Decision Criteria and Mechanisms

Part Two covered independent pursuit of their own interests by individual agents. However, standards and conventions require social coordination. Individuals can buy their own houses independently, but the housing code for the city must be arrived at collectively. Whether we should use accounting standards, and what they should be, are collective decisions. Before analyzing standards in Chapter 11, let us discuss the criteria and methods for making such decisions. An important collective decision-making mechanism in society is called government. In Chapter 12 we discuss how government makes laws and regulations that govern the operation of proprietorships, partnerships, and private and public corporations.

Individual choice depends on the preferences of one person or homogenous group. Collective choice depends on the preferences of many (if we ignore dictatorial imposition). The latter has all the complications of individual choice, plus more. We start with the criteria and then go to the methods, and finally discuss the strengths and weaknesses of various ways of setting accounting standards.

Criteria for Social Choice

What we choose depends on what we look for and where and how far we search. What we look for, or the criterion for choice, is not unique.'

Technological Efficiency

In engineering and physical sciences, a criterion of choice is efficiency, which is the ratio of physical output to physical input of a process. Suppose you lose 10 percent of the weight of potatoes in hand peeling, and only 2 percent in machine peeling. Machine peeling, at 98 percent, is more efficient than hand peeling.
at 90 percent. Computerized bookkeeping is often technologically superior to manual bookkeeping in this sense. In the same sense, the application of statistical sampling to audits is superior to purely judgmental techniques in many situations.

**Simple Economic Efficiency**

The technologically efficient method for peeling potatoes is not necessarily the cheapest. Economic efficiency of a process is the ratio of the dollar value of its output to the dollar value of the inputs it needs. Convert all inputs into money and add them up. Do the same for the outputs, before taking the ratio of the two. If labor and potatoes are cheap and machines are expensive, hand peeling might turn out to be the efficient economic choice.

Technological efficiency affects, but does not determine, simple economic efficiency. If the dollar prices of inputs and outputs are chosen by the analyst, the latter is less objective, and is applicable to decisions made by individuals or homogeneous groups. Whether the owner of a grocery store replaces mechanical cash registers with a computerized checkout system is a matter of simple economic efficiency. The owner seeks the cheapest way to collect revenue. Whether an auditor chooses statistical methods over judgmental sampling can also be seen as a matter of simple economic efficiency. The auditor seeks the cheapest way to detect each error or each dollar of error.

**Multiperson Economic Efficiency**

How do we choose what is best for a group of two or more people when they do not agree among themselves? If the group were homogenous, we could use the simple economic efficiency criterion just described. If the goals of the members of the group are diametrically opposed—one side’s gain is the other side’s loss—no criterion of efficiency can be applied to the group. Members of most groups have overlapping interests. part common—part opposed. The common part induces a foundryman and a machinist to produce a component. The opposing part induces them to haggle on who gets how much of the sale price. How could the group make its choice?

Consider “better for some, worse for none” as a criterion of group choice. Compare two options at a time. If one is better for some but worse for none, discard the other option. Continue making pair-wise comparisons until none of the remaining options can be discarded. The set of remaining options is called the Pareto efficient set, and the criterion is called *Pareto efficiency*.

Unlike technological and simple economic criteria, this one rarely leads to a unique choice. Picking one of the Pareto efficient set over another necessarily sacrifices the interests of some members of the group for the benefit of others. One member of the set is no better than another by this criterion. This incompleteness of the Pareto criterion has led some to use cost–benefit criterion instead. Cost–benefit criterion compares options on the basis of their *aggregate* costs and
benefits, without regard to the distribution of these costs and benefits among individuals. We discuss cost–benefit criterion for social decisions in a later section.

Cyert and Ijiri and Beaver and Demski argue that important accounting issues concern the interests of many people. Budgeting, cost center, profit center, transfer price, inventory valuation, depreciation, and disclosure decisions affect many people. Each person can make a personal decision based on personal costs and benefits. However, these personal costs and benefits are affected by the decisions of others. To understand the consequences of accounting decisions, we need to consider this interdependency among individuals.

Two complicating factors can be added to each of these three criteria of efficiency (technological, simple economic, and Pareto). First, the consequences of many decisions are realized over a long period of time. Second, the consequences are often uncertain at the time the decision is made.

**Multiperiod Problem**

The efficiency of a decision, whether technological, simple economic, or Pareto, may vary over time. For example, the technological efficiency of a potato-peeling machine may decline with wear and tear, while the efficiency of hand peeling may improve with experience. One option is better in some periods, while another is better in others. How do we choose among them?

Since technological efficiency is defined in physical quantities of inputs and outputs, and not in terms of money, the multiperiod problem is usually resolved by simple or weighted averaging across periods. This amounts to treating all periods, early or late, alike.

Simple economic efficiency is reckoned in dollar costs and benefits. When the same option is not the best in all periods, each dollar amount is adjusted for the time value and the purchasing power of money, using one or more discount rates. A discount rate is the opportunity cost of money. The person making the decision can choose an option by comparing the net present value of each option, a single number.

In a multiperson context, it is possible, theoretically at least, to have each individual apply his or her personal discount rate to reduce the vector of period-by-period net benefits to the net present value of each option. These personal net present values could then be used to identify the Pareto efficient set as described. However, identifying this Pareto efficient set requires knowledge of various alternatives, their outcomes, and the preferences of individuals with respect to these outcomes.

In cost–benefit analysis, a common social, instead of a personal, rate of discount is used to aggregate multiperiod data. Determining an appropriate social rate of discount is even more difficult. It implies calculating the exchange rate in intergenerational transfers, and requires specification of the long-term goals and desires of the society.
Uncertainty Problem

The consequences of actions and choices are often uncertain. The longer the passage of time, the greater is the uncertainty. Let us start by considering uncertainty within a single period.

If one option is always better than others, no matter what happens, it is safe to pick that option. If option A has, say, two outcomes, \( a_1 \) and \( a_2 \) in state \( s_1 \) and \( s_2 \), respectively, and option B also has two corresponding outcomes, \( b_1 \) and \( b_2 \), then A is unambiguously preferred only if \( a_1 \) is greater than or equal to \( b_1 \) and \( a_2 \) is greater than or equal to \( b_2 \), and at least one of the two inequalities holds strictly. In many decisions this condition is not fulfilled because either \( (a_1, a_2) \) and \( (b_1, b_2) \) do not have such a relationship, or the two options divide the state space in noncomparable ways. How do we rank options in such cases?

In assessing technological efficiency, when one option does not dominate others in all states of the world, we resort to picking the option that has the higher expected efficiency. We may pick A over B if the former is better than average, but not always. We must supply not only the outcome under each state of the world, but also the probability of each state. In technological applications, it is sometimes possible, in concept if not in practice, to conduct experiments to determine the relative frequencies of various outcomes associated with an option. These relative frequencies are used as probabilities in weighting outcomes to calculate the mathematical expectation of the option.

The expected value criterion assumes that the desirability of options is linear in measured attributes. Under uncertainty, the expected utility—average desirability of each outcome associated with an option weighted by its probability—is currently a popular method of comparing options by simple economic efficiency. Use of a desirability or utility function allows for the possibility of a nonlinear relationship, but requires data about probabilities as well as the desirability of each outcome of each option.

It is rarely possible to obtain objective estimates of the relative frequencies of outcomes, making it necessary to rely on subjective probability assessments or the beliefs of the decision maker. The presence of uncertainty renders the efficiency of alternative courses of action a matter of belief, not fact. There is evidence that individual decisions made by intuition are not well-described by this expected utility criterion.

Before we discuss the implications of uncertainty for multiperson economic efficiency, one more consequence of uncertainty must be pointed out. Consider a grocery store owner who paid $1,000 in premium for fire insurance during the year. Fortunately, there was no fire. Was buying insurance a good decision? One might be tempted to respond that $1,000 was wasted because the store owner did not get anything of substance in return. Without the insurance policy, the owner would have had the same store, plus a higher balance in the bank. On the other hand, for a merchant whose store does burn down, an insurance premium is an excellent investment. It might yield a return of, say, 10,000 percent.
Because almost any option can turn out to be desirable in some circumstances, after-the-fact criterion cannot form a basis of choosing decisions in the presence of uncertainty, and it must be replaced by before-the-fact criterion, two examples of which are expected outcome and expected utility. Such criteria of efficiency are expected to yield more desirable outcomes on the average, but do not necessarily generate more desirable outcomes in every instance or even in a majority of instances. This leads to difficult problems of choice in multiperson economic settings.

The Pareto criterion of efficiency requires that the chosen option make at least someone better off without making anyone worse off. In the presence of uncertainty, the desirability of an option for each person can be assessed in terms of expectations before the fact, rather than in terms of actual events after the fact. Whose expectations or beliefs are to be used in applying the criterion? Except in the special case when all individuals have identical beliefs, there is no obvious interpretation of the Pareto criterion. Consider a few examples.

Let each person identify Pareto efficient options in terms of personal beliefs. If option A is identified to be superior to B by every individual on this basis, then A is socially preferred over B. However, this “super” Pareto criterion is even less complete than the Pareto criterion, and except in special rare cases, the diversity of individual beliefs renders most options noncomparable by this criterion.

A second possibility is to let each individual rank each option on the basis of his or her own beliefs and welfare. If option A is ranked higher than B by at least some individuals and not ranked lower by any, then A could be considered more efficient than B. Note that since each individual is using a simple economic criterion, the ranking of options will be reasonably complete. Multiperson ranking is still incomplete, but not as incomplete as the criterion mentioned in the preceding paragraph. This improvement in completeness is obtained only by discarding any information individuals may have about the effects of various options on the welfare of all other agents. This efficiency criterion wastes available information.

A third possibility is to assume that the information in the separate possession of all individuals is, by some process—possibly an appropriately designed institution such as a market—pooled and made available to all individuals. Therefore, everybody becomes as well-informed as they would be by an honest exchange of information. These homogeneous beliefs simplify the problem so that the Pareto criterion can be applied. Such arrangements for pooling information are not always possible, nor are they costless.

Selecting a criterion of efficiency is rendered difficult by considering uncertainty and time. Considering them both simultaneously invites even more complications.

**Social Cost–Benefit Analysis**

Social cost–benefit analysis sets aside the question of equity. The decision criterion is the difference between the sum of the incremental costs borne by all indi-
individuals and the sum of the incremental benefits across all individuals. Because summation across individuals is necessary to apply the criterion, the utility or desirability of the options is replaced by the monetary value of the options in the form of costs and benefits.

**Which Costs and Which Benefits?**

Setting the ethical question of equity aside, a second and equally difficult ethical problem plagues cost–benefit analysts: Which costs and which benefits must be included in evaluating options? Should we consider all costs and benefits? If not, which ones should be included? The scientific ethic favors measurability and objectivity. A scientist is likely to include only the costs and benefits that can be objectively measured. The social ethic drives one to include costs and benefits that are regarded as socially admissible and to ignore those that are not. If a new accounting standard reduces the possibility of fraud, and gains from fraud are regarded as socially inadmissible, a social cost–benefit analysis of the proposal can be conducted by ignoring the loss to defrauders and reckoning the benefits to the victim. The business or private ethic, on the other hand, requires that the costs one has to pay and the benefits one can capture be included in the cost–benefit analysis, and the others be ignored.

Which costs and benefits are included in analysis is a fundamental ethical choice. Therefore, the results of cost–benefit analysis depend on the ethical perspective used. Some business decisions may generate controversy when exposed and examined in a broader social context. For example, the fuel tanks of Pinto cars produced by Ford Motor Company were found to cause fire and injury in automobile collisions. In designing its Pinto model, Ford Motor Company tested the fuel tanks and decided, under business ethics, that the benefits of that design (lower costs) exceeded the costs (potential liability of Ford to customers). Since social ethics do not permit trading lives for money, at least not explicitly, Ford could not present this decision rationale before the jury in a court of law. A business or private cost–benefit ethic, hardly a secret, may face social condemnation in the public domain.

This discrepancy between the private business ethic and the social ethic also plagues discussions of what auditors and accountants do. The AICPA and other similar professional bodies, in carefully and jealously guarding their rights to set standards in their professions, proclaim that they do so for the public good. Businesspeople, when they fail to disclose data to their shareholders, claim to do so for the good of the shareholders. The private ethic is socially known and even accepted to a degree, but not acknowledged. Public statements are made on the basis of the social ethic instead.

**Problems of Partial Analysis**

In cost–benefit analysis, we typically assume that the relative prices of goods remain unaffected by the choice made. This partial equilibrium assumption is not al-
ways valid. When we consider the possibility that the choices we make can alter the prices, a paradox can arise: we may prefer option B over A at prices prevailing under A, and yet prefer A over B at prices that prevail under B. In other words, the grass is always greener on the other side of the fence. Fortunately, the chances that this paradox would occur are small.

**Nonlinear Utilities**

Even if we ignore the effect of choice on prices, another paradox can arise from the nonlinearity of agents’ utilities. If twice as large an increase in cost does not result in twice as large an increase in utility, the social costs of moving from status quo A to alternative B may exceed its benefits, but, had B been the status quo, the social cost of moving to A may also exceed the benefits. The result—that the status quo may be superior to the alternative, irrespective of what the status quo is—arises not only from adjustment costs, but also from nonlinear utility functions of agents. However, nonlinearities of the utility of agents are simply ignored in most cost–benefit analyses.

**Measures of Efficiency**

Our discussion of concepts of efficiency has been abstracted from the organizational setting and practical considerations. These concepts are more useful in designing the system itself, rather than in predicting how a particular system will operate. In a social system or industrial organization, agents can be expected to enhance their own welfare by using whatever measure of performance or efficiency is used to determine their rewards. Researchers and scientists, for example, often seek their rewards in the mere fact of discovery and the acclaim that may follow. Salary, promotion, and tenure of university professors are tied to publication, which, in turn, depends more on innovation than usefulness. Engineers similarly strive for technical excellence and meeting production targets and schedules. In a bureaucratic organization, the number of documents processed, permits granted, invoices prepared, and other such criteria may provide measures of efficiency.

The performance of an organization as a whole is a function of the behavior of its participants. Individual behavior depends on measures of efficiency by which individuals perceive themselves to be evaluated. Accounting produces many of these concrete measures in organizations.

**Mechanisms for Social Choice**

The practical problem of social choice is solved by designing mechanisms for making social choice. Elections and markets are the two major nondictatorial methods. The outcome of nondictatorial mechanisms depends on the preferences of all individuals. In a market process, social choice is determined through price. Preferences are expressed through the willingness of individuals to make eco-
nomic sacrifices in order to attain their preferred alternatives. The voting mechanism is employed when a unique choice must be made by a group or society as a whole, and where divergence of choice across individuals is not feasible. Although the market mechanism permits everybody to buy his or her own brand of coffee, the voting mechanism results in only one person being elected to the city council from a given district.

Should accounting choices be made by price in a market or by vote in a referendum? Markets and voting mechanisms are not mutually exclusive. A market can and often does exist for votes. On the other hand, the definition and operation of a market requires socially enforceable rules of exchange that must be arrived at by a voting process. Thus, the distinction between a voting and a market mechanism is not absolute, only a convenient analytical device. If both mechanisms are to coexist, what should be the extent of the utilization of each? If the standardization of some aspect of accounting is considered desirable, some type of voting mechanism should be applied. In those areas in which the imposition of a single choice is not socially desirable, a market must be allowed to prevail.

In this chapter, we assume that this higher-level choice of which accounting areas are to be governed by market and by voting mechanisms has already been made. This issue is explicitly considered in Chapter 12. In the following section, following Plott and Sunder, some of the problems associated with market and voting mechanisms are examined.

Limitations of Voting Mechanisms

Preferences of groups are unlike individuals’ preferences. If we think of groups as individuals, or try to construct group preferences from the preferences of their individual members, results can be strange. We show three examples of how group preferences need not have any internal consistency, even if they are derived from internally consistent individual preferences.

The first example shows Arrow’s Paradox: even if the preferences of all individuals are transitive (if \( x > y \) and \( y > z \) then \( x > z \) where symbol > stands for “preferred over”), preferences of the group as a whole, determined by their majority vote, can be cyclical (\( x > y > z > x \)). Consider a committee of three persons considering three options. The committee decides by majority rule, and the members of the committee have formed their personal preferences before meeting to resolve their conflict. In Figure 10.1, individual I prefers \( x \) over \( y \) over \( z \); individual II likes \( y \) over \( z \) over \( x \); and individual III likes \( z \) over \( x \) over \( y \). The preferences of every individual are internally consistent.

If members of the committee vote to choose between options \( x \) and \( y \), individual I votes for \( x \), individual II votes for \( y \), individual III votes for \( x \). Under the majority rule, \( x \) beats \( y \). If a vote is taken between options \( y \) and \( z \), I and II vote for \( y \), III votes for \( z \), and \( y \) wins. In voting between \( x \) and \( z \), I votes for \( x \) but II and III vote for \( z \), therefore \( z \) wins. The group as a whole, using a majority vote, prefers \( x \) over \( y \), \( y \) over \( z \), and \( z \) over \( x \). Transitive individual preferences can yield circular majority preferences.
Another way of thinking of such results is that the outcome of the group process is vulnerable to the choice of the agenda—the order in which various options are pitted against one another and put to a vote. The outcome of the voting process can be quite different, depending on the order in which various proposals are paired up and put to a vote. For another example, suppose that the status quo is \( w \), and \( z \) is proposed. It can be seen in Figure 10.2 that \( z \) is preferred to \( w \) by two out of three voters, so the system moves to \( z \). Then somebody proposes \( y \) and the system moves from \( z \) to \( y \). Then \( x \) is proposed and again a majority prefers \( x \) to \( y \), so the system ends up at \( x \). Using a democratic majority rule at each step, the system starts at \( w \) and ends up at \( x \), even though every individual prefers \( w \) over \( x \).

All known voting procedures cause problems demonstrated by these examples. Some rules assure a Pareto optimum, but they are all subject to procedural manipulation. As shown by the examples, the majority rule has problems on both counts.

Group choice is sensitive to the rules used. Consider a point voting system as a third example. If four alternatives exist, each voter is to assign four points to his or her best option, three points to the next best option, two points to the next best option, and so on. Points are then added, and the option with the highest total is chosen. Scoring systems like this are used for many purposes, including personnel
evaluation. The seven-person example in Figure 10.3 demonstrates the sensitivity of such choices to the set of options under consideration. With the four options (w, x, y, z), the total points are shown in the column labeled 1. In this case, y is the winner with 20 points, and it is followed by x and w with 19 and 18 total points, respectively. If the loser, z, with 13 points, had not been considered at all, the results would have been quite different. As shown in the column labeled 2, the choice would have been w with 15 points, followed by x and y, in that order. The addition or elimination of an unchosen option can cause the ordering of the other alternatives to be inverted by a committee. In other words, the group’s preference can invert with the interjection or elimination of options.
The core of a cooperative game (defined as the set of those choices that cannot be improved upon by any individual or by any subgroup of individuals acting on their own) is a good predictor of its outcome. This implies that people can manipulate groups that appear to be “fairly constituted.” Balanced representation on committees is often a subject of protracted discussions. The idea is to obtain representation of all the extremes, to get proper information into the process by allowing all people to be represented. Let us suppose that we have a single issue, represented by the line in Figure 10.4, and a committee is to be appointed. We want the group to choose point A on the figure, but we cannot force it to do so. One strategy is as follows.

We choose someone for the committee whose preferences are like our own, that is, who likes point A best. Next, in order to make the committee look fair, we appoint people representing diverse groups. But each time we appoint someone whose preferences are to the right of A, we also appoint someone whose preferences are to its left. Even extreme positions can be represented as long as they are in equal numbers on either side of A. Point A is the core, and it will be the choice of the committee. The committee may look “fair,” but you can see how representation determines choice.

Certain types of agenda are powerful determinants of group choice. Agendas that form a sequence of partitions can be used to determine, within limits, the choice of a voting group. Such an agenda partitions the options into two sets, and the vote is on which set to consider further. With one set eliminated by majority rule, the remaining options are again partitioned for a vote. The choice of options to be grouped into sets (the wording of the motions) is a powerful tool for manipulating groups that decide by vote.

This above discussion has centered on the problems of majority-rule voting. Similar problems of cyclicity or vulnerability to manipulation exist in other voting schemes. Buchanan and Tullock and Rawls provide tools to evaluate constitutions, rules, or processes. Theoretical properties of voting processes may be altered by the political conditions in which they operate, adding uncertainty to the relative desirability of various voting processes.

**Market Mechanisms in Accounting Standards**

Market mechanisms can provide efficient solutions for the problems of the production and distribution of private goods. Standards for traded goods define the
rules of the game by which the markets are governed. Product standards themselves are public goods. One can conceive of competition among alternative sets of rules of the market, such as a computerized stock exchange operated by the National Association of Securities Dealers versus the New York Stock Exchange with a trading floor. These alternative sets are public goods and no exchange market can exist for them. The choice of rules or standards must be arrived at by some social choice mechanism. To the extent that the form of exchange in the product market is left to be specified by the participants, they may overwhelmingly prefer one form over another. In such cases, one may use the evidence from the product market to introduce a new rule limiting transactions to the preferred form. Current accounting standards leave many aspects of financial reporting to the discretion of those who prepare, audit, or read the results. If a standard-setting body used evidence about choices made by reporting entities in making their decisions, it may be said to have used the market mechanism. Let us return to the problems of, and opportunities for, using markets to determine accounting standards.

**Legal Rights and Markets**

Markets facilitate the exchange of property rights. They require a socially accepted definition of these rights to function properly. This definition is arrived at by a political process. Conversely, the legal system relies on market choices for its effectiveness. Law defines the rewards and punishment associated with various types of behavior. It depends on people’s desire to enhance their welfare for its effectiveness: rational people choose their actions in light of the rewards and punishments associated with the alternatives.

The interaction of the law and markets has interesting effects. When the cost of market transactions is zero, a change in the initial assignment of legal property rights may affect the distribution of wealth, but it leaves unchanged the equilibrium allocation of resources. For example, if the operator and the neighbors of a steel mill could conduct mutual transactions without cost, the amount of smoke emitted from the chimneys of the mill would remain unaffected by whether legal liability for smoke damage to citizens lies with the citizens or with the steel mill. This apparently counterintuitive result follows from the fact that if the gain to the mill owner from emitting more smoke exceeds the damage to the citizens from so doing, the mill operator will be able to compensate the citizens for the damage and gain their consent to emit more smoke if the law makes the operator liable for damage. If, on the other hand, the law makes the citizens liable for the smoke damage, they will not find it economical to compensate the mill operator for the loss from reducing the amount of smoke emitted, because their gains from reduced smoke are not as large as the loss to the mill owner. Thus, the amount of smoke emitted from the chimneys in equilibrium remains unaffected by the assignment of legal property rights to clean air.

The same argument is applicable to standards that define property rights in information and accounting systems. If agents involved in a particular firm could
make costless transactions among themselves, socially determined accounting standards would not have an effect on the accounting system of the firm. Standards can be effective only because the costs of such transactions are nonzero. Conversely, the rationale of socially determined accounting standards lies in firm-level transaction costs. When accounting standards are promulgated, it should have to be demonstrated that the problem cannot be handled at the level of the firm.

Summary

Social decisions on accounting affect many members of society in diverse ways. There are two basic approaches to defining socially desirable decisions. The Pareto criterion, which requires that a socially desirable decision not be harmful to any member of the society, is not easily met in practice. The social cost–benefit criterion is considered unacceptable by many, because it ignores the distributional effects of social choices. Its application may result in serious inequities. The practical application of both criteria is complicated by problems of uncertainty and by the time span over which the consequences of social choices are realized. There are no perfect mechanisms for making social choices. All mechanisms, whether they are based on voting or on market exchange, have weaknesses. In selecting ways of setting accounting rules and standards, it is useful to pay attention to the limitations of the instruments available to us.

Notes


Additional Reading
