

Government Intervention in Competitive Markets

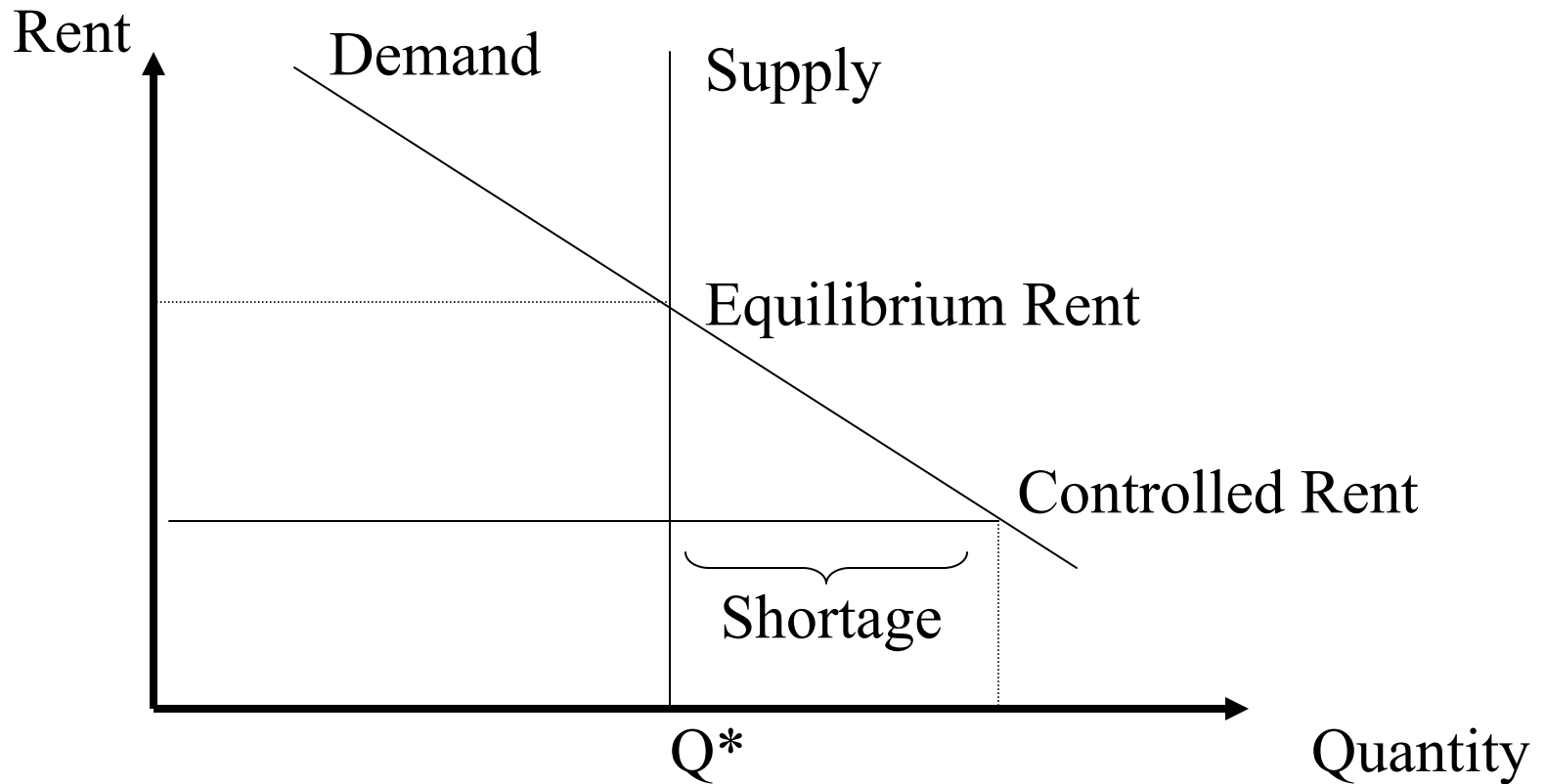
Government Interventions

1. Price ceiling (e.g. rent control)
2. Price floor (e.g. minimum wage)
3. Quota
4. Tax (e.g. consumption tax)

Similarly, trade tariffs

(1) Price Ceiling

Example: Rent control in short run

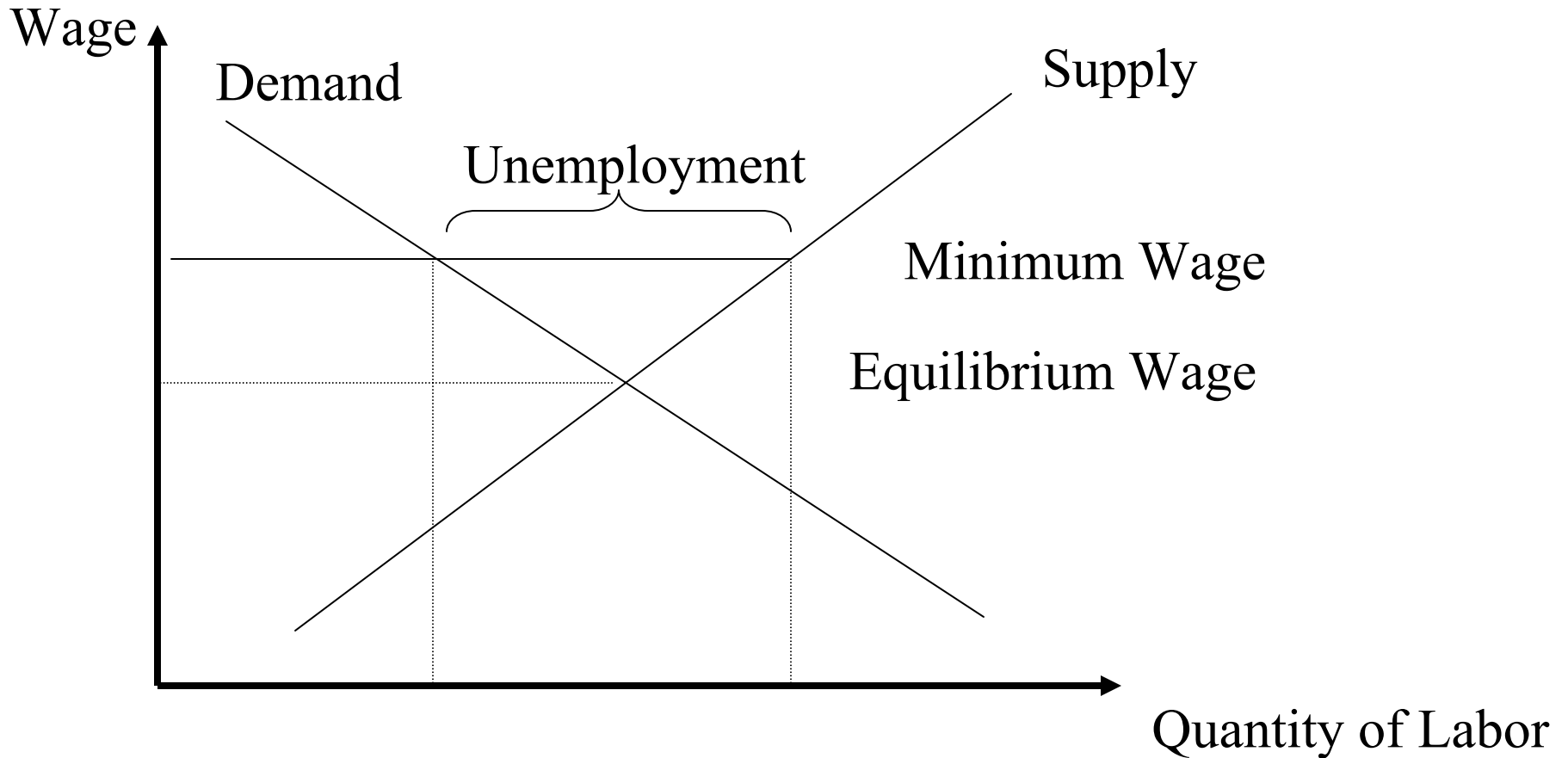


Rent Control

- How will the market cope with shortage?
- Who will be able to rent at the controlled rent among those who are willing?
- What's the welfare loss from rent control?
- What the possible effects in the long run?

(2) Price Floor

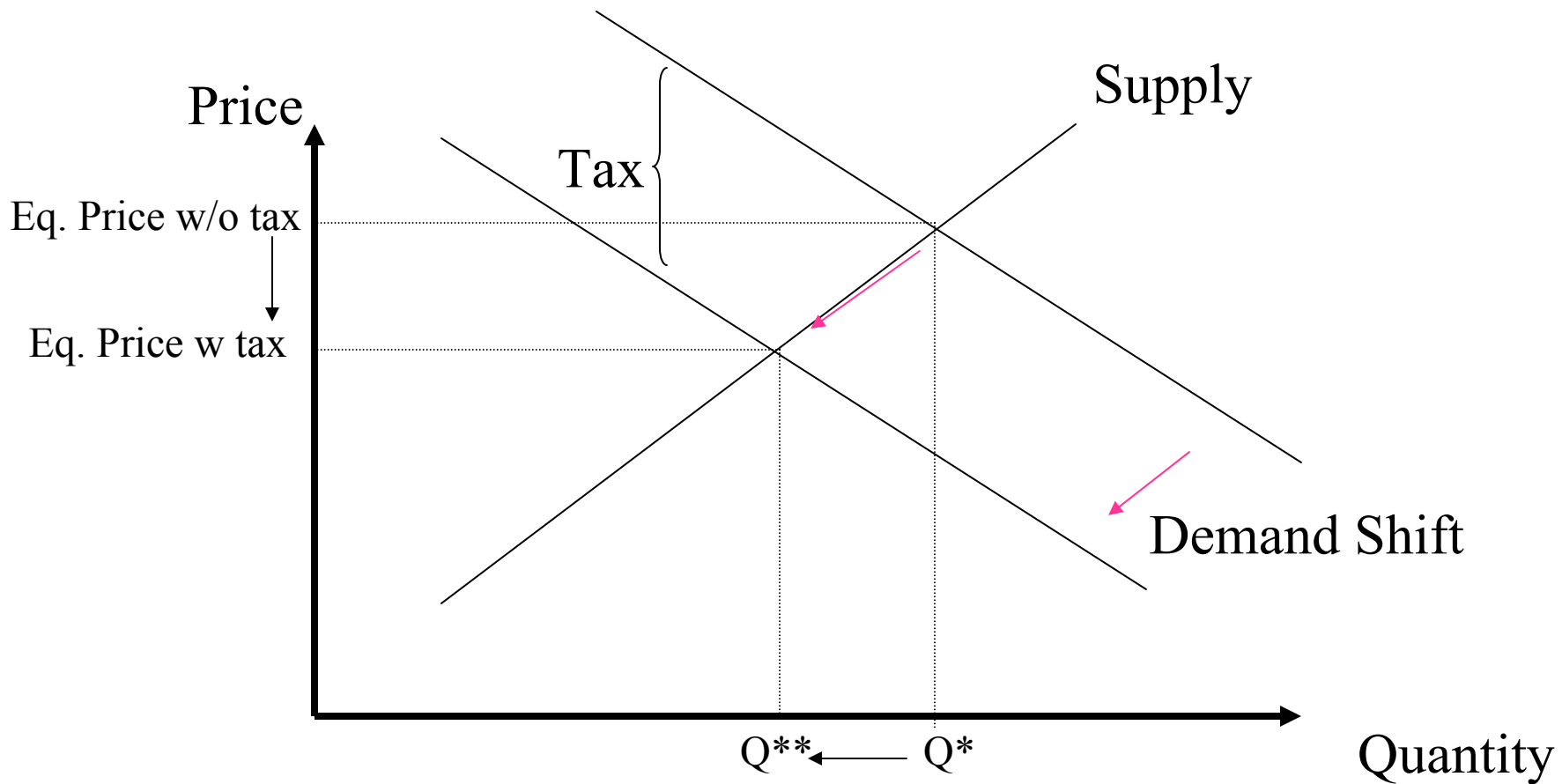
Example: Minimum Wage



Minimum Wage

- Who will be affected by the minimum wage?
- Who gains and who loses from minimum wage?
- What's the welfare loss from minimum wage?
- What are the possible effects in the long run?

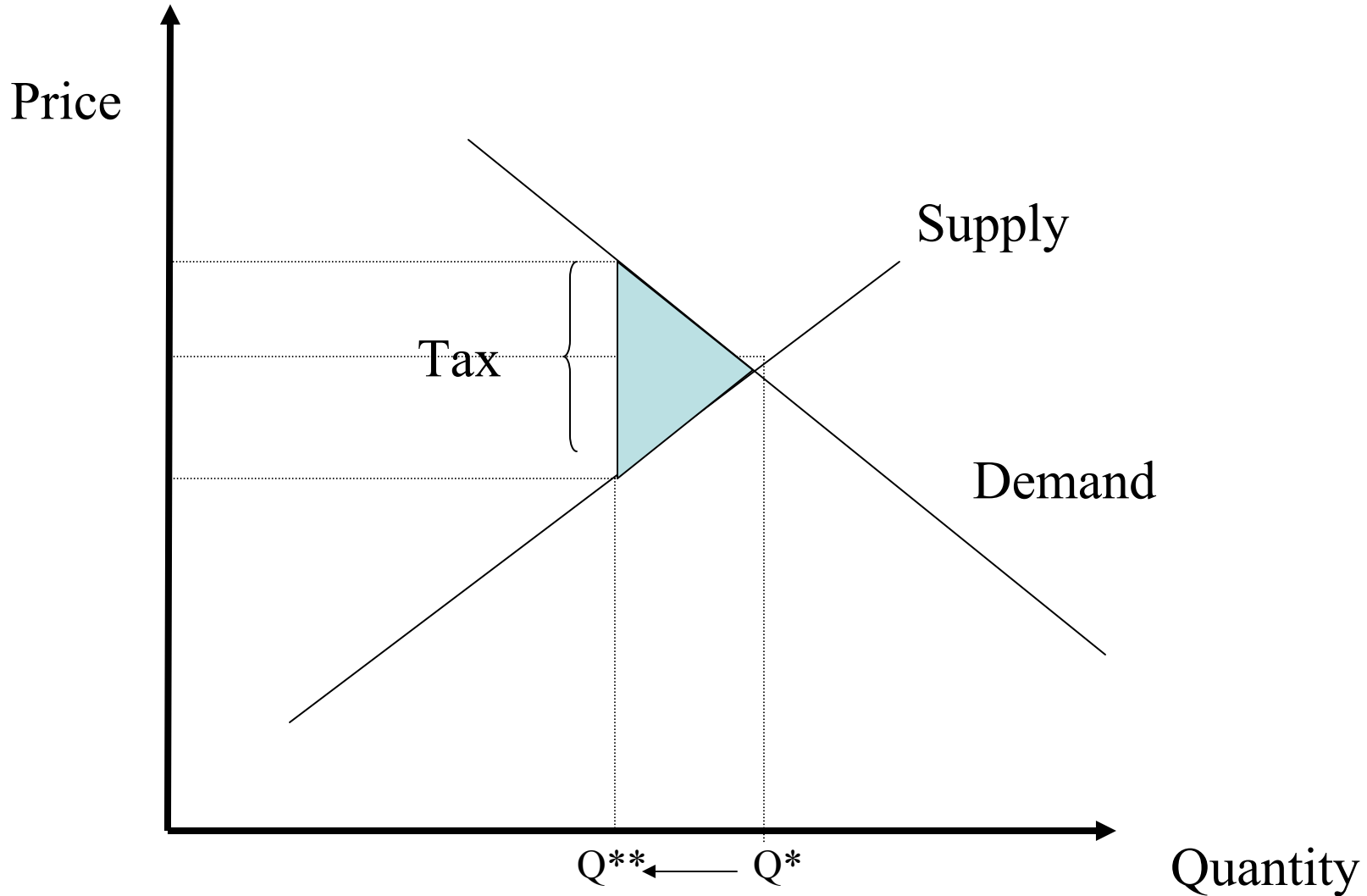
(3) Consumption Tax



Tax

- What's the difference between consumption and production tax?
- What's the government revenue?
- What's the deadweight loss of taxation?
- Who bears the tax?

Deadweight Loss of Taxation



Elasticity of Demand

- Definition: Percentage change in quantity resulting from a 1% change in price

$$\varepsilon = -\frac{\frac{\Delta Q}{Q}}{\frac{\Delta P}{P}} = -\frac{\Delta Q}{\Delta P} \frac{P}{Q}$$

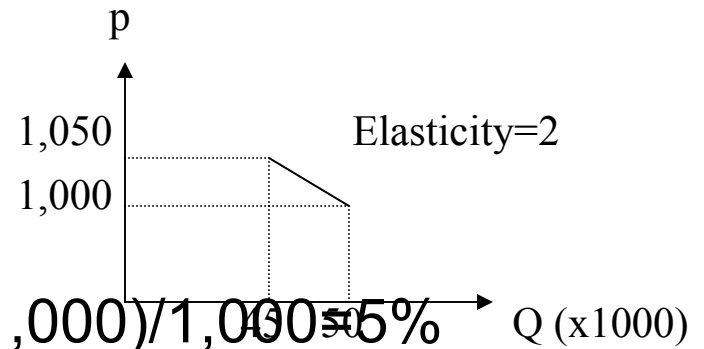
Slope Normalisation

Unit Free

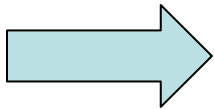
Example

2 Data-Points Demand Curve

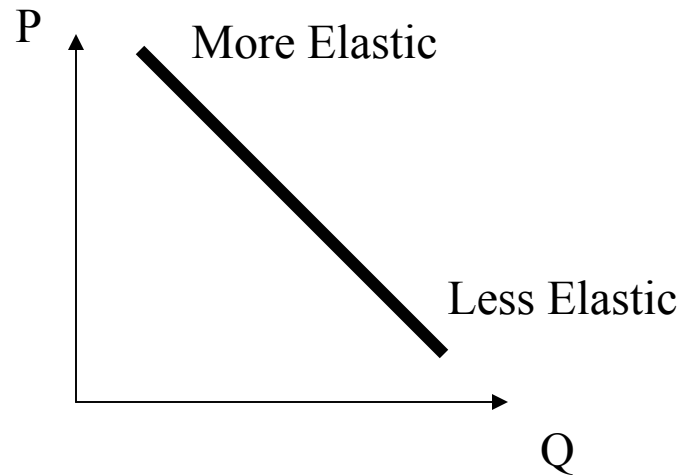
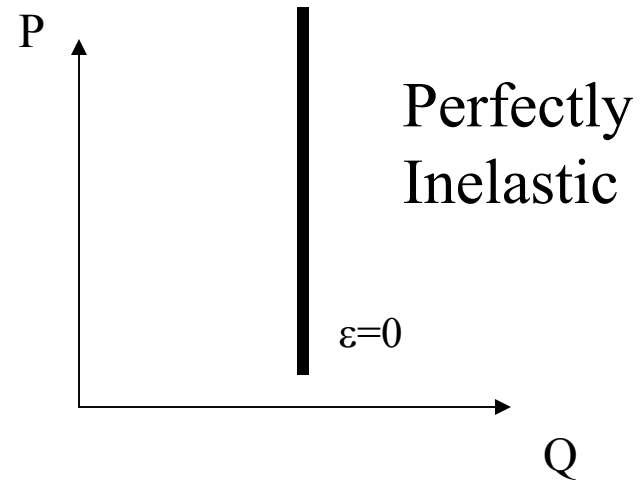
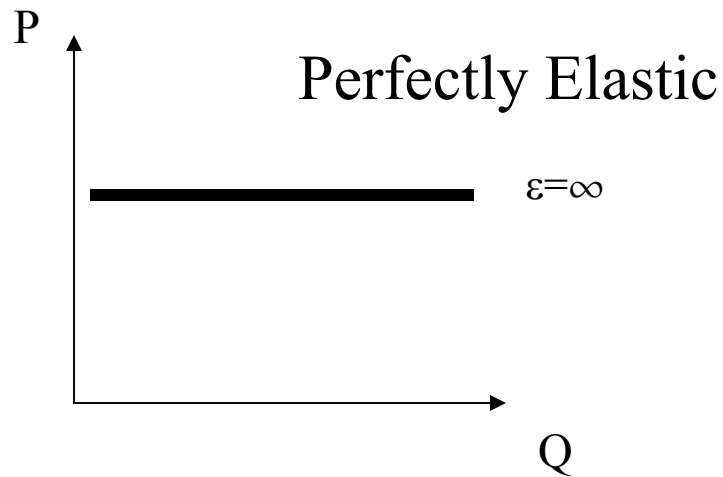
- Initial price = £ 1,000
- Initial demand = 50, 000 units
- New price = £ 1,050
- New demand = 45, 000 units
- Percent change in price = $(1,050-1,000)/1,000 = 5\%$
- Percent change in demand = $-(50-45)/50 = -10\%$



$$\text{Elasticity} = (10\%) / (5\%) = 2$$



Elasticity on a Graph



Estimation of Demand Elasticities

Price Response

- Expert judgement
 - Customer survey
- } Marketing approach
- Analysis of historical data (e.g. price war, regulatory change, technological change)
 - Price experiment (e.g. promotion, direct mail catalogue)

Demand Elasticities

Table: Selected Estimates of Demand Elasticities

	Short Run	Long Run
Cigarettes	–	0.35
Water	–	0.4
Beer	–	0.8
Physicians' Services	0.6	–
Gasoline	0.2	0.5-1.5
Automobiles	–	1.5
Chevrolets	–	4.0
Electricity	0.1	1.9
Air Travel	0.1	2.4

Source: Browning and Mark Zupan, *Microeconomics and Applications*. Hendrik Houthakker and Lester Taylor, *Consumer Demand in the United States, 1929-1970*. Kenneth Etzinga, "The Beer Industry", in *The Structure of American Industry*, edited by Walter Adams. James Sweeney, "The Response of Energy Demand to Higher Prices: What Have We Learned?", *American Economic Review*, 74, #2, May 1984, pp.31-37.

Demand Elasticities

	GDP per capita (% US)	Income Elasticity of Food	Price Elasticity
India	5.2	0.76	-0.32
Nigeria	6.7	0.74	-0.33
Indonesia	7.2	0.72	-0.34
Bolivia	14.4	0.68	-0.35
Philippines	16.8	0.67	-0.35
Korea	20.4	0.64	-0.35
Poland	34.6	0.55	-0.33
Brazil	36.8	0.54	-0.33
Israel	45.6	0.49	-0.31
Spain	55.9	0.43	-0.36
Japan	61.6	0.39	-0.35
Italy	69.7	0.34	-0.30
UK	71.7	0.33	-0.22
France	81.1	0.27	-0.19
Germany	85.0	0.25	-0.17
Canada	99.2	0.15	-0.10
US	100	0.14	-0.10

Laundry List for Elasticity

- Long run versus short run (oil shock)
- Substitutes (Nike vs. Generic)
- Search costs (candy bar vs. cars)
- Elasticity is a general concept: income elasticity, cross elasticity

Cross Elasticity of Demand

Definition: Percentage change in quantity demanded of good i resulting from a 1% change in price of good j

$$\varepsilon_{ij} = \frac{\Delta Q_i / Q_i}{\Delta P_j / P_j}$$

$\varepsilon_{ij} > 0$, the goods are called *substitutes*
(Coke and Pepsi)

$\varepsilon_{ij} < 0$, the goods are called *complements*
(Computer and software)

$\varepsilon_{ij} = 0$, the goods are unrelated
(hamburgers and binoculars)

Income Elasticity of Demand

Definition: Percentage change in quantity demanded resulting from a 1% change in consumer income

$$\varepsilon_I = \frac{\Delta Q / Q}{\Delta I / I}$$

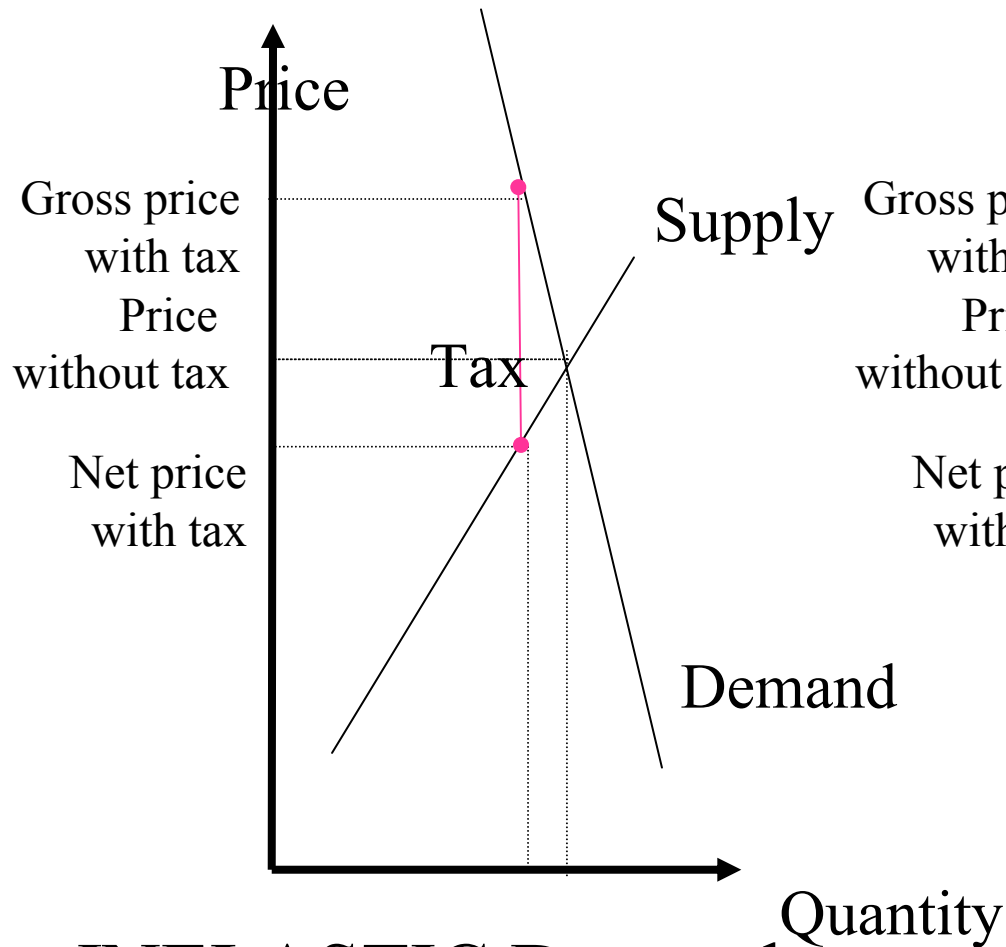
$\varepsilon_I > 0$, the good is called *normal good*
(Rolex watches, housing, eating out)

$\varepsilon_I < 0$, the good is called *inferior good*
(potatoes, second-hand shopping, video rental)

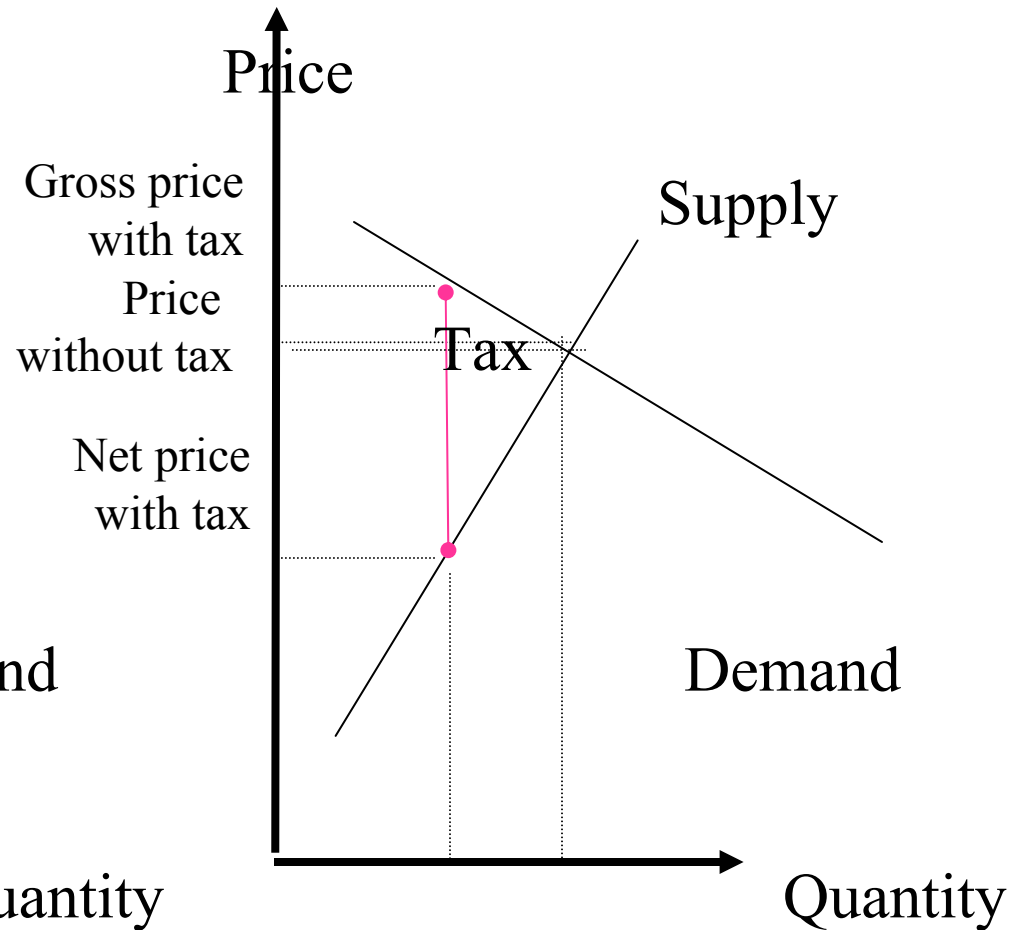
Elasticity: Applications

1. Elasticity and tax incidence
2. Elasticity and deadweight loss of taxation
3. Elasticity and tax revenues
4. Elasticity and revenues (monopoly power)

(1) Elasticity & Tax Incidence

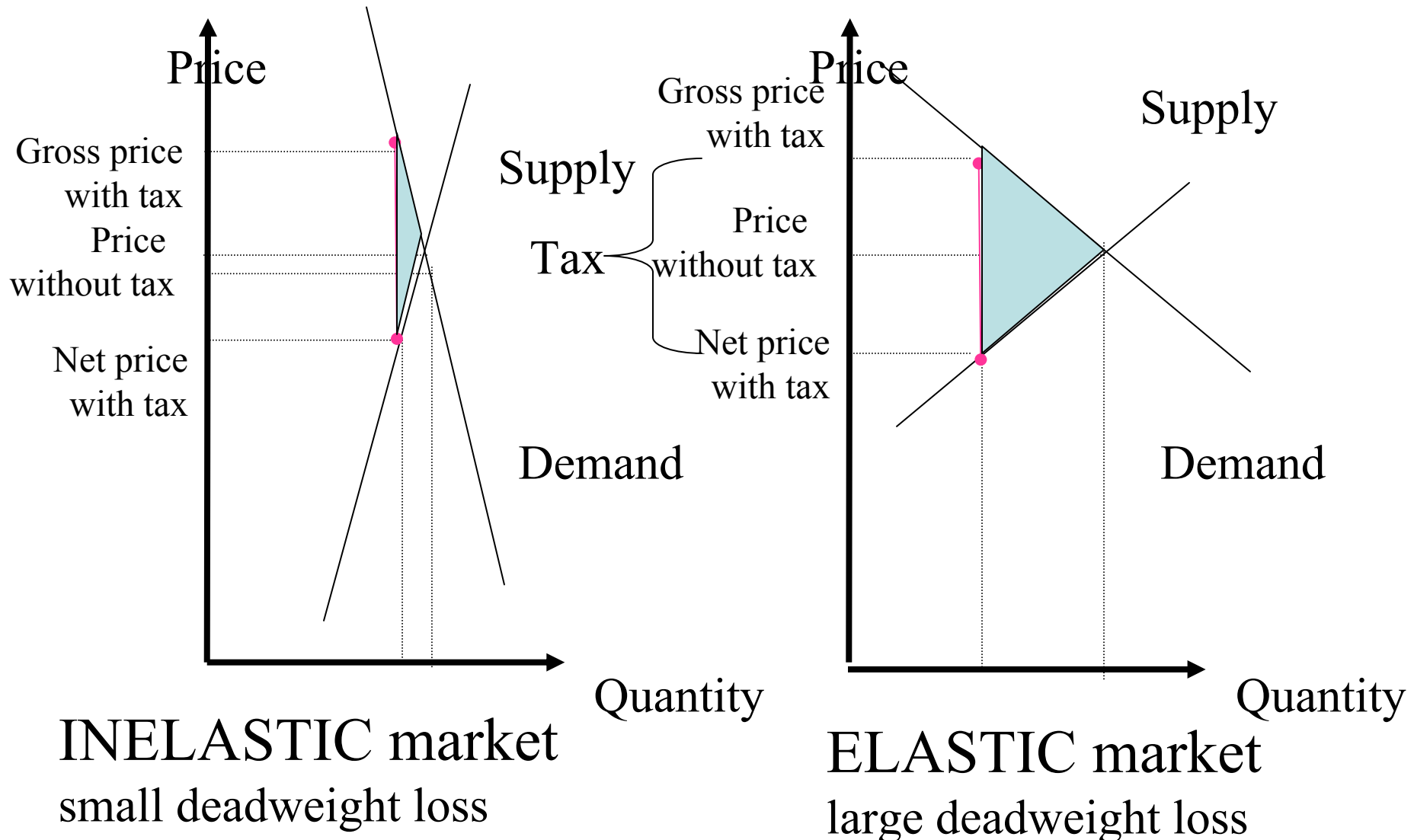


INELASTIC Demand
consumers bear most of tax

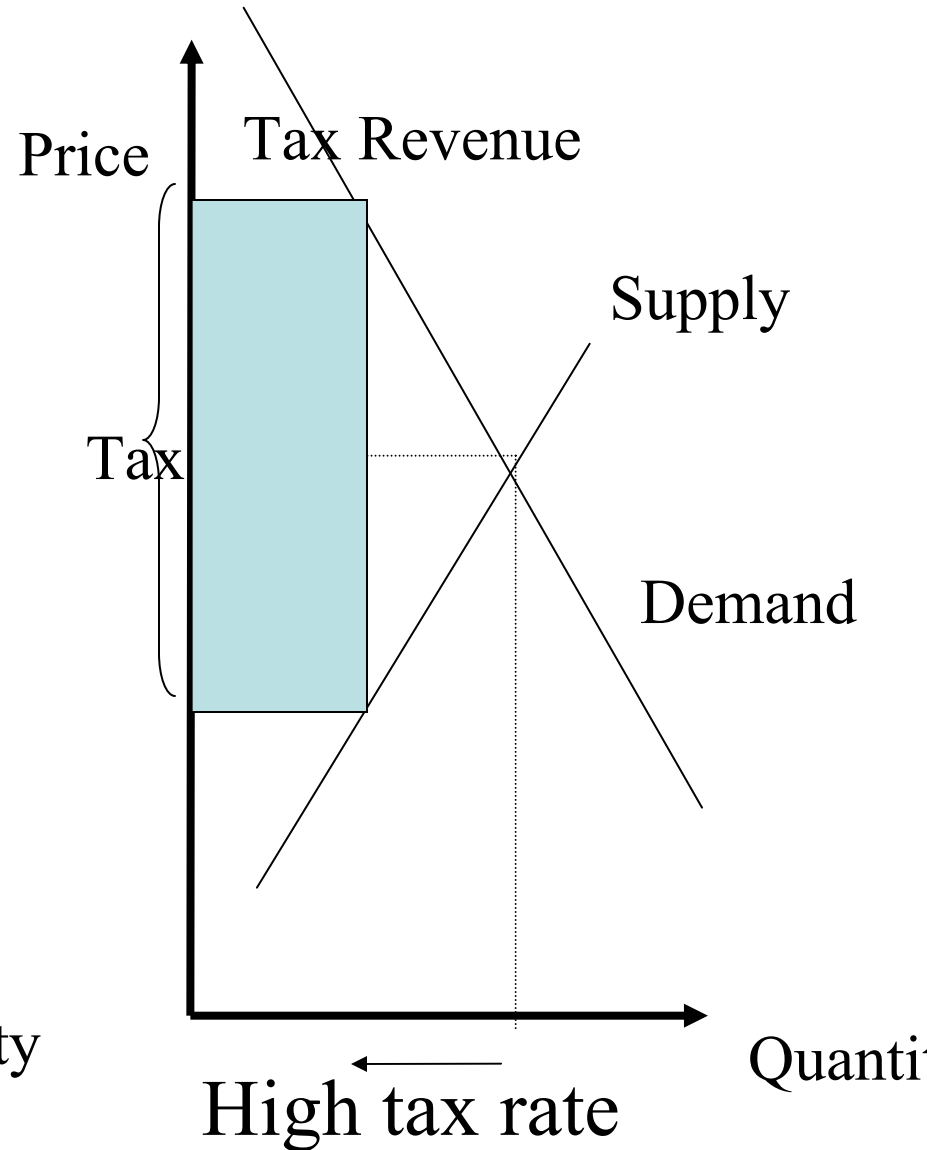
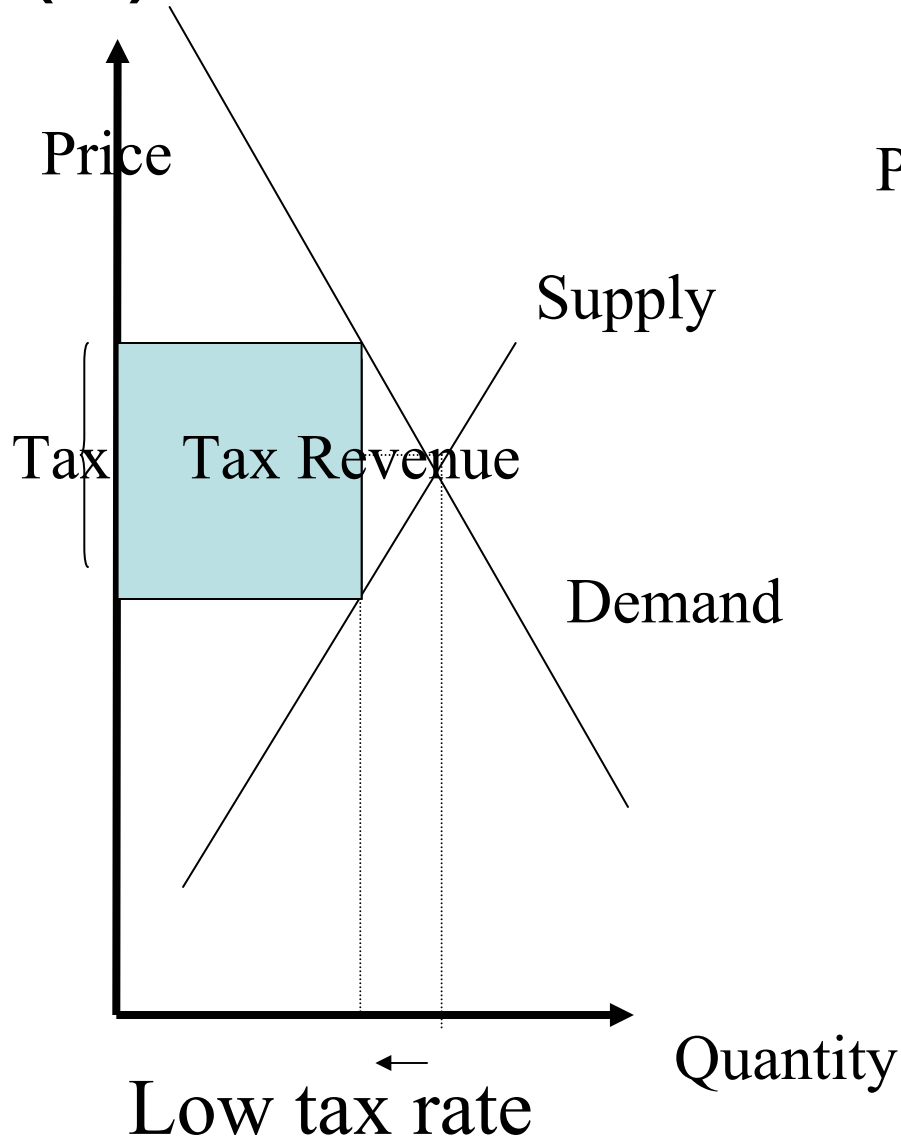


ELASTIC Demand
producers bear most of tax

(2) Elasticity & Deadweight Loss



(3) Tax Revenues & Tax Rates



Optimal Taxation

Suppose that the government needs to raise a certain tax revenue

- We know that taxes on competitive markets reduce efficiency
- Which goods should be taxed?
 - Goods with elastic or inelastic demand?
 - Goods with elastic or inelastic supply?
- How can we minimise efficiency loss?
- Examples?

Laffer Curve

- Could it be that a reduction in tax rate result in an increase in tax revenues?
- In theory?
- In practice?

Reaganomics

Summary

- Interventions in competitive markets lead to reduction in welfare (deadweight loss)
- An increase in tax rate can result in a reduction in tax revenues
- If government need to raise funds, it should tax goods with inelastic supply and demand