

GEORGE MASON UNIVERSITY SCHOOL OF LAW



# Markets, Regulation, and the Competitive Process

Global Antitrust Institute

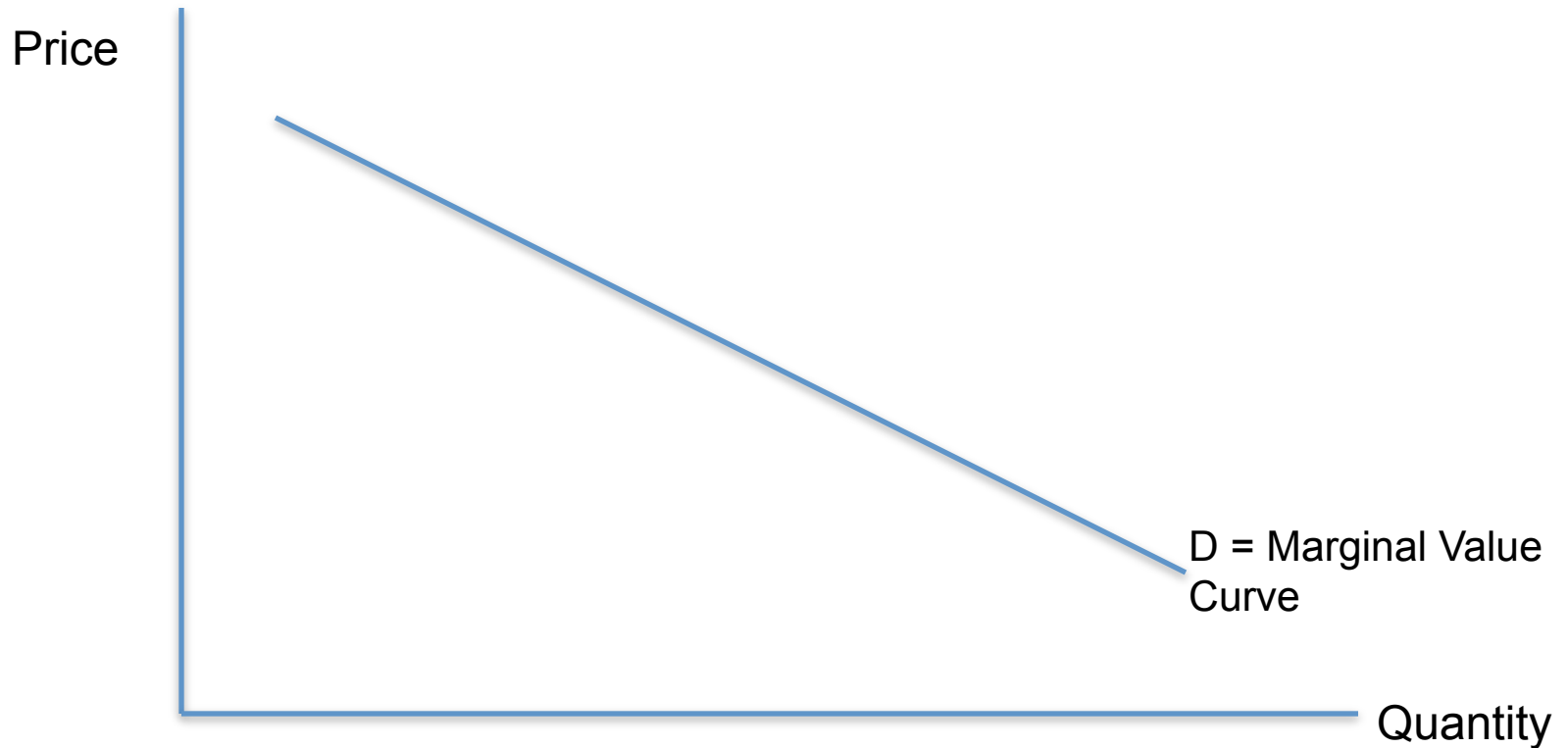
Kahuku, Hawaii

November 2015

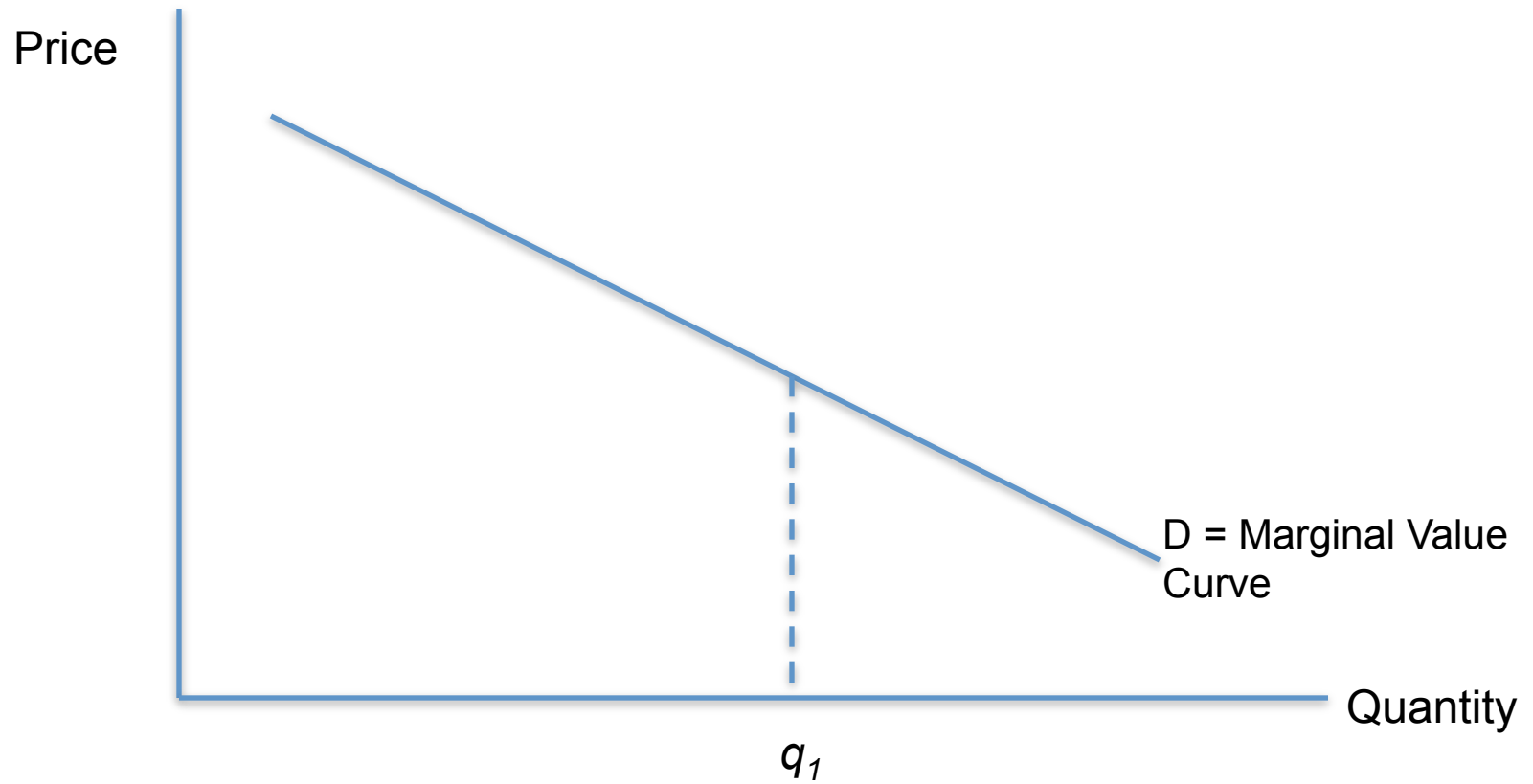
# Efficiency of Market Allocation

- Maximizing Societal Welfare
  - In equilibrium, the size of the pie – producer + consumer surplus – is maximized.
- Prices as information
  - Markets produce information in form of prices
  - Prices send signals to producers and consumers about relative scarcities
  - Incentives to enter
  - Price coordinates activities among strangers

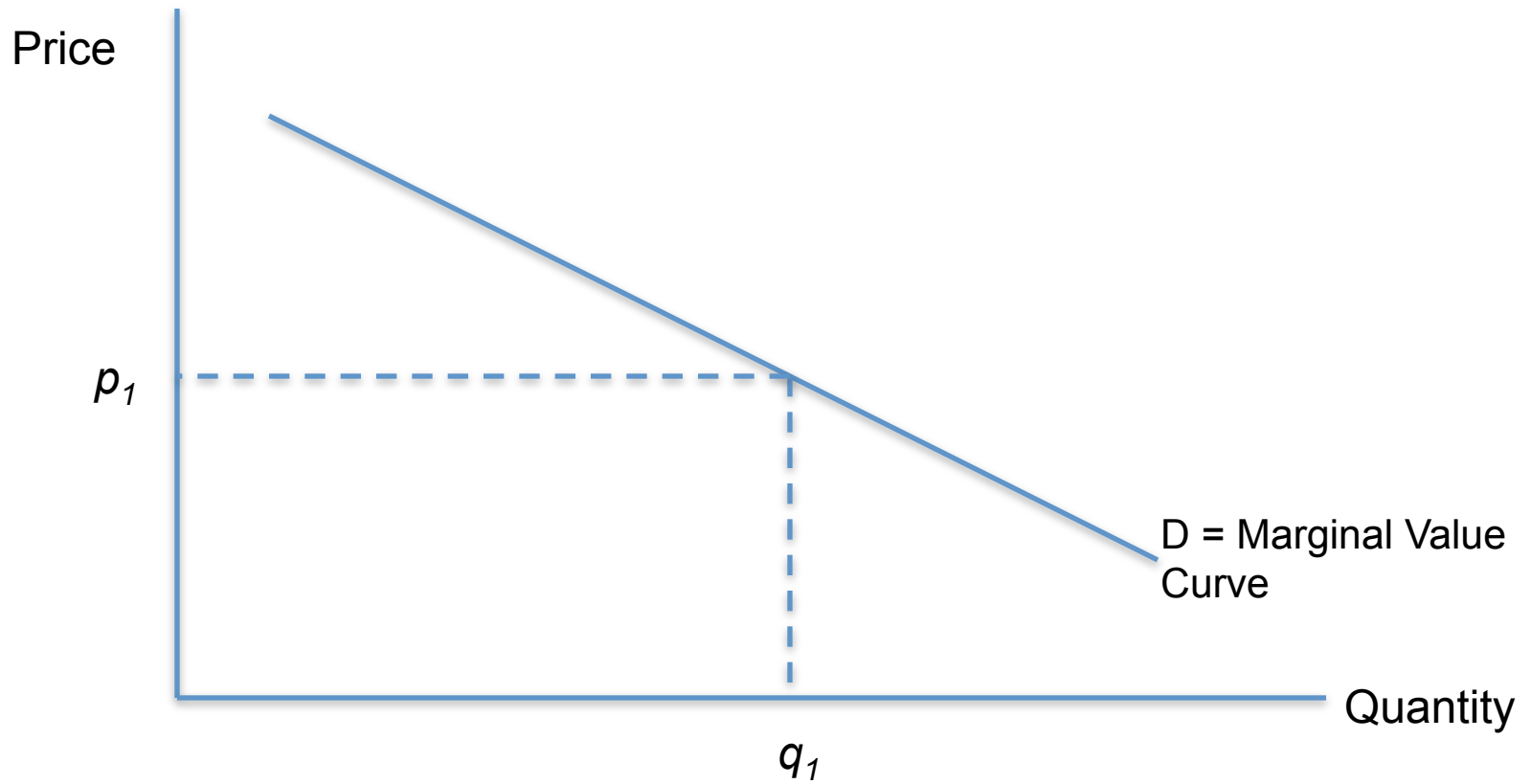
# Market Demand Curve



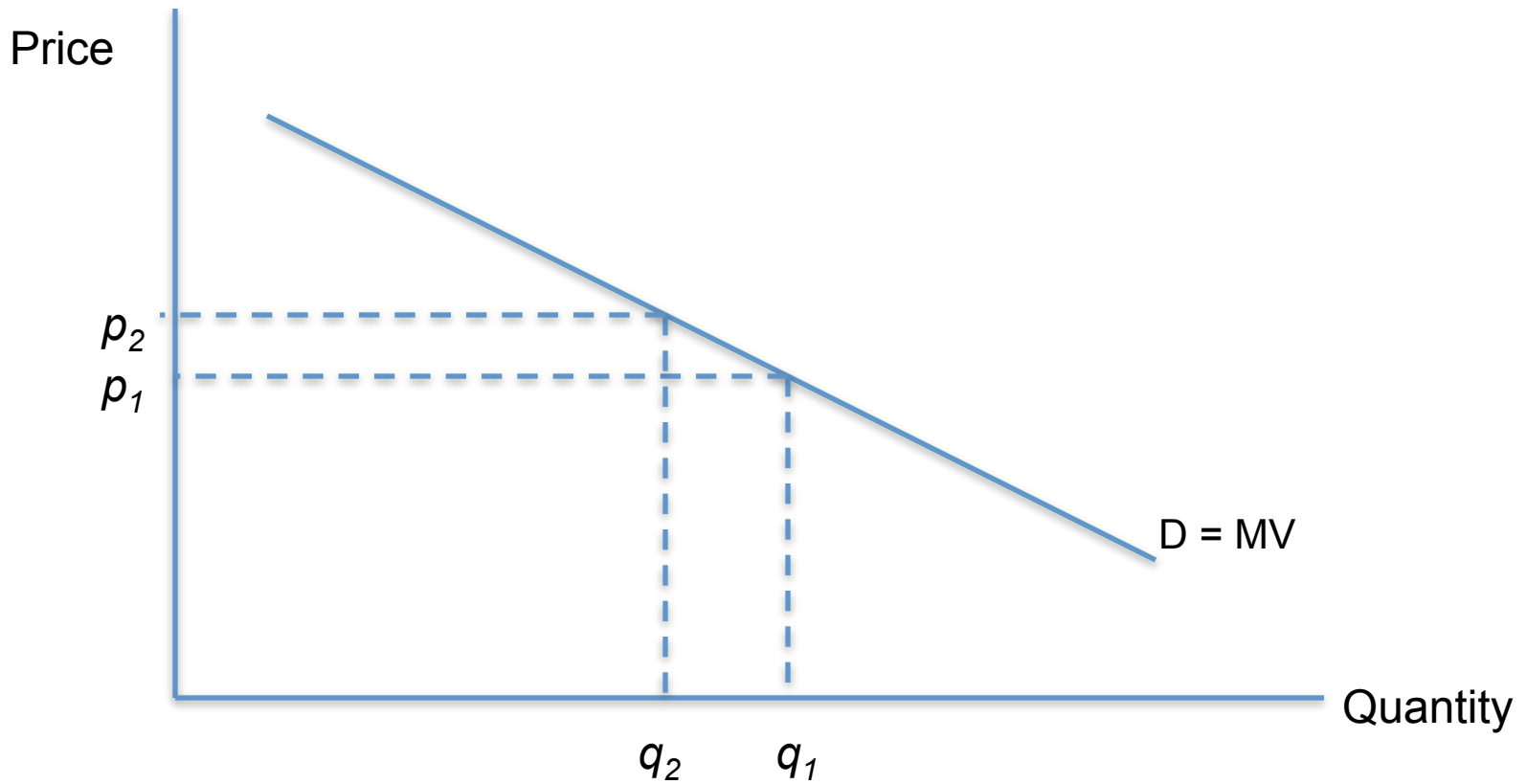
# Demand Curve



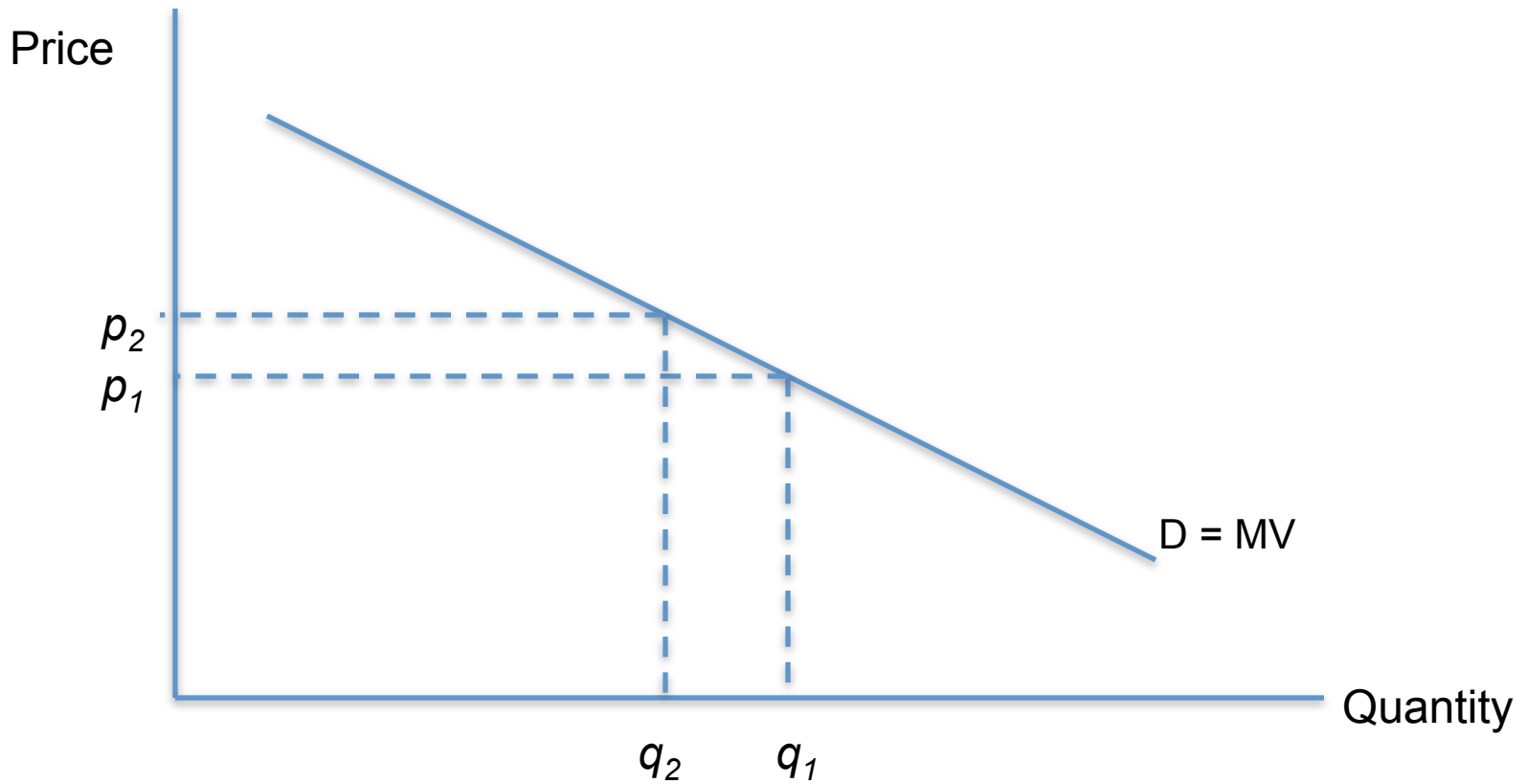
# Demand Curve



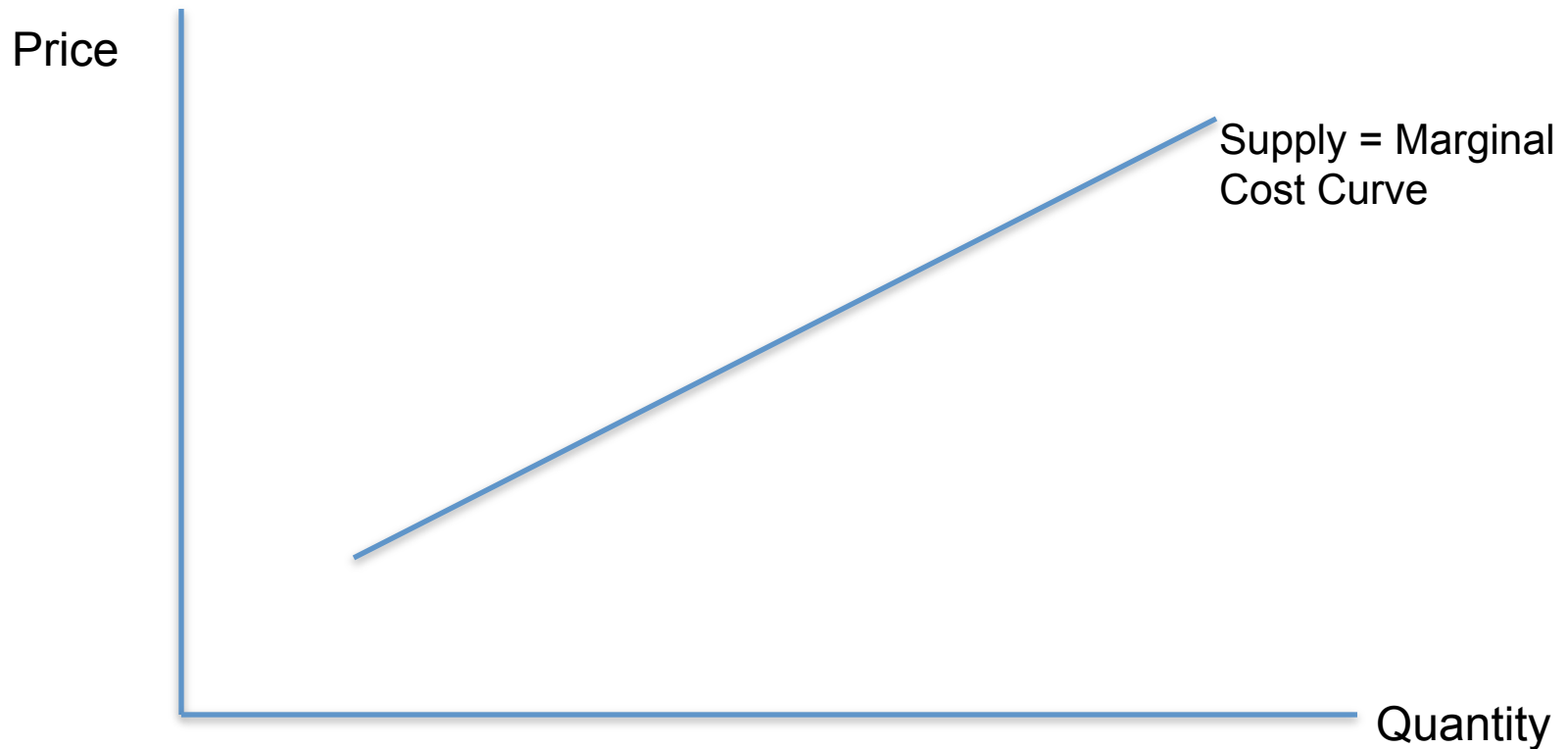
LAW OF DEMAND → Inverse relationship between price & quantity demanded, *ceteris paribus*



LAW OF DEMAND → derived from rational behavior among traders attempting to *maximize utility*

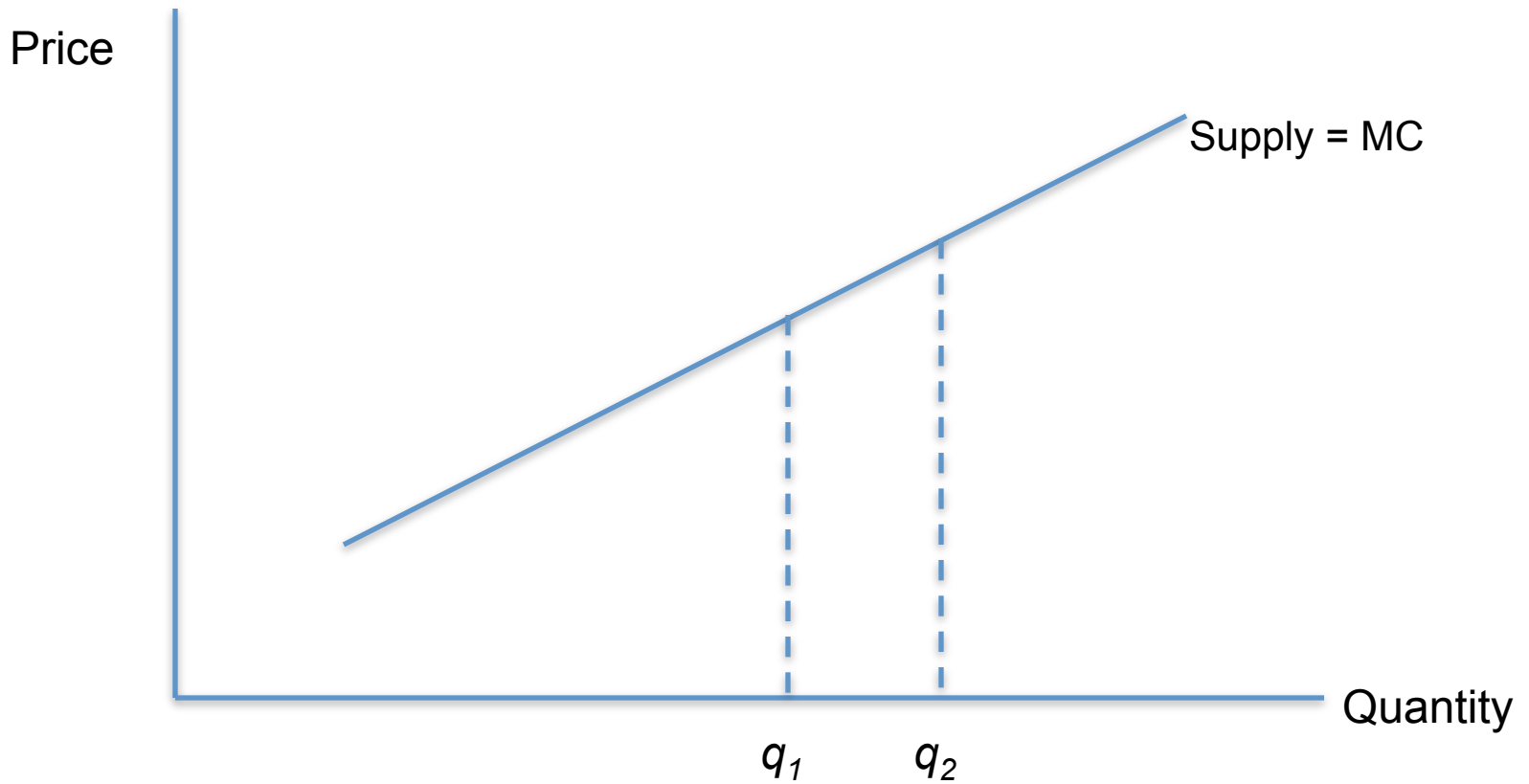


LAW OF SUPPLY → derived from rational behavior and the idea of opportunity cost

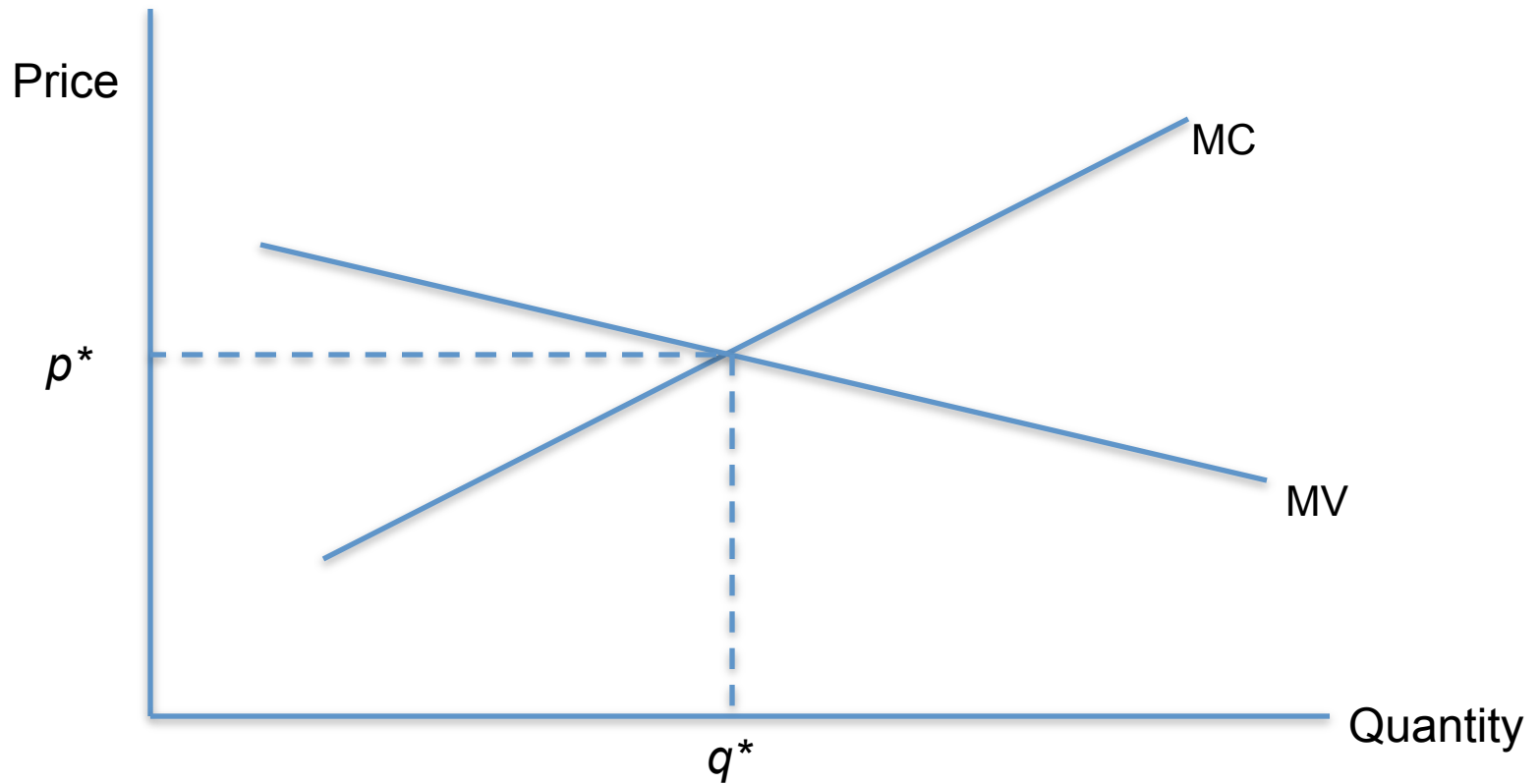




LAW OF SUPPLY → expanding supply in this market,  
pulls more inputs from others



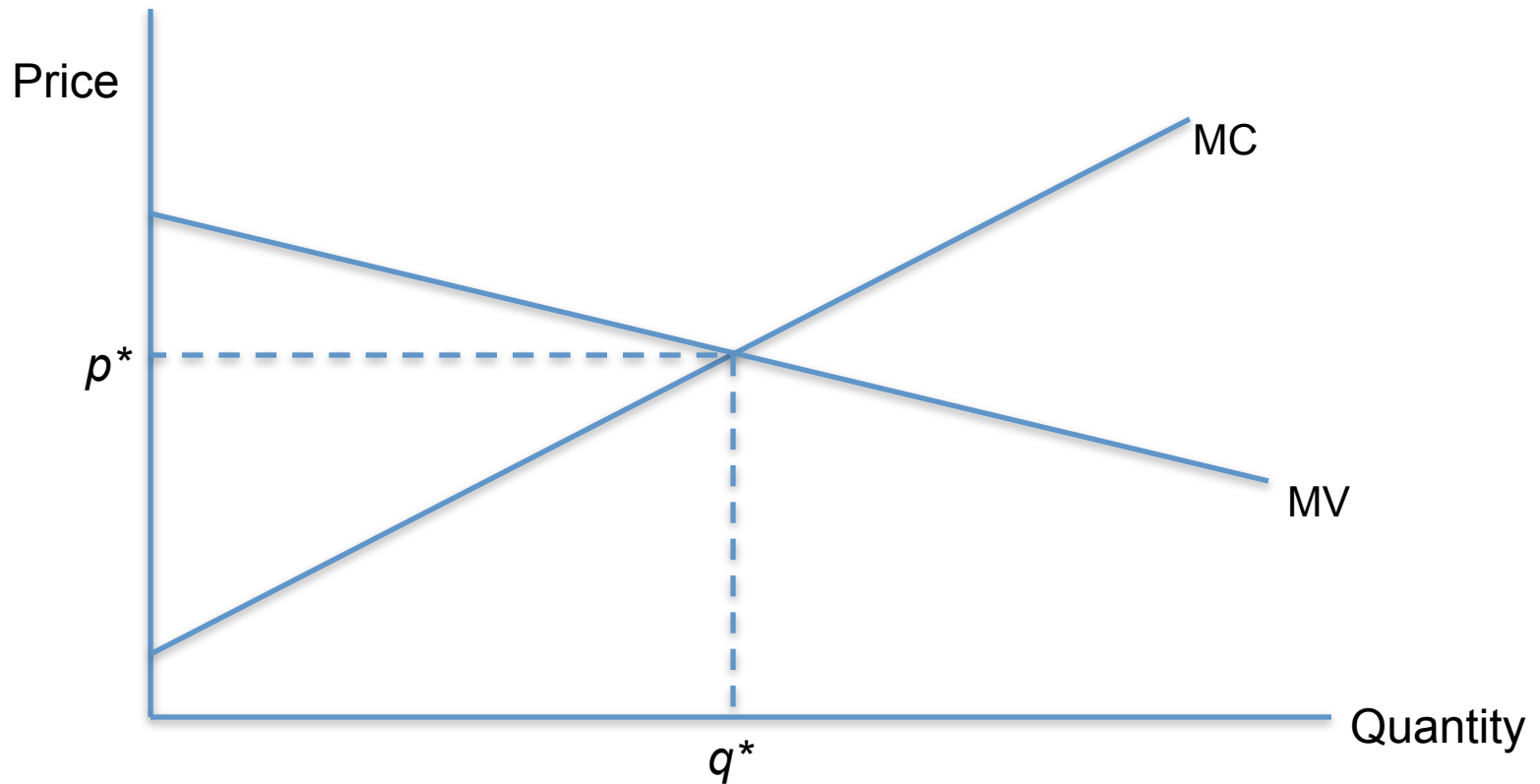
# Equilibrium



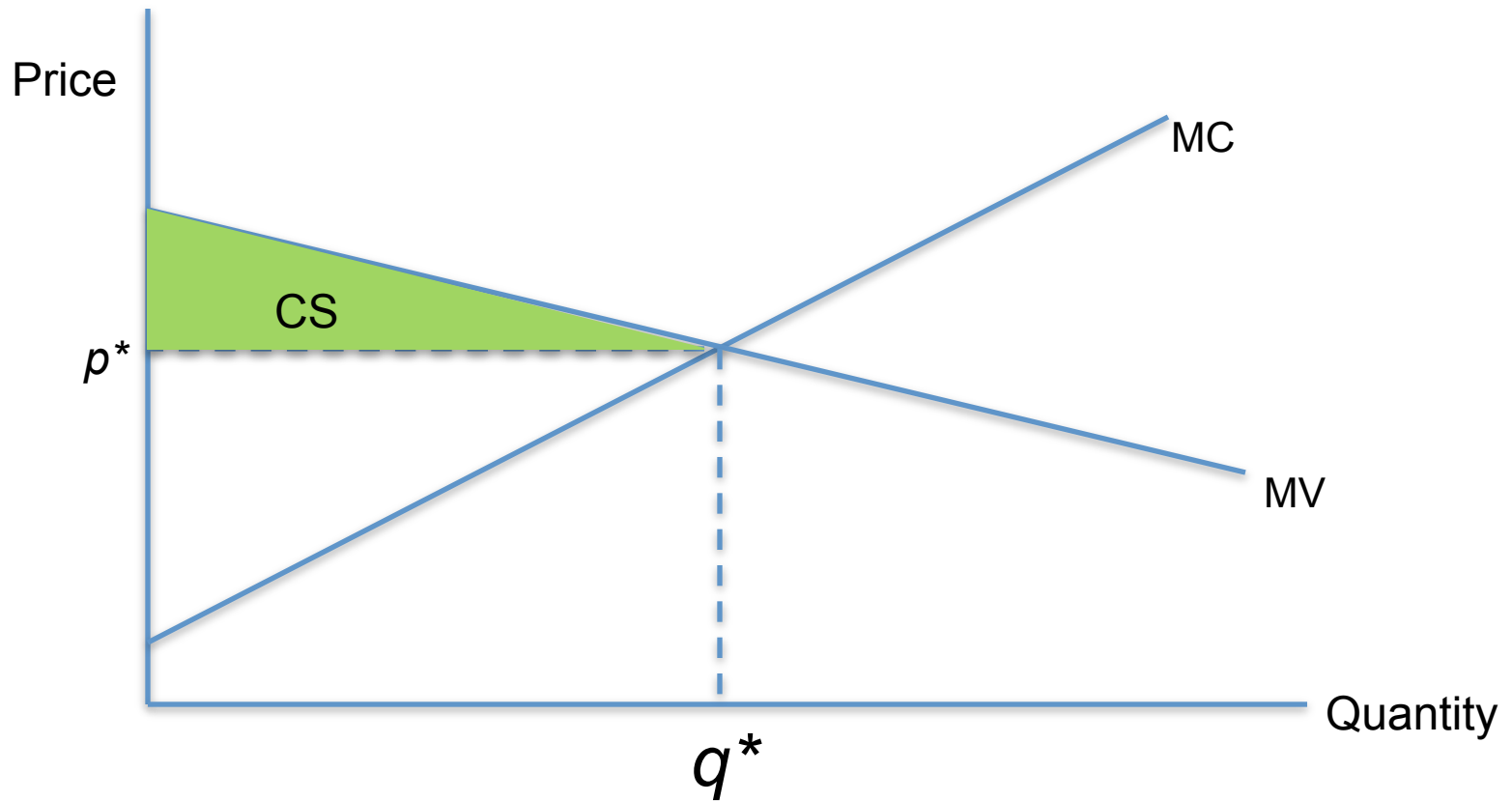
# $p^*$ , $q^*$ properties

- spontaneity
  - competitive auction process
- price signals value
  - minimum demand
  - maximum supply
- coordinates maximum total value
  - marginal conditions
  - resources used for every unit where  $MV > MC$

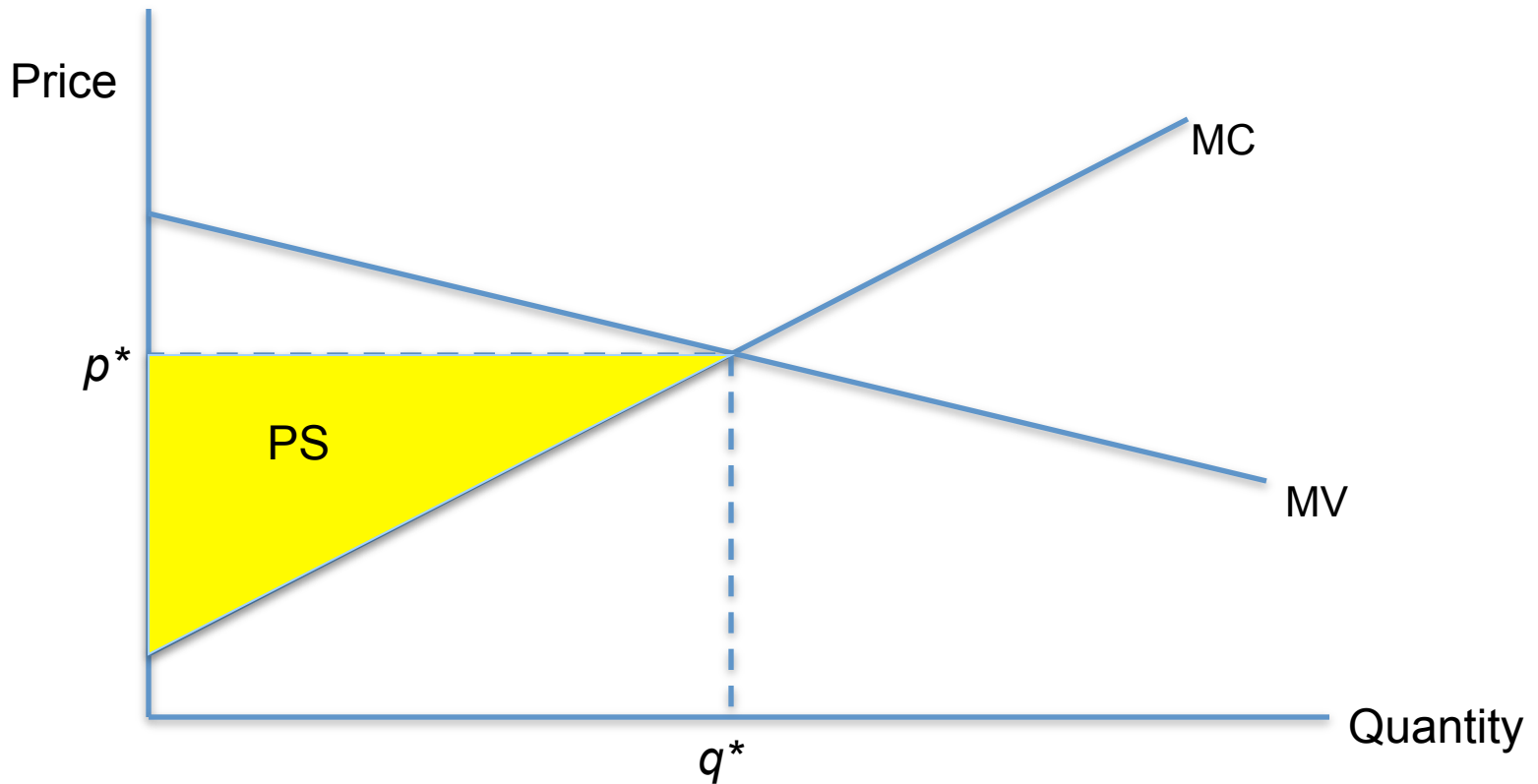
# Maximizing Social Welfare (= CS + PS)



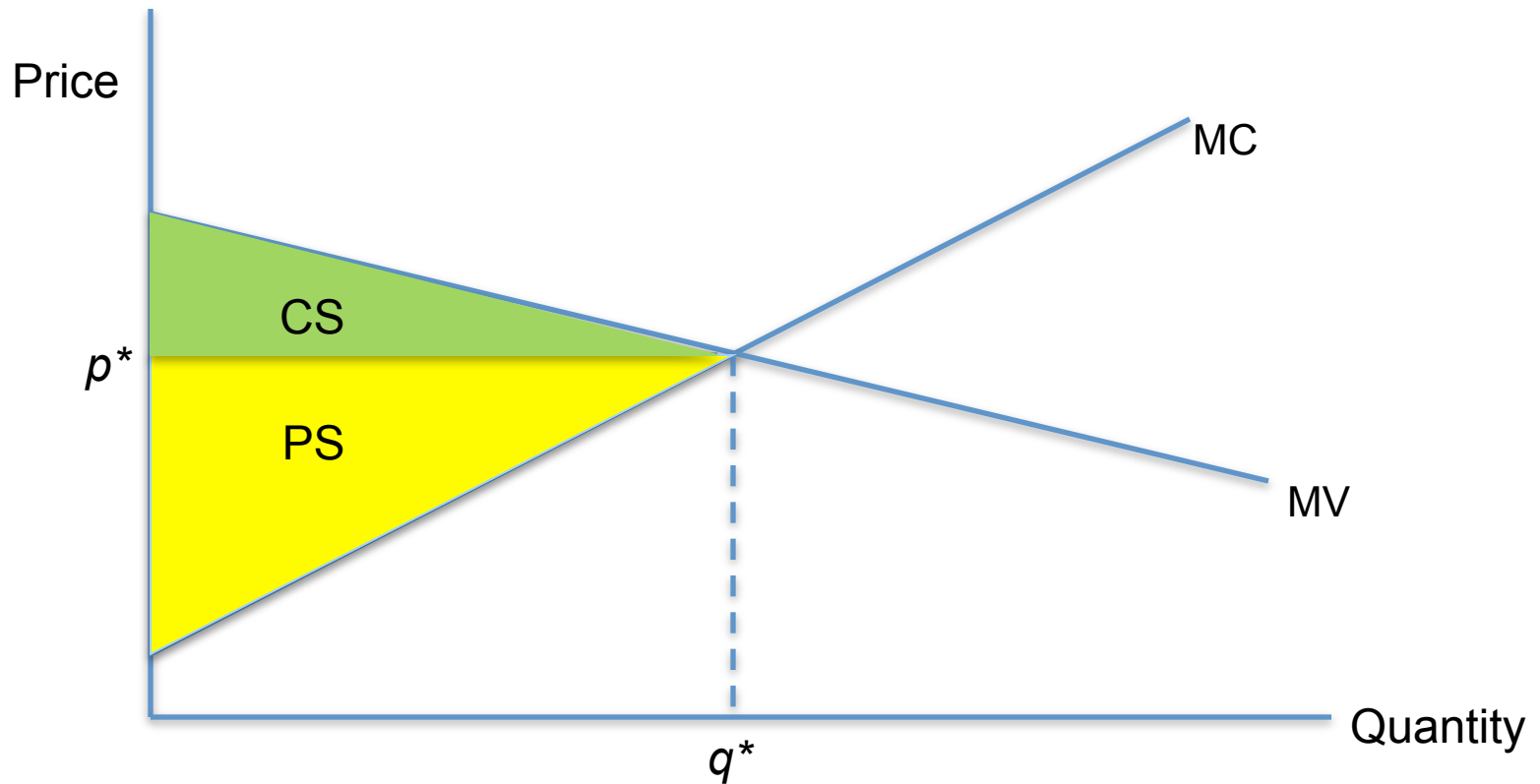
# Consumer Surplus (= WTP – price)



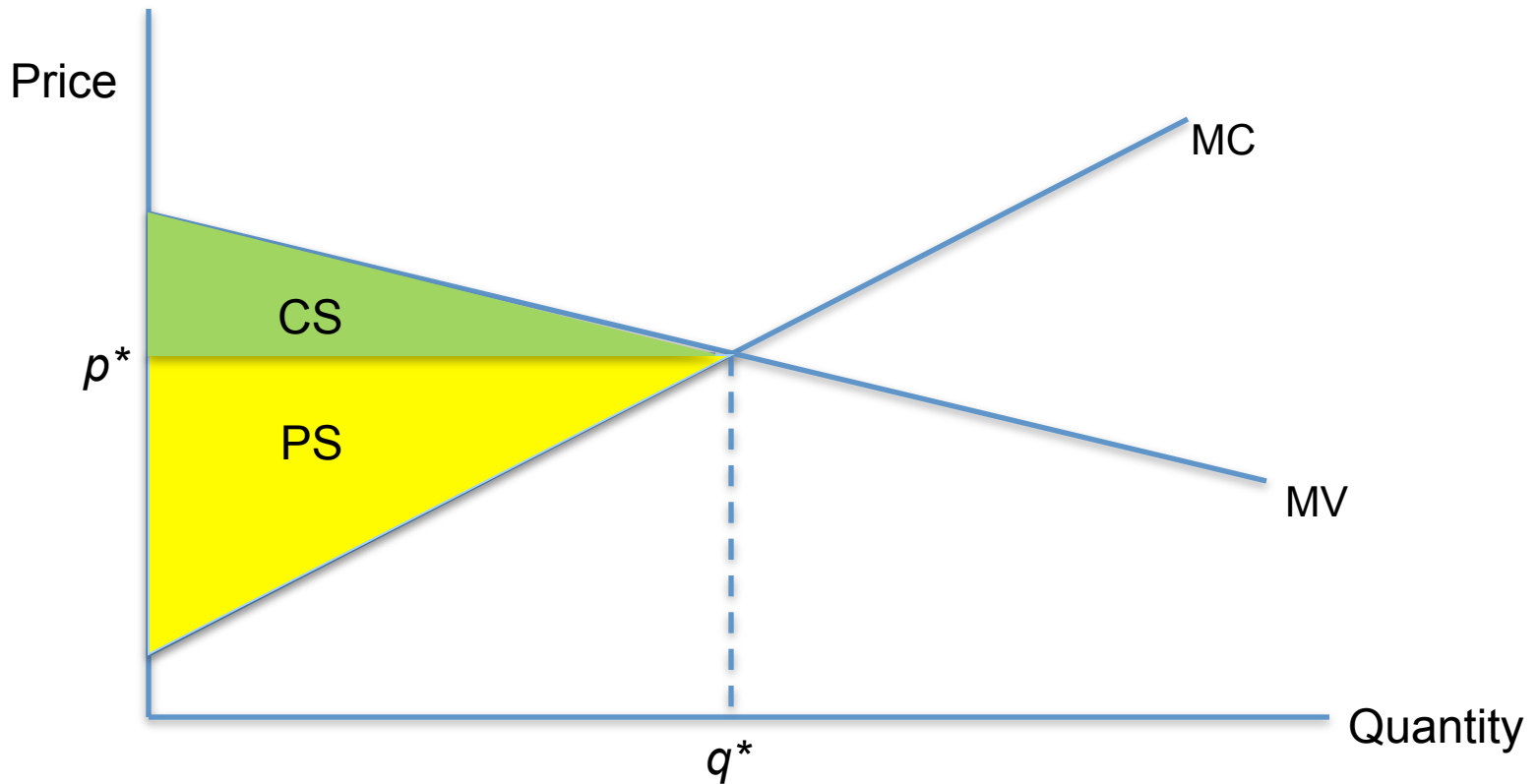
# Producers' Surplus (= price – opp cost)



# Social Welfare (= CS + PS)



# So Here's the Pie ( $SW = CS + PS$ )

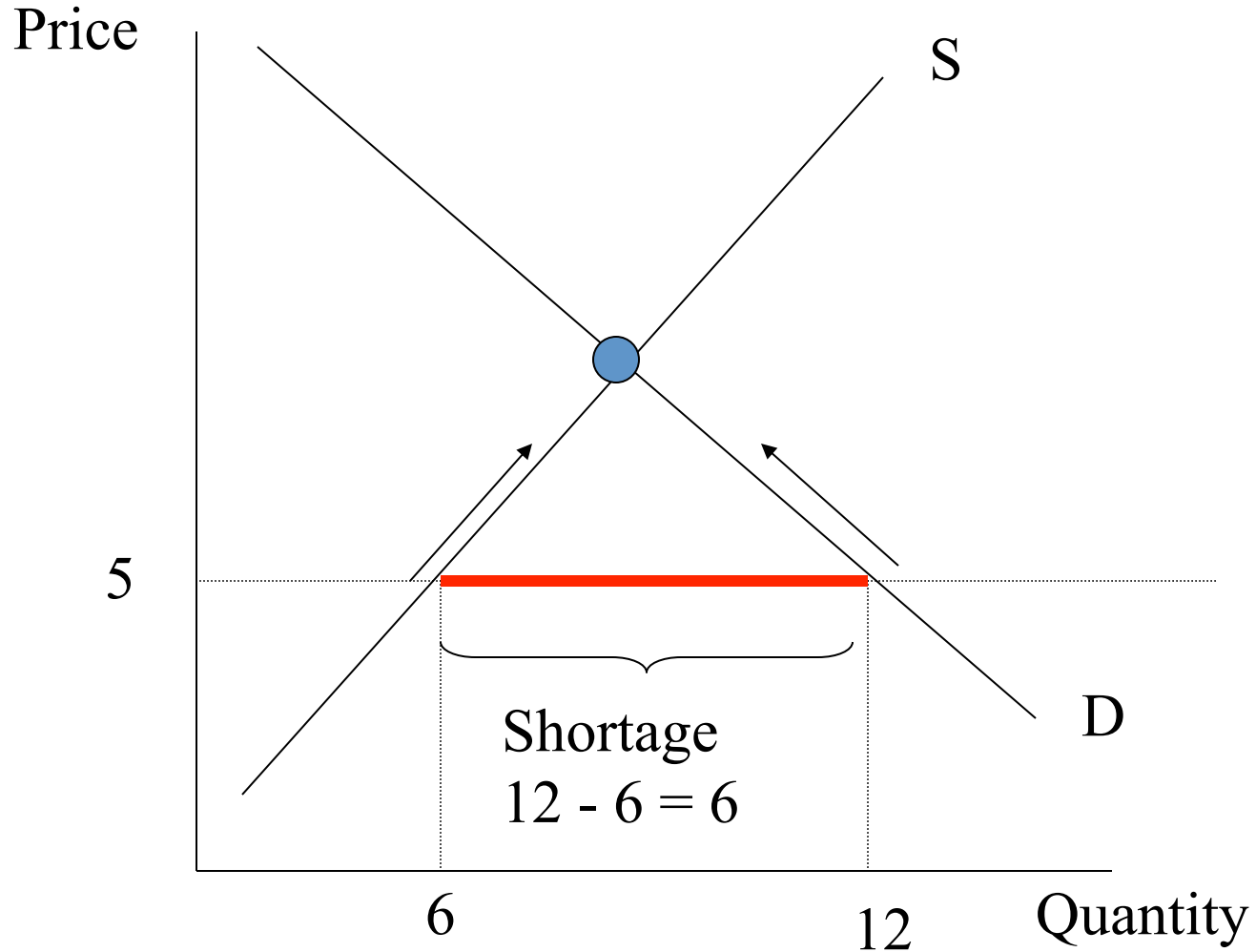




# Price Regulation & Barriers to Entry

- Prices as information
  - Markets produce information in form of prices
  - Prices send signals to producers and consumers about relative scarcities
  - Price coordinates activities among strangers
- Welfare implications of regulation
  - Barriers to entry

# If price is too low...



# If price is too high...

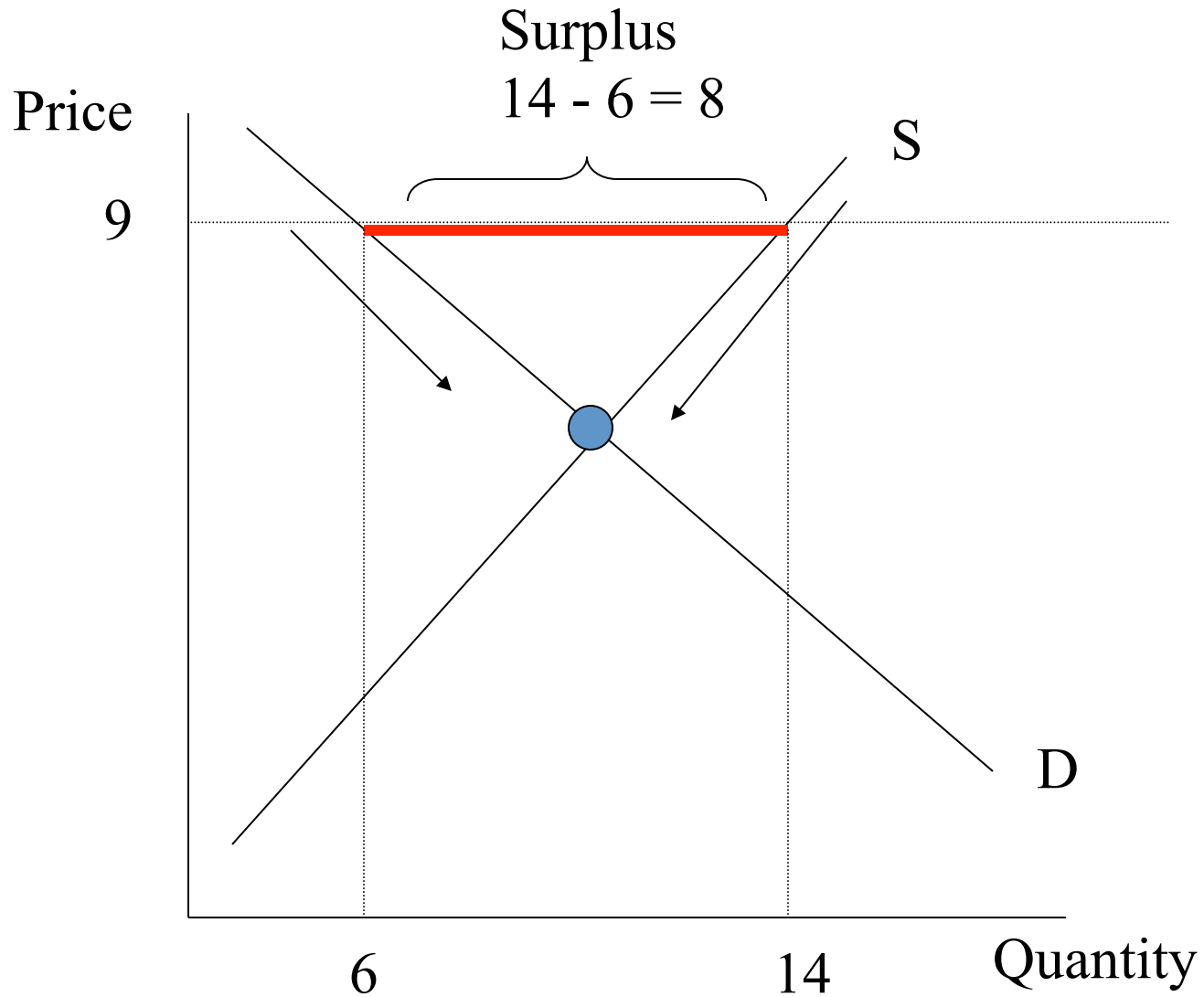
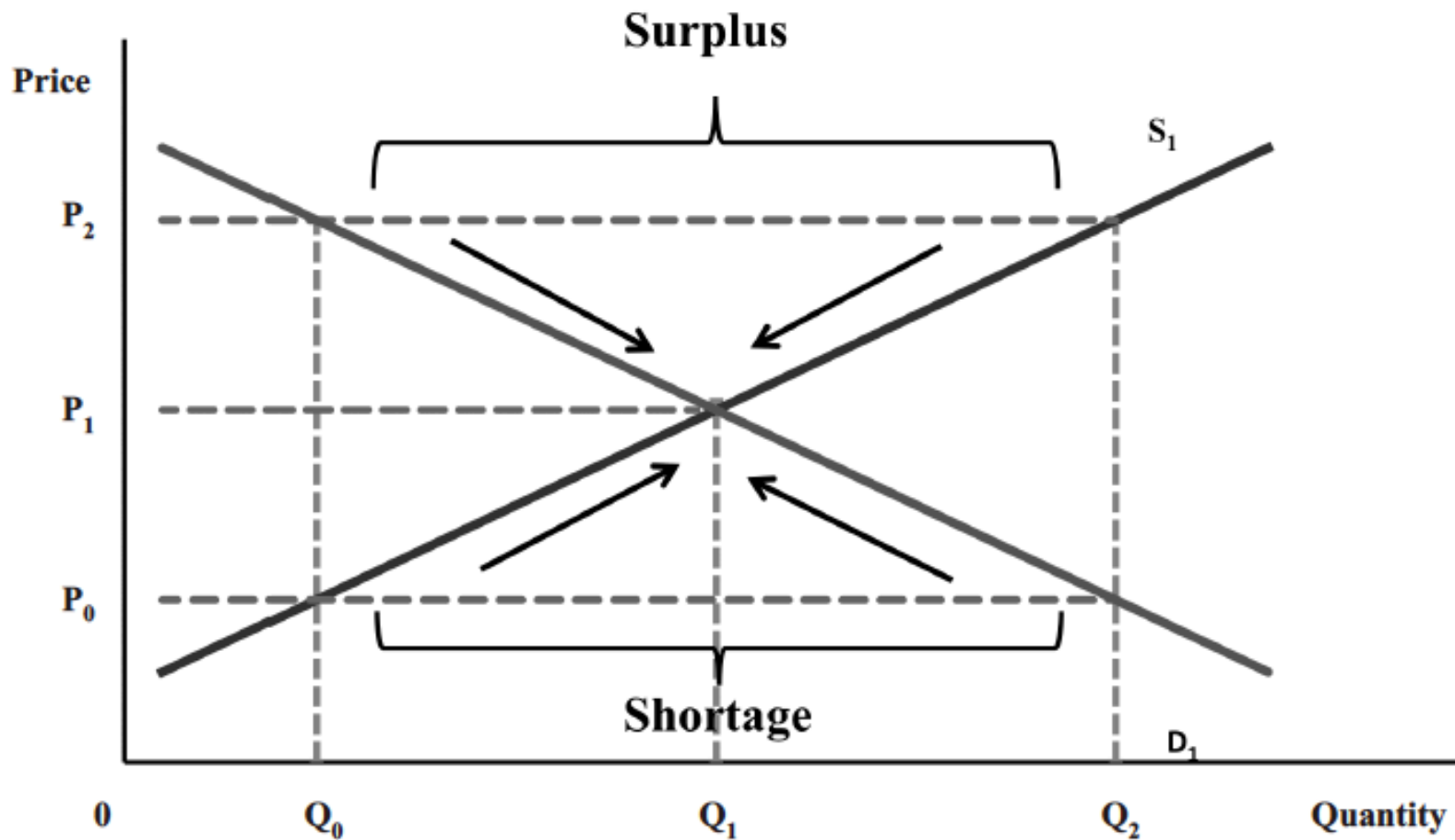


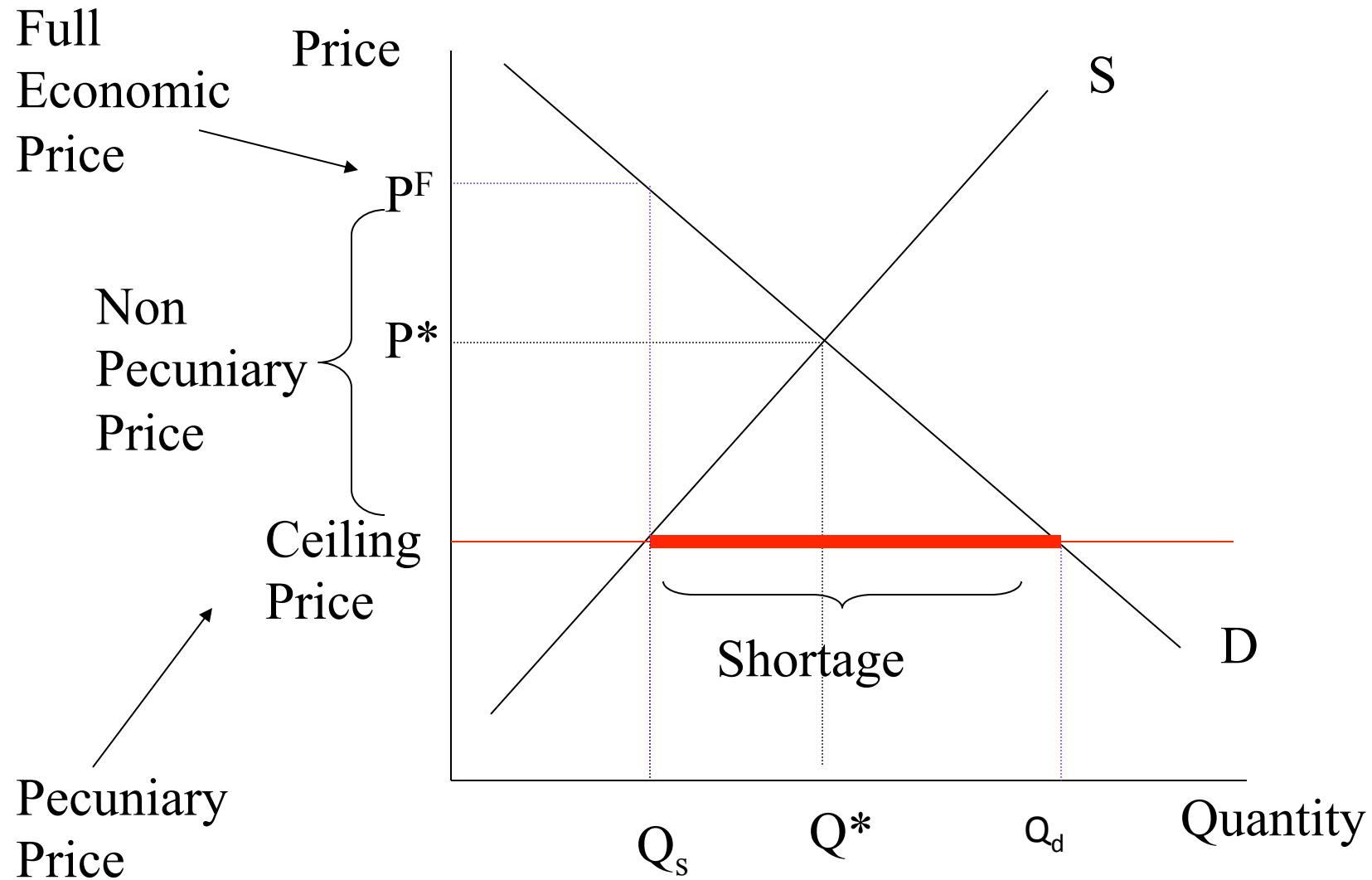
Figure II-6. Equilibrium: Market Price & Quantity



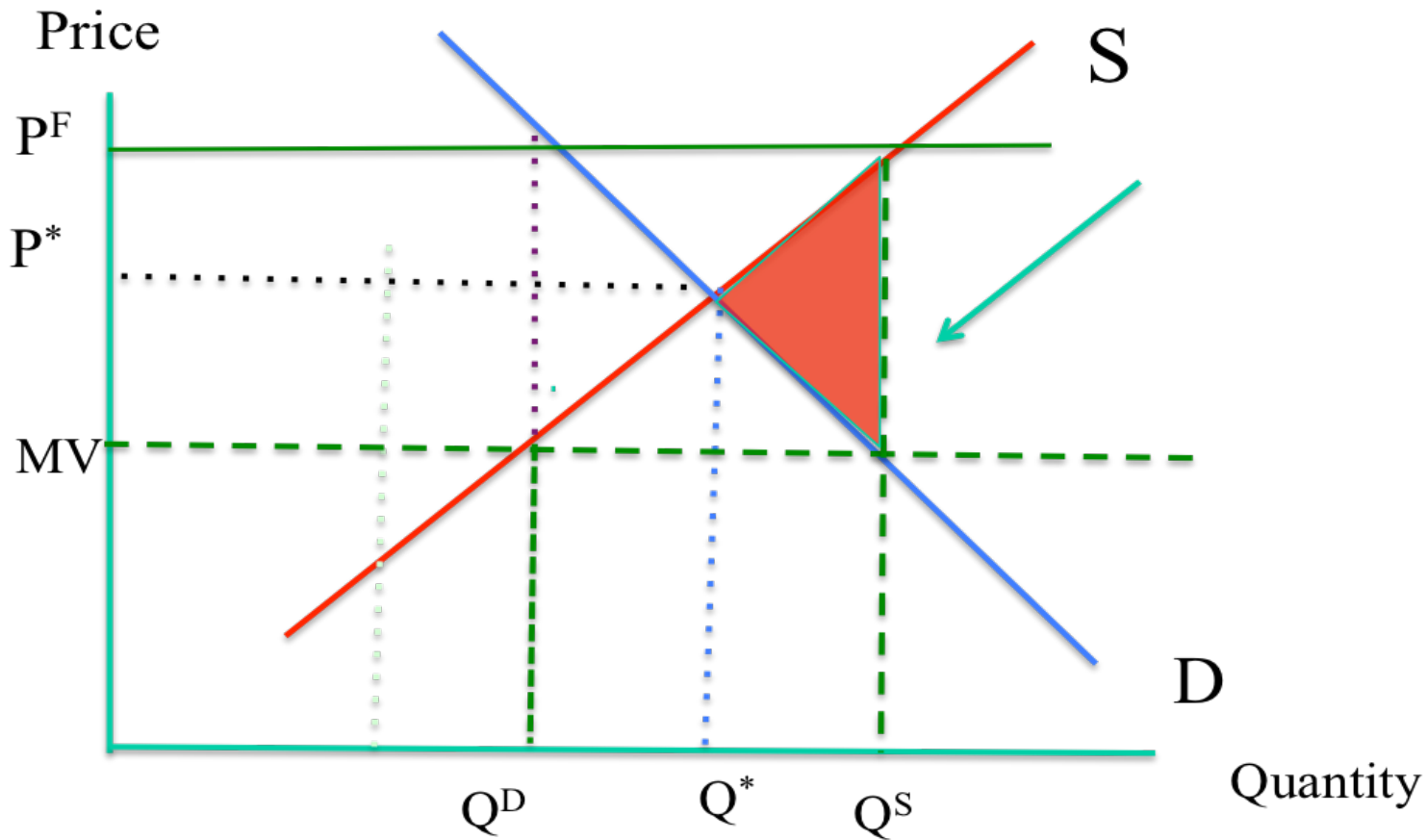
# Impact of Price Restrictions

- Price ceiling: maximum legal price **BELOW** the equilibrium market price
  - Examples: gas prices in 70s, rent control, price gouging laws, prohibitions on compensation for organ donation
- Price floor: minimum legal price **ABOVE** the equilibrium market price
  - Examples: minimum wage

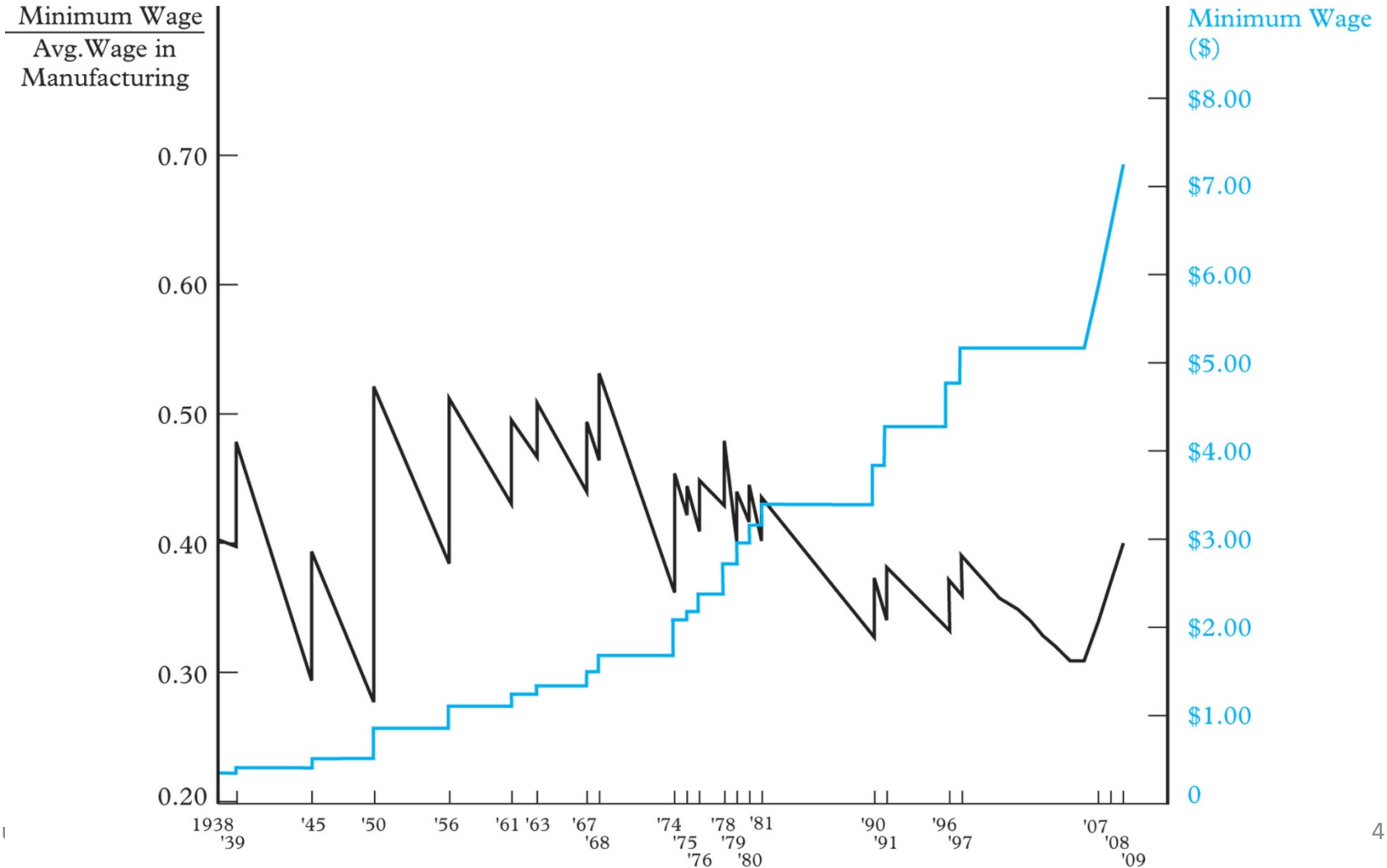
# Impact of a Price Ceiling



# Impact of a Price Floor



# Federal Minimum Wage Relative to Wages in Manufacturing, 1938–2009

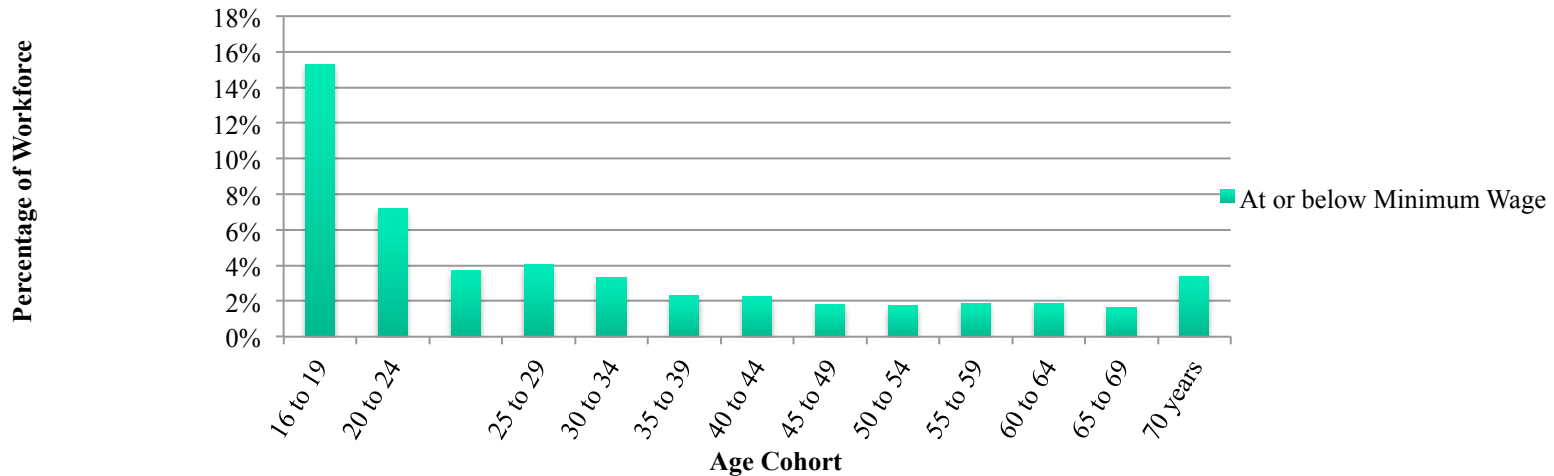




# Minimum Wage

- Only 3.9% of hourly workers earn at or below minimum wage
- 48% are 16-24.
- 65% work part time.
- 23% have yet to graduate high school
- 31% have a high school degree
- 37% have high school degree and some college

**Percentage of Workers Earning at or Below Minimum Wage by Age**



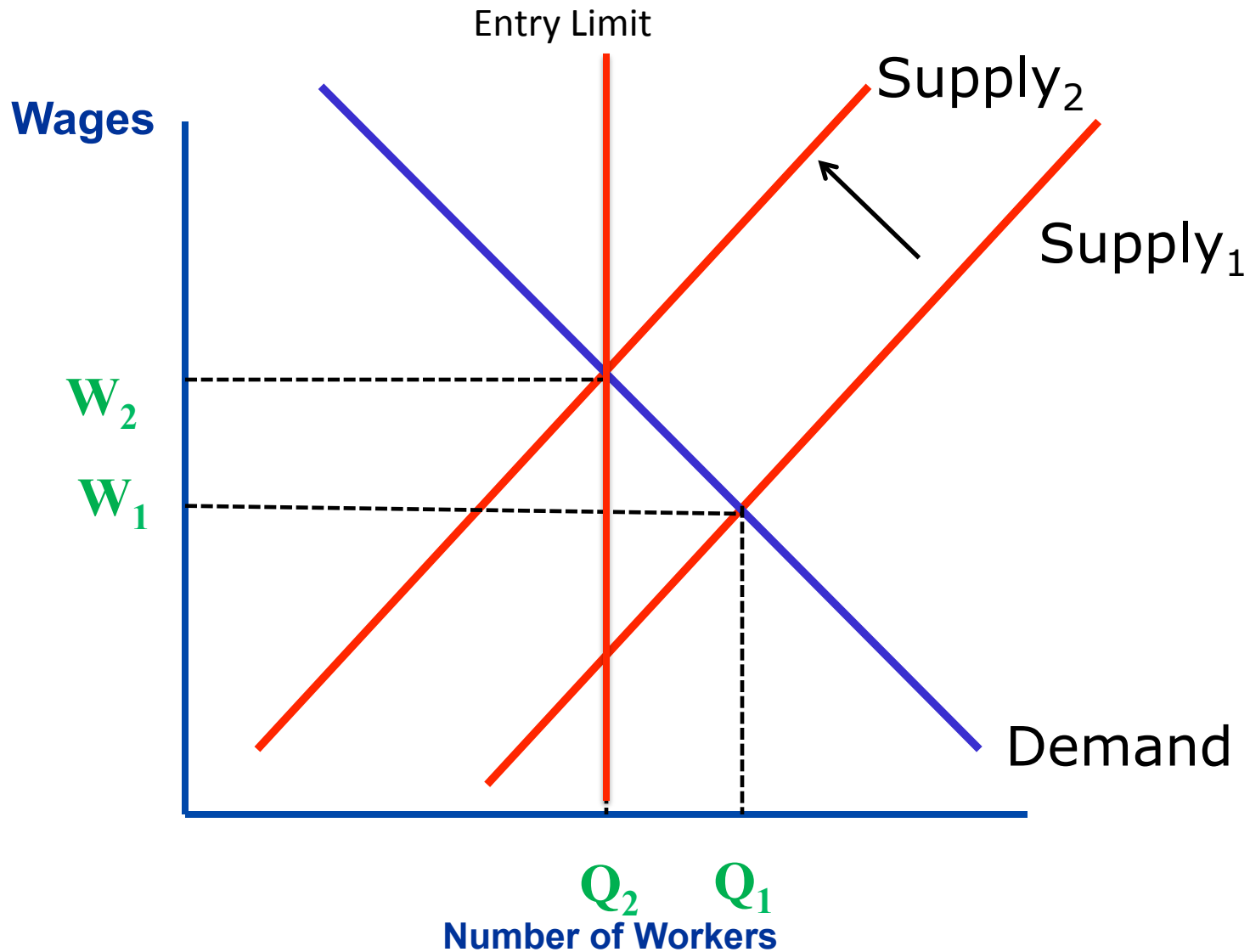
# Empirical estimates of the impact of the minimum wage on employment

- Decrease in employment of teenagers: elasticity of teenage employment with respect to changes in the minimum wage between -0.2 to -0.6.
- Decreases in employment of low-wage workers that earn at or near the minimum wage before it is increased: elasticity of their employment with respect to changes in the minimum wage is -0.12.
- *But see* Card & Krueger (AER, 1994): small or even slightly positive impact on employment.
- *But but see:* Neumark & Wascher (AER 2000): Card & Krueger results turn negative using different data.

# Barriers to Entry: Occupational Licensing

- Requirement of government certification to enter profession
- Often mandates educational requirements and test:
  - E.g., 8 months of education to be cosmetologist in NY; 3 years to become a security guard in Michigan
- $\frac{1}{4}$  US workers need a license—5x more than 1950s
- Examples:
  - Doctors
  - Dentists
  - Lawyers
  - Florists

# Effect of Licensing Requirement



**Table 3: Effects of Licensing Regulations on Prices**

Author	Date	Country	Profession	Restriction	Impact on Price	Increase in Price
Benham (i)	1972	USA	Optometry	Advertising	Increase	25-100%
Benham (ii)	1975	USA	Optometry	Advertising	Increase	25-40%
Cady (iii)	1976	USA	Pharmacy	Advertising	Increase	5%
Muris & McChesney (iv)	1978	USA	Law	Advertising	Increase	--
Shepard (iii)	1978	USA	Dentistry	Reciprocity	Increase	15%
Feldman & Begun (iii)	1978/ 1980	USA	Optometry	Advertising	Increase	9-16%
Bond et al. (v)	1980	USA	Optometry	Commercial practice, Advertising	Increase	33%
Muzondo & Pazderka (vi)	1980	Canada	20 including law and architecture	Direct entry, mandatory fees, advertising	Increased income (fees & adverts)	10.4% (fees) 32.8% (adverts.)
Cox, DeSerpa & Canby (vii)	1982	USA	Law	Advertising	Higher price dispersion	--
Conrad & Sheldon (iii)	1982	Canada	Dentistry	Commercial practice, use of auxiliaries	Increase	4%
FTC (viii)	1984	USA	Law	Advertising	Increase	5-11%
Kwoka (ix)	1984	USA	Optometry	Commercial practice, advertising	Increase	20%
Haas-Wilson (iii)	1986	USA	Optometry	Commercial practice	Increase	5-13%
Schroeter et al. (x)	1987	USA	Law	Advertising	More inelastic demand	--
Liang & Ogur (iii)	1987	USA	Dentistry	Use of auxiliaries	Increase	11%

Source: Canada Office of Fair Trading, *Competition in Professions*, March 2001, p. 27.

<http://www.oft.gov.uk/NR/rdonlyres/B08439C8-C5F6-4946-8AFF-71C050D34F46/0/oft328.pdf>, citing:

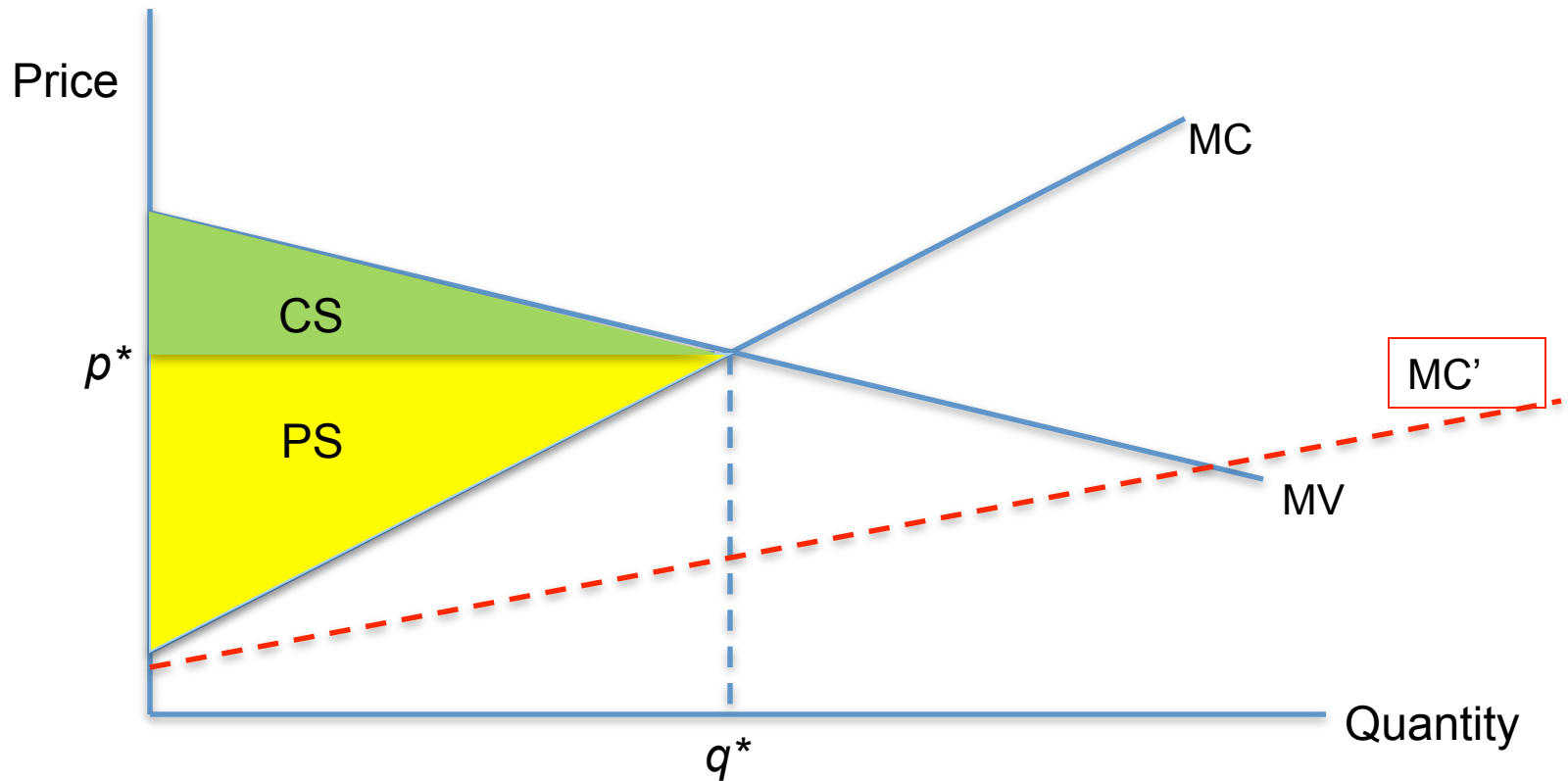
**Table 2: Effects of Licensing Regulations on Product Quality**

Author	Date	Country	Profession	Restriction	Impact on Quality
Holen (i)	1978	USA	Dentistry	Direct entry	Positive
Feldman & Begun (i)	1985		Optometry	Commercial practice, advertising, CPD	Neutral
Healey (i)	1973	USA	Laboratory Personnel	Licensing	Neutral
Cady (ii)	1976	USA	Pharmacy	Advertising	Neutral
Muris (iii) & McChesney	1978	USA	Law	Advertising	Neutral
Bond et al. (iv)	1980	USA	Optometry	Advertising, commercial practice	Neutral
FTC (ii)	1983	USA	4 including pharmacy and optometry	Advertising	Neutral
Paul (i)	1984		Physicians	Licensing	Neutral
Young (i)	1986	USA	Accountancy		
Trebilcock et al. (v)	1979	Canada	4 including law	Price advertising	Negative
Muris (vi) & McChesney	1979	USA	Law	Advertising	Negative
Carroll & Gaston (i)	1981	USA	7	Direct entry	Negative
Kwoka (vii)	1984	USA	Optometry	Advertising	Negative
Cebula (viii)	1998	USA	Law	Advertising	Negative
Martin (i)	1982	USA	Pharmacy	Direct entry	Mixed

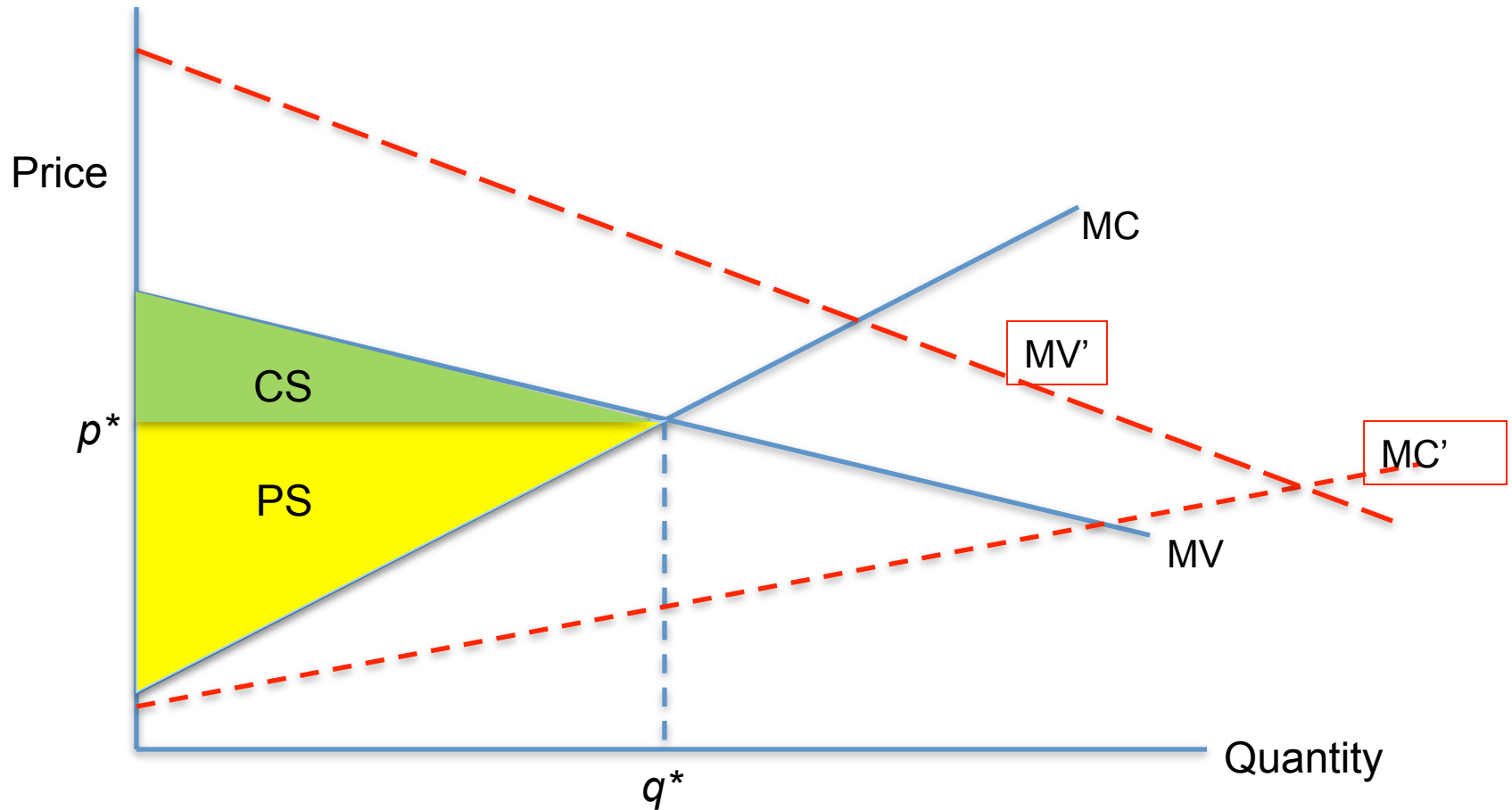
Source: Canada Office of Fair Trading, *Competition in Professions*, March 2001, p. 22.

<http://www.oft.gov.uk/NR/rdonlyres/B08439C8-C5F6-4946-8AFF-71C050D34F46/0/oft328.pdf>, citing:

# Innovation to Lower Costs

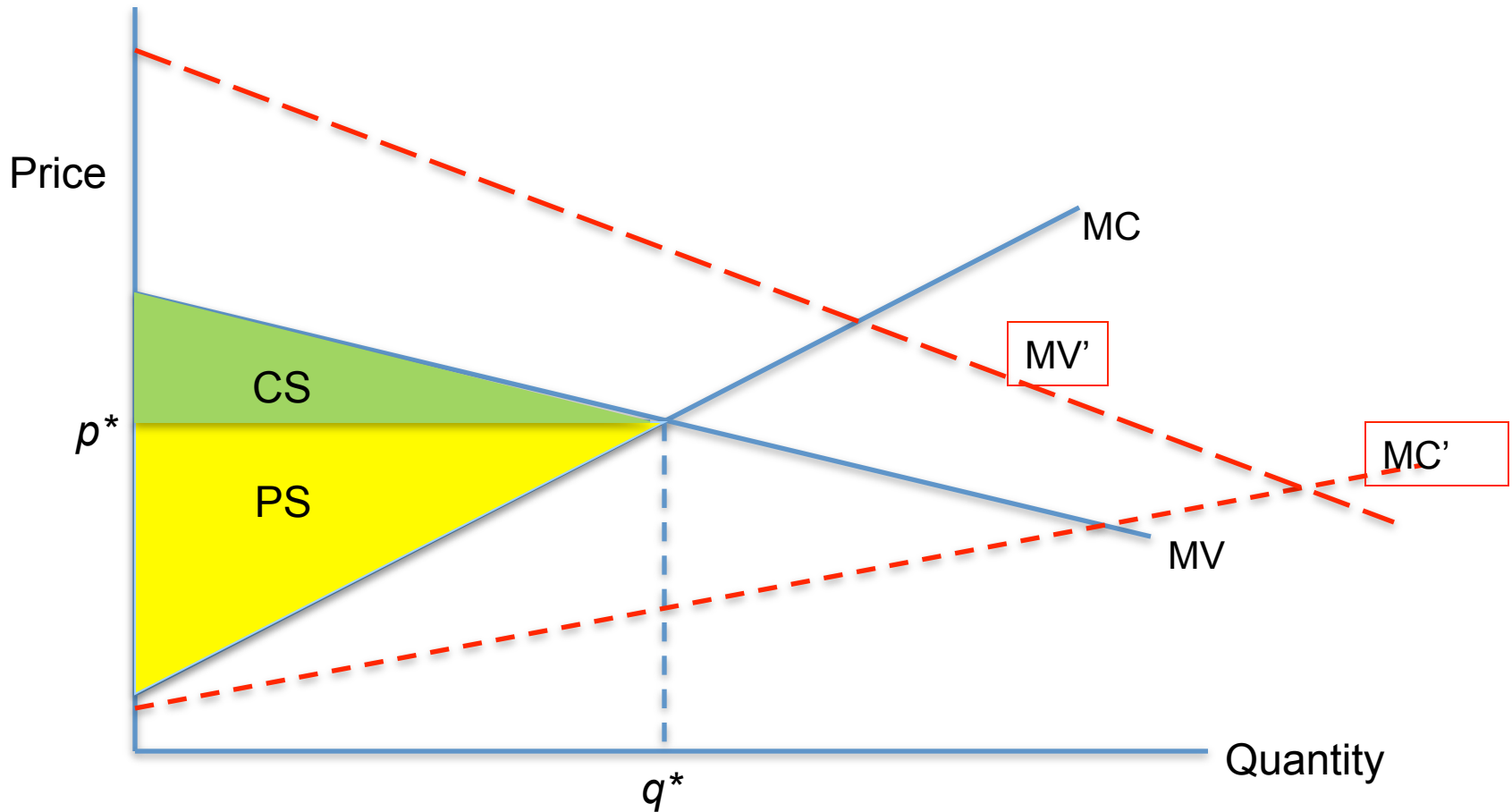


# Innovation to Improve Products

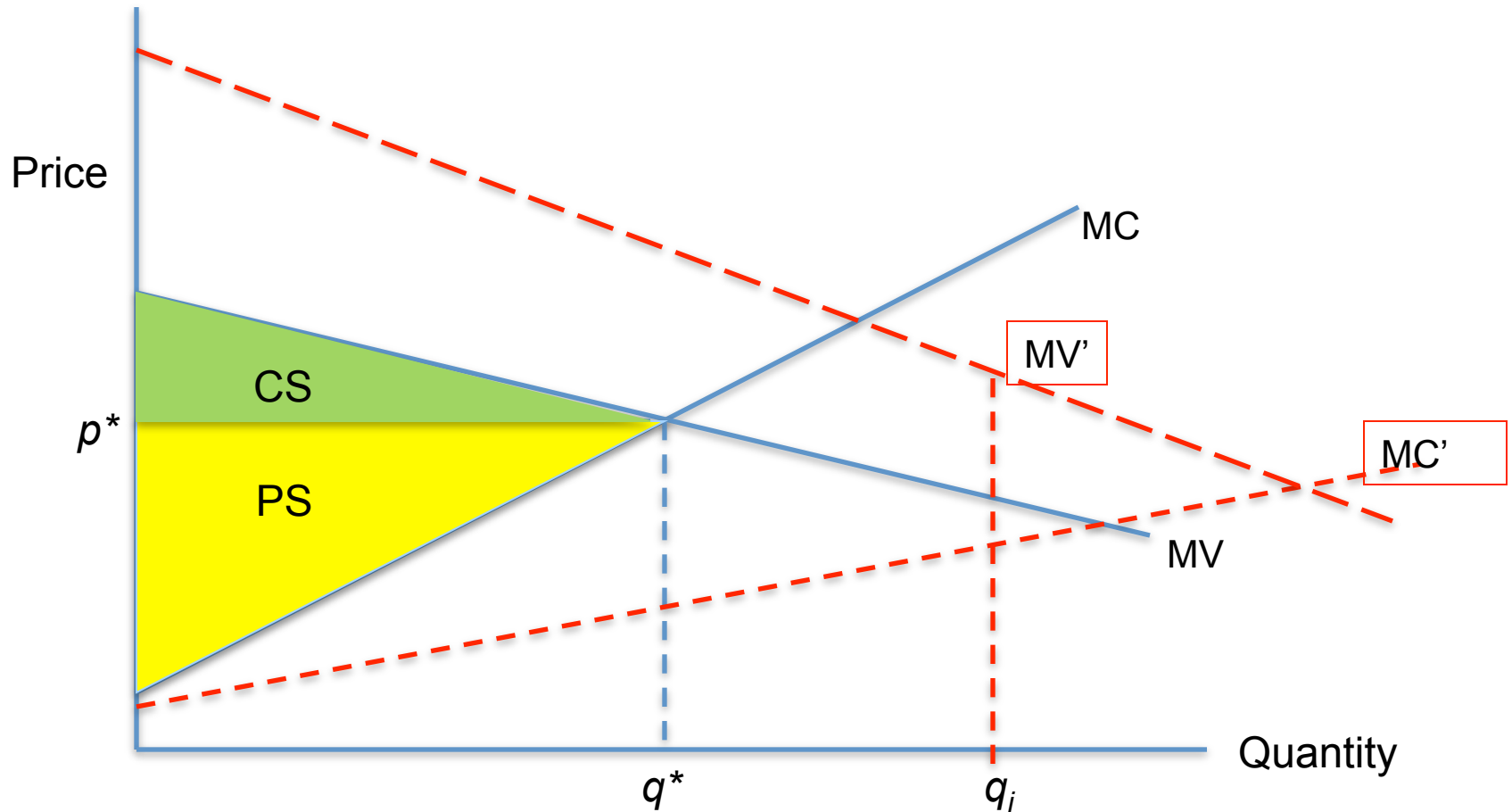




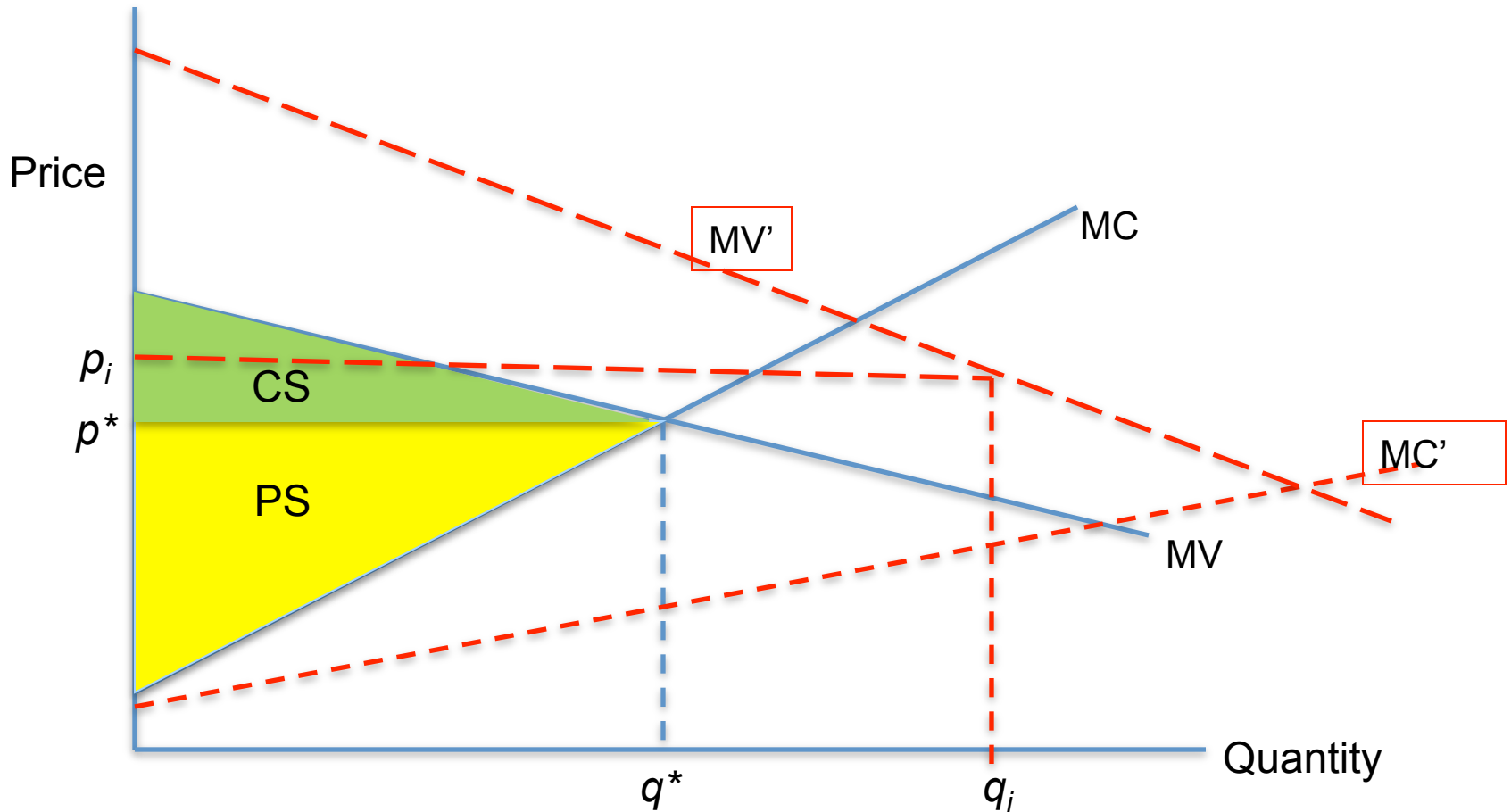
# Social Gains – but Inefficient?



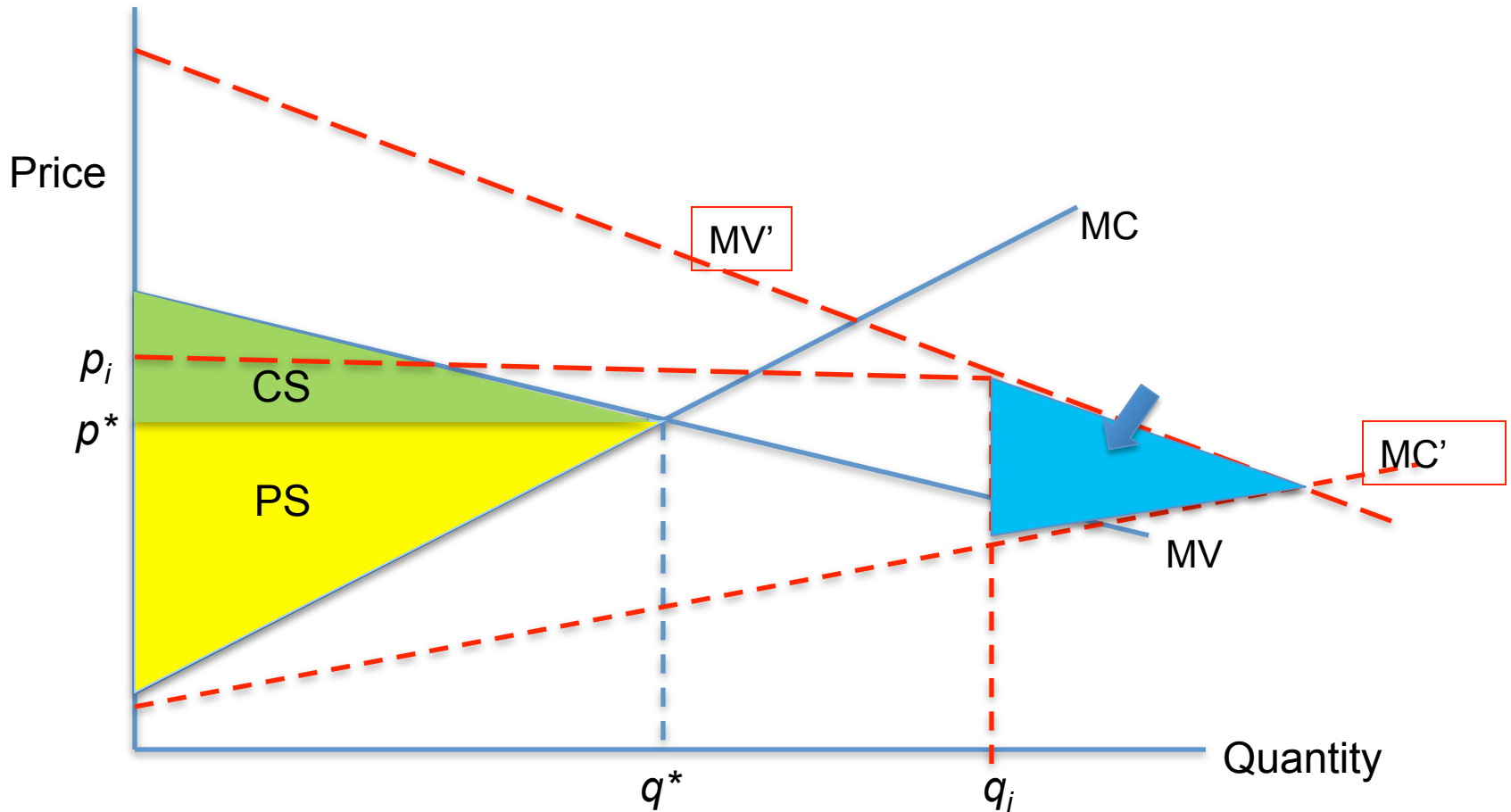
Suppose new output =  $q_i$



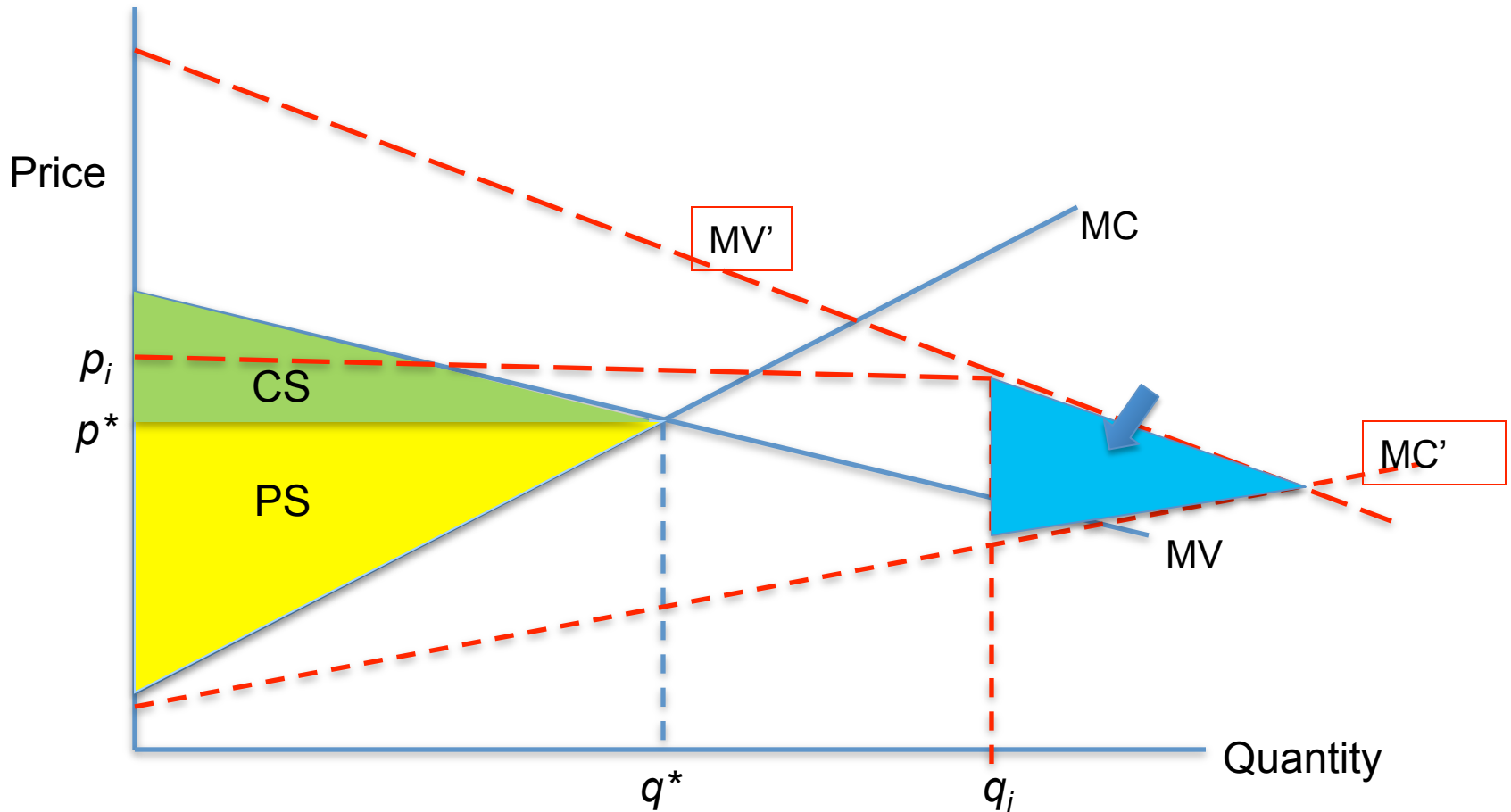
so new price =  $p_i$



# Dead-weight loss



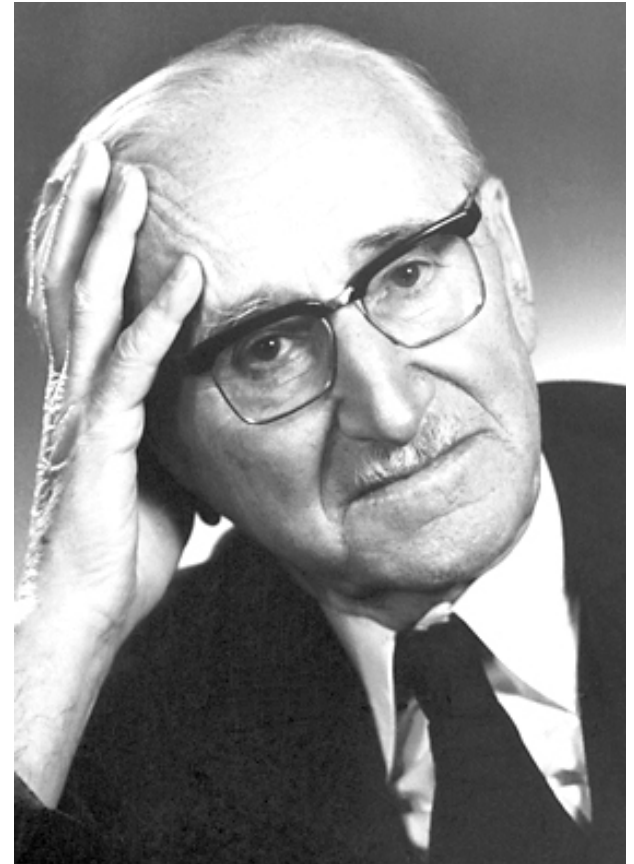
# But “innovation” surplus dominates



# F.A. Hayek

- ‘Nobody can be a great economist who is only an economist—and I am even tempted to add that the economist who is only an economist is likely to become a nuisance if not a positive danger’

-- F. A. Hayek



# Hayek on Market Prices and Information

F.A. Hayek, *The Use of Knowledge in Society*, 35 *Am. Econ. Rev.* 519 (1945).

- It is more than a metaphor to describe the price system as a kind of machinery for registering change, or a system of telecommunications which enables individual producers to watch merely the movement of a few pointers, as an engineer might watch the hands of a few dials, in order to adjust their activities to changes of which they may never know more than is reflected in the price movement.

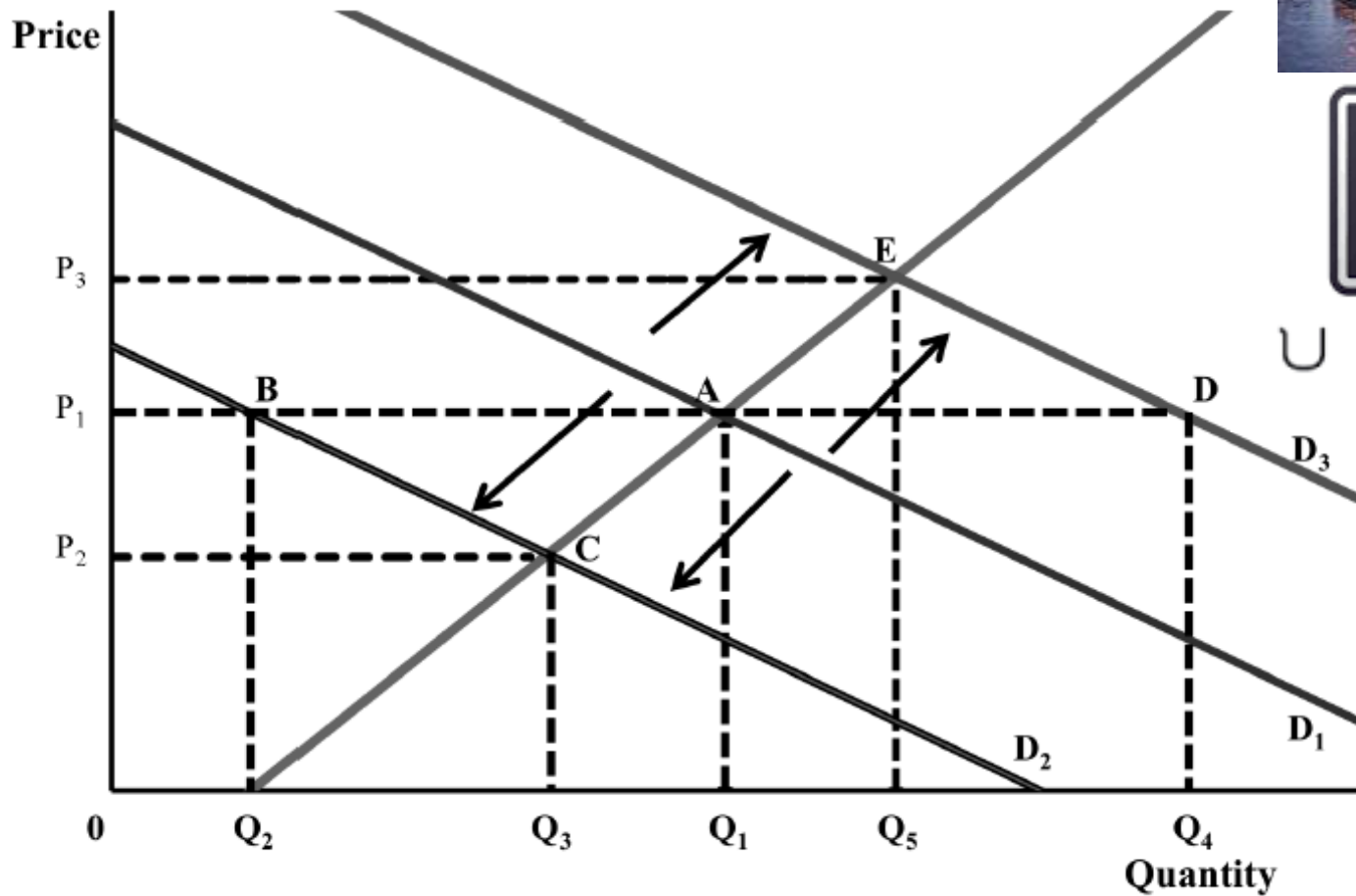
# Hayek on Market Prices and Information

F.A. Hayek, *The Use of Knowledge in Society*, 35 *Am. Econ. Rev.* 519 (1945).

- We must look at the price system as such a mechanism for communicating information if we want to understand its real function.
- The most significant fact about this system is the economy of knowledge with which it operates, or how little the individual participants need to know in order to be able to take the right action.
- [O]nly the most essential information is passed on and passed on only to those concerned.



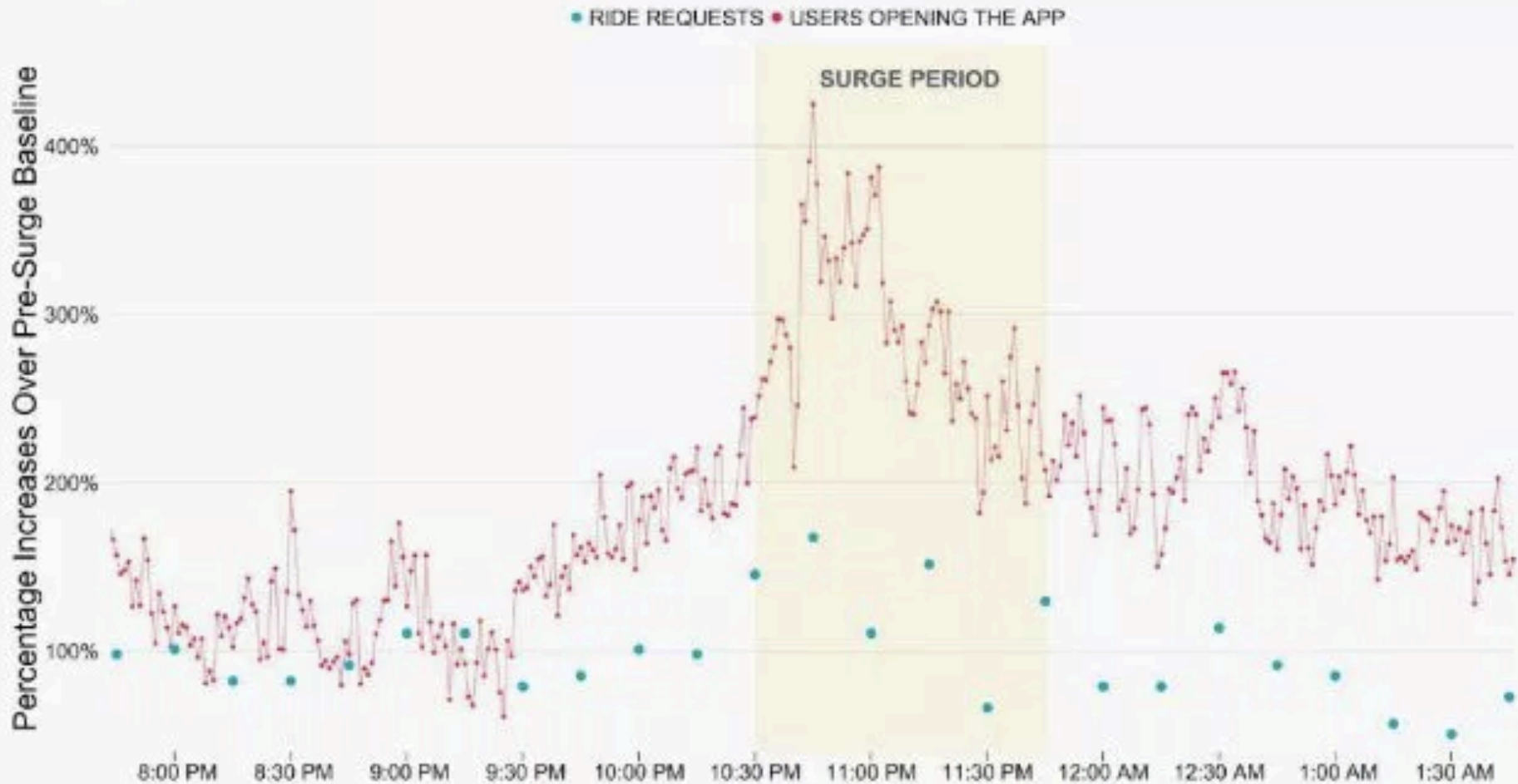
Figure II-9. Changes in Demand



U B E R

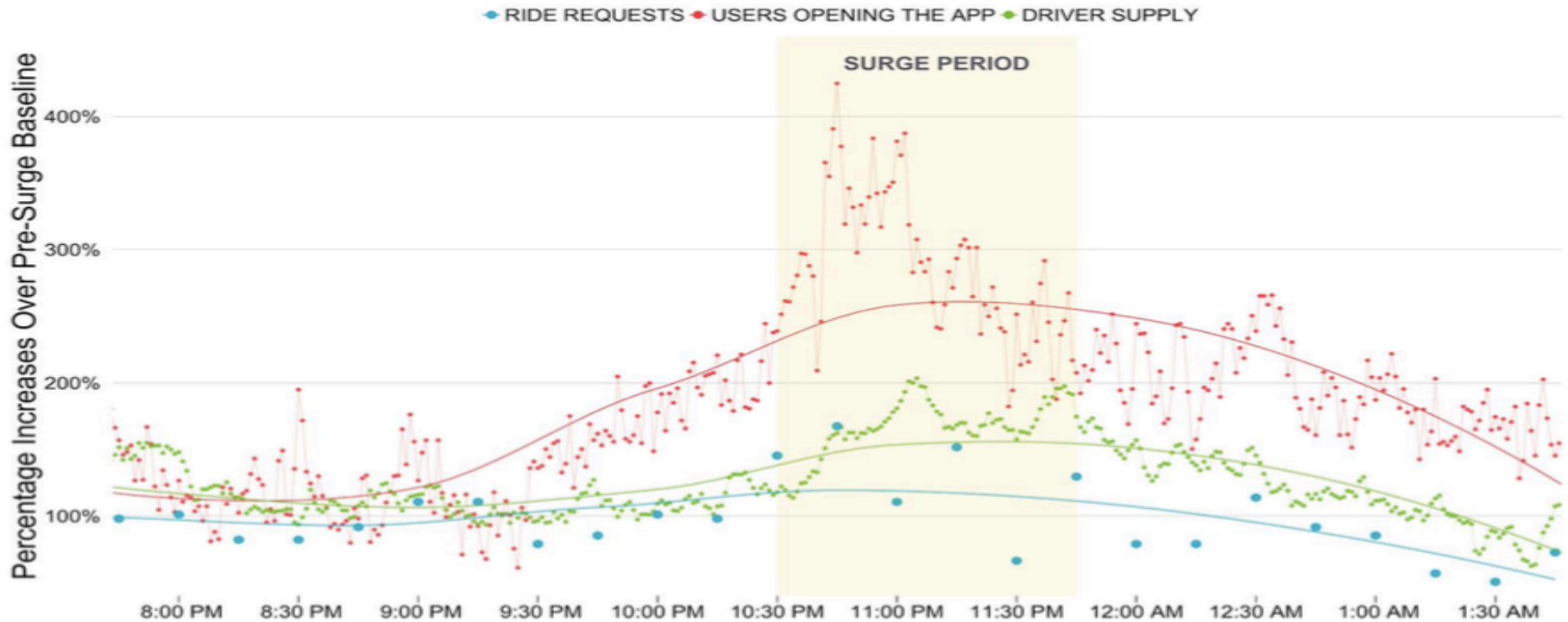
# NYC With Surge Pricing

Figure 1: Demand for Uber Spikes Following Sold-Out Concert on March 21, 2015



# NYC With Surge Pricing

**Figure 3:** Supply Rises to Meet Demand Following a Sold-Out Concert on March 21, 2015



*Note: Figure reports the number of users opening the Uber app each minute over the course of March 21, 2015 (in red), as well as the sum of total requests for Uber rides in 15-minute intervals over the same time period (blue circles), and the number of “active” uberX driver-partners within the same geospatial box (noted above) each minute (green line). In this case, “active” means they were either open and ready to accept a trip, en route to pick up a passenger, or on trip with a passenger. Pure volume counts have been normalized to a pre-surge baseline, defined as the average of values between 9:00 and 9:30 PM that evening, before surge turned on. “Surge period” (yellow box) is the time over which the surge multiplier increased beyond 1.0x.*

# NYC Without Surge Pricing

**Figure 6:** Impact of a Surge Pricing Disruption on Completed Ride Requests on New Year's Eve



*Note: Figure reports the "completion rate" for a given 15 minute interval over the course of New Year's Eve, December 31, 2014 to January 1, 2015, for uberX vehicles within the geospatial bounding box noted earlier (red line). "Completion rate" is defined as the percentage of requests that are fulfilled (calculated as the number of completed trips within the 15 minute interval, divided by the sum of completed trips and unfulfilled trips). "Surge outage" (red box) is the time period during which Uber's surge pricing algorithm broke down due to a technical glitch.*

# UBER in Low-Income Neighborhoods in Los Angeles

		LA NEIGHBORHOOD GROUPS				
		Van Nuys Area	Koreatown Larchmont Echo Park	Cypress Park Elysian Valley Lincoln Heights	Panorama City N. Hollywood Valley Glen	All Qualifying Neighborhoods
AVERAGE COST	TAXI	\$16.77	\$12.21	\$10.86	\$14.00	\$14.63
	UBERX	\$7.26	\$5.67	\$4.74	\$5.53	\$6.40
AVERAGE WAIT TIME	TAXI	0:14:19	0:21:31	0:22:28	0:18:30	0:17:42
	UBERX	0:07:20	0:05:32	0:06:57	0:06:20	0:06:49
LONGEST WAIT TIME	TAXI	0:40:29	0:57:00	0:54:11	0:45:07	0:57:00
	UBERX	0:20:00	0:16:31	0:15:28	0:15:37	0:20:00

# Uber draws criticism for Sydney siege pricing

**Kim Hjelmgaard, USA TODAY** 8:30 a.m. EST December 15, 2014



(Photo: Handout)

Fresh controversy struck Uber on Monday after the car service raised prices in Sydney's central business district (CBD) amid an ongoing [hostage situation](/story/news/world/2014/12/14/sydney-hostages/20411269/) at a cafe there.

The firm made the announcement on Twitter while up to 40 people were being held by a gunman and hundreds of Australian police were mobilized over fears of a terrorist attack.



**Uber Sydney**  
@Uber\_Sydney

Follow

We are all concerned with events in CBD. Fares have increased to encourage more drivers to come online & pick up passengers in the area.

9:35 PM - 14 Dec 2014

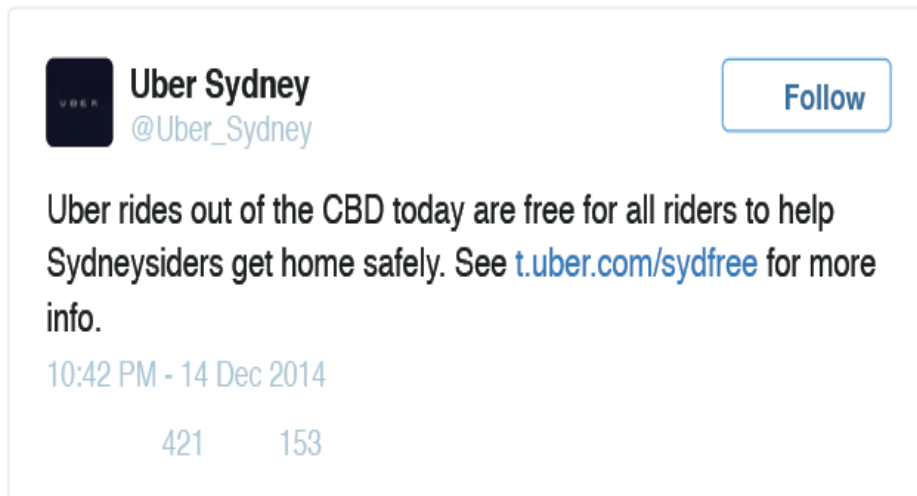
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Users of the services immediately expressed outrage on the social network as fares were reported to reach \$100 Australian dollars (about \$80) for a ride.

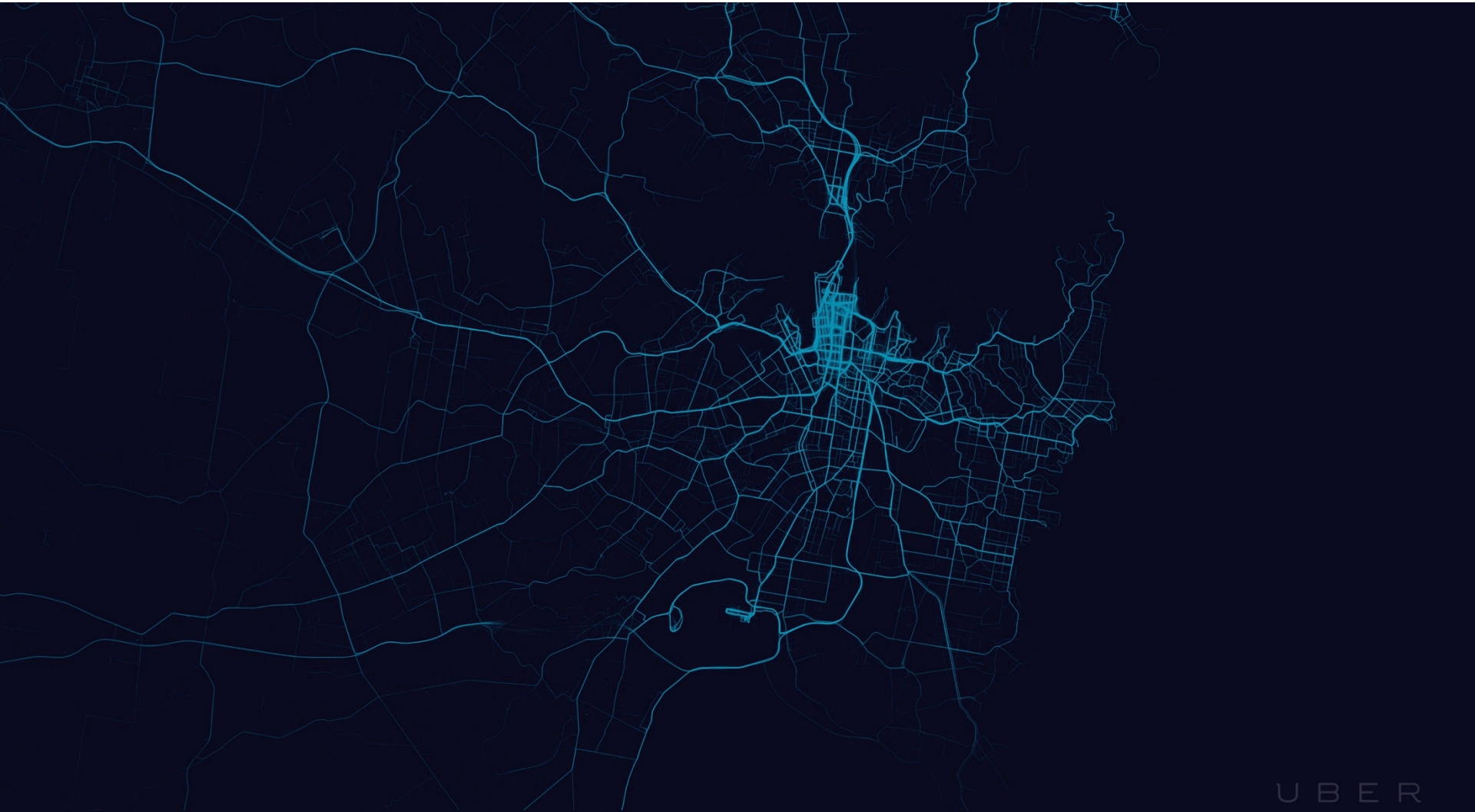
"Absolutely disgraceful. You should be capping the prices much lower rather than taking advantage! Shockingly bad," tweeted @MonocleMoose.

The San Francisco-based company quickly about-faced and offered free rides.

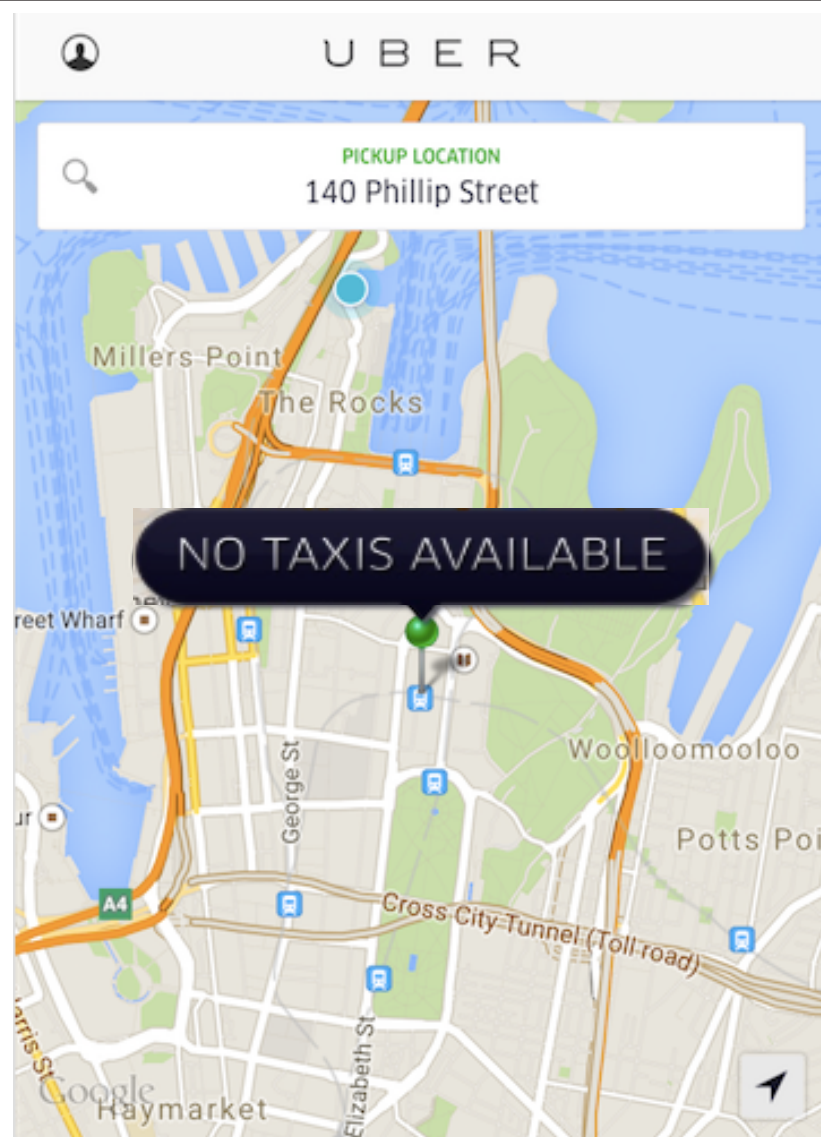
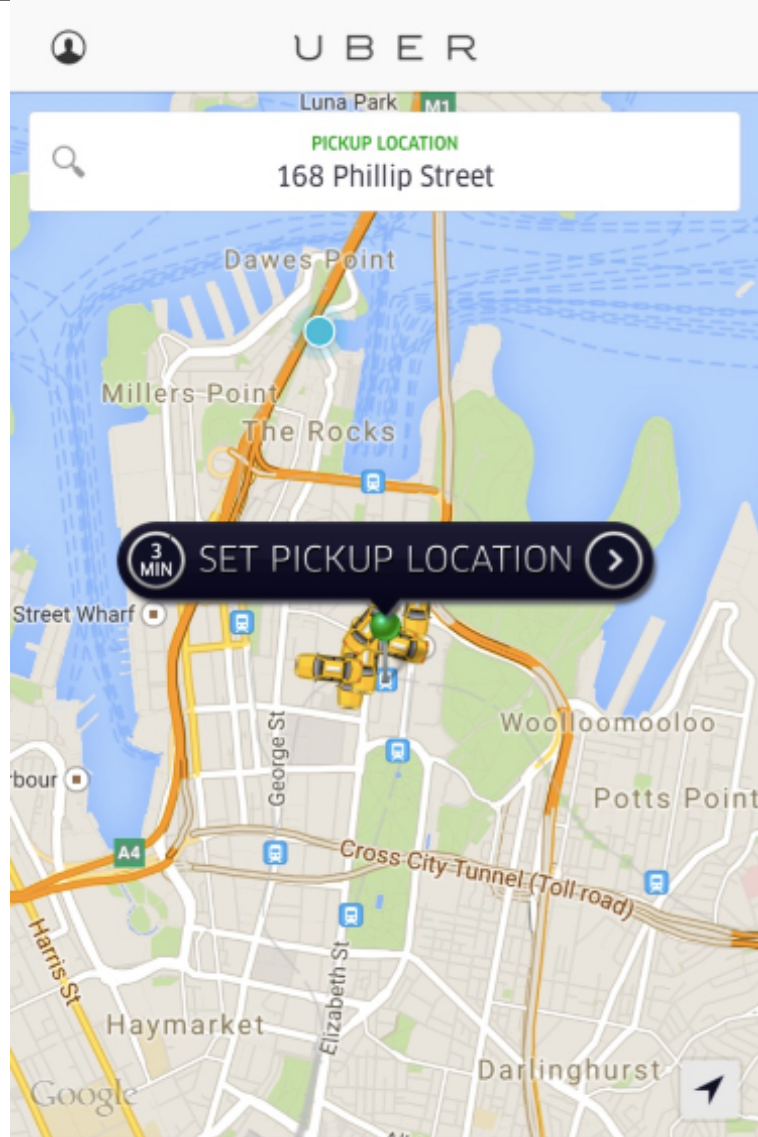


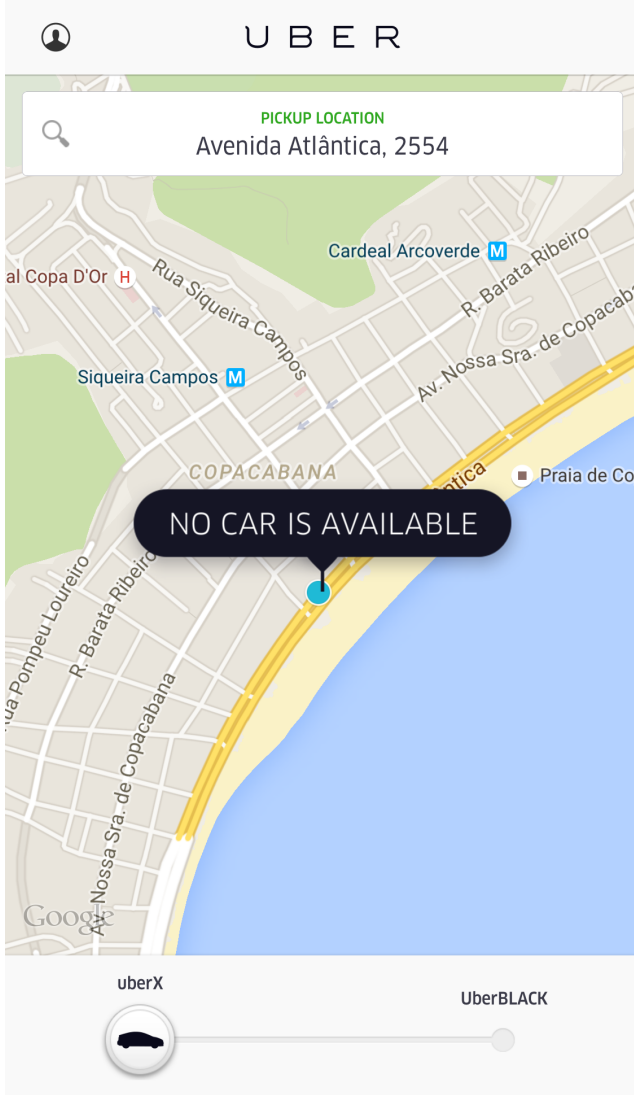
"We are all concerned with the events happening in Sydney," Uber said in a statement. "Uber Sydney will be providing free rides out of the CBD to help Sydneysiders get home safely," adding that "We are in the process of refunding rides from the area."

Sydney, December 14, 2015









# Rio de Janeiro Bans Uber's Service

Taxi drivers in Brazil's second-largest city complain that Uber isn't subject to same regulations



Taxi drivers from Rio de Janeiro, São Paulo and Belo Horizonte block an avenue in Rio in July to protest against Uber Technologies Inc.'s ride-hailing service. PHOTO: GETTY IMAGES

By MARLA DICKERSON And LUCIANA MAGALHAES  
Sept. 30, 2015 12:30 p.m. ET



**The Transitional Gains Trap**  
Gordon Tullock  
*The Bell Journal of Economics*  
Vol. 6, No. 2 (Autumn, 1975), pp. 671-678

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Journal Info

# Transitional Gains Trap (Tullock 1975)

- The new generation faces the costs of the licensing requirements.
  - These costs must be factored in to any notion of lifetime returns, considering those people's alternative life paths.
- Even if the subsequent generations earn only normal returns, they have as much incentive to oppose abolition of licensing as the first generation had to support its imposition – *transitional gains trap*.
- The beneficiaries end with the first generation of privilege, yet occupational licensing policies continue one generation after another because of transitional interests.

COUNTY OF LOS ANGELES  
DEPARTMENT OF HEALTH SERVICES  
ENVIRONMENTAL HEALTH

GRADE

**A**

THIS ESTABLISHMENT RECEIVED A SCORE OF  
**90-100%**  
AT THE TIME OF INSPECTION

**11122**  
SITE NUMBER

DO NOT REMOVE UNDER PENALTY OF LAW  
Los Angeles County Code 11.11.006, 11.11.008, 11.11.009, 11.11.010, 11.11.011





JTD Entrance

JTD'S  
FAMOUS  
DELI

A

JTD'S  
FAMOUS  
DELI

JTD'S  
FAMOUS  
DELI

VALET PARKING  
PUBLIC WELCOME  
2.00 PER 1 HR.  
1.00 EA. ADDL. 15 MIN.  
7.00 PER 2 HR.

LOADING  
PASSENGERS  
ONLY

Journal

# FALAFEL KING



# Advertising as Non-Price Competition

- What is the impact of the grade cards on
  - consumers' restaurant choices
  - restaurants' hygiene quality
  - incidence of foodborne illness?
- Why did some restaurants have high hygiene scores before grade cards?
- Do grade cards change the behavior of restaurant inspectors?

# Impact of Grade Cards on Consumers' Choices

	Coefficient	Std. error
Mandatory disclosure	0.0569	0.0153***
Voluntary disclosure	0.0326	0.0149**
B-grade	-0.0074	0.0084
C-grade	0.0039	0.0074
D-grade	-0.0023	0.0057
Mandatory × B-grade	-0.0497	0.0151***
Mandatory × C-grade	-0.0670	0.0304**
Mandatory × D-grade	-0.0565	0.0437
Voluntary × B-grade	-0.0029	0.0128
Voluntary × C-grade	-0.0238	0.0216
Voluntary × D-grade	-0.0758	0.0469
Missing grade	-0.0001	0.0096
Observations	74,321	
<i>R</i> <sup>2</sup>	0.9506	



# Impact of Grade Cards on Consumers' Choices

- Before grade cards, restaurant revenue is insensitive to changes in inspection scores
- After grade cards, revenue responds to grades
  - A grade: + 5.7%
  - B grade: + 0.7%
  - C grade: – 1.0%
- Total industry revenue increases by 3.3% (\$250 million increase in LA)

# Impact of Grade Cards on Average Inspection Scores

	BEFORE	AFTER	DIFF
ALL restaurants	81.6	88.7	7.1
Chains	87.1	92.6	5.5
Zagat guide	78.4	88.6	10.2
Chinese food	78.4	86.3	7.9
Mexican food	82.5	88.9	6.4
Pizza	84.2	89.7	5.5
Low income areas	80.5	88.5	8.0

Are these improvements changes in actual quality of food arising from grade cards?

Or do they represent changes in behavior of inspectors?

Something else?

All entries are statistically different from the mean for all restaurants

# Impact of Grade Cards on Foodborne Illnesses

- Compare the number of food-related hospitalizations in LA with
  - non-food-related hospitalizations in LA
  - food-related hospitalizations outside LA
- Hospitalizations for which 90% or more of cases are transmitted via food. This includes

Salmonella

Amebiasis

Tularemia

Listeriosis

Shigellosis

E. coli

Brucellosis

Other food-poisoning

# Impact of Grade Cards on Foodborne Illnesses

$$\ln(a_{ijt}) = \alpha_{ij} + \tau_t + \beta_1 m_{it} + \beta_2 v_{it} + \gamma_1 \text{food}_{ijt} m_{it} + \gamma_2 \text{food}_{ijt} v_{it} + \epsilon_{ijt},$$

THE EFFECTS OF GRADE CARDS ON  
ln(No. HOSPITALIZATIONS FOR DIGESTIVE DISORDERS)

	Coefficient	Std. Error
Mandatory disclosure	0.0271	0.0246
Voluntary disclosure	0.0716	0.0238***
Food-related × mandatory disclosure	-0.2243	0.0426***
Food-related × voluntary disclosure	-0.2055	0.0350***
Observations	6,840	
$R^2$	0.9809	