

Public Finance and Public Policy

Responsibilities and Limitations of
Government

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1

MARKETS AND PROPERTY

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1.1

A First Account

The most important question that can perhaps be asked in economics is when should we forgo the personal decisions of markets, where we choose how we earn and spend income, and instead rely on decisions of government. This book addresses this fundamental question.

The background for our study is the existence of markets. Markets allow people voluntarily to buy and sell. Assigning responsibilities to government in general requires taxes, which are not voluntary.

We shall be happy with markets, if markets achieve two basic objectives: (1) efficiency and (2) social justice. We shall presently more precisely define these objectives. If markets cannot achieve these objectives, we need to consider replacing the private decisions made in markets with the collective decisions of public finance and public policy made through government.

We shall begin our investigation with markets where neither public finance nor public policy is present. From this starting point without government, we shall investigate whether or how public finance and public policy can improve outcomes of private, individually made, market decisions.

1.1.1 The market and efficiency

A case for the virtue of private market decisions without government can be traced back at least to the writings of Adam Smith (1723–90). On a number of occasions, Smith, who was a professor of moral philosophy,¹ referred in his writings to an invisible hand that guides personal self-interest to outcomes that benefit an entire society.

Voluntary market decisions are necessarily personally beneficial, since a person who believes that a market decision is not in his or her best interest can simply choose not to buy or not to sell. The invisible hand, according to Adam Smith, ensures that personally beneficial market decisions are also socially beneficial.² The social benefit provided by the invisible hand can be identified as efficiency. The invisible hand does not promise social justice.

The invisible hand, according to Adam Smith, allowed virtuous men and women to pursue self-interest through markets without feelings of guilt. We see elements

¹ Adam Smith first studied at Glasgow University in Scotland and then at Oxford University in England. After his studies, he returned to Glasgow to take a position as professor of logic; in the following year, he became professor of moral philosophy.

² The idea of the invisible hand appears in Smith's book *The Theory of Moral Sentiments* first published in 1759 and also makes an appearance in his book *An Enquiry into the Causes of the Wealth of Nations* first published in 1776. The invisible hand has become part of the folklore of economics. For accounts of Smith's intentions when using the idea of the invisible hand, see Macafie (1959), Rothschild (1994), and Grammy (2000). Overviews of Smith's writings and ideas include Reisman (1975) and Tribe (1999).

of moral philosophy in this suggestion: People who pursue self-interest through markets should not feel guilty for not having broader social objectives because the invisible hand will direct their personal self-interest to the good of all society. That is, through markets people do social good by doing personal good for themselves.

Adam Smith also pointed out that social good achieved through the invisible hand is unintentional. People do not purposefully set out to do social good when making self-interested market decisions. The absence of *intent* to do social good was seen by Adam Smith as a virtue because hypocrisy could be absent from market decisions. Smith wrote (1776/1937, p. 423):

I have never known much good done by those who affected to trade for the public good.

Adam Smith would thus advise us to be wary of persons who, when offering to buy or sell, claim to have objectives other than their own personal self-interest. We should be cautious when offers to buy or sell are accompanied by claims of altruistic motives. The saying, “do not look a gift horse in the mouth,” advises us not to examine too closely the quality of a gift that we are offered.³ In a market, however, gifts are not given. Rather, money and goods change hands. Adam Smith advised us to beware of gifts or bargains in markets. To achieve both private and social good, people need only profess to seek their own personal benefit when they offer to buy or sell.

Efficiency in a competitive market

There is no formal proof in Adam Smith’s writings that personal self-interest expressed through market decisions benefits a society. In the centuries since Smith’s writings, various ways of more formally confirming the social benefit of markets have become available. The simplest means of proof is to look at a single competitive market, as in Figure 1.1, where market demand expresses marginal benefit of buyers through willingness to pay, and market supply expresses the marginal cost of sellers.⁴ In a competitive market, individual buyers and sellers do not influence market prices. Buyers choose quantities to buy by setting the market price equal to their personal marginal benefit *MB*. Sellers choose quantities to sell by setting the market price equal to their marginal cost of supply *MC*. Since the market price is the same for all buyers, all buyers have the same realized personal *MB* from their purchase decisions. Market demand in Figure 1.1 thus reflects the equalized personal *MB* of all buyers. The market supply function likewise reflects the common *MC* of sellers. At point *E* in Figure 1.1, the total quantity demanded by all buyers is equal to the total quantity supplied by all sellers, and the price that buyers are willing to pay is equal to the price that sellers require in order

³ Examination of the condition of the teeth of a horse will reveal the age and health of the horse.

⁴ More elaborate proofs of the efficiency of markets are provided in Supplements 1A and 1B.

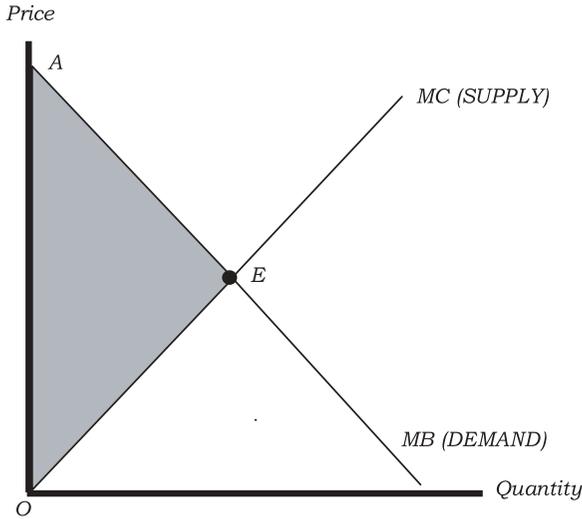


Figure 1.1. The efficiency of a competitive market.

Demand expresses marginal benefit MB of buyers. Supply expresses marginal cost MC of suppliers. At point E where demand equals supply, MB and MC are equal, and $W = B - C$ is therefore maximized. Maximal W is the area AEO .

to supply.⁵ We confirm Adam Smith's claim that personal market decisions are socially beneficial, if we show that the market outcome at point E is efficient. Of course, we would then have defined social benefit as efficiency.

We define an outcome as efficient, if net social benefit

$$W = B - C \quad (1.1)$$

is maximized, where B is total benefit and C is total cost. In seeking maximal net social benefit W , we are not asking how total benefits B and total costs C are distributed in a population. We are not asking whether the people who benefit or incur costs are rich or poor. Such questions are distributional; we ask distributional questions when we seek an objective of social justice.

In the market shown in Figure 1.1, B is the total benefit of all buyers in the market, and C is the total cost of all suppliers. W is the net benefit to society from existence of the market.

Efficiency to maximize $W = B - C$ requires that a quantity of output be supplied and sold for which

$$MB = MC. \quad (1.2)$$

Because MB of buyers is indicated by the demand function and MC of sellers is indicated by the supply function, the output at which $MB = MC$ is at point E

⁵ The demand and supply functions in Figure 1.1 are shown as linear. Linearity is only for exposition. The negative slope of demand indicates diminishing MB of buyers, and the positive slope of supply indicates increasing MC of suppliers.

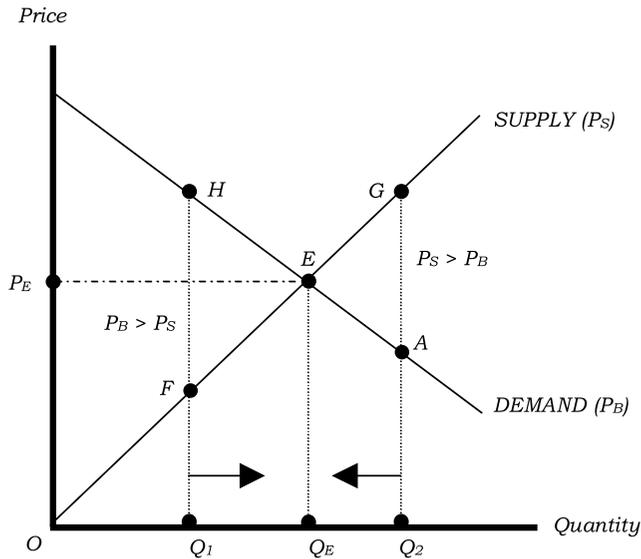


Figure 1.2. The competitive market adjustment mechanism.

The competitive adjustment mechanism moves the market to the equilibrium output Q_E .

where demand and supply are equal. The outcome at point E in Figure 1.1 is therefore efficient and is, moreover, the only efficient outcome.⁶ The shaded area AEO is the maximal value of $W = B - C$ that the market can offer.⁷

If the market is not at the efficient point E but somewhere else, a competitive adjustment mechanism will bring the market to point E . Once at point E , the market will stay there. The competitive adjustment mechanism is illustrated in Figure 1.2. The price that buyers are willing to pay for additional output is shown as P_B . This price is determined from the demand function. The price that suppliers require to provide additional output is P_S . This price is given from the supply function. At quantity Q_1 in Figure 1.2, the price P_B that buyers are willing to pay for additional output exceeds the price P_S that suppliers require to supply additional output. Since buyers are willing to pay a higher price than sellers ask to supply more output, output supplied increases from Q_1 . Output supplied continues to increase until the efficient output Q_E at point E is reached. At output Q_E , the price P_B that buyers are willing to pay and the price P_S that suppliers require in

⁶ A second-order condition is satisfied at point E . See Supplement 1A.

⁷ The area under the demand function measures the total benefit B for any quantity of output provided to buyers by summing MBs from quantities of output. The area under the supply function measures the total cost C of supplying a quantity of output by summing MCs of supply. Therefore, $W = B - C$ is the difference between the areas under the demand and supply functions. This difference reaches a maximal value at point E . We shall often use the area under the demand function to measure total benefit and the area under the supply function to measure total cost. The area under the demand function is an approximation for total benefit. The approximation is in general reasonable. See Robert Willig (1976).

order to supply are equal to the price P_E . Output now stays constant. E is therefore the point of market *equilibrium*.⁸

With market supply originally the quantity Q_2 shown in Figure 1.2, buyers' willingness to pay for additional output P_B (given from the demand function) is less than the price P_S (given from the supply function) that sellers require to provide more output. Buyers are therefore unwilling to pay the price that suppliers require to maintain supply at the quantity Q_2 , and output supplied falls. The output decline stops at the equilibrium output Q_E at point E .

Whether the market begins from an output such as Q_1 less than Q_E or from an output such as Q_2 greater than Q_E , the competitive adjustment mechanism thus brings the market to the efficient output Q_E at the equilibrium point E .⁹

We have now shown that the equilibrium of a competitive market is efficient. The market could be for a product or service supplied for consumption, or it could be for a factor of production. Buyers and sellers make self-interested decisions (buyers choose quantities to purchase according to $P = MB$ and sellers choose quantities to supply according to $P = MC$), and the market adjusts to the efficient equilibrium if not already at the equilibrium. We have therefore confirmed Adam Smith's proposal that the market is guided to efficiency by individual self-interest *as if* by an invisible hand, and that buyers and sellers have no reason to feel guilty about making personally self-interested decisions, provided the decisions are made in competitive markets and provided that the social objective is efficiency.¹⁰

A first responsibility of government: competition

The efficiency achieved through markets requires that markets be competitive. A first responsibility of government is thus the preservation and protection of competitive markets.¹¹ This responsibility of government requires an antimonopoly or

⁸ During adjustment to the market equilibrium, price is changing. Since no individual buyer or seller can influence a market price in a competitive market, we might ask how prices ever change. Calling on the "invisible hand" to change market prices is not an adequate answer. The condition that no buyer or seller can influence price is a characteristic only of the market equilibrium. When the market is not in equilibrium, individual offers to buy or sell influence market prices. See Supplement 1A on how prices change in a competitive market.

⁹ From Figure 1.2, we also confirm that nonequilibrium outputs such as Q_1 and Q_2 are not efficient outputs. At quantity Q_1 , there is a loss equal to HEF from the market not being at the efficient point E . At the quantity Q_2 , there is a loss equal to GEA .

¹⁰ Adam Smith did not use the ideas of supply and demand to make his case for the virtue of the market. Alfred Marshall (1842–1924) much later introduced the ideas of market supply and demand. Marshall resolved a problem that had been debated for centuries, which is whether the price (or value) of a good is due to the cost of production or reflects personal benefit expressed in willingness of people to pay. Marshall showed that neither cost nor benefit alone *caused* value. Rather market price (or market value) was determined by supply and demand interacting simultaneously in markets.

¹¹ The responsibility of government to ensure competition includes international free trade. A foreign supplier may offer buyers the lowest price or the best quality, or a foreign buyer may offer a better price than is available in a seller's home market. International free trade permits buyers and sellers to take advantage of *all* market opportunities when making decisions to buy or sell. See Supplement 1B. Adam Smith included the benefits from free trade in the benefits from markets. More formal statements of the gains from free trade followed, for example Murray Kemp (1962).

antitrust agency that pursues a public policy of ensuring competition.¹² The persons employed in the government's antitrust agency receive incomes that are publicly financed. The implementation of public policy through the antitrust agency thus requires taxes and public spending.

1.1.2 Individual freedom

Competitive markets are a basis for individual freedom. A single seller in a market can restrict individual freedom by arbitrarily refusing to sell, and a single buyer can arbitrarily refuse to buy. In a competitive market, the personal attributes or beliefs or social and ethnic background of a buyer or seller do not influence buying or selling opportunities. The presence of many buyers and sellers makes a competitive market anonymous and impersonal, so there can be no adverse discrimination.

There is also individual freedom in that market decisions involve neither compulsion nor obligation. No one is telling anyone else what to do.

1.1.3 Spontaneous order

Individual freedom is related to the idea of spontaneous order. Spontaneous order differs from order that some people impose on others. In competitive markets, order arises spontaneously, as markets achieve efficiency through voluntary decisions. The idea of spontaneous order through voluntary market decisions has sometimes been viewed as a puzzle and with suspicion, since the way in which markets function may not be immediately evident to the human eye (hence the invisible hand). Some people have been led to wonder why the outcome of market decisions is not chaos rather than the adjustment to market equilibrium.

Suspicious about independent market decisions have at times led to proposals to impose order through a visible hand of government, to preempt the perceived anarchy of the market. The market is however not anarchic. Order emerges spontaneously through independent personal decisions. No imposed order is required by men and women who might want to control decisions for others.

¹² The responsibility of government to ensure competitive markets can be subtle. A single seller does not necessarily indicate monopoly. The test of monopoly is whether artificial barriers exist that deter sellers who wish to sell. A single seller might achieve market dominance by providing a better product or service or by selling at a low price, in which case a single seller is not an indication of monopoly but the consequence of competition. For example, in a famous case in the 1960s, the U.S. government accused IBM of being a monopolist in the market for computers. IBM's successful defense was that the company's market successes were due to continual quality improvement and low prices in the face of potential competitors waiting to enter the market. At the time, IBM produced mainframe (large) computers. By the 1990s, personal desktops and laptops had the computing power of the previous mainframe computers, and IBM confronted new competition that ended its previous dominance of the market for computers, without the intervention of government. When we call upon government to ensure that markets are competitive, we therefore add the qualification that success should not be penalized, and that allowance should be made for the technological competition that can give temporary market dominance to innovating firms. To provide incentives for innovation and the creation of new knowledge, governments also provide innovating firms with *legal* monopolies, through patent protection.

For example, there is spontaneous order at a fruit and vegetable market. Farmers arrive at the market with produce for sale. Farmers independently make individual supply decisions for the produce that they bring to the market, without coordinating their personal decisions. The government has issued no directives about the types of products and the quantities that should be brought to the market. Buyers also arrive at the market to make their purchases. In the course of a day, numerous transactions take place between farmers and buyers. At the end of the day, the farmers will have left their stalls, their produce sold, to return the next day with new supplies. Buyers also return the next day to purchase the produce that they seek. Spontaneous order is present. Every buyer and seller knows “what to do” without instructions from anyone else.

Spontaneous order extends to market relations among different goods. Producers supply goods not only for consumption but also to other producers, who use the purchased inputs in the stages of their own production activities. In the web of market interdependence, foreign producers supply imported goods, and domestically produced goods are sold in foreign countries. Foreign producers might use these goods as inputs to produce goods that are exported back for consumption or for use by other domestic producers.

Spontaneous order in the market is made possible by the information about value revealed by market prices. When all individual buyers set their personal MB equal to the price revealed in the market and likewise all individual sellers set their personal MC equal to the market price, we have

$$MB = P_E = MC \quad (1.3)$$

at the market price where demand equals supply. This ensures that net social benefit $W = B - C$ is maximized. Spontaneous order is thereby achieved through voluntary independent personal decisions that establish the equality between MB and MC required for market efficiency. Moreover, to participate in markets for their own advantage, individuals need only to know their own personal MB or own personal MC .

1.1.4 Responsibilities of government: why the market may not be enough

Governments have the responsibility of certifying private ownership and protecting lives and property through the rule of law. In Section 1.2, we shall elaborate on this responsibility of government. The two responsibilities of overseeing competitive markets and ensuring the rule of law define a minimal government.

A minimal government is usually not enough. Markets may fail to achieve efficiency. In that case, government has a responsibility to correct the inefficiencies. In the chapters that follow, we shall identify market efficiencies from a number of sources. We shall see that markets are inefficient or ineffective when spending benefits a number of people at the same time. Such collective benefits arise in many cases that range from spending on roads to national defense to disease prevention.

Markets also do not ensure efficiency when individual market decisions affect others, whether adversely or beneficially. For example, there may be damage to the environment. Societies may also decide to prohibit particular markets. Questions also arise concerning social justice. If markets do not ensure social justice, a society may decide that government has a responsibility to amend market outcomes by taxation and income redistribution.

1.1.5 Normative and positive questions

As we investigate the responsibilities of government, we need to ask both normative and positive questions. A *normative question* enquires whether a public policy can improve on markets, or whether public finance is socially beneficial. *Positive questions* seek explanations and predictions, without judgments about whether policies or outcomes are desirable.

The distinction between normative and positive questions is in particular important for studying political processes that redistribute income. We need to consider whether political decisions about public finance and public policy are consistent with normatively justifiable objectives.

The normative and positive distinction is also important for questions about taxes. Normative questions ask about the taxes that ought to be imposed. Positive questions ask why different taxes are imposed, about the effects of the different taxes, and about why taxes are sometimes not paid.

To ask and answer normative questions, we require norms that allow us to judge whether an outcome or a change is justified as efficient or as socially just.

1.1.6 Pareto efficiency

Normative questions about efficiency can be posed by using the criterion that an outcome is efficient if net social welfare $W = B - C$ is maximized. This is the procedure we followed when we enquired about the efficiency of a competitive market. We can also use an alternative definition of efficiency, called *Pareto efficiency*, after Vilfredo Pareto (1848–1923).

Pareto efficiency for production is achieved when no more of any one good can be produced without giving up some quantity of another good. Pareto efficiency for consumption is achieved when an allocation of goods or income among people cannot be changed to make someone better off, without making someone else worse off.

Pareto efficiency therefore defines absence of waste. No more can be produced without giving something up. No person in society can be made better off unless at the expense of someone else.

Decisions to buy and sell in a competitive market are Pareto efficient. We have seen that competitive markets result in outcomes where $W = B - C$ is maximized. At the same time, since individual decisions to buy and sell are voluntary, no one can be worse off as a consequence of a personal market decision. Since there are

only gainers, the efficiency achieved by a market in maximizing $W = B - C$ also results in outcomes that are Pareto efficient.¹³

While personal decisions made in markets are Pareto-efficient, the same is not necessarily so for public policy decisions. A public policy decision can increase net social benefit $W = B - C$, without benefiting everybody. For example, a road that benefits many people could be built through someone's house. The Pareto criterion for efficiency is not satisfied if the owners of the house are worse off as a consequence of the public-policy decision to build the road, although total benefits from the road exceed total costs including the costs imposed on the people who lose their house.

If total benefits exceed total costs so that $W = B - C > 0$, the people who gain from construction of the road gain more than the losers lose. The gainers can thus compensate the losers for their loss and still be better off. After the losers have been compensated, the Pareto criterion will be satisfied because some people are better off and no one is worse off.

Any public policy that is justified by the efficiency criterion that the policy increases $W = B - C$ also allows the Pareto criterion to be satisfied through compensation of any losers from the public policy. The compensation may however only be possible in principle, and not in practice. We know the identity of the people who have lost when construction of a road requires that their houses be destroyed. In other cases, identification of the losers may not be possible. As an example, we can consider the introduction in the nineteenth century of steam technology to replace sails as the means of propulsion of ships. Because of the change in technology, people who had skills and knowledge associated with furling and unfurling sails lost income. It would have been very difficult to compensate all people with such skills for the losses they incurred because of the new steam technology. The market introduced steam technology without compensation to the losers. Yet, because the change in technology increased the total income of society, the losers could in principle have been compensated and the gainers would still have been better off. Requiring actual compensation would have been an impediment to the introduction of the new technology because of the administrative complexities of identifying and certifying who should be compensated and by how much. The problem is complex. It involves not just identifying the losers and determining how much each loser lost but also identifying the gainers and determining how much each gainer should contribute to the fund to compensate the losers. A further complexity is that future gainers from a new technology may not yet have been born.

There were gainers and losers when the personal computer was introduced. Before the advent of the personal computer, typing was a specialized skill, and few people did their own typing. The introduction of personal computers disadvantaged typists because many people learned to do their own typing. Insistence

¹³ Supplement 1B develops the concept of Pareto efficiency achieved through markets.

on actual compensation of losers would have made the introduction of personal computers contingent on identifying all gainers (i.e., all people who gained from using a personal computer) and determining how much each gained. It would have also been necessary to identify all people who lost income as a consequence of the introduction of the personal computer and to establish how much they lost. An administrative office would have been required to implement the compensating income transfers from the gainers to the losers. If compensation had been required, the personal computer would never have been introduced.

These examples show that administrative and information costs of making compensating payments can be too high to make compensation to losers feasible. When the identities of the gainers and losers and the values of the gains and losses are clear, we might however insist that the gainers compensate the losers. The compensation to the losers might be paid by the government on behalf of the gainers. For example, in the case of the road, we would not expect each gainer individually to compensate the owners of the house. The administrative costs of such individual compensation could be prohibitive. We would not expect the owners of the house to place a toll booth or electronic monitor where the house had been. The government would provide the compensation to the owners of the house through an income transfer financed by taxes.

The compensation is not designed to ensure efficiency. A public policy is efficient if, in principle, the gainers can compensate the losers and still be better off. That is, a public policy is efficient if, for society as a whole, $W = B - C$ is maximized. A desire to provide actual compensation reflects a concern for social justice. Compensation may be socially just. When some people lose from an efficient policy and compensation is not possible or is prohibitively costly, a society faces a conflict between the objective of efficiency and the objective of social justice.

Insistence on actual compensation to losers would have resulted in public policies banning both steam technology and the personal computer, and many other new technologies that have, on the whole, benefited society. As another example, new awareness of damage to the environment may lead to a decision to close a factory that is polluting a lake because ongoing production in the factory is not warranted once the damage to the environment has been included in costs. That is, with the damage to the environment included in costs, total benefit B from the factory's output is less than total cost C . If the factory was constructed before social concern about pollution, should the owners be compensated because new awareness of the harm inflicted by pollution has resulted in the closing of the factory? Most people would agree that if the owners of the factory have lost because of a change in society's environmental standards, the owners of the factory should be compensated.

Should the employees who lose their jobs also be compensated? Should people who have incurred a loss through a decline in the value of their houses because of reduced demand for housing after the closing of the factory be compensated? Should suppliers who supplied inputs used by the factory be compensated? Should

the advertising agency that had the account for the factory be compensated? Should consumers with a special liking for the products of the factory be compensated?

At some stage in the list of people who have lost, a society that seeks efficiency may decide to forego the actual compensation required to satisfy the Pareto criterion that no one lose because of a change. A judgment might be made, for example, that the advertising agency should not be compensated for the closing of the factory. Such judgments involve considerations of social justice. The closing of the factory is justified because for society the costs C of the existence of the factory exceed the benefits B . The benefits lost by the closing of the factory include the former gains of the advertising agency that had the account for the factory's products.

A society that emphasizes efficiency might choose to adopt a general rule that a public-policy decision is justified when $W = B - C > 0$ increases. Such a society does not investigate the distribution of the benefits B and costs C among the population. The intention is that, by proceeding with all changes and public policies that increase $W = B - C$, all people over time will come to benefit, even if on some occasions some people lose.

1.1.7 Social justice

We have two quite precise ways of expressing the social objective of efficiency, through the net social benefit criterion $W = B - C$ and through Pareto efficiency. Social justice, the other objective that societies seek, is a more elusive concept to express than efficiency.

Social justice through actual compensation

One way to express the objective of social justice is insistence on actual compensation whenever somebody loses from a public policy. Many of the fundamental disagreements that arise in economics, and in politics, can be traced to different positions on whether social justice through actual compensation for losers is required before a government can proceed with efficient public policies.

Social justice through competitive markets

Do competitive markets provide incomes that are socially just? A competitive market provides individuals with incomes according to the value of personal contributions to production.¹⁴ As a result, personal incomes earned in competitive markets are consistent with social justice, if we make the judgment that people should be rewarded according to the value of their personal contributions to a

¹⁴ We can express profits of a competitive firm as $P \cdot Q(L) - wL$, where P is the competitively determined price, Q is output, w is the competitively determined wage paid to labor, and L is the amount of labor employed. The output Q depends positively on L . The firm maximizes profits by hiring labor so that $P \partial Q / \partial L = w$, so that the wage received by labor is equal to the value of labor's marginal product, which is the value of the marginal contribution of labor to production.

society's output. If we make this judgment, a competitive market is both efficient and socially just. Personal reward determined by the value of personal contributions to production however provides no or low income for people who are incapacitated. Moreover, some people may object to personal ability determining personal income because of the element of luck in innate ability. Luck also determines ability to earn income through support and encouragement to study received from parents. Some people may consequently regard the inequality resulting from market-determined outcomes as unjust and rather may view social justice as requiring equality.

Social justice as equality

Suppose that three people each have incomes of \$1,000 and all benefit equally when they spend the money. A proposed public policy would result in a new outcome where person 1 has \$1,200, person 2 has \$1,300, and person 3 has \$1,400. The change introduced by the public policy satisfies the efficiency condition that $W = B - C > 0$. The public policy also provides a Pareto improvement because all three persons are better off (and no one is worse off). Yet, because incomes are no longer equal, the change has resulted in a departure from social justice defined as equality. We see therefore that defining social justice as equality and insisting that no policy violate equality can be inconsistent with efficiency. In this example, if the three persons cannot equally share their gains, or if the gains are not transferable among the three people, insistence on social justice defined by equality requires person 2 to throw away \$100 of benefit and person 3 to throw away \$200 of benefit.

Water in the desert

Conflict that can arise between efficiency and social justice defined as equality is described in circumstances where two people are in a desert with enough water for one of them to survive. A discussion of these circumstances is found in the Talmud.¹⁵ The Talmud relates:

Two people were traveling along the way and one of them had in his possession a flask of water. If both drink, they both die. However, if one drinks, he will reach a populated area.

The water belongs to one of the travelers. The question that is asked is whether the person with the water should share the water with the other person. As is usual in the Talmud, more than a single answer is given. One answer is consistent with justice defined as equality and the other answer is consistent with Pareto efficiency.

¹⁵ Compilation of the Jerusalem Talmud was completed around 1,600 years ago and the Talmud Bavli was completed some 100 years later. The example that follows is from the Talmud Bavli. In the Talmud, the opinions of people who did not live at the same time are often compared.

The view guided by social justice defined as equality is that the water should be divided. Dividing the water results in equality of outcomes, even though neither person has enough water to survive.¹⁶

The alternative view is that the person who has possession of the water should drink the water. In that case, a Pareto-efficient outcome is achieved, since one person alive is preferable to no one left alive.¹⁷

We should note that the issue was not whether one should give up one's own life for the life of another.¹⁸ Sharing the water saves no one's life. Rather, the question is whether the person with the water should give up his or her own life, when the only purpose is to satisfy a principle of equality.¹⁹

Social justice and equal opportunity

Social justice can also be defined as equal opportunity. Using a lottery to determine who receives the water is socially just in terms of providing equal opportunity if the lottery assigns the water with equal probabilities. After the outcome of the lottery is known, one person has all the water, which is efficient.

The use of a lottery to assign the water presupposes that neither person owns the water in the first place. If the water were owned by one of the travelers, the lottery would require the owner of the water to donate the water as a prize in the lottery. In the circumstances of the two persons in the desert, one person owns the water, and so an obligation to offer the water as the prize for a lottery contradicts rights of ownership. A lottery is a socially just way of assigning the water only if there is no identified owner of the water.

Social justice and "survival of the fittest"

Consider two people in a desert without water. They see a flask of water lying ahead of them, and both set off in a run to be the first to reach the flask. The faster runner will reach the flask first and claim the water. Because the amount of water in the flask is only enough to allow one person to survive, it is efficient for one person to have all the water. Is it however fair, or socially just, that the faster runner has been able to claim the water? Alternatively, if one of the two travelers has better eyesight than the other, or is more perceptive by nature, this person

¹⁶ The reason given for this view was that *it is better that both should drink and die than that one should witness the death of his fellow*. This was the view of Ben-Petura.

¹⁷ This was the view of R. Akiva (c.50–135). The term "Pareto efficiency" was of course not used. This was before Pareto's time.

¹⁸ The different views are alternative interpretations of the principle that we should care about others and not only care about ourselves.

¹⁹ Adherents to Ben-Petura's position might counter that personal benefit should include the feeling of sharing a common fate by sharing the water. R. Akiva's position was that this type of suicide was not desirable behavior, and that *your life takes precedence over your fellow's life*. So, if you have the water and the water can save only one life, you should use the water to save yourself. R. Akiva was sensitive to the plight of the poor. He had been a shepherd and had married the daughter of a wealthy man, who disowned his daughter for marrying below the status of her family. After beginning his studies at the age of forty by learning the alphabet together with his young son, R. Akiva went on to become one of the most prominent of scholars.

will see and claim the water before the other traveler is aware of the presence of the water. Is it fair or socially just that the more alert person, or the person with better eyesight, obtains the water?

When different abilities determine who claims the water, the rule is survival of the fittest. Because differences in initial abilities influence who succeeds in obtaining the water, equality of opportunity is not present as it was in the case of a lottery.

One person might have the water through prior claim based on original ownership or through success in a lottery, and the second person might steal the water or appropriate the water by physical force. The outcome is again determined by the principle of survival of the fittest and is again efficient. The means whereby the water was obtained are now evidently not socially just. The principle of survival of the fittest does not, however, seek to accommodate social justice.

Social justice as the right of possession

Another definition of social justice is the right to possess what one rightfully owns. In the case of the water in the desert, use of the water by a person who owns the water is by this definition socially just, as well as efficient.

On the other hand, there can be disputes about rightful ownership. An example of such a dispute is provided by a problem that confronted Solomon, king of Israel some 3,000 years ago. In his court in Jerusalem, Solomon was confronted by two women who both claimed to be the mother of the same baby. Both women had given birth around the same time, but only one baby had survived. We see that in this case there is an indivisibility, as in the case of water in the desert. Babies cannot be divided. There was no evidence to support either woman's claim that she was the mother of the living child. Solomon faced a problem of asymmetric information. That is, he did not know the identity of the true mother, although each of the two women did know who the true mother was. Solomon decreed that, unless one of the two women renounced her claim to the baby, the baby would be cut in half and divided between the two claimants. The true mother thereupon renounced her claim, but the false claimant did not. Solomon decreed that the baby should be given to the woman who had renounced her claim to save the life of the child, and the true mother thereby received her child. The outcome was efficient since the baby was not divided, and the outcome was also just when justice is defined, not as equal division, but as right of possession by a true owner.

The two women who claimed the same baby are identified as harlots. We might ask why this identification was necessary, or important. An answer is that, since a harlot had low status in society, we are shown that all persons should be provided with equal access to justice without regard for their social status. In receiving the harlots and judging their case, Solomon demonstrated the principle of equality for all persons before the law.

Envy

An anecdote describes two farmers in different societies looking at the well-kept cow of a neighbor. In one society the farmer thinks to himself: "What a beautiful