

what's the point of... **INEQUALITIES?**

You can stand under my umbrella ...



'Dark rain clouds gather over the horizon, there's one hell of a storm coming.' Actually this has nothing to do with the weather – that's another story altogether – but the old adage of saving pennies for a rainy day has become an increasingly important consideration in recent times.

A variety of factors impact on the investment decisions we make for our future. The population is getting older and the proportion of people in the workforce supporting that population is getting smaller. Where are pensions going to come from? The volatility of stocks and shares can mean that, if there is a stock market crash, the value of an investment can fall to almost nothing. To reduce this risk, investors can choose to invest in less risky financial products that offer fixed (but potentially lower) returns over a period of time.

On the other hand, people may turn to banks for loans to fund immediate purchase decisions such as buying

a car, going on holiday, etc. Interestingly, in both these scenarios inequalities are an important factor in the decisions made by the investor or the bank.

If you walk into a bank or apply online for a fixed-rate loan, the first stage is generally assessing your income and expenditure. This acts as a rough and ready measure on your ability to repay the loan. If, after taxes, rent, bills, entertainment, food, etc. your income is greater than or equal to (\geq) your projected loan repayments you are likely to be approved for the loan, or at least encouraged to proceed with the application.

Alternatively, when planning for the future, you may wish to receive a fixed return based on how much you invest. Let's say the interest rate at the time is 5% and you want at least £10 000 a year return for when you retire. You can use the calculation $I = Prt$ (where I is income, P is the principal amount invested, r is the rate of interest and t is the number of time periods).

You can say that:

$$\begin{aligned}
 I &= Prt \geq 10\,000 \\
 P \times 0.05 \times 1 &\geq 10\,000 \\
 P &\geq 10\,000 \div 0.05 \\
 P &\geq 200\,000
 \end{aligned}$$

So, and admittedly this is very simplistic, in order to earn £10 000 a year (before taxes), you would need to have invested £200 000 in a financial product that offers a 5% rate of return. Of course, this does not include factors such as incremental payments, changes in interest rates, etc. but it gives an idea. Start saving those pennies ...

Elasticity - the difference between priceless and pricey

Particularly in the developed world, there are many aspects of our daily lives that we take for granted. Perhaps none more so than the ability to reach for a tap, fill a glass with water and drink it.

The human body can survive almost 18 days without food but only three days without water. Water is essential to life as we know it. No matter how expensive it becomes to obtain, without it we cannot exist. We say that demand for water is inelastic.

On the flipside, as the Christmas holiday season approaches, retailers and manufacturers tempt consumers with powerful advertising campaigns for items such as HD television, the latest games console or designer clothing. We don't need these things, there are plenty of alternatives we could buy. Often, however, it comes down to price. If the demand for a product is affected by the price charged for it, the demand for that product is said to be elastic. Retailers and manufacturers use advertising to try to increase the demand for their goods and make it less sensitive to changes in price. By making it a must-have product they hope that consumers will be willing to pay whatever price is asked.

Retailers and manufacturers may also reduce prices through sales and discounts. With elastic demand, a reduction in price will generate extra demand but will this lead to a fall in revenue? They have to drop the price just enough to attract enough consumers so that revenue will increase.

Price elasticity of demand (E_d) for a given product, is a coefficient that can be calculated using

$$\frac{\% \text{ change in quantity demanded}}{\% \text{ change in price}}$$

If $-1 < E_d < 1$ demand is inelastic and, if the price decreases, so does revenue (and vice versa).

If $E_d < -1$ or $E_d > 1$ demand is elastic and, if the price decreases, revenue increases.

A variation on the theme of elasticity are aisle promotions and loss-leader products, often found in supermarkets under the banner of 'Buy one, get one free' or '3 for 2'. These incentivised offers are designed to attract customers to buy more of a product but also to encourage them to buy other items at the same time, as well as encourage the behaviour of repeat purchasing from the outlet in the future. The revenue from the products on special offer is likely to be less. Overall, however, the decrease in price of the promotional goods will lead to increased revenue for the supermarket as shoppers start to demonstrate loyalty as well as changes in purchasing behaviour, buying more than they need.

