Adam Smith and the invisible hand

By Helen Joyce (abridged)

"…every individual necessarily labours to render the annual revenue of the society as great as he can. He generally, indeed, neither intends to promote the public interest, nor knows how much he is promoting it…he intends only his own gain, and he is in this, as in many other cases, led by an invisible hand to promote an end which was no part of his intention. Nor is it always the worse for the society that it was no part of it. By pursuing his own interest he frequently promotes that of the society more effectually than when he really intends to promote it."

In this passage, taken from his 1776 book "An Inquiry into the Nature and Causes of the Wealth of Nations" Adam Smith set out the mechanism by which he felt economic society operated. Each individual strives to become wealthy "intending only his own gain" but to this end he must exchange what he owns or produces with others who sufficiently value what he has to offer; in this way, by division of labour and a free market, public interest is advanced.

Smith is often regarded as the father of economics, and his writings have been enormously influential. Nowadays, "invisible hand" explanations are invoked to explain all sorts of phenomena, from scientific progress to environmental degradation. Smith made it clear in his writings that quite considerable structure was required in society before the invisible hand mechanism could work efficiently. For example, property rights must be strong, and there must be widespread adherence to moral norms, such as prohibitions against theft and misrepresentation.

<u>The modern "Invisible Hand"</u>

Nowadays, something much more general is meant by the expression "invisible hand". An invisible hand process is one in which the outcome to be explained is produced in a decentralized way, with no explicit agreements between the acting agents. The second essential component is that the process is not intentional. The agents' aims are not coordinated nor identical with the actual outcome, which is a byproduct of those aims. The process should work even without the agents having any knowledge of it. This is why the process is called invisible.

The system in which the invisible hand is most often assumed to work is the free market. Adam Smith assumed that consumers choose for the lowest price, and that entrepreneurs choose for the highest rate of profit. He asserted that by thus making their excess or insufficient demand known through market prices, consumers "directed" entrepreneurs' investment money to the most profitable industry. Remember that this is the industry producing the goods most highly valued by consumers, so in general economic well-being is increased.

One positive aspect of a market-based economy is that it forces people to think about what other people want. Smith saw this as a large part of what was good about the invisible hand mechanism. He identified two ways to obtain the help and co-operation of other people, upon which we all depend constantly. The first way is to appeal to the benevolence and goodwill of others. To do this a person must often act in a servile and fawning way, which Smith found repulsive, and he claimed it generally meets with very limited success. The second way is to appeal instead to other people's self-interest. In one of his most famous quotes:

"Man has almost constant occasion for the help of his brethren, and it is in vain for him to expect it from their benevolence only. He will be more likely to prevail if he can…show them that it is for their own advantage to do for him what he requires of them…It is not from the benevolence of the butcher, the brewer, or the baker that we expect our dinner, but from their regard to their own interest. We address ourselves, not to their humanity but to their self-love. "

The theory of the invisible hand is certainly persuasive, and its simplicity is also very attractive. No doubt every reader can see that it describes the way that things really work on many occasions, and, whether we find it palatable or not, we probably all recognize the truth of Smith's assertion that paying for your dinner is a more reliable way to get it than appealing to the benevolence of others. But, even assuming all the correct conditions, does the invisible hand theory really lead to the maximization of human economic wellbeing, as Smith asserts? This is where mathematics, in the form of Game Theory, can provide us with some insights.

The Prisoner's Dilemma

The "Prisoner's Dilemma" is a very famous "paradox" in Game Theory. It describes two people in a simple situation, acting in an informed manner, both attempting to maximize their wellbeing, and yet making choices that lead to an unnecessarily poor outcome for both. Two people, who are suspected of being accomplices in a crime, are held prisoner in separate, non-communicating cells. The police visit each prisoner, and tell both that if neither confesses, each will be sentenced to two years in jail. However, if exactly one prisoner confesses, implicating each other, the one who confesses will get off scot-free as a reward, and the other, who didn't confess, will receive a punitive sentence of five years. If each confesses and implicates the other, both will be sentenced to three years. What should a prisoner in this situation do? Suppose that the other prisoner doesn't confess. Then the best course of action is to confess, and go free. Even if the other prisoner does confess, it will be better to have done likewise – at least the sentence will be lower. Both prisoners will reason thus, so both will confess and end up serving sentences of three years – even though, if both had remained silent, both would have served sentences of only two years. It may not be immediately clear what the relevance of the Prisoner's Dilemma is to Smith's theory of the Invisible Hand. In fact, it has a number of implications for economic behavior.

The temptation to default

We can think of the prisoners as being asked to decide whether to keep a contract they have made with each other (remain silent) or to default (confess and betray the other).

Similar choices have to be made all the time in economic society. When two people freely agree to exchange goods or services to their mutual benefit, each must decide whether to try to cheat the other by defaulting, or handing over counterfeit goods, or whether to act in good faith and risk the other party defaulting. Obviously, both parties are better off if neither default than if both default – after all, we suppose they willingly contracted with each other – but each would like to get something for nothing, and each is afraid the other will feel the same. The result may well be that the parties are unable to carry out the exchange as arranged, and both lose out. The reason we don't see this behavior too often is because we live in a society where courts can enforce contracts. This reduces the fear of the other party defaulting, and makes it easier to hand over goods ahead of receiving whatever is to be exchanged for them.

Enforcing laws of contract requires cooperation and resources from someone else – in democratic societies, the courts on behalf of the government and the people. But courts and prisons and police cost money and most of the costs fall on people who were not party to the contract in the first place – who are therefore paying for a service that doesn't directly benefit themselves. Such courts fall into the category of "public good" – we are all better off in a society where the rule of law is upheld – but are not created and maintained by any invisible hand mechanism. Courts are set up deliberately to carry out a public good; and, although they may not always work the way they are intended to, there is nothing unintended about their use to enforce contracts.

Subsidy-seeking

In a democratic society, there is a strong temptation for "special-interest" groups to form and lobby the government to provide tax-payers' money to the group in the form of subsidies. Politicians find the prospect of buying the loyalty of the group attractive, and the group sees the prospect of getting other people's money for nothing. Clearly, everyone would be better off if no one sought subsidies – by definition, subsidies are only needed for unprofitable activities, that is, activities that other people do not value sufficiently to pay their own money for. However, if other people seek and gain subsidies, anyone who doesn't bother trying to do the same for themselves will end up subsidizing others while receiving no subsidies themselves. This fear may force large numbers of people to spend their time lobbying the government for subsidies, rather than simply engaging in more profitable activities – a classic example of the Prisoner's Dilemma, and one over which no court has jurisdiction.

A very similar situation occurs regarding monopolies. Since pretty much every producer is a consumer, it is probably to everybody's benefit overall if no producers attempt to raise prices by monopolizing their market; however, attempting to enforce a monopoly can be very attractive to individual producers. Smith rather sardonically observed that "People of the same trade seldom meet together even for merriment and diversion, but the conversation ends in a conspiracy against the public or some contrivance to raise prices."

Arrow's Theorem

Kenneth Arrow's Impossibility Theorem says that, in a certain sense, it is impossible to produce a consistent group preference by aggregating individual preferences. It is normally stated in terms of votes and elections, and, in this format, says that is impossible to use information about individual voters' preferences to decide what is "the will of the people". Every voting system in current use throws up anomalies, such as "flip-flops", which occur when a third candidate enters the race and overturns the group preference between the other two candidates (think of Ralph Nader in California, splitting Al Gore's vote and handing George Bush the election).

The "will of the people"

Again, the relevance to allocation of public goods is not immediately obvious – until you recall that an essential part of the invisible hand process is that producers respond to an single signal that is meant to be an aggregate of all signals by consumers. Arrow's Theorem is often interpreted as saying that there is no consistent way to aggregate the preferences of individuals to give a single preference which can be regarded as the preference of society – or "the will of the people". An economic version of the flip-flop could occur if a majority of customers would prefer to buy Product X to Product Y, but some of that majority actually like Product Z even better (the equivalent of splitting the vote); the producer may end up producing Product Y even though more people would have liked Product X, and presumably it would have been more profitable to produce it. If this happens, then the invisible hand cannot be said to have worked to maximize economic wellbeing.

In a centralized society, a few individuals make decisions on how to spend everyone's money and direct everyone's effort. How far does the invisible hand reach? How economic systems work and what can be done to improve them is still very much a live area of research for economists. Mathematicians are currently grappling with the implications of game theory for all sorts of social choice, in particular, what meaning, if any, can be attached to the expressions "the will of the people" and "the public good". The results of such analyses will not be the only factor in deciding whether societies move towards or away from laissez-faire economics ("laissez-faire" means "let alone" and is shorthand for leaving things to the invisible hand). Political will, whether the world becomes more peaceful or less, and the practicality of any alternatives will also be factors. Alternative systems tend to require much more intervention and more stringent rules. In the real world, such rules automatically introduce more and more opportunities for mistakes and corruption, which might mean that another system, even if better in principle, would be worse in practice. Perhaps the strongest reason for leaving the allocation of effort and reward to the invisible hand is that when it misappropriates goods, it is likely to be on a small scale. More centralized methods of allocating goods are more prone to corruption and waste. Smith developed his theories – that of a heavily planned and rather dictatorial society, where some individuals were above the law and others were effectively without any rights. Smith said, "it is the highest impertinence and presumption, therefore, in kings and ministers to pretend to watch over the economy of private people, and to restrain their expense…They are themselves always, and without exception, the greatest spendthrifts in the society."

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