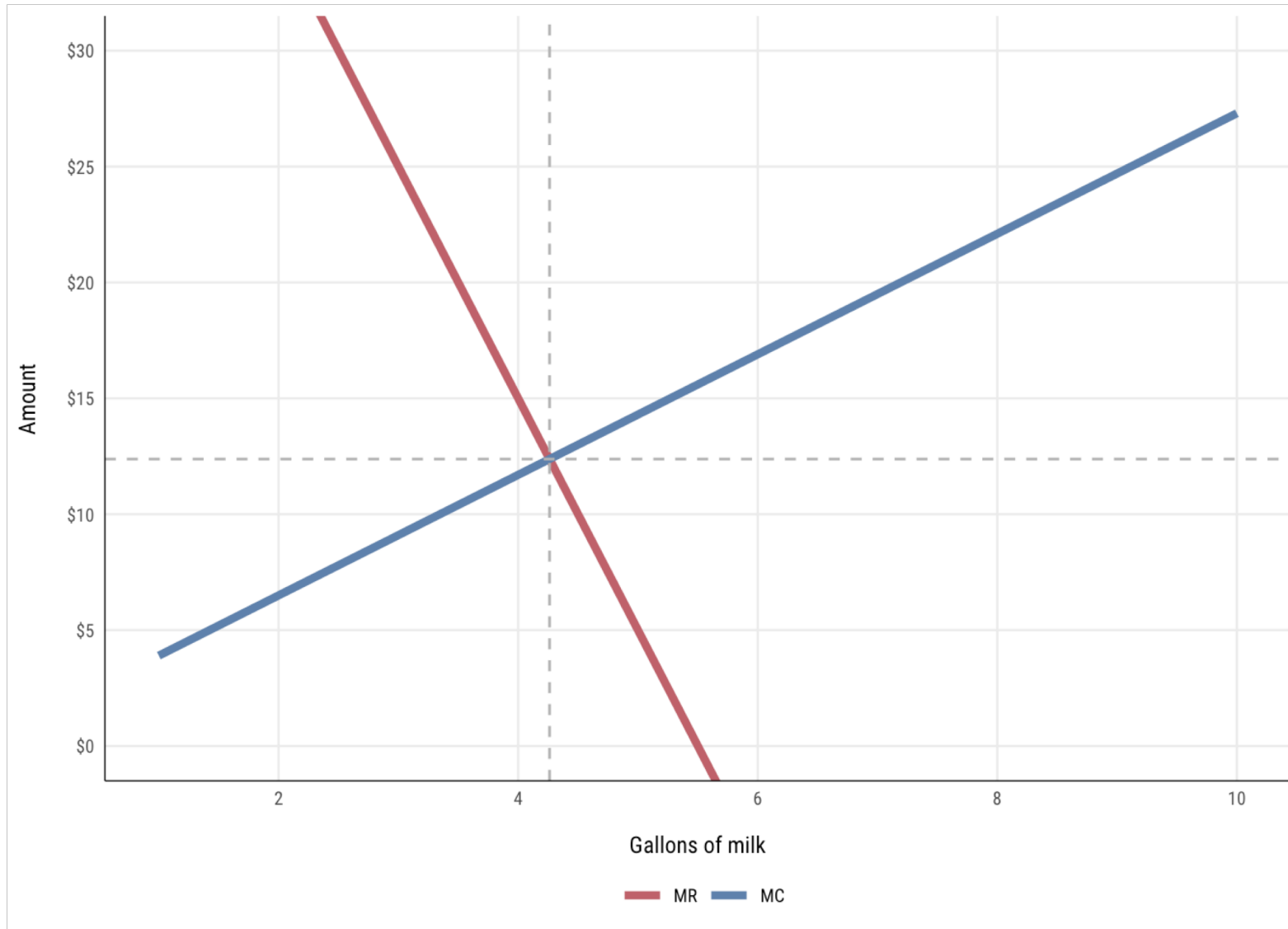
COST MINIMIZATION



REVENUE MAXIMIZATION



PROFIT MAXIMIZATION



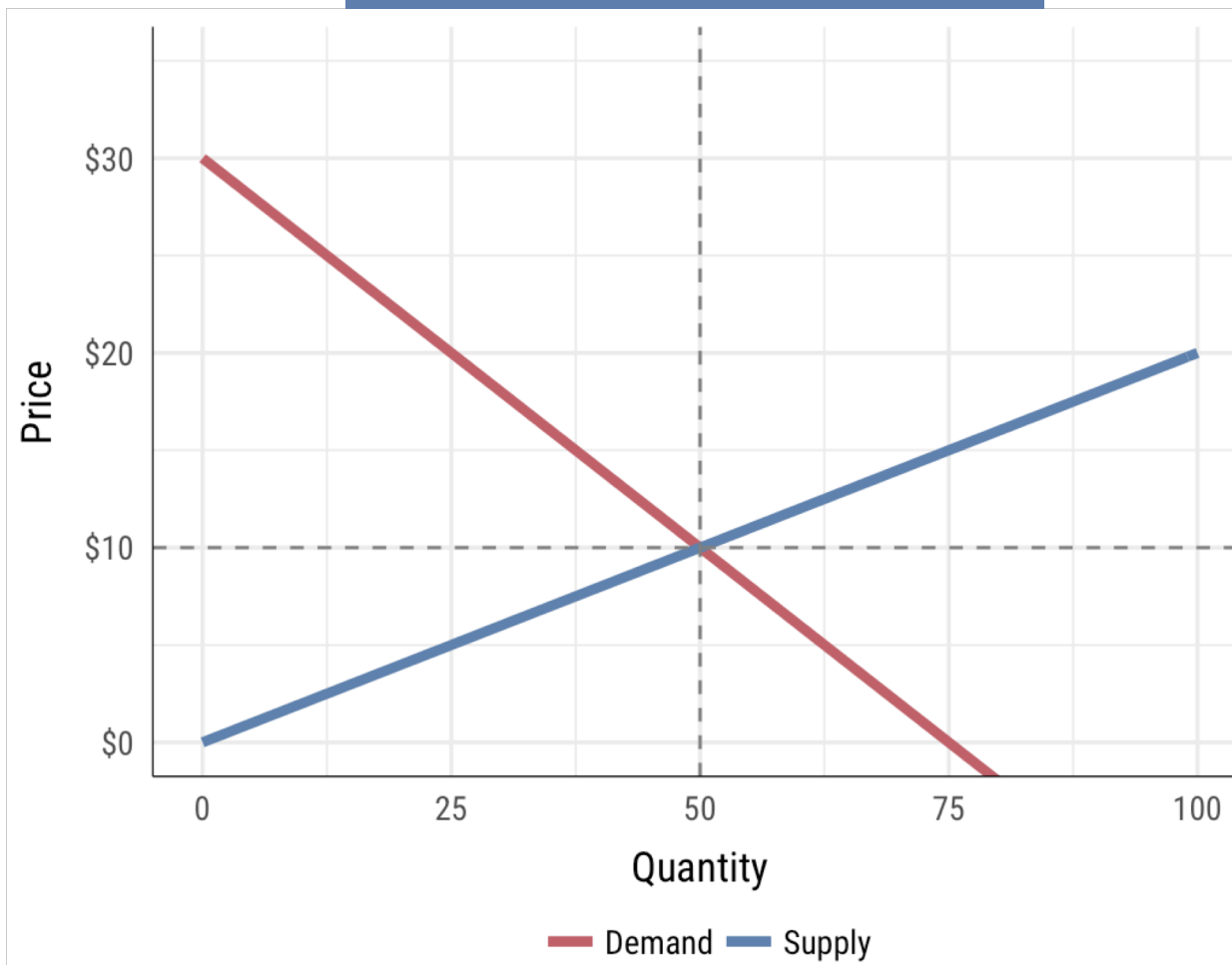
OPTIMAL THINGS

Max π : $MC = MR$

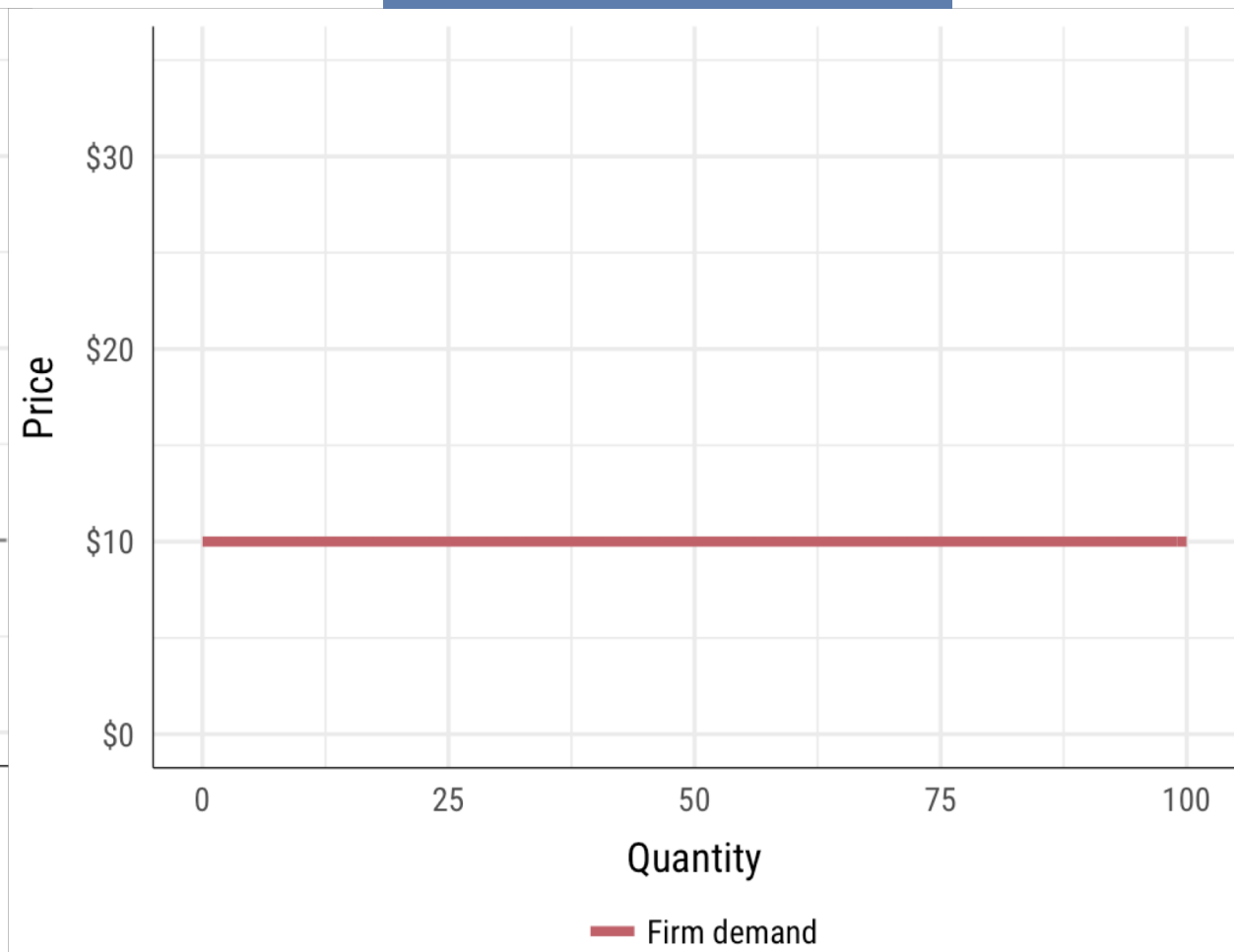
Best Q: Demand = MC

**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.

ESCAPING THE PRICE TAKING WORLD

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

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

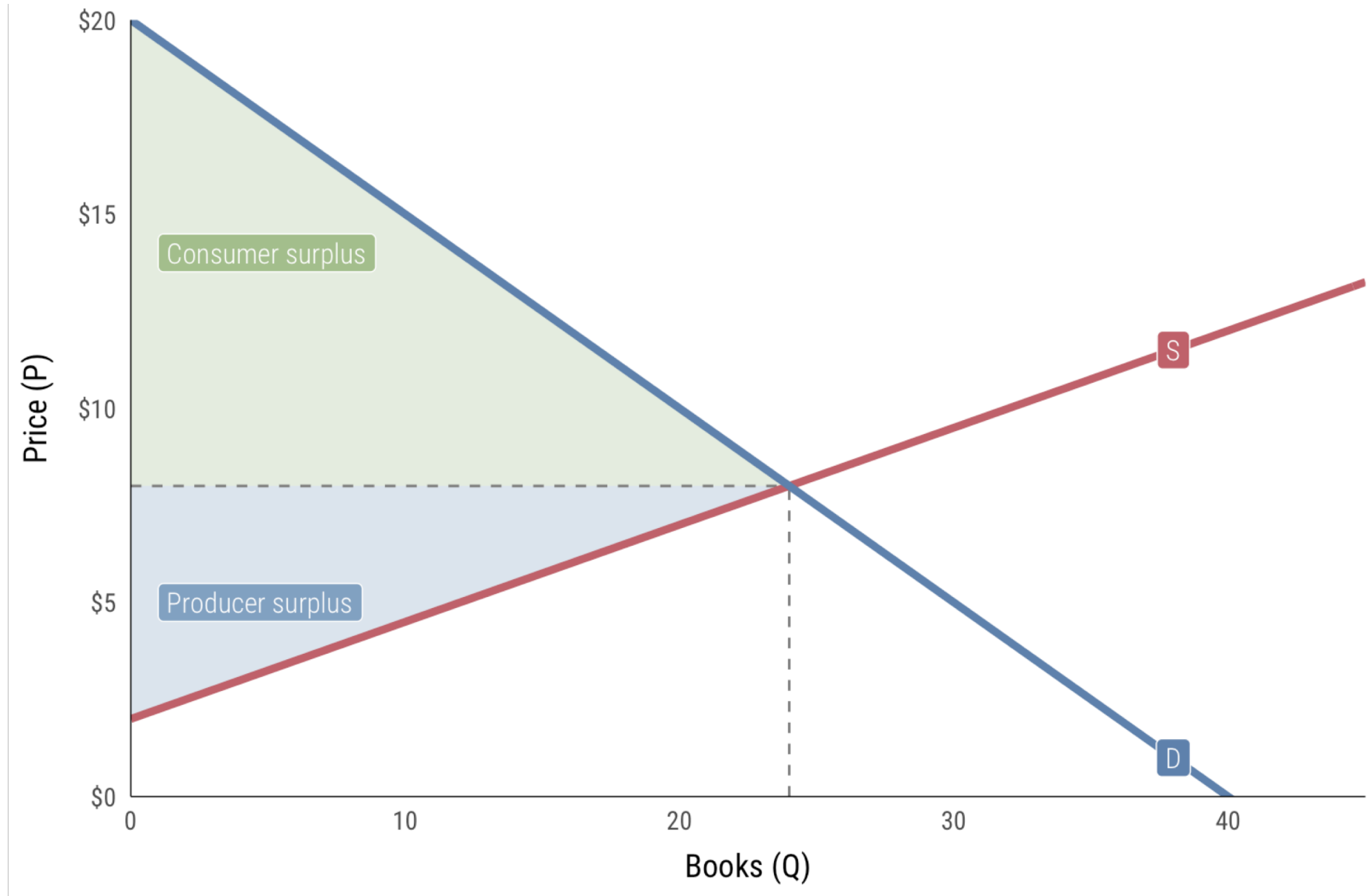
$$\text{Price} = \text{WTP}$$

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

MONOPOLIES

Math time!

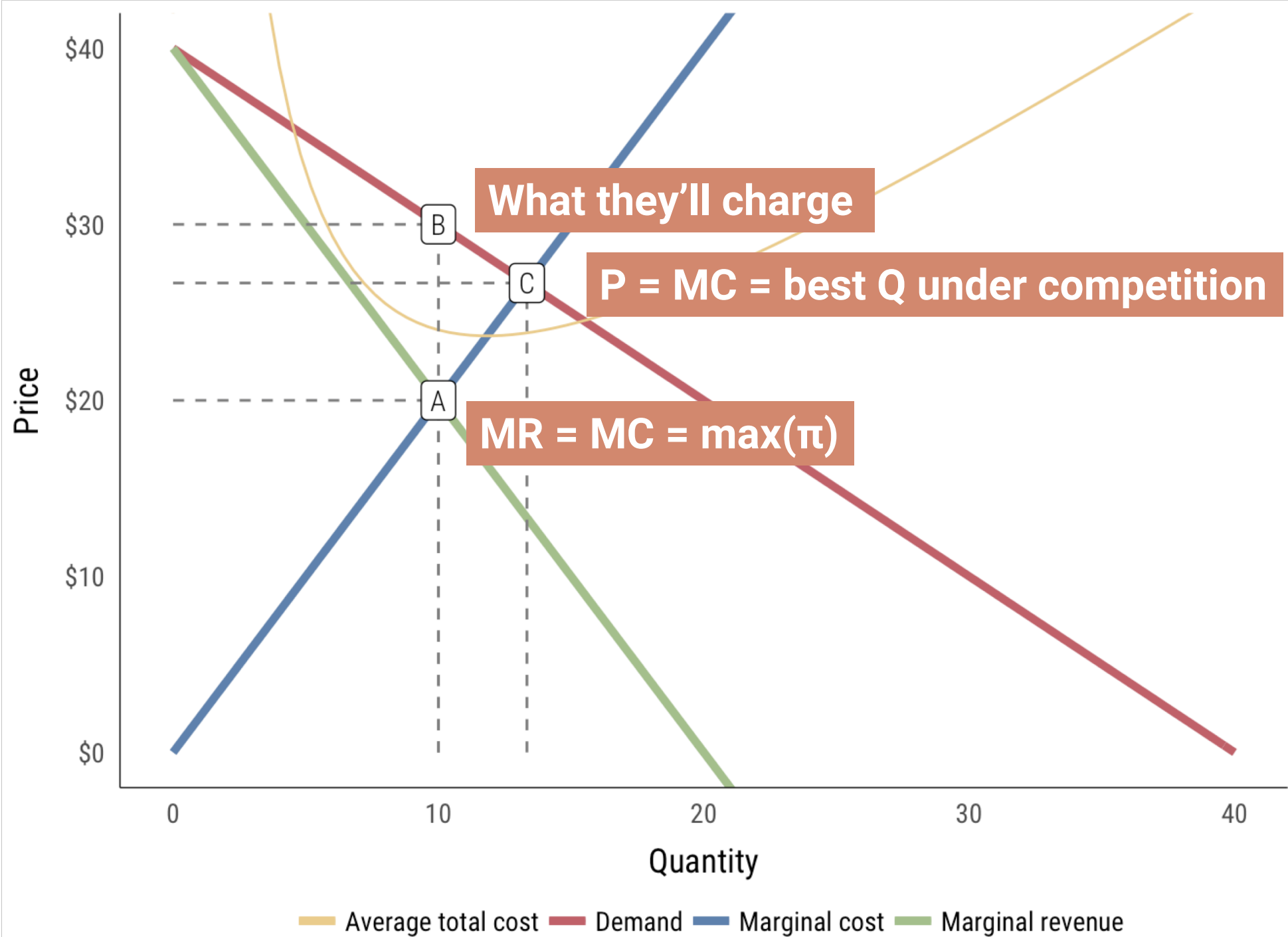
$$\text{Demand : } P = -Q + 40$$

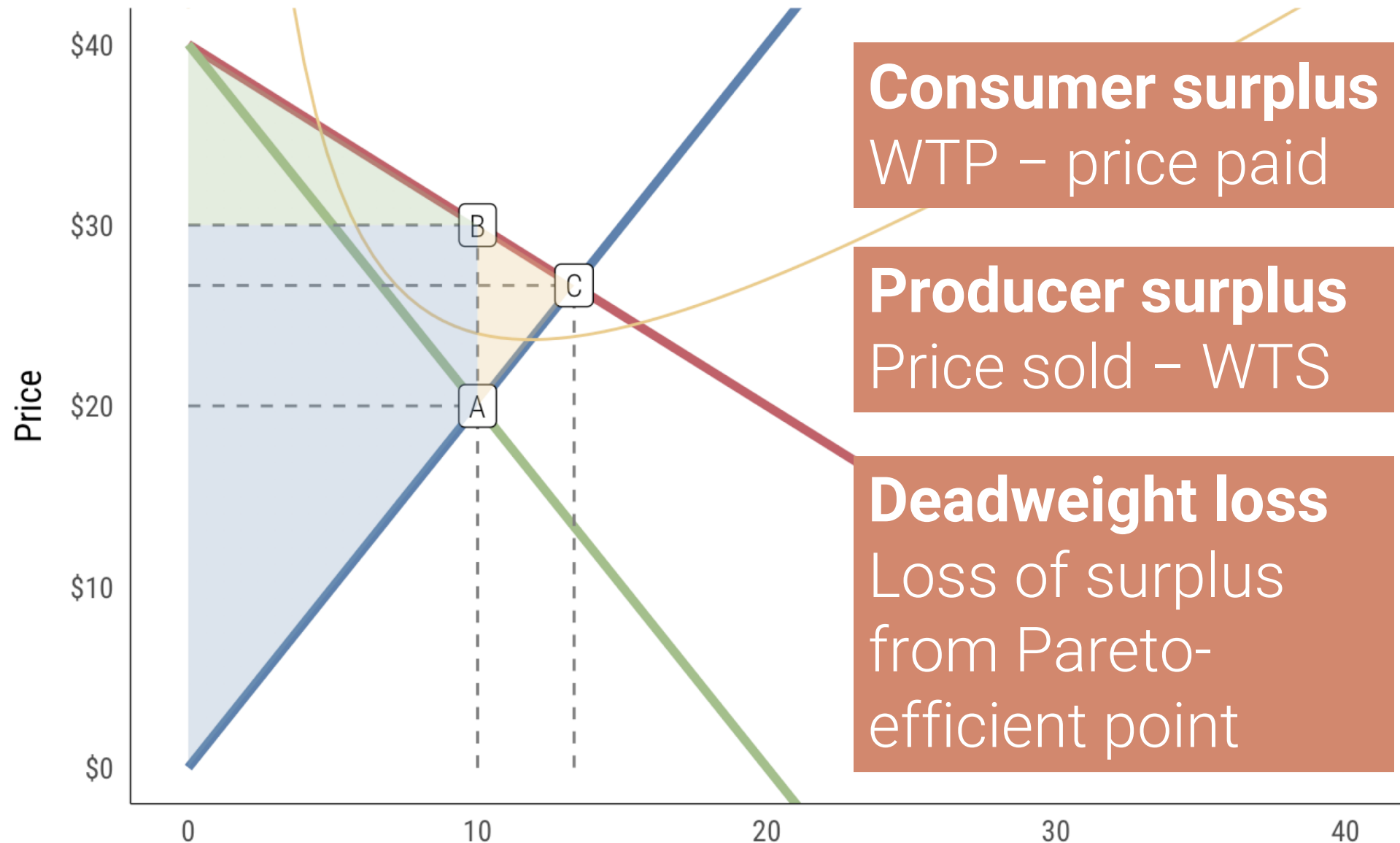
$$\text{TR : } P = -Q^2 + 40Q$$

$$\text{MR : } P = -2Q + 40$$

$$\text{TC : } P = Q^2 + 14Q$$

$$\text{MC : } P = 2Q$$





Consumer surplus
WTP – price paid

Producer surplus
Price sold – WTS

Deadweight loss
Loss of surplus
from Pareto-
efficient point

— Average total cost — Marginal cost — Consumer surplus — Producer surplus
— Demand — Marginal revenue — Deadweight loss

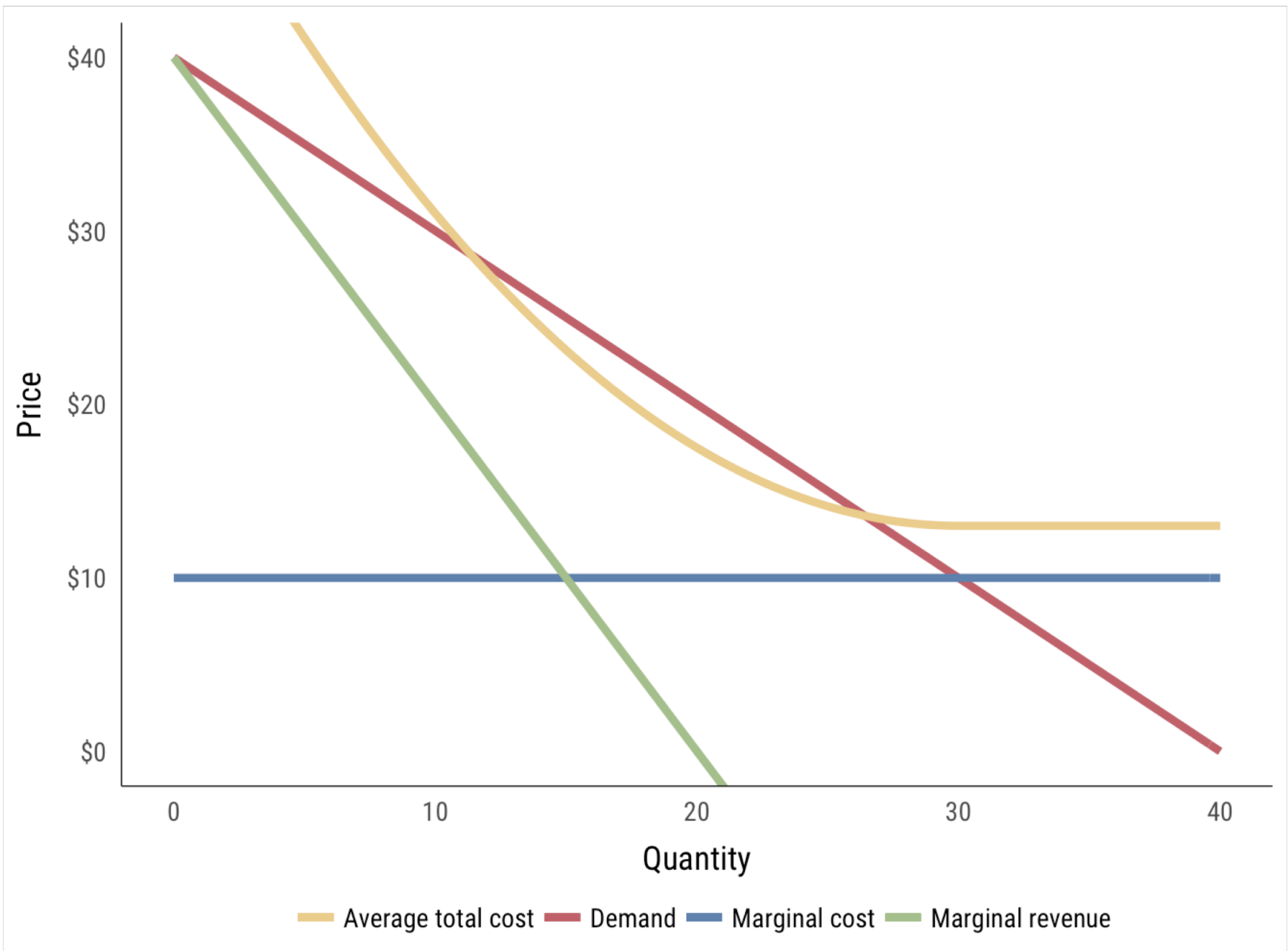
NATURAL MONOPOLIES

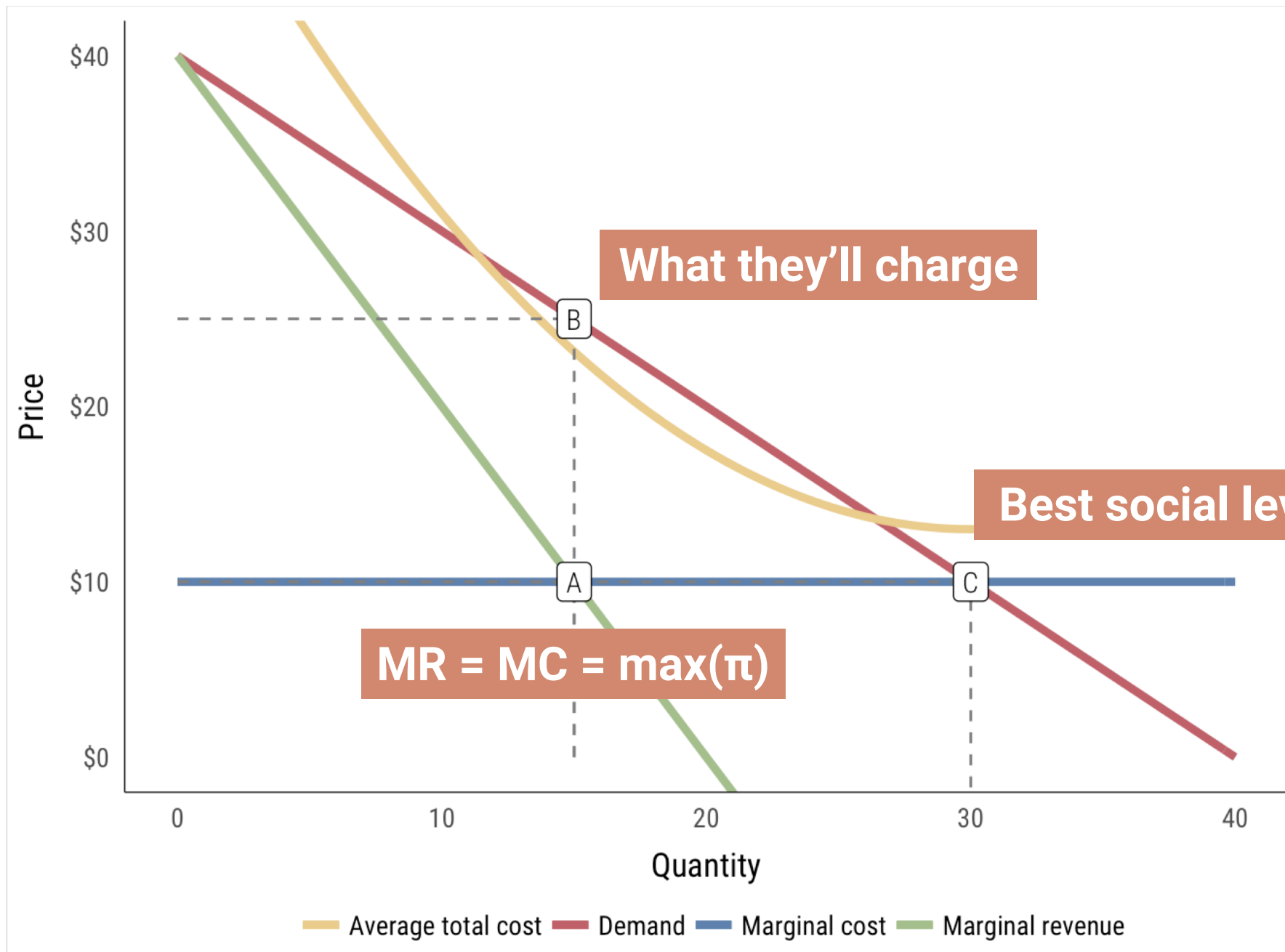
Big expensive things with large capital outlays and low marginal cost

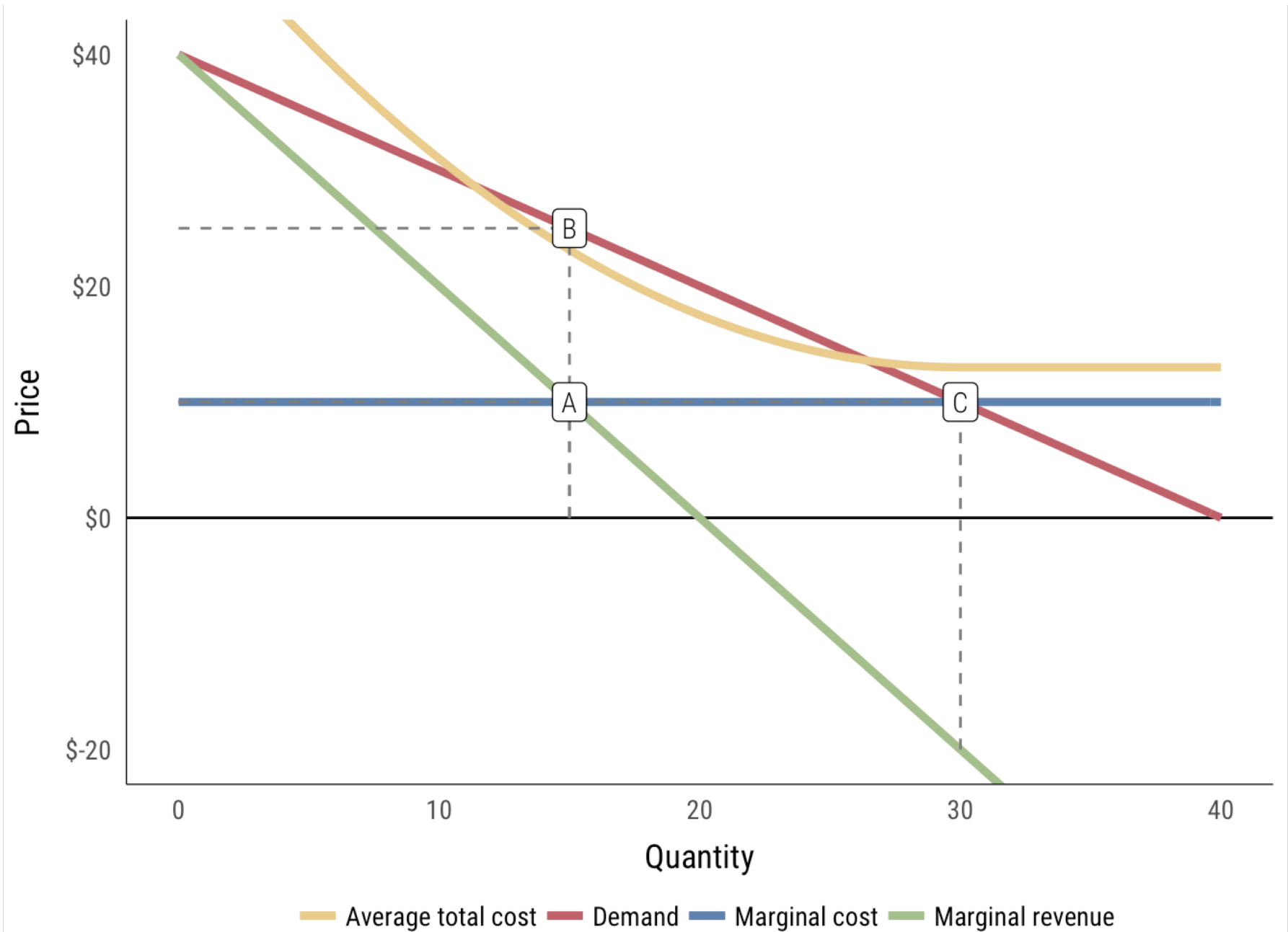
Generally more efficient to just have one firm handle it

Utilities

Public transportation







SWITCHING COSTS

**Make it harder for consumers
to switch away from you**

Brand-exclusive benefits

Technology constraints

Search costs

Network costs