CHAPTER 1

Incentives Matter

'The theory of economics does not furnish a body of settled conclusions immediately applicable in policy. It is a method rather than a doctrine, an apparatus of mind, a technique of thinking which helps its possessor to draw correct conclusions.'

—John Maynard Keynes[1]

In early 1998, day care centres around Haifa, in Israel, had a problem. It was a problem common to many of us who have looked after children for a living: late parents.[2] After a long day being responsible for other people's children, by 4pm the teachers were ready to go home. And they weren't being paid for staying any longer. But invariably some parents would be late, and someone would have to stay behind and wait with the child. But one day some social scientists turned up (or rather, sent their research assistants) and made a suggestion: why not fine the parents for being late? It is a solution any economist would give.

Over the next few weeks things carried on as normal, as the researchers gathered data before making any changes. Then, they adopted a policy where any parent who was more than 10 minutes late would pay a $3 fine. But instead of reducing lateness, the number of late pickups more than doubled. The incentive backfired.

As an economist, I've heard this example a lot. It's often used to show economists that assuming people's behaviour can be manipulated with financial incentives is naïve and narrow minded. Indeed there is some truth to this. Just because originally there was no fine doesn't mean that there was no incentive to be on time. The social norm is to be on time, and late parents probably felt guilty. Once the arrangement moved from the social to a financial realm, parents realised they could 'buy' the right to be late. Indeed they weren't just buying the right to be late, but also the ability to not feel guilty about it. In fact, maybe the lesson of the day care experiment is not that economists overstate their subject matter, but that non-economists understate it. After all, the average monthly cost was about $380. A good economist would suggest that the fine was set at a price that was too low! If the goal was to reduce lateness, raise the fine. And even more importantly, discovering the point at which the fine has an effect will help the day care centre to know just how valuable the parents consider their time to be. This whole experiment might help them to discover which opening hours best suit their customers. Clearly the parents are willing to pay the teachers to stay later. Far from demonstrating the failure of markets, this example is like a cursory foray into their magic.

We tend to think that economics is the study of the economy, and indeed this is an important application. But economics isn't a subject matter; it's a way of thinking. The essence of the economic way of thinking is to understand how incentives and institutions affect people's behaviour. In terms of management, economics can give us important clues about why behaviour may be generating bad outcomes. Understanding concepts such as opportunity cost, price elasticity and price discrimination are tools that managers can use to improve a company's performance. But economics does more than this. It provides us with a way of thinking about human action. Economics is the study of society, and the tools with which we understand social behaviour are of direct relevance to management.

1.1 MANAGERIAL INDIVIDUALISM

In their excellent textbook *Managerial Economics*, Luke Froeb and Brian McCann offer the following guide to decision making: when you see an outcome that you deem to be undesirable, ask yourself three questions:[3]

1. Who made the bad decision?
2. Did they have the information they needed?
3. Did they have the right incentives?

All too often the first question isn't even asked, and failure is put down to some collective problem that is ill defined and impossible to alter. The main insight of managerial economics is to focus on the information and incentive mechanisms that help guide decision making. If you do not even know who is making the bad decision, there's little hope of finding out why they did so. This book intends to explore the information channels and incentive mechanisms that create value. It will focus on how markets can be utilised to help solve these problems.

The reason why economists make individual choice the centre of analysis is because we posit that only individuals choose.[4] This is not the same thing as saying that only individuals matter, or that 'society' is nothing more than a group of individuals. It stems from a concept called 'methodological individualism', which Jon Elster defines as 'the doctrine that all social phenomena (their structure and their change) are in principle explicable only in terms of individuals – their properties, goals and beliefs'.[5] We can talk about how 'Heinz have decided to build a new factory' but according to methodological individualism the literal interpretation that the company itself made the decision is false. Families, businesses and nations might have common interests and work together to achieve shared goals, but it is only as individuals that we make decisions. This doesn't imply that social phenomena aren't important. On the contrary, it is precisely because we wish to understand social phenomena that we see it through the lens of individual choice. We need to understand the preferences and constraints of individual members, to see how collective decisions get made, because social entities are the result of individual action.

This is why the first question – identifying the decision maker – is so important. It is only then that we can look into the circumstances in which the decision was made and what their objectives were. Economics helps to reveal the information and incentive systems within which we operate. The crucial point is that although these institutions influence our choices, we also have choices about how to shape them. In short there's a feedback mechanism between

individuals and institutions, but with us in the driving seat. Institutions are, as John Commons defines them, 'collective action in control, liberation and expansion of individual action'.[6]

In this book we will make two key behavioural assumptions:

1. The rationality assumption – incentives affect behaviour (at the margin)

The idea that incentives matter seems obvious but is often counterintuitive. My brother-in-law enjoys adventure and on a recent skiing trip realised that he was travelling faster than 30mph. My parents were worried that he might hurt himself if he crashed, so they bought him a helmet. Guess what? The next day he promptly reached 58mph! All safety equipment has a curious potential to backfire, because it alters your incentives to take risks. Although helmets mean that you are less likely to be injured if you have an accident, they also affect the probability of having an accident in the first place. In the case of skiing a helmet reduces the cost of an accident. All else being equal, this makes you more willing to risk having one. This may not be a large effect, and perhaps if you wore a helmet you'd think that you'd be just as careful as without. But the helmet is incentivising you to be more reckless, not less. Not only this, but it can affect other people's behaviour. If you wear a helmet you also reduce the cost to other people of them crashing into you. At the margin, it could lead to more accidents.[7]

Think of the difference between Rugby and American Football. Both are similar sports but one key difference is that the players of the latter wear helmets. Which one do you think has the most neck and spinal injuries? The obvious answer would be Rugby, because they don't wear hard protection.[8] But because of this they face a higher cost of putting their head into a dangerous situation. Maybe they are less likely to enter tackles headfirst? Indeed not only do American Footballers face a higher rate of neck and head injuries, there are calls by some to *ban* helmets for this very reason.[9] A 2013 book on the subject claimed that in 1999 the NFL paid compensation to retired players after accepting they had suffered brain damage.[10] Since the year 2000 neurosurgeons have been warning the league that the sport was causing depression, dementia and brain damage.[11]

2. The self-interest assumption – people pursue their own self-interest

Again, to economists this assumption is self-evident and trivial. Maybe we don't really know what other people's interests are. Either way, we put our own interests ahead of the interests of others. This does *not* imply that we are narrowly selfish. It doesn't mean that we're motivated by material possessions, or monetary gains. The welfare of your children, or colleagues, may be your primary goal. Your self-interest may well be altruistic. But it's what drives your economic decision making. As Gary Becker said,

> *I have tried to pry economists away from narrow assumptions about self-interest. Behaviour is driven by a much richer set of values and preferences. Individuals maximise welfare* as they conceive it*, whether they be selfish, altruistic, loyal, spiteful, or masochistic.*[12]

The implications of these assumptions are crucial to management. Forget trying to 'motivate' people. Forget about coaching. The goal of management is really quite simple – to change behaviour you need to change what is in people's self-interest to pursue. You need to change incentives. Achieving that goal is where it gets difficult.

It may well be the case that some people are narrowly selfish, but acknowledging that people respond predictably to incentives does not condone any behaviour that results from it.

These assumptions are merely devices to make the world around us more intelligible. Indeed we can make a distinction between *positive* and *normative* analysis. Economists are often guilty of slipping between the two, and it's important to try to keep them separate. Positive analysis refers to what *is*. For example the claim that 'wearing helmets can increase the number of accidents' is a positive statement. Normative analysis refers to what *ought to be*. If I told you that 'people shouldn't wear helmets' I'd be making a normative statement. The proper role of the economist is to limit themselves to making positive claims about society. Having said this, positive claims only take us so far. Indeed the reason many of us engage in economic analysis is not only to understand the world, but to try to make it a better place. So normative analysis is important as well. The point is that when we move from positive to normative we introduce ethical and moral opinions. Traditionally economists were also moral philosophers, and we shouldn't shy away from ethical questions. The key point is that economists have no specialist claims when it comes to moral questions. Therefore our main function is to provide the positive analysis that helps to inform other people's moral decisions. Indeed we need to be really careful about calling things 'good' or 'bad'. The limits of economics are that we cannot make such judgements. But what we can do is point out a logical framework that – when combined with other disciplines – helps us to do so.

The danger is that economists slip in their normative analysis (i.e. their opinions) under the gravitas of their expertise.[13]

To get around this problem, the role of economist in public policy discussion, and the role of managerial economist when consulting, is to leave their own ethical opinions at the door. Instead, they should(!) engage in positive analysis that takes the policy goals of the policy maker or manager as given. In other words, it is not for the economist to say that minimum wages are good or bad. But we can tell you what the effects might be and leave it for you to decide if this is consistent with your goals. Therefore before we can even ask 'who made the bad decision?' we need to be clear about who is deeming it to be 'bad'. You? Or the person that makes the decision?[14]

What I mean by 'managerial individualism' is the idea that all corporate phenomena emerge from the actions and interactions of individual employees who are making choices in response to expected additional costs and benefits, *as they perceive them*. This last point is critical, because incentives are not an objective fact but a subjective interpretation.[15] We act when the *expected* marginal benefits exceed the *expected* marginal costs. One of the biggest misconceptions about economists is that when we talk about 'costs' and 'benefits' we're referring to a monetary value. But there is nothing financial about saying people respond to incentives.

A famous example is the idea that when you pay people to donate blood (as opposed to relying on voluntary donations) people donate less.[16] This seems to be a serious blow to the economist's claim that 'incentives matter'. But the mechanism is that financial rewards interfere with the positive feeling that comes from believing that you are doing a good deed. In which case the problem isn't that incentives don't matter, it's that the *type* of incentive matters a lot. Plenty of evidence suggests that offering money for the completion of tasks can reduce performance. Not only because it reduces intrinsic motivations, but also because it can encourage free riding,[17] cause people to choke under pressure,[18] or even because workers don't believe it is credible.[19] I remember once being told about a 'generous incentive package' but the conditions under which it applied were completely out of touch with my realistic targets. I lost confidence in my manager, and my performance fell.

Few of us are primarily motivated by money. The reason economists have a tendency to focus on money is simply because we are all motivated by it to *some* extent. Imagine offering your employees that reach specific targets a choice between the following 'rewards'

- Time off
- Social recognition and praise
- Cash
- Promotion/higher status

We don't need to claim that everyone would prefer cash. It's quite possible that some people will be more motivated by other items on the list (and indeed my own impression is that time off is the best motivational device of all). The job of a manager is to understand what motivates your employees, and chucking a £5 note at them is probably less appreciated than positive and constructive feedback. But it is difficult to know what truly motivates people, and the fact people are motivated by different things makes this even harder. In terms of incentives, money is indeed a lowest common denominator, but that's exactly why it is so useful.

The rest of this chapter focuses on consumer theory. When we wish to understand public policy, the decision maker is the politician. To understand management, the decision marker is the manager. To understand consumer theory, we need to focus on the consumer.

The consumer is central to economic analysis, because of consumer sovereignty. This is sometimes referred to 'consumer is king', which might be a useful phrase for salespeople but is meaningless jargon. It implies that firms should bend over backwards to satisfy the whims of their customers, and if you believe that a market economy will deliver this then you'll be disappointed. What consumer sovereignty means is that in a market economy, it is consumers who, as a group, decide upon how resources are managed. The 'economic problem' is deciding what is to be produced, how it will be produced and who it will be produced for. In a centrally planned economy it is state bureaucrats who decide. In a market economy it is consumers.

1.2 DEMAND CURVES

The starting point of economic analysis is that people place different valuations on the same things. Although this seems fairly obvious, it's a relatively new insight. For economists prior to the late nineteenth century 'value' was an inherent property of a good – it was something that could be determined independently of the person doing the 'determining'. Indeed even now when you ask people what drives 'value' you will notice that they fall back on old myths. One is that value stems from labour, the other is that it stems from scarcity. A simple counter example can destroy each of them.

Myth 1: Value stems from labour hours

It may seem churlish for me to demolish the foundation of pre-twentieth century economic thought (and indeed drive a stake through the heart of Marxism) with a single paragraph, but the amount of labour hours put into the production of goods and services does not determine their final value. Whether I've spent 3 months of hard

toil crafting this chapter or rattled it up over a few cans of Natty Ice has no bearing on whether it is of value to you.

This may seem odd, because it's common in many industries for the price of something to reflect the amount of time it took to make. For example I pay my accountant based on how long it takes to prepare my tax return. But this is only because I'm using time as a proxy for his cost. And this is independent of the value being created. I'm only willing to pay him for his time because I deem the value he creates to be worth more. There is evidence that more firms are trying to look at value directly. In April 2009 Coca-Cola announced that they would start paying the advertising agents they hire based on specific results achieved rather than hours worked. This is known as 'value-based' compensation, and Proctor and Gamble are another large firm to move away from paying based on labour hours and towards paying based on performance.[20] When we focus on value it is output that matters, not inputs.

Myth 2: Value stems from scarcity

The notion that value stems from scarcity is both totally wrong and obviously correct. It is wrong in the sense that we only value things that serve a purpose. Counter examples help to explain this. Brain tumours are (thankfully) quite rare. They are scarce. But that doesn't make them highly valuable. It is true that scarcity can influence the *price* of a good, but that is because it affects the costs (and therefore the supply curve). But this chapter is referring to *value* – the demand curve. Indeed by definition any economic good is a scarce good. It is obviously correct that for a good to be valuable it must be scarce, but that's only because if it wasn't scarce it wouldn't be an economic good. Air isn't scarce, therefore it isn't a good. Scarcity is a necessary but not sufficient condition to determine something's value. In economics it's a fact of life. It's taken as a given. To explain the source of value we need to look elsewhere.

So if labour hours and scarcity don't explain value, what does? *Value is subjective and stems from the alleviation of pressing needs*. As long as we accept that we live in a world of scarcity, all economic decisions involve tradeoffs. The term 'need' is therefore a little misleading. We have a long list of pressing needs and there's always going to be a point at which you'd switch to satisfying other ones. For example we tend to think that basic human needs include shelter, or indeed electricity. But we only 'need' electricity in an abstract sense. If we 'needed' electricity we wouldn't see people reducing their usage when the cost increases. In every economic decision, we exercise choice. If electricity becomes more expensive we conserve more (for example by switching off lights when not in use), or use alternatives (which could be as simple as an extra layer of clothing). Everyone, no matter how poor, will be willing to give up *some* of one good if they're offered *enough* of other goods. Even in extreme situations people engage in tradeoffs based on their own interpretation of what constitutes their interests. You and I may rank food as being a basic need that we cannot do without. But across the world there are people going hungry because they have prioritised other needs. There's no universal hierarchy of needs that we all subscribe to. Life is about tradeoffs, not absolutisms. We have an infinite list of pressing needs, but only finite means with which to satisfy them. Therefore we rank-order our preferences and apply successive units of our budget to acquire the less and less urgent desires. Because we live in a world of scarcity, we satisfy our most pressing needs first.

So it is the alleviation of pressing needs that we 'value', not the 'commodities' themselves. This is what we mean by subjective, as opposed to objective, value. 'Goods' are simply the things that alleviate our pressing needs, and there is nothing inherently valuable about them. Indeed the distinction between tangible products and intangible services is somewhat false, because the *only* thing we value is the service of satisfying our pressing needs. As Steven Horwitz says, 'physical goods are only means to the fulfilling of various subjectively valued ends, so a good does not need to provide physically observable services to be valuable.'[21] Or, as James Bryant Quinn put it so succinctly,

Products are a happy way of capturing services.[22]

The lesson for management is to lead on benefits (i.e. how a product helps to satisfy the customer's pressing needs) rather than features (i.e. a description of the physical product). The value of the product derives from the service being provided, not the product itself.

It's important to see that this isn't economists imposing their value system on others, it's economists arguing that we all have our own personal value system and that economics helps to draw them together. Economists are essentially blasé about what something is worth. As Publilius Syrus, put it in the first century BC 'a thing is worth whatever a buyer will pay for it'. End of discussion! Those lengthy arguments in the pub about whether Fernando Torres is worth £50m are resolved by the economist's glib yet correct answer that if someone is willing to pay that much, he apparently is. We can disagree on whether *we* think he's worth that, but economics allows us to transcend arguments about personal taste to reflect those tastes in a non-arbitrary manner. The fact someone was willing to pay £50m tells us something useful.

The first law of demand states that price and quantity demanded are inversely related. This is because as the consumption of a good increases, the satisfaction derived from consuming more of the good (per unit of time) will eventually decline. The technical term for this phenomenon is the law of diminishing marginal utility (DMU). The term 'utility' just means our subjectively determined benefits. The greater the quantity of the good we consume, the greater we expect our *total* utility to be. But additional units can only be put to less valuable uses, so *marginal* utility must fall. We can use pizza as an example. Over a particular range the more slices of pizza we eat the happier we feel. As the quantity consumed rises so does total utility. But the first slice tastes better than the second. And the third slice brings even less pleasure. Marginal utility declines. The term 'satiation' refers to the point at which marginal utility becomes zero, and total utility stops increasing. If you consume more than this point marginal utility is negative, and you become less and less happy. The common term for this is 'vomiting'. When marginal utility becomes negative you would be willing to pay money *not* to consume additional units. Pizza is no longer a good, it becomes a 'bad'. DMU is a simple, but powerful concept. It states that the more you have of something, the less you value additional units. The rate of DMU will be different for different goods, and we would expect DMU to be more pronounced for perishable or sickly goods. Since you can store toilet roll you would probably be willing to pay a similar amount of money for a sixth roll as for the first. Therefore non-perishable (i.e. durable) goods tend to have a low rate of DMU. Conversely, I once bought a roast chicken from a supermarket at 8pm and was offered a second one for just 50p. But even though I had paid £5 for the first one another wasn't much use to me. The man behind the deli counter thought it was a bargain. I thought it was worthless. MU diminished rapidly.

Similarly, you might be willing to treat yourself and pay £10 for a slice of rich chocolate torte in a fancy restaurant, but are unlikely to want to pay the same amount for another one.

Ultimately our consumption choices are all relative – they depend on a relative comparison between the marginal utility and the price. More formally, consumers maximise their total utility when the final dollar spent on every good purchased provides the same marginal utility per dollar spent.[23] In other words, if we're choosing between beer and pizza and a beer costs twice as much, we'd purchase both items such that the marginal utility of the last beer is exactly twice as high as the marginal utility of the last slice of pizza. This is an equilibrium condition, because if it doesn't hold there's an incentive to change behaviour. For example, if the price of pizza rises for some reason then the ratio of marginal utility of pizza to the price of pizza will be lower than the ratio of marginal utility of beer to the price of beer. This means that you're gaining more marginal utility per pound spent from beer, implying that you should reallocate some of your budget from pizza to beer. If you do so, and your consumption of beer increases, the marginal utility will fall. Ultimately you will keep drinking until the two ratios are equal once more.

The concept of marginal value was a breakthrough in economic thought because it solved a perennial mystery: why are people willing to pay more for diamonds than they are for water? As Adam Smith himself put it,

> *Nothing is more useful than water; but it will purchase scarce anything … A diamond, on the contrary, has scarce any value in use; but a very great quantity of other goods may frequently be had in exchange for it.*[24]

We've mentioned already that value stems from the ability to satisfy our pressing needs. We all recognise that water is essential for life and that by contrast diamonds are largely decorative.[25] Surely survival is a more pressing need than a nice piece of jewellery? And yet people save up for months to buy an engagement ring. It's tempting to explain this paradox by saying that diamonds are scarcer, but scarcity isn't enough. Lots of things are 'scarce' but if they don't fulfil our needs they're not valuable. The solution lies in the fact that we always act on the margin. In other words we're never asked to choose between 'water' and 'diamonds'. Rather, we choose been *additional* units of water and *additional* units of diamonds. We don't buy the concept of diamonds, we buy some amount more than we currently own. Therefore the value we place on goods comes from the needs that are satisfied by additional units. Because most of us consume a lot of water, *additional* units of water would only be put to satisfy minor needs. By contrast most people don't have many diamonds at all, so additional diamonds are highly sought after. There are diminishing marginal returns to both, but at any moment in time we're higher up the scale when it comes to diamonds. Our willingness to pay is based on marginal value, and not some intrinsic property contained within the good.

Economics textbooks tend to define the demand curve as the relationship between price and quantity – i.e. that as the price of a good falls we wish to purchase, have, use or consume more of it. This is true. But the underlying reason that demand curves slope downwards is because the more we have of a good the less we value additional units.

The fact that demand curves slope downwards helps to explain the concept of **consumer surplus**. This is defined as the difference between what you *do* pay for a good or service (i.e. the price) and the maximum that you would have been *willing* to pay. It makes sense to say that we'd only ever buy something if it's worth more to us than the price we pay, but this has a nice outcome that is worth dwelling on. Every purchase that we make delivers consumer surplus.

When I paid £380,000 for my house it seemed like an awful lot of money, and I was pretty certain that the person who sold it would have accepted quite a bit less. But I also knew that I would have happily paid over £400,000. That difference constitutes my consumer surplus. In one famous example people were asked how much access to the internet was worth to them.[26] When you think about it, so much of our utility comes from consumer surplus. People often criticise companies that charge prices that are higher than the cost of production (i.e. for making 'excessive' profits), but the other side of the coin is that consumers are *always* paying a price less than they value the good ('excessive' utility?).

One of the most common complaints about demand curves is that they oversimplify reality, but this is actually their primary strength. It's important here to underline the fact that demand curves *only* show the relationship between price and quantity. If any other variable changes, the demand curve will *shift*. In reality, of course, such change is ubiquitous. But that doesn't make demand curves irrelevant; it just means we have to be careful how much we can attribute to them.

The language we tend to use is that changes in price will affect *quantity demanded* (i.e. a movement along a demand curve). Changes in any variable other than price will affect *demand* (i.e. cause a shift in the entire demand curve). Examples of non-price factors that will cause a demand curve to shift include:

- Income
- The price of related goods
- The number of consumers
- Expectations about future price movements
- Changes in preferences.

If any of the above changes, our original demand curve becomes outdated.

We can split a price change into two underlying effects – if the price of a good falls there are two reasons why we'd consume more:

- Substitution effect – we can switch consumption from other goods

  If the price of a good falls it becomes cheaper relative to other goods, therefore we consume more of it (we substitute or 'switch' from the relatively expensive to the relatively cheap). This demonstrates why relative prices matter.
- Income effect – we can afford more

  If the price of a good falls our real income rises (we now have more income available for consumption) and so we can afford to consume more. Note that unlike the substitution effect (which is always negative) the income effect is ambiguous. More income may mean we wish to consume more of a good, but it may mean we wish to consume less.

A decent microeconomics course will make it clear that the first law of demand doesn't imply that people *always* respond to price changes, just that there is a *possible* price change that *will* create a change in behaviour. This helps us to deal with some common (but misguided) criticisms of the first law of demand.

1. Is there a little whore in all of us?

Many people are uncomfortable with the implication that *everything* has a price. When Kerry Packer was bidding for the voting rights to screen ICC Cricket, he famously

said 'There's a little bit of the whore in all of us, gentlemen. What's your price?'[27] I do think that this is a valid assumption to make about human behaviour, and the problem isn't that it's *inaccurate*, it's that it is *regrettable.* Non-economists might accept that in practice people do respond to incentives, but such incentives elicit socially harmful outcomes. I don't see it this way, because the assumption is simply saying that *people will be at the table* and since this will always expand the menu of choices, it's an improvement (or what economists refer to as a **Pareto Gain**). It just means that we're all influenced by price to some degree. If someone inherits their mother's house, they might claim that it has infinite value to them. The self-interest assumption says that there is a price at which they'd sell it. Why? Because the consumer has many competing preferences, and in a world of scarcity we make tradeoffs. Hence selling the house – at the right price – might make enough money to pay for the kids to go to university. Suddenly it's not a choice between mum's old house vs. not mum's old house; it's the house vs. an education. Regardless of whether it's sold or not (quite possibly its value is so very high there isn't an amount of alternative goods that can bid it away), surely it's selfish *not* to consider selling? If there's the slightest shred of altruism within your own preferences, there *must* be a possible price that would get you to sell. All economists are saying is that people will come to the table: nothing is off limits, we're all open to negotiation. And therefore this is welfare-enhancing, by expanding our menu of choice.

2. Luxury goods

A common response is that if prices signal quality, a luxury brand would fear that a reduction in price would signal a reduction in quality and therefore create a *fall* in quantity demanded. This seems intuitively plausible, but does it undermine the first law of demand? No, because it confuses a change in *demand* with a change in *quantity demanded*. If a company drastically alters its reputation, it's created a different product. The first law of demand (as represented on a demand curve) applies to the relationship between price and quantity demanded, for a given product. Therefore any other events (any non-price events) are exogenous and represent a shift in the curve. It may be true that Skoda has raised the price of their cars since the 1990s and more people have bought them. But both of these stem from a *shift* in the demand curve, and not a movement along it. It's possible that the quality of a Skoda has remained constant throughout (but it's worth considering whether this is likely, and if not why not) and the rise in demand is *purely* due to a price hike and its corresponding quality signal. But this is an abstract point and rests on an assumption that price is used as an accurate indication of quality. If the consumer *knows* the quality of the product, there's no reason why a rise in price would lead to a rise in quantity demanded. For any given Skoda, if the price rises you're less likely to wish to buy one. For Skoda cars as a whole, an increase in price *might* alter the type of product it is, if consumers don't know the quality. But this simply means that *tastes have changed*, and therefore the curve has shifted. 'Luxury goods' behave the same way as any other.

It is also worth recognising that although consumers may believe that high prices signal high quality, the opposite may also hold. Restaurants that have lower prices may generate large queues, which signals high quality to potential customers. In addition, Tyler Cowen suggests a link between the cheapness of ethnic food and the quality. He argues that in many neighbourhoods the immigrant population are more likely to frequent cheap restaurants, and this requires them to be authentic. If you want high quality Chinese food you want to find a restaurant were local Chinese people eat.[28]

3. Giffen goods

A 'Giffen good' is, by definition, a good where the income effect dominates the substitution effect. In other words it constitutes so much of your shopping basket that price changes have a massive effect on your real income. So if it's highly 'inferior' (i.e. demand falls as income rises) a fall in price can induce a *rise* in quantity demanded. But again changes in real income mean that the demand curve has shifted. And if it shifts, the self-interest assumption hasn't been violated. This provides the theoretical support for the empirical fact that Giffen goods are so hard to find.[29]

So all three of these theoretical objections to the law of demand fail to hold, and I think there are three reasons why people assert them:

1. Forgetting the 'ceteris paribus' condition

This is a Latin term that roughly means 'all else equal'. The real world is complex with many changes occurring at the same time. When we make a theoretical statement such as 'if price falls quantity demanded will rise' it rests on a number of assumptions – and the point of this chapter is to explain what they are. But perhaps the biggest assumption is that this is the only effect we are considering. In the real world many other events will coincide with a price cut. There may be a recession, a competitor could cut their prices, a hurricane could destroy your supply chain in the night. The term 'ceteris paribus' is simply a quick way of saying 'assuming that there's no recession, competitors' prices remain unchanged, there's no adverse weather conditions, etc.'. You may think that this severely weakens the applicability of a theoretical statement, and that's true. Economics cannot make perfect predictions. But it does mean that you have to be very careful about using real events to 'prove' or 'disprove' economic theory. We cannot say that quantity demanded will always go up after a price cut. But we can say that it will be higher than it would have been without one. Ceteris paribus.

2. A misunderstanding of the nature of theory

A theoretical premise is not refutable by evidence – it can only be refuted by better theory. Therefore if we define a normal good as one where demand rises if income rises, and then label coffee a normal good, evidence (hypothetical or otherwise) that a rise in income leads to a *fall* in demand for coffee is irrelevant. In that case, coffee isn't a normal good. It doesn't mean that normal goods don't exist. Consider the three primary colours of red, blue and yellow. In real life we never see these three colours on their own, since we're always viewing some combination of them. Evidence of a green object doesn't mean that blue and yellow don't exist; it just means they're not always observable and fixed.

3. Confusion between prices and revenues

A firm isn't interested in charging as high a price as possible – revenues are what matter. A simple monopolist's cost structure will show that even if she had enough market power to triple her price, this would lead to an increase in costs and probably *reduce* profits. Therefore it's wrong to apply the laws of demand to firm behaviour, because the laws of demand focus on how consumers respond to prices. However firms don't care about *prices,* only *revenue* (and how revenue and cost correspond to generate profit). In fact, it's likely that a monopolist would increase profit by *lowering* prices (depending on the elasticity of the demand curves).

1.3 ELASTICITY

DMU tells us that demand curves will *always* slope downwards. But even though all demand curves slope downwards, they will do so to different degrees. The **elasticity** of an economic variable refers to its *responsiveness* to changes. Therefore the price elasticity refers to the response of quantity demanded to changes in price, and reflects the slope of the demand curve. There are several ways to calculate the price elasticity of demand, but generally speaking we can divide the percentage change in quantity demanded by the percentage change in price. This will give us a negative number (due to the first law of demand) and reflect the extent of the responsiveness. If the elasticity is greater than 1 (i.e. changes in price lead to an even bigger change in quantity demanded) we can label it an 'elastic' good. If the elasticity is between 0 and 1 (i.e. the change in price is proportionally bigger than the resulting change in quantity demanded) then it is 'inelastic'.

For example, if Honda raised the price of a CR-V by 10% there would probably be a large fall in quantity demanded as people switched to similar cars from other companies. Let's imagine they sell 20% fewer cars as a result. In this case we can say that the price elasticity of demand is −2. If all SUV manufacturers raised their prices, we'd expect a less pronounced impact on demand. Maybe it would only fall by 5%. In which case we could say that the SUV market as a whole has a price elasticity of −0.5. The slope of the demand curve is only an indicator of the elasticity, and different sections of the demand curve will have different slopes. But generally speaking:

- An elastic demand curve is very flat (small changes in price lead to large changes in quantity demanded)
- An inelastic demand curve will be very steep (even a large change in price has a small effect on quantity demanded).

Many factors will influence the price elasticity, but we can list some of the main ones:

1. Substitutes

   The reason we'd expect the demand for Honda CR-Vs to be reasonably price elastic is because it's a competitive market with plenty of close substitutes. This means it's relatively easy for the substitution effect to kick in. But we can make two important points about substitutes. Firstly, *substitutes are subjectively determined*. In the same way that value is subjective, what constitutes a substitute is too. If I have fond memories of a previous Honda that I owned I will be less sensitive to price changes than someone who has never driven one before. In the example above I then talked about the entire SUV market. But maybe you would be happy with a large saloon instead. Whilst substitutes are subjectively determined, they are also *degrees of substitutability*. We can put these into four categories. Think of them as having the product at the core of expanding concentric circles, with broader and broader degrees of substitutability.
   - Product form – are goods that have the same features (i.e. they 'look' the same). In our example this might be different Honda dealers, or possibly Ford Kas, Toyota Rav 4s or a VW Tiguan.
   - Product category – these only have similar features and could even be thought of as the entire industry. We might add Volvo XC60s, Audi Q5 or Mercedes M class.

- Generic – are goods that fulfil the same customer needs, and are to be interpreted more broadly. To some extent other modes of transport can be considered a substitute for buying a car
- Budget – this reflects the fact that all goods and services are competing for the consumer's income.

2. Share of total budget

If your spending on a certain good constitutes a small part of your budget, you're unlikely to care much about price changes. Things like matches, toothpicks or salt are items we spend very little on over the course of a year, and even if the price doubled you might not even notice.

3. Search costs

The greater the hassle of finding alternatives the less responsive your demand will be to price changes. The internet has made searching far cheaper than previously and makes it easier to compare prices from different sellers. This makes demand more responsive to price changes

This all sounds quite abstract and we need to look at some direct managerial implications. The problem is that it's very hard in the real world to calculate the price elasticity of goods that you sell. But this makes it all the more important to develop an intuitive understanding of the factors that influence elasticity. The reason for this is because elasticity will determine the effect that a change in price has on total revenue. Total revenue is simply price multiplied by quantity. And we know from the first law of demand that there's an inverse relationship between the two. So if you lower prices, then you should expect to sell more. But there are two outcomes here. On the one hand you will be receiving less money per unit sold. But on the other hand you'll sell more units. It is the elasticity that will tell us which effect dominates.

If the good is elastic, then demand is highly responsive to changes in price. Therefore the additional units sold compensate for the fact that you're selling them at a lower price. Total revenue will go up. But if prices are increased, the opposite effect occurs and total revenue falls. Do not raise prices for elastic products!

If the good is inelastic, then demand is going to be less responsive. In this case a price cut will not lead to a large increase in sales and so total revenue falls. For inelastic goods you generally want to raise prices, because the additional revenue per item offsets the small fall in quantity demanded. An understanding of elasticity is crucial for any basic pricing strategy.

The **2nd law of demand** is that elasticity increases over time. We can demonstrate this by considering what happens when fuel prices rise. In the short term there may not be a massive effect, because it will be quite inelastic. But remember that we demand petrol to satisfy our pressing needs, and some of these needs will be more pressing than others. If petrol becomes more expensive we stop satisfying the least pressing needs first. Maybe you cut down on unnecessary journeys and improve your energy efficiency by taking the golf clubs out of the boot, driving at 55mph, or only going to the supermarket once a week. The more time that passes the easier it is to find substitutes. You start getting the train to work, or get taxis when you need to go to the airport. Over the medium term if fuel prices remain high you will consider buying a more fuel-efficient car. You wouldn't go out and buy a new car as soon as fuel prices went up, but higher fuel prices could mean that fuel efficiency is something you consider when you do come round to replacing it. If more time elapses we might expect more permanent solutions. You may start working from home more, or move house to reduce your commute. The bottom line is that substitutes are everywhere, but can be costly to find (after

all there's a reason you've chosen to use a car in the first place). If the price of a good rises then consumers will reduce their consumption by a larger amount in the long run than in the short run. This is because the more time you have to deal with a price change, the easier it is to adapt (and therefore the less costly it is). Elasticity increases over time. And indeed rising fuel prices are market signals to encourage people to make this steady transition away from fossil fuels.

Changes in price are not the only thing that will influence demand. Indeed there's an 'elasticity' for any variable that influences a consumer's marginal value. We can look at two of the main ones:

- Income elasticity

  This is the responsiveness of demand to changes in income, and is calculated by the percentage change in quantity demanded divided by the percentage change in income. Intuitively you may think that the more income you have, the greater your demand will be. And for many goods this is the case. There would be a positive income elasticity, and we call them 'normal' goods. (If the income elasticity is greater than 1 we tend to call them 'superior'.) But think about low quality products that have obvious, higher standard alternatives. For example you may buy reasonably cheap cuts of meat, or low quality wine. But if your income rises you may decide to switch to rump steak and champagne. For some goods you'll therefore consume *less* if your income rises. In this case the income elasticity would be negative, and we label these goods as 'inferior'.

  Things like new cars, private education, donations to environmental goods and swimming pools are all highly income elastic. As income rises the demand for these goods expands even more rapidly and therefore spending on them rises as a proportion of income.

  A really important implication of this is that recessions are not necessarily bad for business. This is because falling incomes will only lead to falling demand if the good is a normal one. If the good is inferior (i.e. the cheap cuts of meat or the cheap wine) demand will rise.
- Cross price elasticity

  This is the responsiveness of demand to changes in price of an alternative good, and is calculated by dividing the percentage change in the quantity demanded of one good with the percentage change of price of another good. If the cross price elasticity is positive it means that when the price of good X goes up, the demand for good Y will. This implies that the two goods are **substitutes**. We've discussed previously how consumers can respond to price changes by switching to an alternative, and here's how we determine the substitution effect. Substitutes are two goods that provide a similar function. Typical examples include hamburgers and tacos; Coke and Pepsi; butter and margarine; ball point pen and felt tip pen. If the price of the former goes up, we'd expect people to switch to the latter.

  However not all goods act as alternatives to each other. Some goods need to be used with another product. If the cross price elasticity is negative it means that if the price of Y goes up the demand for X will fall. This is because fewer people will demand Y and therefore fewer people will demand X. We call such goods **complements**, and define them as goods that are consumed jointly. Typical examples include burgers and fries; hats and gloves; window frames and glass panels; cars and petrol. If the price of the former goes up, we'd expect people to buy less of both. Companies don't have to make money across all product lines – they can give away things for free if they encourage the purchase of complementary goods.

My local Honda dealer does not understand the difference between substitutes and complements. Within a year of buying a new CR-V they sent me details of special offers on an even newer CR-V. But to me they are close substitutes. The fact that I'd already bought one did not mean I would be interested in another. In fact, it took me three years to find a plastic cargo liner that would fit perfectly into the boot. Since this is a complement to a CR-V, this is the type of product the dealer should have been attempting to sell me.

The Alchian-Allen effect (also known as the **third law of demand**) claims that if you add a per unit levy to the prices of two substitute goods, the relative consumption of the higher priced good will rise. This can be directly applied to travel expenses. Imagine that the price of a standard train ticket from London to Liverpool is £40, whilst a first class ticket is £60. One way of viewing this is that the first class ticket is 1.5 times as expensive as travelling on standard. Now, imagine that the travel agent that makes the booking charges a flat rate of £10 per booking. The standard ticket is now £50, and first class is £70. The relative price of the first class ticket has now *fallen* to 1.4 times standard. First class travel has become relatively cheaper. Ceteris paribus, we would expect a shift from standard to first class.[30]

Consider Table 1.1, which shows a number of different goods down the middle column. We can add substitutes on the left hand side and complements on the right. The fact that you may disagree with some of these demonstrates that preferences are subjective.

Just because we've introduced some technical terms, and formulas, do not start to think that our object of study has become more objective. The extent to which goods are complements or substitutes still depends on our subjective judgement about their ability to satisfy the same pressing needs. Some people express a strong preference for Coke over Pepsi and vice versa. We can have a legitimate disagreement about whether they're 'the same'. We might use data relating to actual purchases and calculate a cross price elasticity, but this stems from the subjective judgement of consumers and is not an inherent property of the good. Today we may consider olives and hummus to be complements, because there can be no great dinner party without them. Tomorrow we may decide that we only need one or the other. Diversity of opinion is what makes markets tick.

We will finish this chapter by stating four postulates that will hold for the rest of the book. We have derived them sequentially, and they logically follow from each other. They sound obvious, but the trick of applying economics to complex situations is retaining a clear understanding of the logic of microeconomics.

1. People have preferences
2. More of a good is preferred to less
3. People are willing to substitute one good for another
4. Marginal value falls as you consume more.

TABLE 1.1 Cross price elasticity spectrum

Substitute	Good	Complement
Blu Ray player	DVD player	Television
Pepsi	Coca Cola	Hot dog
Olives	Hummus	Pitta bread
Water	Wine	Water

NOTES

1. Keynes, J.M. (1922) Introduction to the Cambridge Economic Handbook Series in Robertson, D.H., *Money*, Cambridge University Press.
2. The Israeli day care experiment was published as Gneezy, U. and Rustichini, A. (2000) A Fine is a Price, *The Journal of Legal Studies*, **29** (1), 1–17.
3. See Froeb, L.M. and McCann, B.T. (2008) *Managerial Economics*, Thomson South Western (2nd edition), p. viii. At the time of writing the most recent edition of the book is Froeb, L.M., McCann, B.T., Ward, M.R. and Shor, M. (2013) *Managerial Economics*, Thomson South Western (3rd edition).
4. For more detail on the concept of methodological individualism (with references) see Evans, A.J. (2010) Only Individuals Choose, in Boettke, P.J. (ed.) *Handbook on Contemporary Austrian Economics*, Edward Elgar.
5. Elster, J. (1982) Marxism, Functionalism and Game Theory, *Theory and Society*, **11**, 453.
6. Commons, J.R. (1931) Institutional Economics, *American Economic Review*, **21**, 648–657.
7. This is known as the Peltzman effect, which 'arises when people adjust their behavior to a regulation in ways that counteract the intended effect of the regulation'. Peltzman, S. (2004) Regulation and the Natural Progress of Opulence, *American Enterprise Institute*, vii. [http://www.aei.org/files/2005/05/16/files/2005/05/16/Peltzman-Lecture.pdf, accessed 24 September 2013].

   Another interesting application is bicycle helmets. According to UCL Professor John Adams mandatory helmets have three negative unintended consequences: (i) they encourage cyclists to take more risks; (ii) they encourage motorists to drive closer to them; (iii) they discourage cycling. In a study published by the *British Medical Journal*, Dorothy Robinson found that whilst people who wear helmets tend to have fewer injuries than non-wearers, there is no obvious relationship between enforced helmet laws and reductions in head injuries. She says,

   'The lack of obvious benefit from helmet laws may be because helmets … are not designed for forces often encountered in … serious crashes that cause most head injuries requiring hospital admission. Helmets may also encourage cyclists to take more risks, or motorists to take less care when they encounter cyclists.' Robinson, D.L. (2006) No clear evidence from countries that have enforced the wearing of helmets, *BMJ*, **332** (7543), 722–725.

   In the UK there were 122 cyclists killed on the roads in 2013 and it is unknown how many were wearing helmets. [See Gallagher, P. (2013) Hats on for cyclists? With deaths at a five-year high – calls for helmets to be made compulsory are getting louder. But not everyone agrees, *The Independent*, 4 August.] But even if none of them were wearing helmets, helmets are more useful at protecting the head from minor concussions, rather than life threatening ones. According to Martin Gibbs, from *British Cycling*, 'the majority of fatalities involve forces far in excess of the capabilities of helmets, such as those involving HGVs' (ibid.). I cannot find a single case where someone has died from head injuries whilst not wearing a helmet, that a helmet could have been reasonably expected to prevent. Indeed one of the common sources for a reduction in cycle accidents is a greater prevalence of cyclists, and so raising the cost and inconvenience of cycling may be generating accidents that otherwise wouldn't exist. What makes the issue all the more emotive is the campaign to make bicycle helmets mandatory for children. The risk for children is even more negligible than for adults, accounting for less than 1% of cycle deaths. [See Reported Road Casualties, Great Britain 2011, *Department for Transport* https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/9280/rrcgb2011-complete.pdf, accessed 7 October 2013.] Again, there is no evidence that helmet laws have reduced deaths amongst children. But there *is* evidence that ill-fitting helmets have caused deaths amongst children via strangulation. See Byard, R.W., Cala, A., Ritchey, D. and Woodford N. (2011) Bicycle helmets and accidental asphyxia in childhood, *Medical Journal of Australia*, **194** (1), 49.
8. Some rugby players elect to wear skullcaps that provide more head protection, but I am not aware of any studies that consider whether this impacts their susceptibility to head injuries.

9. Albergotti, R. and Wang, S. (2009) Is it time to retire the football helmet? *Wall Street Journal*, 11 November [http://online.wsj.com/article/SB10001424052748704402404574527881984299454.html accessed 24 September 2013].
10. Fainaru-Wada, M. and Fainaru, S. (2013) *League of Denial: The NFL, Concussions and the Battle for Truth*, Crown Archetype.
11. In response to some of these concerns the NFL have increased the penalties for players that hit others helmet-to-helmet. But this has the potential to only shift, rather than eliminate, the risk. As Washington Redskins safety Brandon Meriweather realises, if the cost of hitting opponents high goes up, he will try to hit them low instead. But this transfers impact to the knee and increases the chance of causing damage to the anterior cruciate ligament (ACL), 'I guess I've just got to take people's knees out … You can't hit them high no more. You've just got to go low.' See Florio, M. (2013) Meriweather returns with a bang, *NBC Sports,* 28 October [http://profootballtalk.nbcsports.com/2013/10/28/meriweather-returns-with-a-bang/ accessed 17 November 2013]. Sure enough, on 8 December 2013 the Cleveland Browns safety T.J. Ward hit the knee of New England Patriot's star tight end Rob Gronkowski, resulting in a torn ACL. Like Meriweather, Ward recognised the perverse incentives that he faced, saying, 'If I would've hit him up high, there's a chance I was going to get a fine … It's kind of being caught between a rock and a hard place … When they set the rule, everyone knew what was going to happen.' See Smith, M.D. and Ward, T.J. (2013) If I hit Rob Gronkowski high, I would have been fined, *NBC Sports*, 9 December [http://profootballtalk.nbcsports.com/2013/12/09/t-j-ward-if-i-hit-rob-gronkowski-high-i-would-have-been-fined/, accessed 20 December 2013].
12. Becker, G.S. (1992) The economic way of looking at life, Nobel Lecture, [http://www.nobelprize.org/nobel_prizes/economic-sciences/laureates/1992/becker-lecture.pdf, accessed 24 September, 2013] (emphasis in original).
13. One example I like is when Nobel laureate Robert Solow explained why he was opposed to school vouchers. He said, 'It isn't for any economic reason; all the economic reasons favor school vouchers. It is because what made me an American is the United States Army and the public school system.' [See Klein, D.B. (2005) The People's Romance: Why People Love Government (as Much as They Do), *The Independent Review*, **10** (1), 5–37.] It's rare indeed for an economist to explicitly acknowledge that their wider opinions and beliefs conflict with their economic knowledge, and that they decide to follow the former. To be fair to Solow though, these are comments made during a Q&A so he wasn't attempting to influence public opinion.
14. Consider also how focusing on individuals is not about selfishness. In fact it forces you to see things from the perspective of other people.
15. I take this phrase from Alex Tabarrok paraphrasing Ludwig von Mises, see Tabarrok, A. (2011) Rewarding altruism: blood for money, *Marginal Revolution*, 7 December [http://marginalrevolution.com/marginalrevolution/2011/12/rewarding-altruism-blood-for-money.html accessed 24 September 2013].
16. The claim that people donate less blood if they get paid is typically attributed to Richard Titmuss, see 'Looking good by doing good', *The Economist,* 17 January 2009.
17. Winter, E. (2007) Incentive Reversal, The Center for the Study of Rationality and the Economics Department, The Hebrew University of Jerusalem [http://www.dklevine.com/archive/refs4843644000000000241.pdf accessed September 2013].
18. Dohmen, T.J. (2008) Do professionals choke under pressure?, *Journal of Economic Behavior & Organization*, **65** (3–4), 636–653.
19. This treatment of how bonuses backfire is inspired by the thoughts of Chris Dillow, see Dillow, C. (2011) How bonuses backfire, *Stumbling and Mumbling*, 19 September and Dillow, C. (2011) How bonuses backfire, *Stumbling and Mumbling*, 1 March.
20. See 'Clock-watchers no more', *The Economist*, 16 May 2009.
21. Horwitz, S. (1990) A subjectivist approach to the demand for money, *Journal des Economistes et des Etudes Humaines*, **1** (4), 459–471, at 461.

22. This quote is cited in Maital, S. (2011) *Executive Economics: Ten Essential Tools for Managers*, Free Press, p. 112. See Forsyth, J.E., Gupta, A., Haldar, S. and Marn, M.V. (2000) Shedding the commodity mind-set, *McKinsey Quarterly*, **4**, 79–85.
23. The claim is that 'the consumer will maximise her satisfaction (total utility) by ensuring that the last dollar spent on each commodity purchase should provide the same marginal utility per dollar spent on it' Gwartney, J.D., Stroup, R.L., Sobel, R.S. and Macpherson, D.A. (2010) *Economics: Private and Public Choice*, Cengage Learning, p. 161.
24. Smith, A. (1776 [1976]) *An Inquiry into the Nature and Causes of the Wealth of Nations*, University of Chicago Press, p. 33.
25. Diamonds do have industrial uses as well, but so too does water.
26. Would You Give Up The Internet For 1 Million Dollars? TFAS Video, *You Tube,* [http://www.youtube.com/watch?v=0FB0EhPM_M4 accessed 24 September 2013].
27. 'Kerry Packer' *The Economist*, 5 January 2006.
28. Cowen, T. (2012) *An Economist Gets Lunch*, E.P. Dutton & Co.
29. For a critique of the concept of Giffen goods see Garrison, R.W. (1985) Predictable behaviour: Comment, *American Economic Review*, **75** (3), 76–78.
30. The Alchian-Allen effect originates from Alchian, A. and Allen, W.R. (1964) *University Economics*, Belmont. Their original example concerns the consumption of grapes, and how a per unit shipping cost will shift relative consumption towards higher quality. Let's consider two bottles of wine that are both produced by Freemark Abbey Winery, in Napa Valley. There is a 2011 Edelwein Gold Riesling that sells for $75 and a 2012 Viognier for $30. The Riesling is 2.5 times more expensive than the Viognier. Imagine that you live in the UK, and that there is a $15 shipping charge per bottle. Your choice is therefore between a $90 Riesling and a $45 Viognier. The Riesling has become relatively cheaper, because it only costs 2 times the Viognier. This is the Alchian-Allen effect. Tyler Cowen and Alex Tabarrok have an important critique that specifies a number of instances where the Alchian-Allen effect is erroneously invoked [Cowen, T. and Tabarrok, A. (1995) Good grapes and bad lobsters: Applying the Alchian and Allen Theorem, *Economic Inquiry*, **33**, 253–256]. Returning to our previous example, we can conclude that British consumers will consume relatively more expensive Californian wine than Californians (because they face a lower relative price). It is tempting to try to extend this analysis and claim that British tourists that visit Napa Valley will also find the high quality wine to be relatively cheaper than locals. After all, what is the difference between shipping the wine to customers, versus shipping the customer to the wine? As Cowen and Tabarrok point out, however, the cost of travelling to Napa is not a per unit levy, but is instead an 'entry fee'. It should therefore be considered as sunk, and irrelevant to the decision of what type of wine to consume. It introduces an income effect with the relative price effect. For this reason, we need to be careful about attributing statements such as 'employees will shift consumption to higher quality goods when they are travelling on business'. Cowen and Tabarrok point out that for the Alchian-Allen effect to hold when *people* are being transported, it requires several additional assumptions. These are: (i) that they are planning high quality and low quality trips in future; and (ii) that the high quality good is positively related to a high quality trip. In which case the theorem applies to the trip as a whole, rather than the particular good.