Consumers and the Demand for Health (Care)

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Lecture 3: Consumers and the demand for health (care)

This lecture should enable you to:

- Describe the concept of 'demand'
- Understand the main factors that influence demand
- Distinguish between movements *along* and movements *of* the demand curve
- Define and illustrate 'elasticity of demand'
- Apply concepts of (elasticity of) demand to the case of the demand for health (care)

Why the interest in demand?

- If we can understand consumption patterns we might be able to change them
  - Eg. alcohol use, tobacco use, vaccinations, testing for sexually transmitted infections, etc
- More specifically, by understanding the relationship between 'price' and 'quantity demanded' it might be possible to introduce *incentives* to alter consumption
  - Eg. taxes or subsidies to reduce or increase consumption of alcohol, vaccinations etc

What is 'demand'?

- 'Demand' ≠ 'want' or 'need'…
  - Need = capacity to benefit from consumption (eg a health benefit, no matter how small)
  - Want = a desire to consume something (regardless of whether yields health benefit)
    - Need ≠ want (eg women may *want* a caesarean birth for non-health reasons, and many people may *need* dental work, but do not want it!)
- 'Demand' = *willingness* and *ability* to pay for a good (at given price, over given period)
  - *Willingness* represents wants, desires, preferences
  - *Ability* represents resource constraints (or 'income')

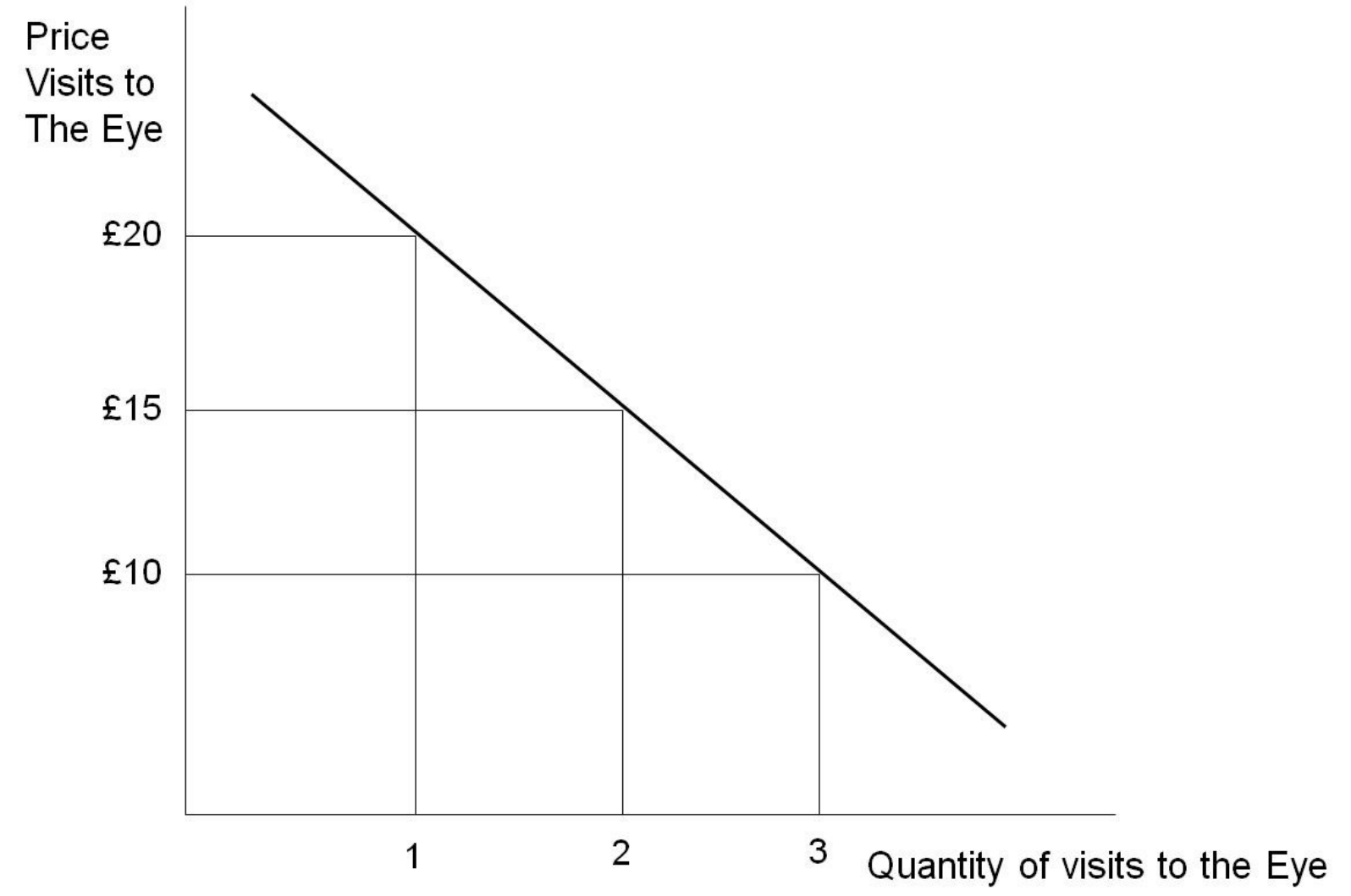
Demand for what?

- 'Demand' is under-pinned by the idea that consumers purchase goods which (subject to their income constraint) maximise their utility
- Key difference with other goods is that most health care consumption does not yield direct benefit or utility (usually opposite!), but yields indirect utility through eventual affect on health. This means demand for health care is *derived demand* – demand not for direct utility if gives but perceived indirect effect on utility (via health). Come back to this in later lecture

Demand for…

- … a ticket for the London Eye
- How much would you be *willing* and *able* to pay?
- … compared to a movie ticket?

Demand ‘curve’



Why does the demand curve slope down from left to right?

- A demand curve shows quantity (in a specified period) that consumer is willing and able to buy at different prices
- As price falls, quantity demanded increases
  - "Income effect" – if price of x falls then you have more income to spend (on x)
  - "Substitution effect" – if price of x falls then you may spend more on x and less on y
- In both cases, the relative *marginal benefits* have changed, leading to reallocation

Individual and 'market' demand

- Thus far we have illustrated demand using one individual. Note that a market demand curve is the (horizontal) summation of individual demand curves
  - Thus, even where consumption is a unique single event (eg corrective laser eye surgery), and *individual* demand is constant (at 1 or 0 units at any given price), because different consumers have different preferences (willingness to pay) and income (ability to pay), *market* demand will be downward sloping

Influences on demand

- So far, considered effect on demand of price changes, but demand is also function of:
  - Income
  - Prices of other goods
  - Tastes, trends, fashions

Demand-side barriers to seeking care for obstetric emergencies,Bangladesh

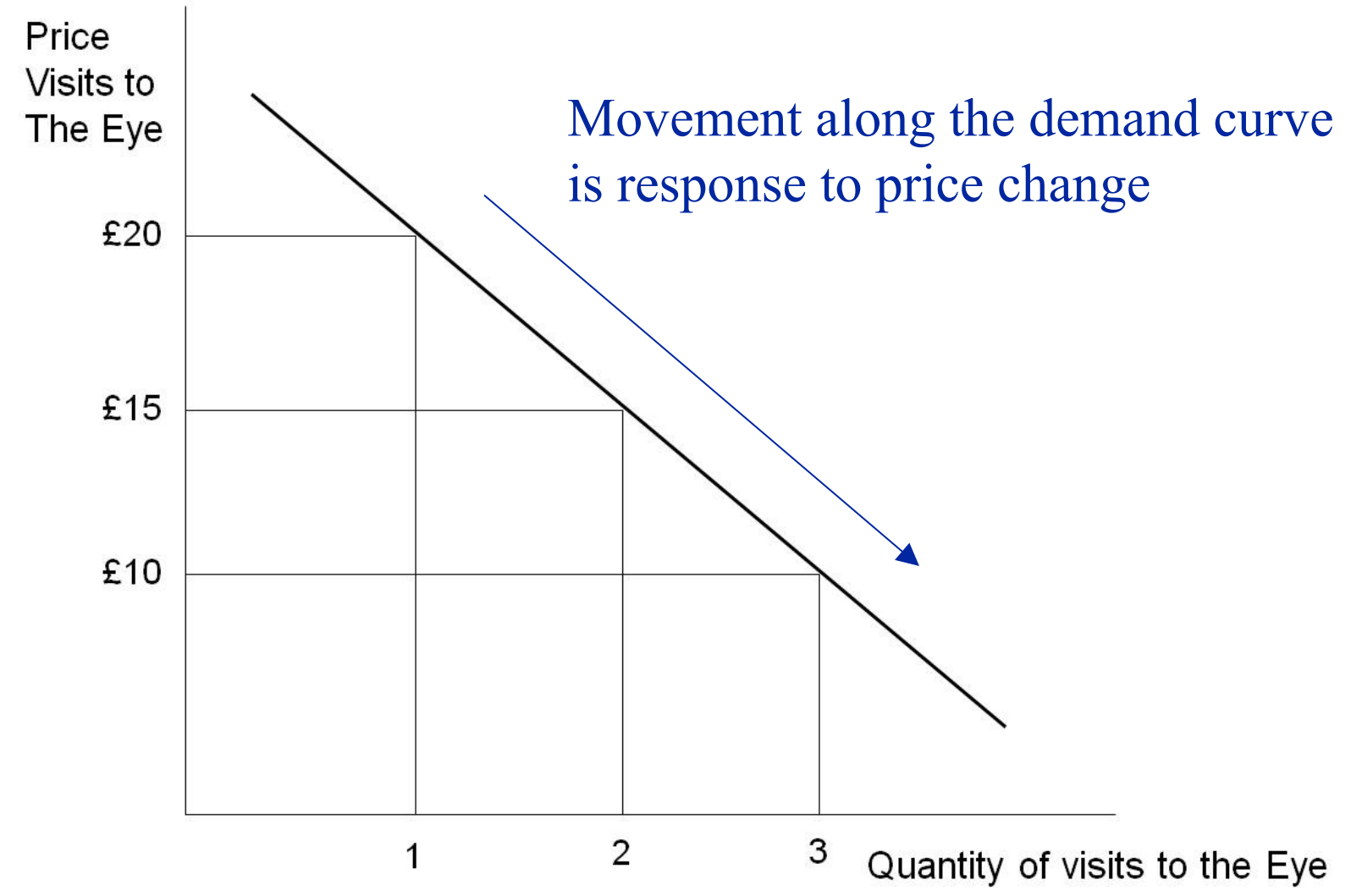
Problem	%
Do not know about emergency problems	60
Financial costs high (price)	46
Do not know what services available at facility	39
In-laws object	36
Religious prohibition on going outside house	35
Shyness	32
Facility too far (non-price costs)	28
Poor communication to facility	18
Husband objects	17

Adapted from Ensor and Cooper 2004

Influences on demand

- So far, considered effect on demand of price changes, but demand is also function of:
  - Income
  - Prices of other goods
  - Tastes, trends, fashions
- What happens to the quantity demanded as these variables change, "*ceteris paribus*" (other things remaining equal)?
- Critical issue is that price causes a movement *along* a demand curve, and other factors *shift* the curve (seminar 3!)

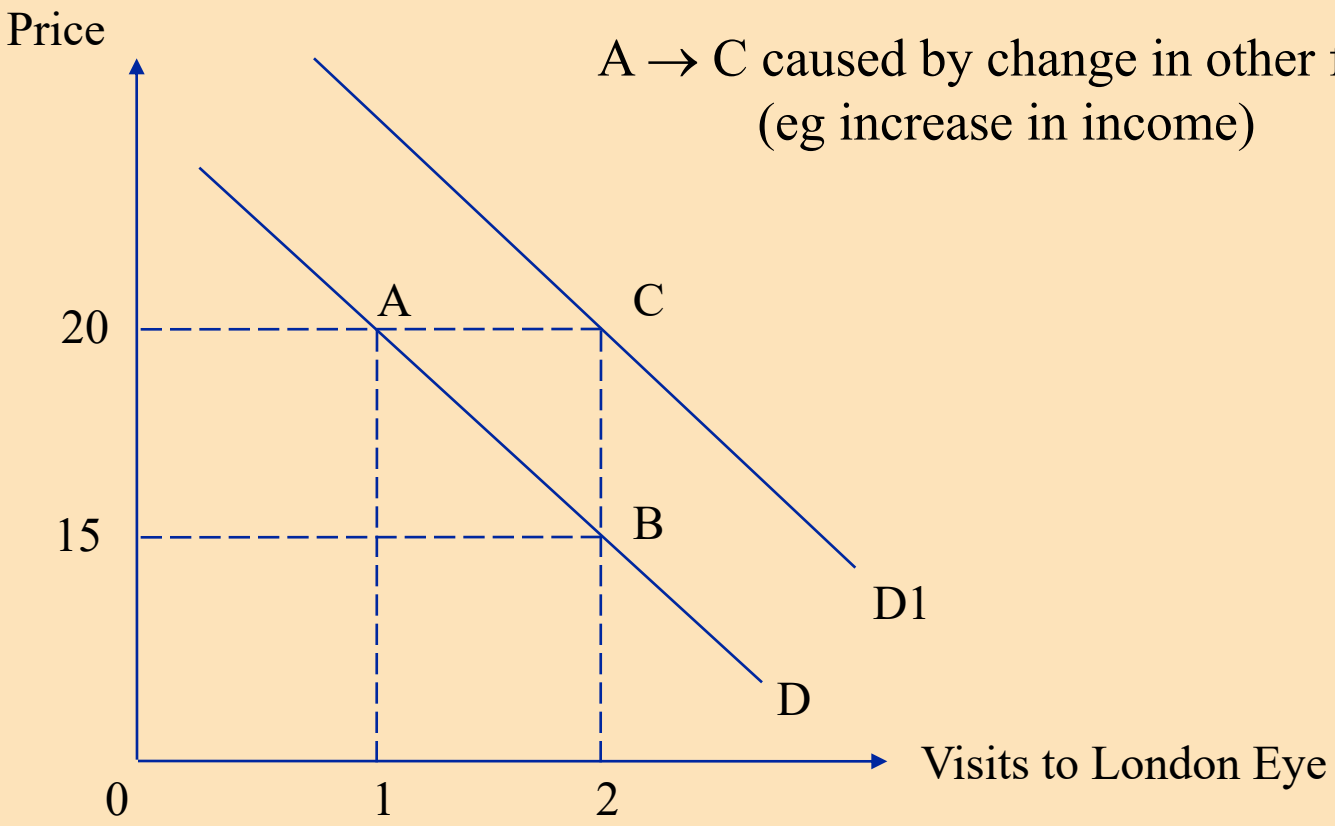
Increase in demand as price falls



Price versus other factors

A → B caused by fall in price

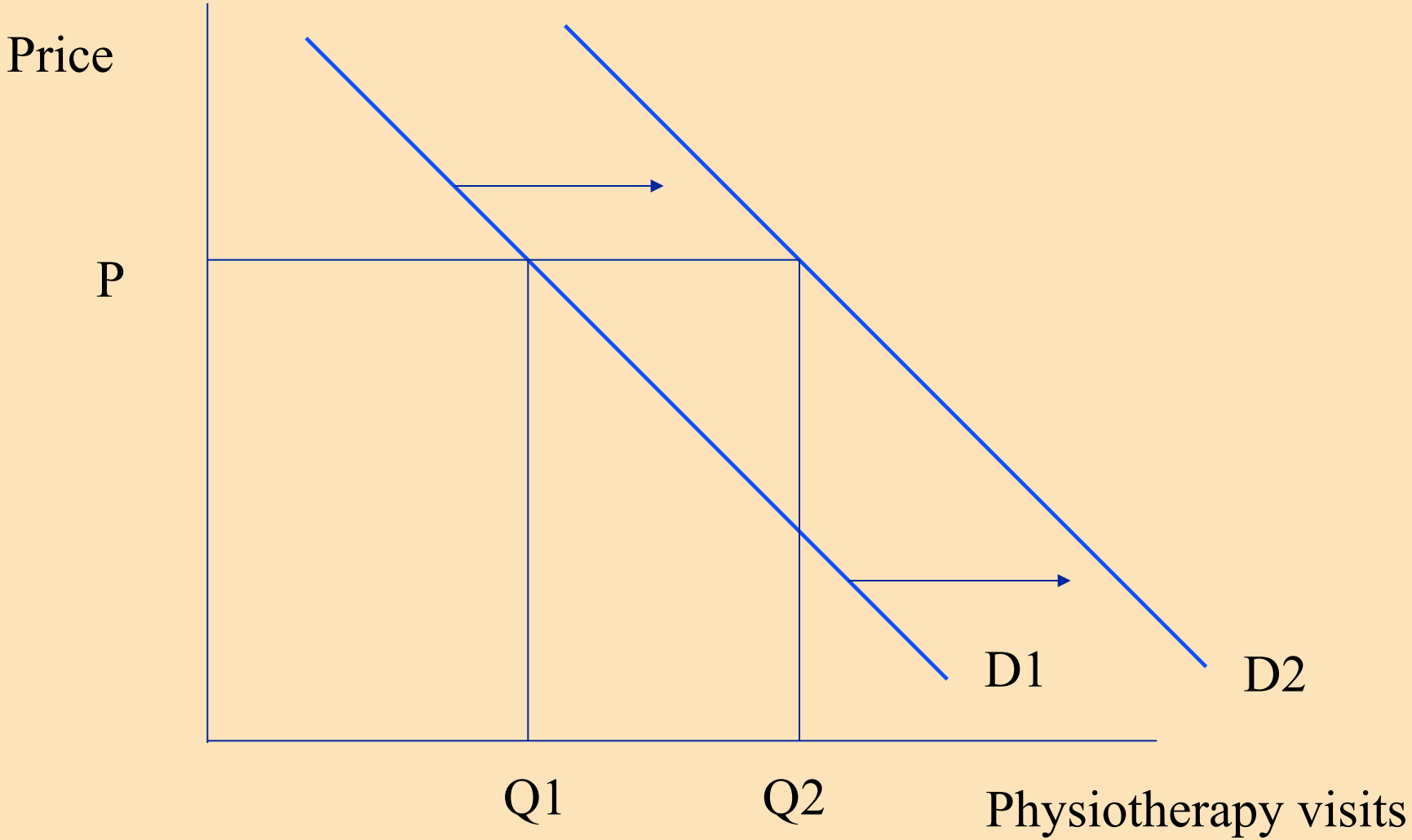
A → C caused by change in other factors
(eg increase in income)



Income

- "Demand" = willingness and *ability* to pay for a good
  - Willingness to pay represents wants, etc
  - Ability to pay represents our resource constraints (or 'income')
- Thus, as income increases, our *ability* to pay increases, and thus (c*eteris paribus*) the quantity demanded increases *at each price*

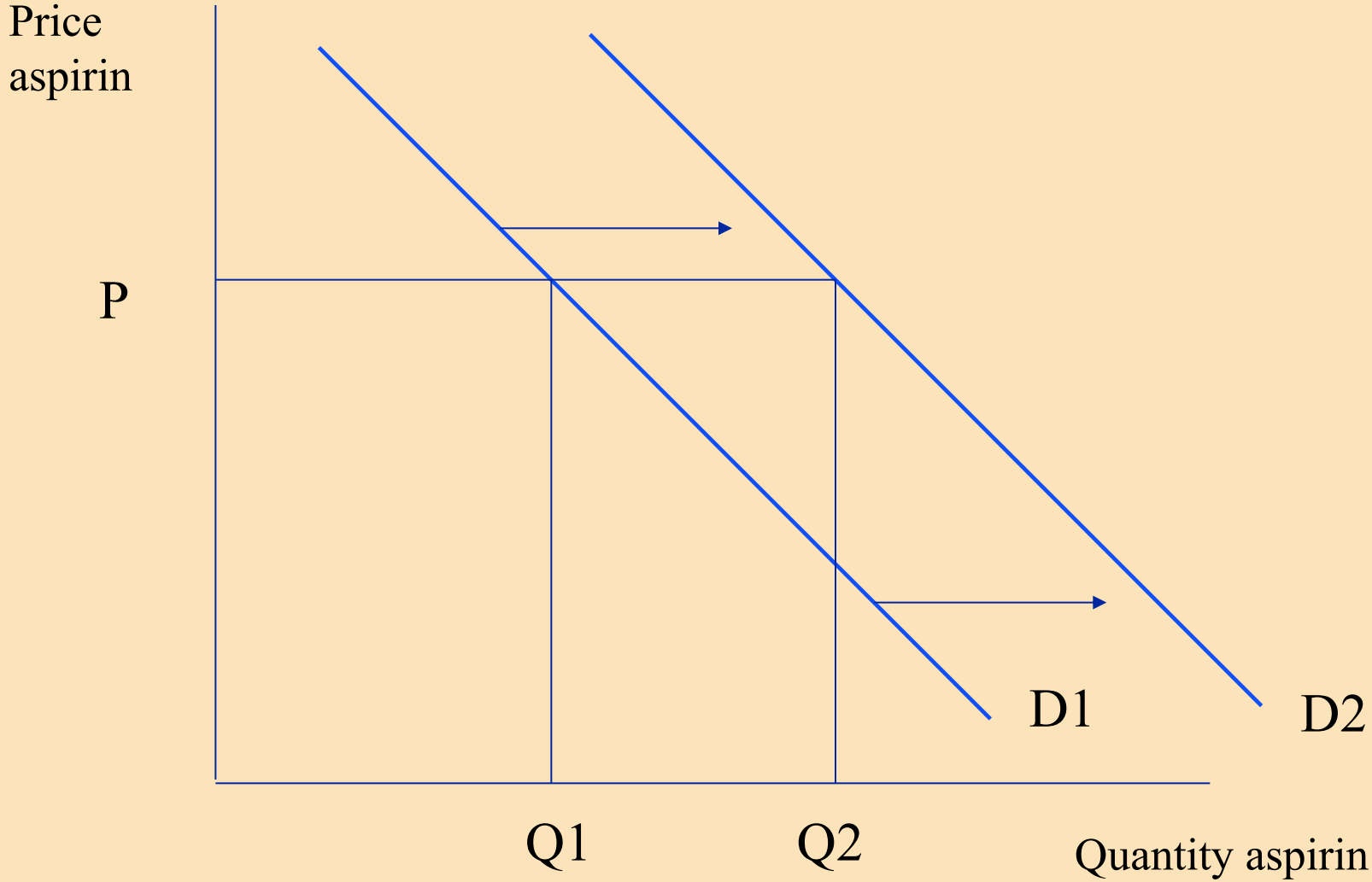
Demand for physiotherapy services if income increases



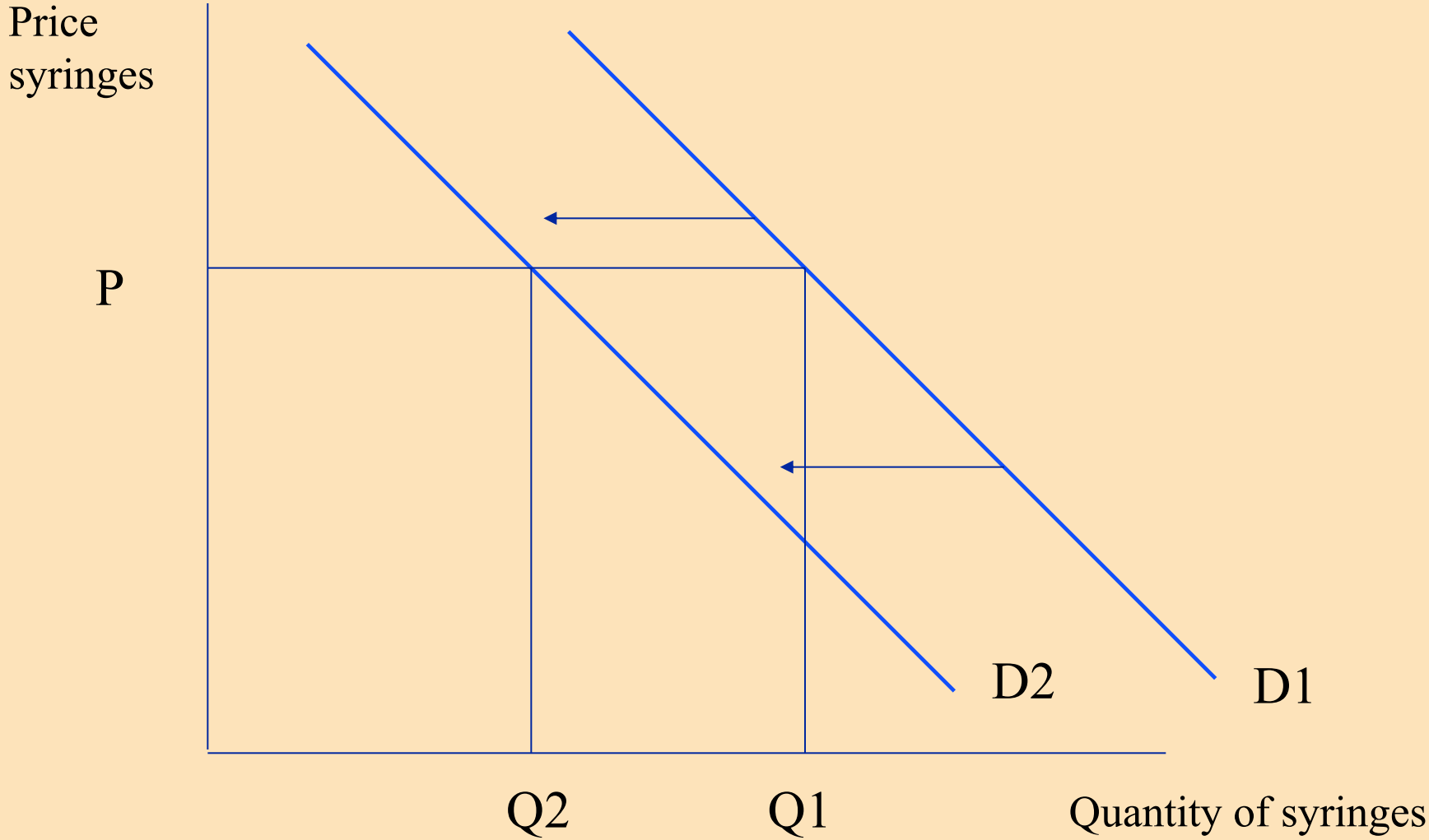
Prices of other goods

- All goods compete for our limited resources (budget) and hence their relative prices are important influences in 2 ways
- Substitutes
  - goods which can be used instead (e.g. aspirin versus paracetamol)
- Complements
  - goods which must be used together (e.g. syringe and vaccine)

Demand for aspirin if price of paracetamol increases



Demand for syringes if the price of vaccines increases



Tastes

- Tastes, trends, fashions determine the relative desirability of goods, and hence influence the *willingness* to pay for a good
  - A good becoming more fashionable increases utility derived from it, and hence increases demand for it
  - A good becoming less fashionable decreases utility derived from it, and hence decreases demand for it
- For instance, change in tastes and trends concerning smoking, diet, alcohol, cosmetic surgery etc influence demand for them

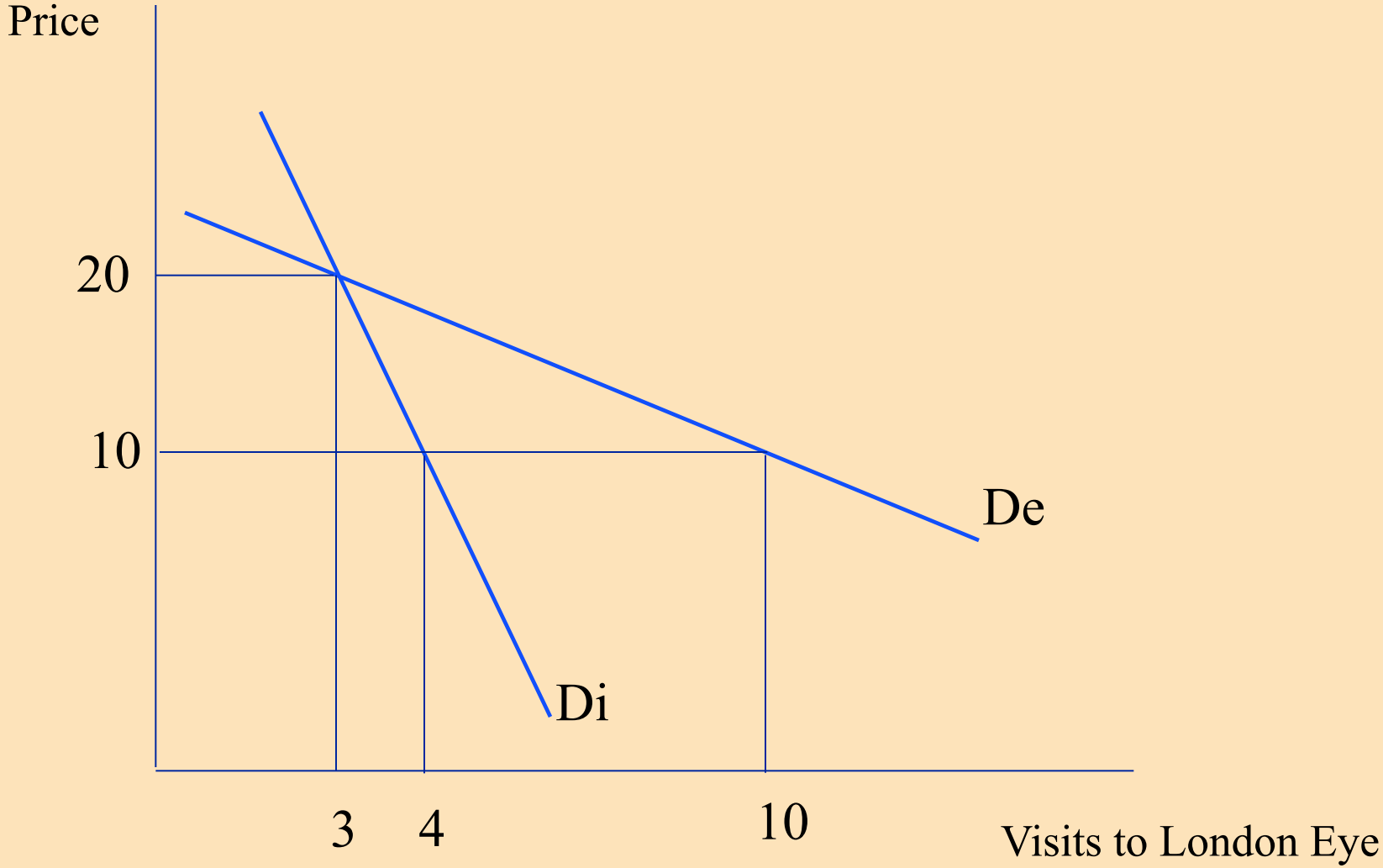
Demand and policy questions

- Many policy questions concern demand:
  - How much will quantity of primary care consumed fall if user fees are introduced?
  - Will reducing import duty on mosquito nets lead to a large increase in coverage?
  - Is raising the tax on cigarettes a good way to encourage people to stop smoking?
- To answer these, we need to understand how *responsive* demand is to various influences, especially price

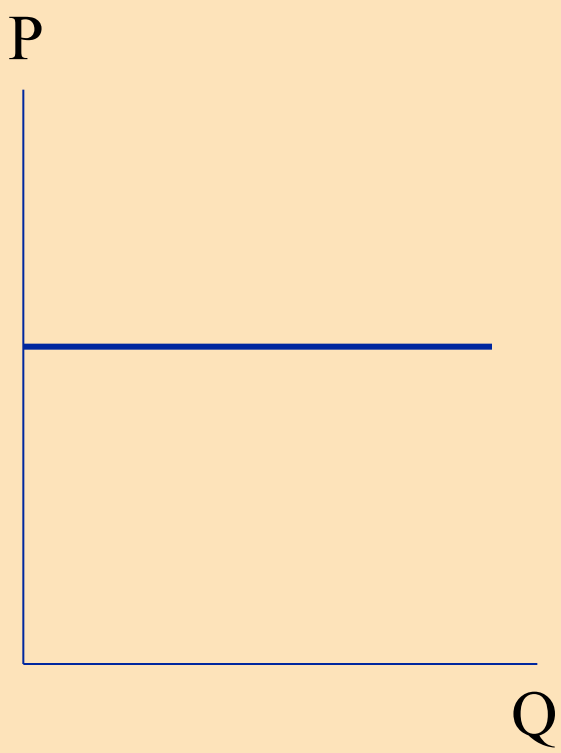
'Elasticity' of demand

- Elasticity (ε) measures *responsiveness* of changes in quantities demanded to other variables – typically (own and other) price and income
  - **Price elasticity of demand (PεD)** = % change in quantity demanded for % change in price
  - **Cross price elasticity of demand (XPεD)** between two goods X and Y = % change in quantity demanded (X) for % change in price (Y)
  - **Income elasticity of demand (IεD)** = % change in quantity demanded for % change in income

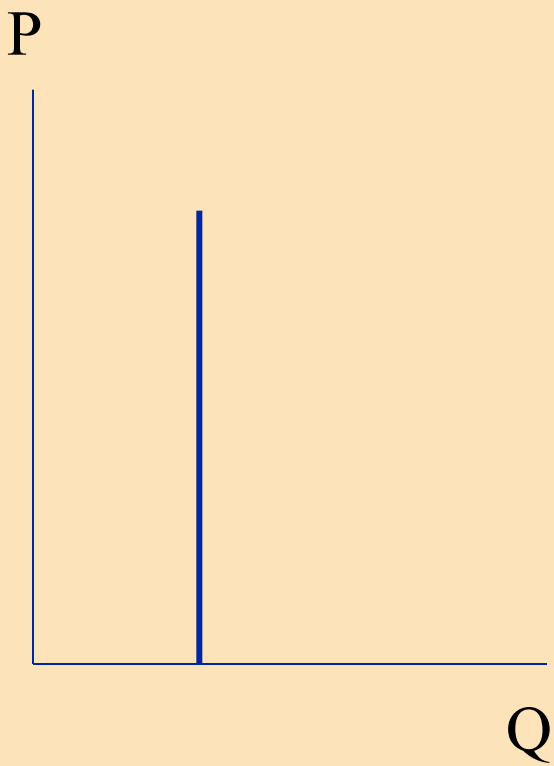
Price elasticity of demand (PεD)



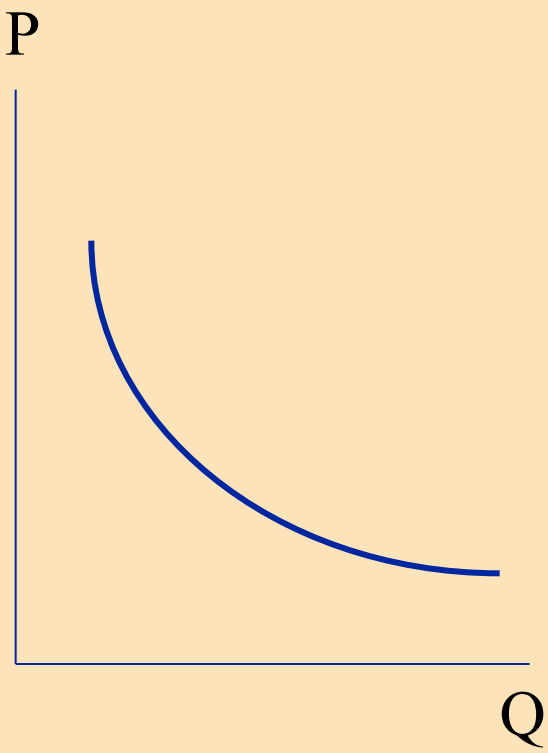
3 special cases



Perfectly elastic demand



Perfectly inelastic demand



Constant elasticity of demand

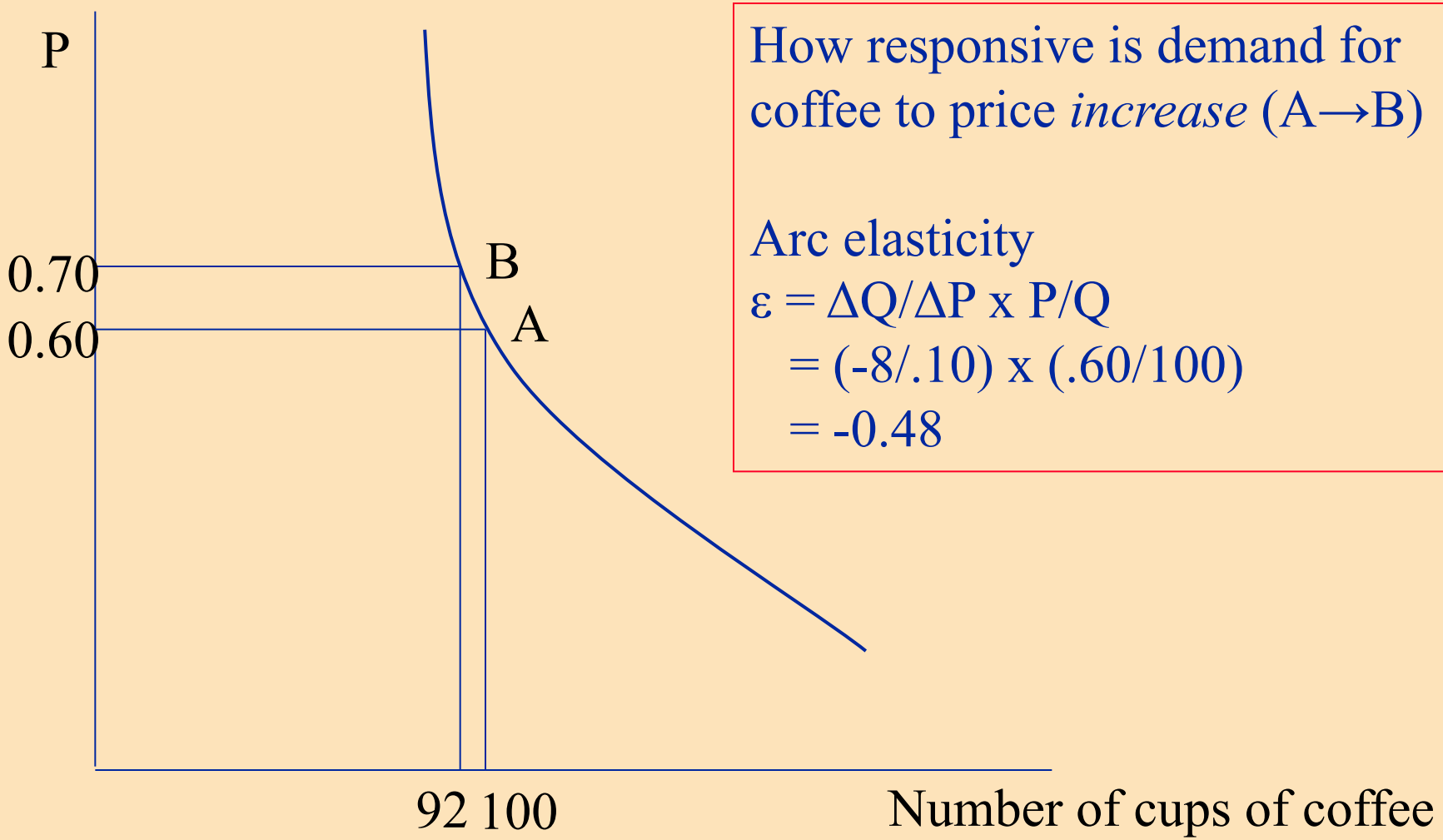
What determines price elasticity?

- Existence and number of substitutes
- Degree of “necessity” (need?)
- Passage of time
- Proportion of income spent

Calculating PεD

- Point elasticity (Morris book)
  - PεD = [δQ÷δP] x [P÷Q]
    - Where [δQ÷δP] = slope of demand curve at that point
- Arc elasticity (seminar!)
  - PεD = [ΔQ÷ΔP] x [P÷Q]
- Arc mid point
  - (Q1-Q2)/(P1-P2)*[(P1+P2)/2]/[(Q1+Q2)/2]

Arc elasticity



How responsive is demand for coffee to price *increase* (A→B)

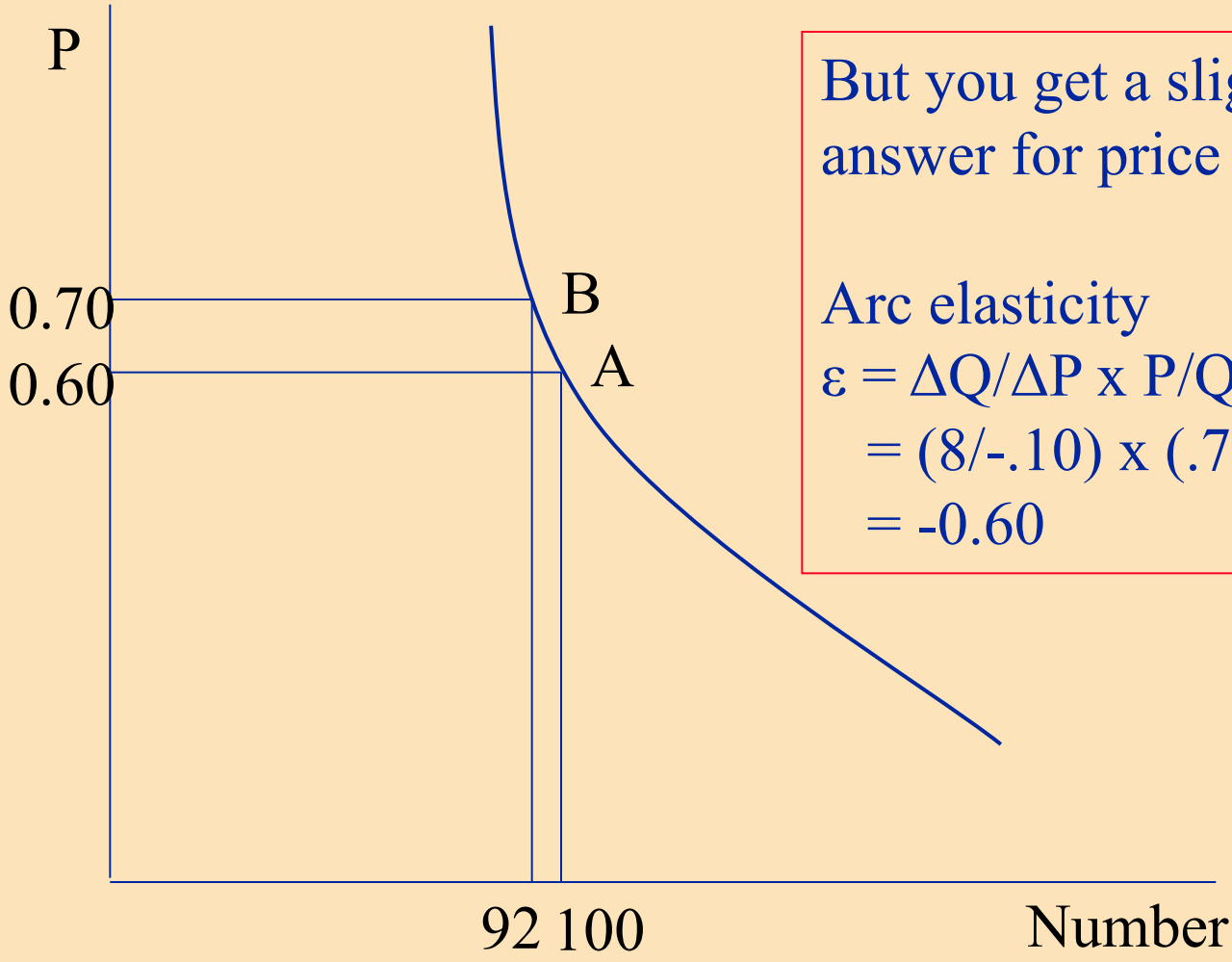
Arc elasticity

$\varepsilon = \Delta Q/\Delta P \times P/Q$

$= (-8/.10) \times (.60/100)$

$= -0.48$

Arc elasticity



But you get a slightly different answer for price *decrease* (B→A)

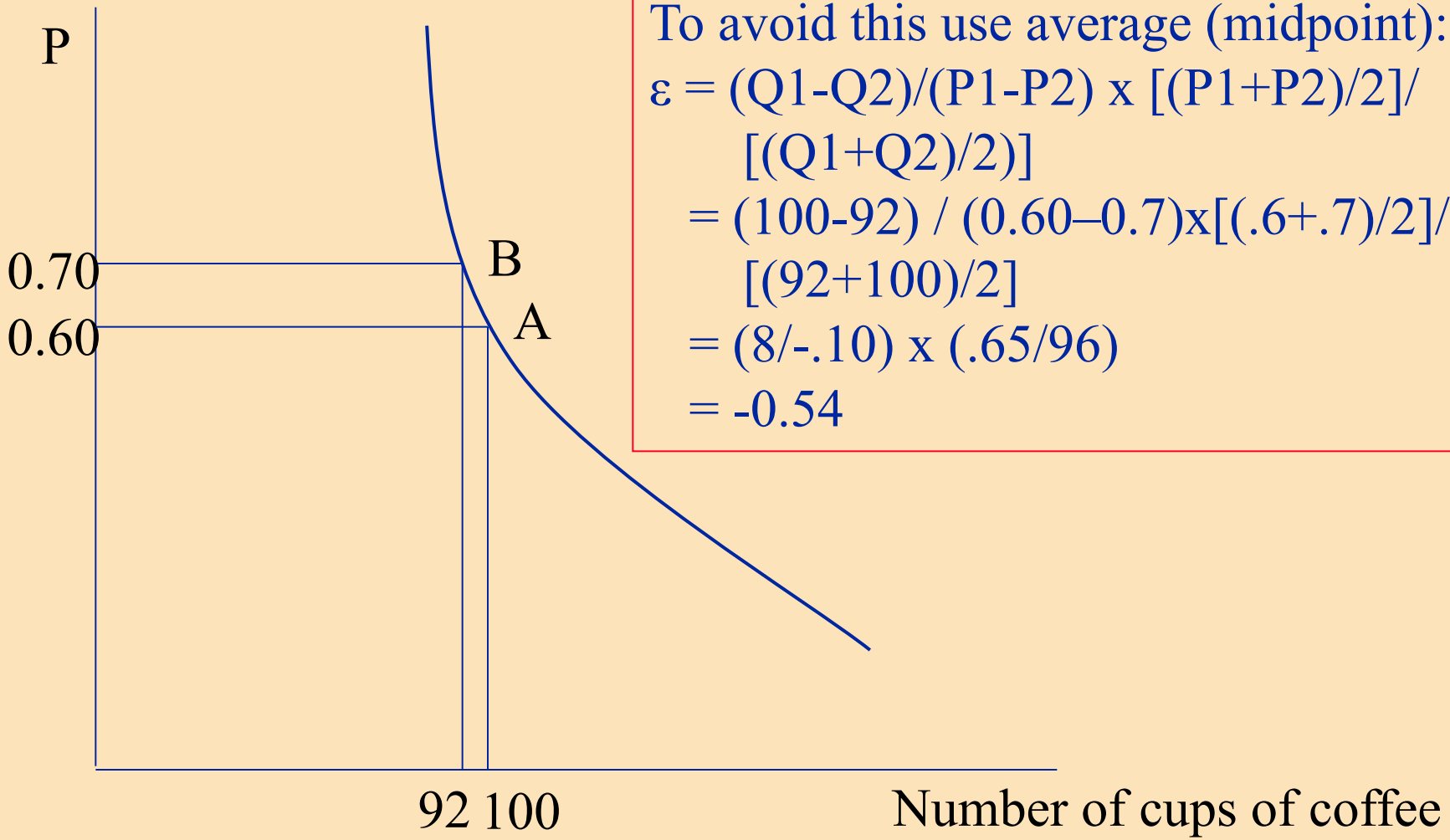
Arc elasticity

$\varepsilon = \Delta Q/\Delta P \times P/Q$

$= (8/-.10) \times (.70/92)$

$= -0.60$

Arc elasticity



To avoid this use average (midpoint):

ε = (Q1-Q2)/(P1-P2) x [(P1+P2)/2]/
[(Q1+Q2)/2)]

= (100-92) / (0.60–0.7)x[(.6+.7)/2]/
[(92+100)/2]

= (8/-.10) x (.65/96)

= -0.54

Price elasticity of demand (PεD)

- We say that demand is
  - *Elastic* if $|\varepsilon| > 1$ (equivalently < -1, such as -1.2)
    - relatively horizontal demand curve
    - change in price will produce a *more* than proportionate change in quantity demanded
  - *Inelastic* if $|\varepsilon| < 1$ (equivalently > -1, such as -0.5)
    - relatively vertical demand curve
    - change in price will produce a *less* than proportionate change in quantity demanded

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Price Elasticity Estimates for Tobacco Products in India

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The tax base of tobacco in India is heavily dependent on about 14% of tobacco users, who smoke cigarettes. Non-cigarette tobacco products accounting for 85% of the tobacco consumption contributes only 15% of the total tobacco taxes. Though taxation is an important tool to regulate consumption of tobacco, there have been no estimates of price elasticities for different tobacco products in India to date, which can guide tax policy on tobacco. This paper, for the first time in India, examines the price elasticity of demand for bidis, cigarettes and leaf tobacco at the national level using a representative cross-section of households. This study found that own-price elasticity estimates of different tobacco products in India ranged between −0.4 to −0.9, with bidis (an indigenous hand-rolled smoked tobacco preparation in India) and leaf tobacco having elasticities close to unity. Cigarettes were the least price elastic of all. With some assumptions, it is shown that the tax on bidis can be increased to Rs. 100 per 1000 sticks compared with the current Rs. 14 and the tax on an average cigarette can be increased to Rs. 3.5 per stick without any fear of losing revenue. The paper argues that the current system of taxing cigarettes in India based on the presence of filters and the length of cigarettes has no justification on health grounds, and should be abolished, if reducing tobacco consumption and the consequent disease burden is one of the objectives of tobacco taxation policy. It also argues that attempts to regulate tobacco use without effecting significant tax increases on bidis may not produce desired results.

Keywords Tobacco, bidis, cigarettes, consumption, elasticity, India

The Rand Health Insurance Experiment (USA, 1970s)

- Randomly allocated 5,800 households to one of 14 different health plans with different co-payments
- Overall price elasticity = -0.22
- Varied over types for care, such as:
  - Hospital care (-0.14)
  - Outpatient (-0.31)
  - Dental care (-0.43)
- Evidence generally is PεD for healthcare between -0.1 and -0.7 – *inelastic*.
- Why? Is health care a *necessity*? Is it because there are *few substitutes?* Is it because of *who demands?*

A final word…

- Health as a 'commodity' can be analysed using standard economic approaches
- But, health *care* is different from the standard economic model because:
  - Derived from the demand for health
  - Agency relationship with doctor because of specialist knowledge/uncertainty of need
  - Uncertainty of timing (emergency etc)
  - Need health before you can demand anything else
- Led to specific developments in concept and application of demand which will see in later lectures