

# Cost-benefit analysis II

MPA 612: Public Management Economics

March 28, 2018

*Fill out your reading report on Learning Suite!*



# Plan for today

How do we judge projects?

Why is CBA controversial?

Lots of CBA practice

Current events

How do we  
judge projects?

# Important CBA numbers

**Benefit cost ratio (BCR):**  
Total benefits / Total cost

**Internal rate of return (IRR):**  
Breakeven discount rate

**Net present value (NPV):**  
Benefits - costs

# Standards of fairness/efficiency

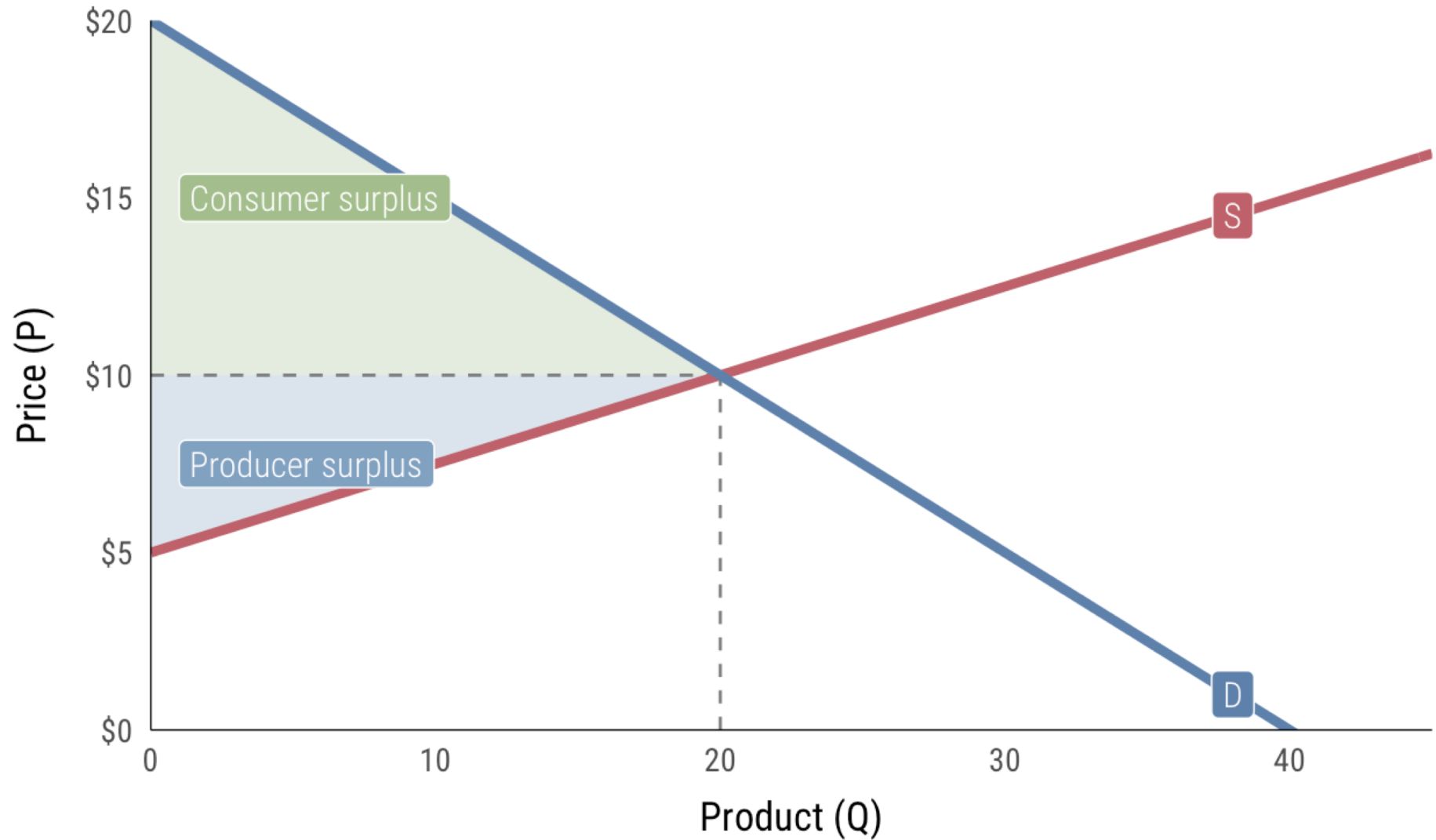
## Pareto standard

Nobody made better off without someone being made worse off

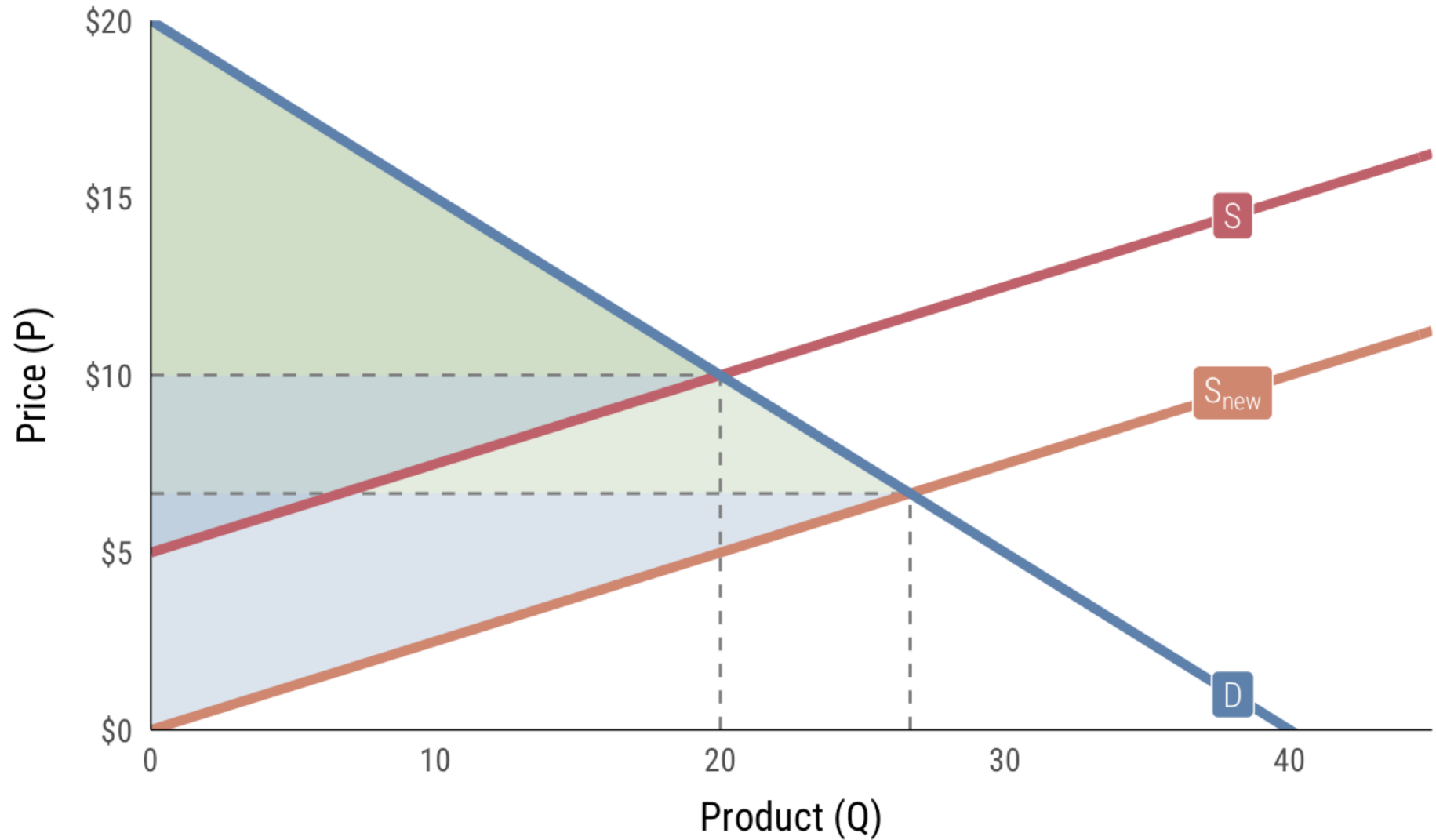
## Kaldor-Hicks standard Potential Pareto

Adopt policy iff those who gain could compensate those who lose and still be better off

# Social surplus and economic pie

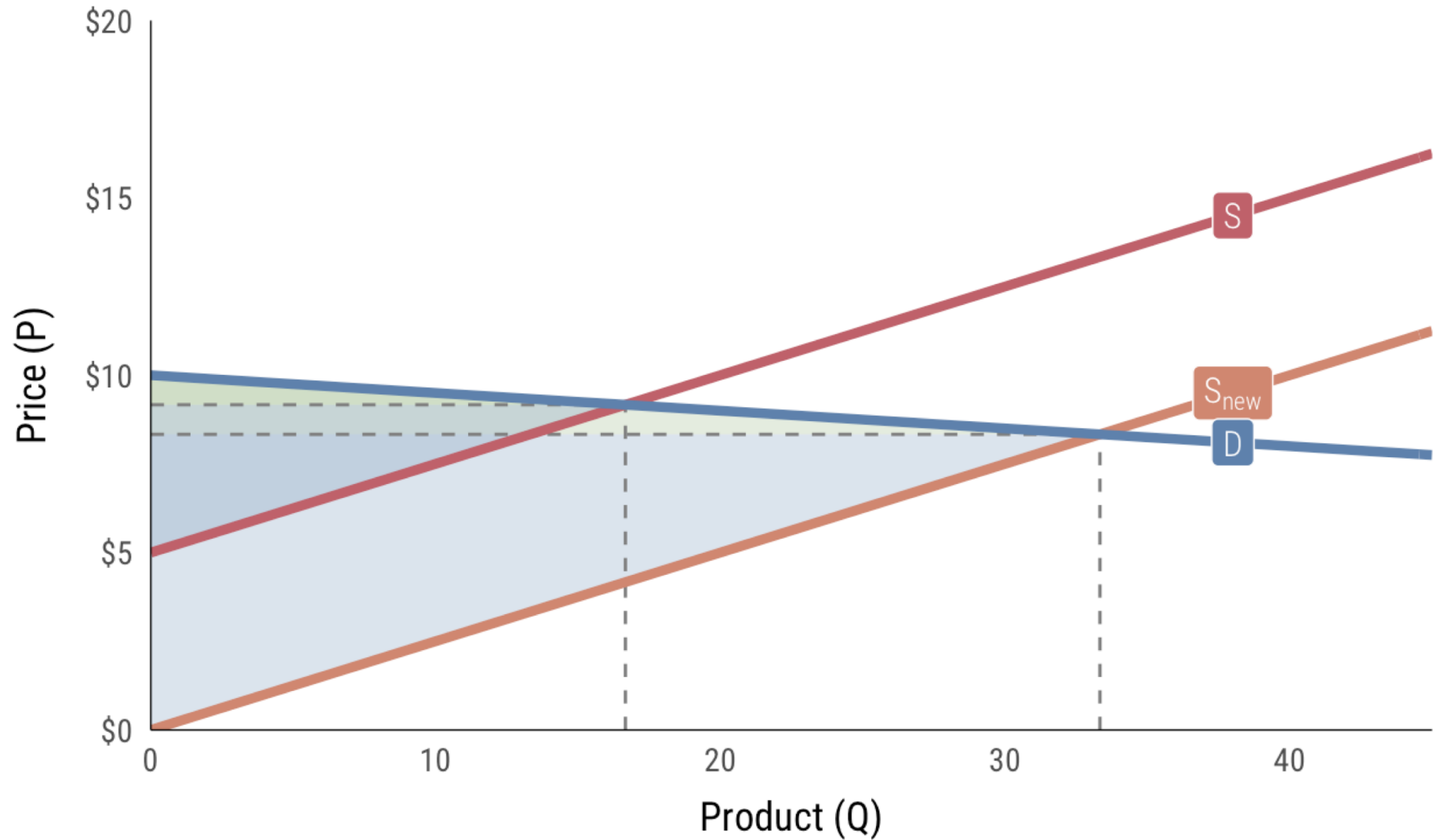


# Social surplus and economic pie

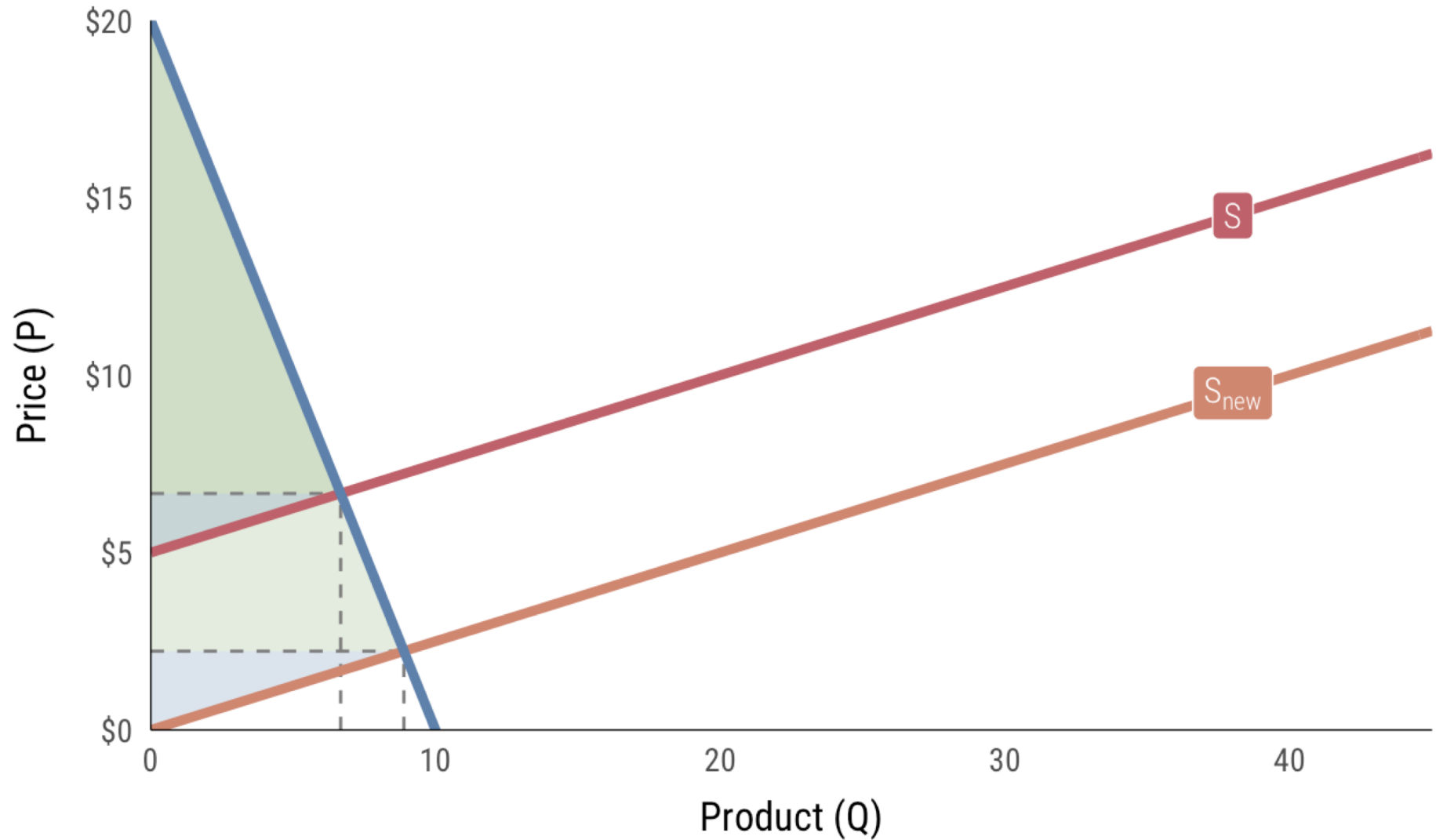




# Social surplus and economic pie



# Social surplus and economic pie



# Should we do projects or policies where $NPV < 0$ ?

Sometimes, yeah, if we're comfortable with DWL or outcome

Sin taxes; Pigovian taxes; subsidies

Justify the policy on other grounds

Why is CBA controversial?

**Incommensurability**

**Discounting**

**Distribution**

# Incommensurability

Critics say you can't monetize everything

How do you measure the benefits of cheaper electricity against the loss of a pristine view of the Grand Canyon?

Critics say life is priceless

# Incommensurability

But life is full of scarcity and tradeoffs

What if new program only hurt our view of the Grand Canyon for one 15-second interval every 10 years?

“Claiming that different values are incommensurable simply hinders clear thinking about difficult tradeoffs”

Robert Frank, “Why is Cost-Benefit Analysis So Controversial?,” *Journal of Legal Studies* 29 (2000)

# Discounting

Critics say CBA doesn't discount future utility

We don't know how much people in the future will appreciate the projects

Sure. So guess and include future generations.

And do lots of sensitivity analysis



# Distribution

This critique is trickier

Kaldor-Hicks doesn't require that compensation actually happen

Benefits depend on WTP, which can be irrational and can favor the rich

# Distribution

If  $NPV > 0$ , total social surplus (economic pie) grows

It could all go to one person though ツ

# Distribution

Issues with contingent evaluation

People think they can influence policy

People hyperbolically discount

People can't think in hypotheticals

People are loss averse

By attending class today, you have been exposed to a rare, fatal disease. The probability that you have the disease is one in a thousand. If you have the disease you will die a quick and painless death in one week. There is a cure for the disease that always works, but it has to be taken now. We do not know how much it will cost. You must say now the most you would be willing to pay for this cure. If the cure ends up costing more you won't get it. If it costs less, you will pay the stated price, not the maximum you stated. How much will you pay?

We are conducting experiments on the same disease for which we need subjects. A subject will just have to expose him or herself to the disease and risk a one-in-a-thousand chance of death. What is the minimum fee you would accept to become such a subject?

↑ **\$800**

← **\$10,000**

# Distribution

Issues with revealed preferences

VSL based on idea that high risk jobs pay more




# Distribution

Issues with revealed preferences

VSL based on idea that high risk jobs pay more

VSL based on idea that people self-sort into high risk jobs



AN ECONOMIC ANALYSIS OF A DRUG-SELLING  
GANG'S FINANCES\*

STEVEN D. LEVITT AND SUDHIR ALLADI VENKATESH

**VSL = \$50,000**



# Lots of CBA practice

Sensitivity analysis!

A country is considering installing a water treatment system in a rural community that is expected to cause environmental and direct benefits of \$1,000,000 per year for its inhabitants. The system would require an investment of \$9,000,000 and have operating and maintenance costs of \$300,000 per year for an expected life of 20 years, after which it would have no value.

If money for this type of project costs the country 6% (i.e. the discount rate is 6%), is the project justified?

If USAID is willing to pay \$4,000,000 of the investment, is the project justified?