15 Efficiency

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Introduction

The dominant economic theory, neoclassical economics, employs a single economic evaluative criterion: efficiency. Moreover, it assigns this criterion a very specific meaning. Other – heterodox – schools of thought in economics tend to use more open concepts of efficiency, related to common sense understandings of cost-saving and preventing waste. Also, to assess the state of an economy, heterodox schools of thought tend to draw upon additional evaluative criteria, such as stability, equity and sustainability. Economics' widespread concern with efficiency is, of course, implied in the well-known definition of the subject as 'the study of the allocation of scarce resources to alternative ends'. Here, the aspect regarded as mattering most is simply which allocation of resources helps to achieve the most ends.

However, efficiency has not always dominated economic evaluation. For Adam Smith, a good economy was characterized not only by efficiency in exchange, but also by moral sentiments underlying the functioning of markets. A market economy, Smith argued in his *Wealth of Nations*, should combine efficiency and equity: 'It is but equity, besides, that they who feed, cloath and lodge the whole body of the people, should have such a share of the produce of their own labour as to be themselves tolerably well fed, cloathed and lodged' (Smith [1776] 1981, p. 96). John Stuart Mill considered a good economy one that provides freedom for all agents, including the socially and politically marginalized, such as women. This requires not only the negative freedom of markets, but also positive freedom, guaranteed by entitlements, such as embodied in the Poor Laws in England which Mill ([1848] 1917, pp. 754–7) defended in *Principles of Political Economy*. For Karl Marx ([1867] 1969), to mention a third classical economist, an economy that would allow exploitation of labour through unequal ownership of resources was a bad economy, because it limited the freedom of a whole class to own the product of its labour. Classical economists, hence, regarded freedom, justice and equality as equally important criteria for economic evaluation.

It was only in the twentieth century that efficiency came to dominate economic evaluation through the development of welfare economics by economists such as Arthur Pigou and Vilfredo Pareto. Welfare economics, of course, could not exist without a measure of welfare, and these thinkers opted for a utilitarian approach. The consequentialist ethics of utilitarianism is concerned with what Jeremy Bentham phrased 'the greatest happiness for the greatest number'. Today, 'Pareto efficiency' is widely used in economics. It refers to the situation in which no one can be made better off without making anyone else worse off – irrespective of who would be affected or to what extent. So, only total utility counts, not its distribution. This prohibition of interpersonal utility comparisons rules out redistribution and invokes a strong form of the liberal 'no-harm principle'; that is, any redistribution that harms at least one person is regarded as morally bad, irrespective of the good it would bring to others. Hence, Pareto efficiency is not a morally neutral

criterion but expresses a strong liberal – even libertarian – ethics through the application of a strict no-harm principle towards redistribution.

Critiques of Pareto efficiency

Utilitarianism and the prohibition of interpersonal utility comparisons

As explained above, Pareto efficiency has been defined in utilitarian terms, through the development of welfare economics. Utility is a fully commensurable individual measure of well-being that assumes individuals maximize their utility by satisfying their preferences. In other words, they follow their self-interest, even when satisfying other-directed preferences: altruism exists only when it increases the utility of the altruist to a larger extent than self-directed actions would have done, with given prices and constraints. As a consequence of the entirely individualistic subjective utility space of evaluation, Pareto efficiency ignores a more social and political, or democratic, assessment of valued ends, capacities and efforts of economic agents.

So, in the widely applied criterion of Pareto efficiency, redistribution of resources is only allowed as long as it makes at least one person better off without making *anyone* else worse off. No redistribution is allowed if even one person would become worse off, regardless of whether that one person would be only a bit worse off, whereas many others would benefit. In other words, equity is portrayed as a trade-off with efficiency. The logic behind this trade-off is that if the state were to tax the income (or land or any other resource) of the rich and pass the proceeds on as a subsidy to the poor, this would create disincentives, decreasing efficiency. The rich would no longer be willing to invest to innovate and expand if the marginal benefits of that effort were taxed away. The poor, on the other hand, would no longer do their best to find employment, be entrepreneurial and work hard, because they would receive welfare support anyway. This logic clearly rests on a reductionistic view of humans as entirely self-interested with a dislike of work – indeed, the assumption of economic rationality in neoclassical economics.

Surprisingly, the subjective and individualistic straitjacket of Pareto efficiency may not actually promote the most efficient outcome for an economy. This can be explained with the help of the principle of diminishing marginal returns, which states that a last added unit generates less value than a previously added unit (of a production factor, income or consumer good). Now, applying this to total utility, it may well be that when some resources are shifted from those with low marginal utilities (generally the rich) to those with high marginal utilities (generally the poor), total utility would increase because of a more efficient resource use. The poor would benefit more from such redistribution than the rich would lose. Hence, with given resources, more total utility could be achieved. But the definition of Pareto efficiency does not allow such redistribution, even though in resource terms it would be more efficient – resulting as it does in more total utility with the same amount of resources. This leads to the conclusion that Pareto efficiency is not really about maximum efficiency, but rather about relative maximum utility, that is, total utility constrained by a strong no-harm principle. In other words, Pareto efficiency allows for the waste of resources – land, food or health care – by the affluent.

Perfect competition

The first fundamental welfare theorem holds that Pareto efficiency occurs in a situation of perfect competition. Now, perfect competition occurs in an ideal market without externalities, barriers to entry or exit or economies of scale. Obviously, real-world markets are almost never perfectly competitive. Markets often create externalities, exhibit collusion or value-chain control by firms or generate increasing returns to scale leading to monopolistic tendencies. Hence, Pareto efficiency is largely a theoretical construct with very little relation to real markets. Moreover, as Amartya Sen (1987) explained so well, in the real world, economic agents do not behave like the typical neoclassical 'rational economic man' – they do not act exclusively competitively, pursuing their own interests. Real-world economic agents also care for others and follow norms of justice, and therefore also help to further the well-being of others, sometimes even at the cost of their own well-being. Hence, as Walter Schultz (2001) recognized, economic behaviour has a morally laden interpersonal dimension which is not captured by the first fundamental welfare theorem. Agents need to have particular moral characteristics – rights and responsibilities – in order to bring about and support perfectly competitive markets. In particular, agents need to refrain from free-riding, resist blocking others from participation and not be tempted to dump external costs on third parties. Self-interest is clearly not enough for markets to flourish and efficiency to emerge.

In addition to the abovementioned assumptions about perfect competition, the one-to-one relationship between Pareto efficiency and perfect competition in the first fundamental welfare theorem builds on a hidden assumption as well. This is the limitation of efficiency to the realm of exchange, while assuming that exchange by definition is beneficial for both parties. The applicability of Pareto efficiency to other realms of the economy – such as the supply of public goods by the state or unpaid transactions within and between households – is very limited (except in the case of so-called 'market failures'). This excludes much of women's work from welfare analysis, as such work largely takes place unpaid in households, creating a gender bias in the concept of Pareto efficiency (Barker 1995). At the same time, the market-only focus of Pareto efficiency regards public goods as, at most, second-best compared to market supply. Pareto efficiency takes for granted that agents will be able to survive when exchange in perfectly competitive markets is not mutually beneficial. In other words, Pareto efficiency assumes that autarky – self-reliance – is always a feasible option, living off of one's wealth, savings, own-account production or access to commons, in cases where possible exchanges do not satisfy both parties. This is what Sen (1981) called 'trade-independent security'. Distress sales may be regarded by libertarians as voluntary in a static sense, but they undermine an agent's resource base and hence crowd out productive capacity in the long run. This is generally not efficient in a dynamic sense, making people dependent on others or the state. In the real world, without perfect markets, but with the important influence of power and uncertainty, most people who experience a disadvantaged exchange position have very few resources to live from, except their labour power. Hence, many people have no trade-independent security. Even their labour may not be in demand. Due to a lack of nutrition and health (Dasgupta 1993), one's labour may not earn sufficient market value for survival (Kurien 1996). Or a combination of factors may lead to low demand for labour, including lack of aggregate demand (Walsh 1996).

Hence, the strong no-harm principle of libertarianism benefits the status quo of the distribution of endowments, which, however, does not necessarily imply the most efficient allocation of resources from a dynamic perspective.

Compensation

The second fundamental welfare theorem, that of the Kaldor-Hicks compensation, is an addition to Pareto efficiency that allows for some form of redistribution. This is limited to a lump-sum redistribution of resources from winners (those who gain from free markets) to losers (those who, temporarily or due to exogenous shocks to the economy, do not gain from exchange), to the extent that winners keep a net advantage in order to buy the losers' cooperation, that is, their voluntary exchange. The objective of such redistribution is not so much *fairness* between winners and losers in the optimum but the *feasibility* of reaching the optimum from a political economy perspective.

Again, this theorem is an entirely theoretical construct. In the real world it is unlikely that winners will sufficiently compensate losers, because of the difference in bargaining power between the two groups. So it is unlikely that prices will change in order to seduce losers into the exchange (for example, with higher wages) or that the winners will accept a tax rise for the benefit of the losers. The existence of winners and losers in free markets itself creates a difference in bargaining power, so that the losers, without having adequate trade-independent security, are unlikely to be compensated for their cooperation with the winners.

In conclusion, these three critiques indicate that Pareto efficiency is not at all a value-neutral evaluative criterion, but one strongly intertwined with values. Pareto efficiency favours the status quo of competitive market outcomes based on given distributions, relying on a strong no-harm principle which disallows any effective form of redistribution, while measuring efficiency in total utility outcome, rather than minimum resource use, thus condoning various forms of waste.

Cost-benefit analysis

Since utility is unmeasurable, empirical welfare analysis relies on the monetary measurement of welfare levels using incomes and prices. This allows for interpersonal comparisons and, hence, for redistributions that might improve equity as well as efficiency. In practice, money-metric efficiency analysis is applied through cost-benefit analysis, which helps to evaluate the efficiency of a particular economic outcome, or to compare the efficiency of policy alternatives. A problem with shifting from subjective utility space to welfare measured in monetary terms is that estimations need to be made for costs and benefits that are not priced. This difficulty has been solved by including findings of willingness to pay surveys. Such surveys result in lists of virtual prices for non-priced resources (such as nature) and outcomes (such as a loss of social cohesion), which are then used in analyses (Zerbe 2001).

However, as a method of assessing efficiency, cost-benefit analysis has received much critique from heterodox schools of thought (see for an accessible discussion Ackerman and Heinzerling 2004). It has been viewed as having at least four shortcomings. First, income is said to be a poor indicator of well-being across different income classes. This makes it likely that the willingness to pay for particular non-priced goods will differ between classes: the poor are less able to pay but in fact may benefit more from certain policies. At the same time, the value of income to people has decreasing marginal returns,

so that beyond a certain level of income, subjective well-being no longer improves with GDP growth (Easterlin 2001). Money, then, becomes a less reliable measure to assess well-being at higher levels of income. Recently, this difficulty has been addressed with happiness studies, which use surveys ranking self-reported life satisfaction (Frey and Stutzer 2002). But whereas happiness studies may fill some gaps in cost-benefit analysis, they are designed to assess people's experienced satisfactions, not their expected satisfactions, and these are still individualistic.

Second, some valued subjective goods simply cannot be measured in monetary terms and made commensurable with other valued ends, not even with willingness to pay studies. For example, some may enjoy listening to birds in a park but are unable or unwilling to attach a monetary value to this, while others' satisfaction from consumer goods increases with the knowledge that others are worse-off and declines when neighbours' consumer patterns appear more luxurious than their own. Moreover, not all possible effects of a policy can be foreseen, due to uncertainties. Even when a project is carried out as planned there are likely to remain externalities, feedback effects and lock-in situations that limit future choices. This, in the words of Richard Wolff (2004, p. 171), makes 'efficiency analysis . . . an illusion'. Others are less pessimistic, but agree that 'technical optimization is not feasible' (Alkire 2002, p. 232) because of incommensurabilities between priced and non-priced items in cost-benefit analysis.

Third, compensation is not always possible. This is obviously the case with tragic human or environmental losses or the prevention of these. For example, it is simply not possible to reduce the number of traffic deaths to zero by spending more money on traffic regulation and control. A dramatic reduction in road accidents requires not only money but also changes in behaviours and attitudes, such as no alcohol use when driving; and some traffic deaths are caused by bad luck and factors beyond our control. Moreover, some goods are priceless in a moral sense – how would one, for example, answer a question such as 'For how much would you be willing to change your religion?' The question of how much one is willing to pay for a particular outcome may not only be fictitious insofar as the payment is concerned, but also rather unrealistic in terms of the desired outcome. This puts the whole exercise on shaky ground.

Fourth, even if cost-benefit analysis is applied at the aggregate level, including a wide variety of social costs and benefits for a large group of people, its outcome may have very unequal distributional effects, as Peter Söderbaum (2004) argues. A net benefit accruing to one group may jeopardize human rights, destroy ecological values such as biodiversity, or have other irreparable consequences for another group, as is the case in the displacement of people for the building of dams. In fact, many cost-benefit analyses, in their effort to calculate net outcomes, tend to underestimate negative human impacts (Alkire 2002, p. 219).

This critique of cost-benefit analysis points to the need for other concepts of efficiency that do not regard markets and prices as neutral. Instead, an understanding of efficiency is required that does not put efficiency and equity in opposition and recognizes that efficiency cannot escape morality.

Alternative measures of efficiency

In heterodox economics, we find two approaches to alternative measures of efficiency. Neither is as well developed as Pareto efficiency, and probably never will be, as

both are less formalized, more open and concerned with social as well as individual values.

One alternative is that developed in the capability approach of Amartya Sen. It shifts the evaluative space from utility to opportunity freedom, while keeping in place the consequentialist orientation and the strong no-harm principle of Paretian welfare economics. The evaluative criterion is the 'weak efficiency of opportunity-freedom' defined as follows: '[A] state of affairs is weakly efficient in terms of opportunity-freedom if there is no alternative feasible state in which everyone's opportunity-freedom is surely unworsened and at least one person's opportunity-freedom is surely expanded' (Sen 2002, p. 518). This efficiency criterion favours economic outcomes that increase the range and significance of the options available to individuals over outcomes that reduce options or increase these only for a small group. Sabina Alkire (2002) applied this efficiency notion to a micro-credit case study. She showed that loans for the poor in developing countries may improve people's options in a variety of ways, ranging from provision of more stable incomes to improved self-esteem, stronger supportive social relations and more meaningful participation in religious ceremonies. Compared to a cost-benefit analysis evaluation, which is unable to put a monetary value on some of these opportunity expansions, Alkire argues that the efficiency criterion derived from the capability approach appears better able to assess incommensurable outcomes and to value these in the project participants' own terms. The efficiency gain is not so much monetary, although the project needs to fulfil some basic financial criteria of viability, but in terms of human development. It results in the expansion of real and valued opportunities in the short run, but also in the long run, because it makes people more participatory in the economy.

The second alternative approach starts from the view that efficiency has intrinsic value. More than half a century ago, home economist Margaret Reid (1934) made this intrinsic value of efficiency explicit by redefining efficiency as the minimization of waste: first, the waste of means of production (for example, unused land owned by big landowners in the presence of landless farmers); second, inefficient production methods (for example, household production of food, whereas communal kitchens would generate economies of scale); third, production of goods that harm objective well-being (for example, growing tobacco rather than food); and fourth, when the rich consume at luxurious levels whereas the poor lack a basic standard of living (which keeps the poor below a minimally acceptable living standard and at a low level of labour productivity).

The strength of Reid's formulation of efficiency as the minimization of waste is that it goes beyond the common opposition of efficiency and equity: it points out the relationship between the two. This relationship has recently received revived attention, in particular in the literature on increasing returns (Arthur 1994). At the macro level, for example, studies show that GDP growth can benefit substantially from universal access to education for the poor, especially for girls, whose enrolment rates are much lower than those of boys in some parts of the world (Klasen 2002). At the micro level, studies show that in African farm-households redistribution of land, labour and fertilizer from men's cash crops to women's food crops increases total household output by 10 to 40 per cent (Udry et al. 1995). Finally, ecological economics also draws on the relationship between equity and efficiency. For example, it has been pointed out how much grain goes to waste in the production of meat, which results in less food available for a growing world population

(Rifkin 1992). Applications of such more open and less subjective measures of efficiency make use of complex techniques, most of them multi-criteria methods, taking externalities and other feedback effects into account as well as uncertainties by applying a multiple stakeholder perspective and using the precautionary principle. Alternative approaches to efficiency thereby move away from utilitarianism and cost-benefit analysis and instead emphasize substantial well-being outcomes for the population as a whole, in a positional analysis, addressing ideological orientations, alternatives and consequences, including irreversibilities (Söderbaum 2006).

Conclusion

Efficiency is not a value-neutral evaluative criterion. In neoclassical economics, the notion of efficiency is founded upon a utilitarian ethics with a strong version of the liberal no-harm principle. Moreover, it is measured in utility space rather than resource space, so it does not guarantee minimization of waste. In heterodox economic traditions, efficiency has always been regarded as non-neutral and related to equity. Heterodox approaches recognize that equity may help to crowd in production and productivity by those who otherwise remain without resources and must depend on charity, crime or the state.

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See also the entries on: Equity; Amartya Sen; Utilitarianism.