Back to Basics: The Cutting Edge

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Even if you have only had a week or two of economics lessons you will probably know by now that a demand curve slopes downwards and a supply curve slopes upwards. The demand side seems pretty obvious. If you can get something cheaper then you will want to buy more. Or as the economist would put it, there are diminishing returns as you consume more of something, and so at higher quantities the amount you’re prepared to pay for another goes down. But for supply it doesn’t seem so obvious. Of course firms would like to make as much money as possible, but why do they only want to supply more when prices are higher? Surely it’s cheaper to supply more per unit, and don’t firms offer discounts to people who want to buy more? So here is the point of this article – why do most supply curves in textbooks slope upwards?

Before we look at the standard response to this question, let’s just use some common sense. Supply is pretty well fixed for many goods and services. Say you want to go to a sold-out concert on Saturday and you’ll pay anything for a ticket. Too bad. The concert promoters would lose their licence if they overfill the seats. Maybe if there is so much demand and people are really prepared to pay anything the promoters will decide to increase supply by offering one more night. But this is with reluctance (the band will lose their day off, perhaps) and it will only happen if prices people are prepared to pay are high enough.

So why is it that costs rise when you produce more? It’s true that this is only a short run phenomenon because clearly if the concert promoter knew in advance that you could sell more nights of the concert it probably would be cheaper per night to book two. The whole reason for the shape of the supply curve is based on the fact that some factors are fixed and you can’t increase output without incurring extra costs.

Costs of supply tend to go up because some factors of production are restricted in supply in the short run. The amount of many goods and services currently available in the market cannot be increased instantaneously. If you really want more you’ll have to pay more to get it shipped over from another country, with the added expense of changing currencies and tariffs may have to be paid if sourced from outside the EU. Or it may mean that people have to work overtime, for which workers will expect higher pay. While this is not true for many mass-produced, processed and storable items, it is true for many other things that we want to buy. Look at eBay and see prices go up as demand rises. If there’s more than one person aiming to buy a unique item then prices rise. But if there are many items very similar for sale on eBay then there doesn’t seem to be a bidding war, and you can just ‘buy it now’ for a reasonable price.

So one way to explain why supply curves usually slope upwards is that as the price of the product rises producers will find it more profitable to offer goods and services for sale, given their existing productive capacity. This is because any increase in costs incurred by increasing output will be covered by the higher price.

**The law of diminishing returns**

The key to explaining this is the law of diminishing returns, which can also be expressed as the law of increasing costs. For example, imagine you have a farm with some hens in a meadow. Now let’s say you want to draw the supply curve for the eggs that your farm will sell. The hens have to go inside to lay, and they can only lay a maximum of one egg per day, and that’s if you’re looking after them properly and keeping them happy. There is a cost of around 10p per egg in food. So the factors of production are the meadow (land, a fixed factor), the hens and food (known as working capital, variable factors) and the hen house (capital, probably a fixed factor). So what happens as prices rise? You are likely to want to buy some more hens, currently at around £12 each. You bring the hens to your meadow and give them some extra food. Now the market for food is so competitive that even if you have thousands of chickens the price of the chicken food won’t change much. So why will costs start to rise as you try to produce more eggs?
The answer lies in the fact that the meadow is a fixed factor. As you try to get more and more hens into one meadow they will find it harder to get good pecking spots, and eventually you’ll get to the point where you cannot get any more eggs out of the farm even if you buy more hens. The hens that are there will stop laying even if the newcomers will lay. The number of eggs you can get reaches a ceiling, and total output of eggs will not rise even though your input rises. This is a law of economics, in the sense that logically it must be true: if you keep adding more and more of a variable factor to a fixed factor then the increase in output will eventually fall. We call this the law of diminishing returns. You can express exactly the same law in a different way: as more of a variable factor is applied to a fixed factor, the cost of producing an extra unit of output will rise. The cost of producing an extra output is called the marginal cost and so the rule says that ‘marginal costs will eventually always rise’.

So if supply curves were the same things as marginal costs curves, the answer is simple. Higher prices mean higher marginal costs so firms will only supply more or new firms will only enter the market as prices rise. Prices have to cover costs so if costs are rising then supply only increases if prices rise too. But of course life is more complicated. It can be true that supply curves are equal to marginal cost curves, as long as the firm is covering its average variable costs, but this only happens in a market structure known as perfect competition. In the real world firms and consumers have market power, when a firm or consumer can have some control over price, because they can control quantity supplied.

Market power

A firm with monopoly power can restrict supply and thereby charge a lot more for it. Designer brands are a clear example of this. Firms making perfume could probably sell a lot more if prices were lower, but this would mean a fall in their enormous profit margins. Perfume has a low price elasticity, which means that if prices fall total revenue falls. It is in the interest of firms to make as much profit as possible. Another law of economics (that is, something which is true by definition) is that if demand has price elasticity below one then the firm will make more money if it raises the price. In the scenario above where markets are perfectly competitive then they can’t raise price. If they did then other firms would simply undercut them and sales would fall to zero. But if a firm has any market power at all then it can raise price without losing all of its market. When price elasticity of demand is inelastic the firm makes more money by supplying less at a higher price. Lower supply at a higher price? Sounds like the supply curve is downwards sloping in some cases. So if there is a degree of market or monopoly power, it seems that the supply curve is not always upward sloping. It’s very difficult, however, to draw a supply curve in situations like this, because clearly the supply depends on the price elasticity of demand. And because it’s not easy to draw you won’t often see this type of supply curve in a textbook. But certainly most supply curves do have some degree of uncertainty about them for the reason that demand is not perfectly elastic, which is why supply curves always drawn going upwards is a little simplistic.

Another good example to think of is OPEC, the Organisation of Petroleum Exporting Countries, and the way in which it works to keep the price of oil high. It has low oil production costs (less than $5 a barrel) and has the most spare capacity of all the oil producer outlets. It sells 40% of the world’s daily oil supply, and when it has political reasons to take a swipe at its Western buyers of oil it can restrict its supply. The effect of course, owing to price inelastic demand for oil, is that prices zoom up. Why then don’t other suppliers enter the market to take advantage of the higher prices? It may be that there aren’t stocks of oil available in other countries, or maybe other countries just enjoy the price hikes because their own income rises. Firms are much happier supplying when prices are high, and certainly don’t want to destroy that equilibrium by starting a price war. This enters the field of game theory which you might look at when you study oligopoly at A2 level.

Backward bending supply curves

To make matters even more extreme it also seems that some supply curves are not only impossible to draw owing to market power, but also that some which can be drawn are shown as backward bending. So while the economist happily draws an upward slope it gets to the point as prices rise where the supplier starts to
supply less. This happens when the laws governing economics start to break down – you might start to
wonder whether they are really best called laws. Let’s imagine a situation where supply is fairly inelastic,
that is, you can’t increase supply easily and price will have to increase a good deal to encourage firms to
supply more. Now add to this a so-called ‘income effect’ meaning that the amount that is supplied depends
on the suppliers’ real income and the choice between work and leisure. So let’s say you are trying to earn
a bit of extra money working at the weekends in a restaurant. The wages are notoriously low but you work
hard hoping to get some tips, but unfortunately you have to share these with the kitchen staff and the
boss. Now the manager is keen for you to do some extra hours. You’re not very keen because it’s going to
compromise your studies. So the manager says you can keep all the tips. Do you offer to work more hours?
Maybe, but maybe the extra pay inducement will keep you on your current hours, and maybe even cut
them and still have more than you had before. Seems a bad decision by the manager, but that’s how tough
it can be for firms when the supply of labour is price inelastic. A pay rise can in some rare cases make
people less keen to supply, making the top part of an inelastic supply curve bend backwards to the left. Or
in normal English, part of the supply curve is downward sloping.

Back in class your teacher reminds you that supply curves are upwards sloping. Just accept it, you tell
yourself. Certainly this makes for easy mechanics of price determination and analysing how changes in
demand and supply affect prices and output. But in reality you should always remember that there are
some fundamental assumptions behind the upward sloping curve, and that the assumptions underlying it
are very high price elasticity of demand and supply (perfectly competitive markets), and that at least one
factor is fixed. In the long run the supply curve is quite variable!

1. Elasticities tend to rise over time. Why is this?
2. If you draw a supply curve that is very steep but crosses the vertical axis above the origin you will
   be able to calculate that its elasticity is above one, not price inelastic as you might expect with a
   steep curve. Can you explain that in common sense terminology?
3. Spare capacity is one reason why costs of production do not rise when demand rises. Does this
   mean that a country should always aim to have a great deal of idle resources at all times?
4. Marginal costs can begin to rise while average costs are falling. Do you think firms use marginal or
   average costs when choosing prices – or neither? If they use average costs are they being rational?
5. Market power appears to be the key determinant of prices and output for many goods and services.
   However, the power is not always on the suppliers’ side. Buyers can also have market power. If the
   government is seen as a powerful buyer of labour in the health service, what do you think is the
   implication for the wages paid to nurses?
Short run – when at least one factor is fixed. This means that at least one of the factors of production, or resources used to produce all goods and services, can’t be changed.

Long run – all factors are variable.

Law of diminishing returns – if you keep adding more and more of a variable factor to a fixed factor then the increase in output will eventually fall. It only holds true in the short run which means that at least one factor is fixed.

Law of increasing costs – as more of a variable factor is applied to a fixed factor, the cost of producing an extra unit of output will rise.

Fixed factor – when a firm cannot change how much it has. For example the number of A level subjects you can do is determined by the amount of time you have. In the short run it’s fixed by the number of hours in the school timetable. In the long run – after you leave school, say, you can take as many extra A levels as you like as your life goes by. Or maybe your brain capacity is fixed too?

Factors of production, or resources used to produce all goods and services. Economists call them land, labour, capital and enterprise.

Perfect competition – a market structure where there are many buyers and sellers, none of which have any control over price.

Market power – a measure of the control a buyer or seller has over price, because they can control quantity supplied.

Price elasticity of demand – the responsiveness of demand to a change in price.