

# Alternative Concepts of Utility and Applied Economics

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## **Alternative Concepts of Utility and Applied Economics**

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The term, utility, is used in two quite different ways in economics. The purpose of this paper is to (1) distinguish the two uses, (2) discuss the history of the two uses, and (3) discuss the relevance of the distinction to applied economics.

The two uses of the term, utility, are (1) its formal use in positive economics where ideally, it is a measurable concept; and (2) its informal use in moral philosophy, or applied policy models, where it is not meant to be a strictly measurable concept, but is used as a rough and ready term that incorporates into it generally acceptable values. Both uses have their origins in the writings of the radical philosophy of Jeremy Bentham. (Bentham, 1838-43) Bentham used the term, utility, loosely. He equated it to pleasure and pain, but left open the precise interpretation, raising such questions as: What was meant by pleasure? What was meant by pain? Was utility hedonism? Did utility include altruism and multiple dimensions of pleasure? And if so, what were those other dimensions?

John Stuart Mill's (1863) defense of utilitarianism answered some of those questions and made it clear that, for Mill, utility included higher pleasures including justice and morality. People, he argued, were different from pigs, and derived their pleasures in much more complicated ways; utility was much more than hedonistic pleasure. While Mill's use of the term made it clear what utility referred to, he did not explain how the concept could be made operational—how economists could measure, or even whether they should try to measure.

### ***Utility Theory in Positive Economics***

Issues of measurement and comparability of utility gained increasing importance as early neoclassical writers began focusing on utility as the foundation for value theory. Jevons (1871) was pessimistic about the possibility of directly measuring utility. Edgeworth, however, had different views, and in *Mathematical Psychics*, (1881) he responded to the pessimistic views of Jevons with a much more positive view of the possibilities of utility measurement. Specifically, Edgeworth posited the development of a hedonimeter to measure utility, a development he believed was necessary for the application of the science of economics (positive economics) to the real world.

He described the workings of a hedonimeter, which would be capable of “continually registering the height of pleasure experienced by an individual, exactly accounting to the verdict of consciousness, or rather diverging therefrom according to the law of errors.” (ibid. 101) He even argued that interpersonal comparisons of utility would be possible, writing that “We have only to add another dimension expressing the number of sentient, and to integrate through all time and over all sentience, to constitute the end

of pure utilitarianism.”<sup>1</sup> (ibid. 102) He admits that the development of such a machine is far in the future, and that “hedonism may still be in the state of heat or electricity before they became exact sciences” (ibid. 98). But, he clearly saw the development of such a measurement tool as a likely possibility for the future. It was to be the foundation of positive economics.

The hedonimeter was not developed, and positive economics followed a different path, which was based on the assumption that it would never be developed.<sup>2</sup> Instead, positive economics moved away from any attempt to actually measure utility, and replaced direct empirical measurement with an axiomatic foundation of utility theory. The axiomatic approach was based on the assumption that although one could not measure utility, one could specify certain axioms of choice that rational agents would follow, and in principle have agents reveal their ordinal rankings of their choices.

This movement toward the axiomatic approach to choice theory was begun by Irving Fisher (1892), Ragnar Frisch (1932), and completed by Paul Samuelson (1938). From then on, the axiomatic approach became the foundation of the modern presentation of both utility theory and welfare economics. In this axiomatic approach, no direct measurement of utility is needed; utility is revealed through choices.

The acceptance of this axiomatic approach allowed positive economics to avoid the need for an empirical psychological foundation of economics. But it had a cost; it ruled out interpersonal utility comparisons, meaning that any welfare implications drawn from theory would have to be made without interpersonal utility comparisons. This was a major cost in applicability, but it was felt that that was a cost that one must bear in order to have a scientific theory without a direct empirical measure of utility.

### **Utility Theory in Applied Economics**

The above historical developments involved the use of the utility concept in positive economics; these developments were accompanied by a parallel development of the use of the term, utility, in applied policy use. The applied policy use of the concept utility was not concerned with the precise formal measurement of utility, because it did not require any such measurement. It used the concept, utility, as a shorthand for “welfare” in applied policy discussions and relied upon shared value judgments to make the arguments convincing. The applied policy use of the concept, utility, was never meant to be made precise. But it was felt that the term was nonetheless useful in discussions of applied economic policy because individuals, through reflection, would know what was meant sufficiently for the term to serve as a rough and ready measure for discussions of applied policy. This use of the concept, utility, fully accepted that such use of the term

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<sup>1</sup> Edgeworth believed that while this integration into an aggregate measure of utility would be subject to measurement error, that the “greater uncertainty of hedonimetry in the case of others’ pleasures may be compensated by the greater number of measurements, a wider average; just as, according to the theory of probabilities, greater accuracy may be attained by more numerous observation with a less perfect instrument.” (ibid. 102)

<sup>2</sup> Recent work in neuroscience and economics (Camerer, Loewenstein, and Prelec, 2005) may be reopening the issue.

was unscientific, and that it involved value judgments. But, for applied policy purposes, that was of no great concern because, in this tradition, applied policy was unscientific and involved value judgments.

The applied policy use of utility can be seen in the writings of Henry Sidgwick. (Sidgwick 1874, 1883) He distinguished between the art of economics—where formal utility measures were not especially helpful, but were a useful shorthand, and the pure science of economics where a formal measure of utility might be useful as a conceptualization, but had little applied policy relevance.<sup>3</sup> For Sidgwick, the applied policy use of utility was his central concern, and he wrote eloquently on the problem of integrating ethics and altruism into hedonistic economic reasoning. Unlike Edgeworth, Sidgwick had no interest in creating such a single measure of utility because such a single measure would serve little purpose for the applied policy uses he was interested in.

The two uses of the concept utility could exist simultaneously because of the separation of the pure science of economics from the applied policy branch of economics. In classical thought positive economics—pure science--was concerned with pure deductive analysis, and empirical tests of theories. Applied policy work saw the deductive models in positive economics that did not recognize the more complicated psychological nature of economic man as necessary to make a formal model, but of little use in coming to any conclusions about applied policy issues. That positive formal model was for reference, and was not to be applied directly to policy; it was far too simple.

### **Theorems and Precepts**

To differentiate conclusions from applied policy reasoning and from positive economics reasoning, economists of the period distinguished two types of conclusions of economic reasoning: theorems and precepts. (Keynes, 1891) Precepts were developed in the art of economics; they were policy judgments based on broad reasoning involving the applied policy use of utility. Theorems were developed in the positive science of economics. They were logical deductions which had no direct implications for policy.

The thought that economists might try to relate pure theory to policy was quite abhorrent to most economists of the period. Sidgwick writes:

There is indeed a kind of political economy which flourishes in proud independence of facts; and undertakes to settle all practical problems of governmental interference or private philanthropy by simple deduction from one or two general assumptions—of which the chief is the assumption of the universally beneficent and harmonious operation of self-interest well let alone. This kind of political economy is sometimes called ‘orthodox,’ though it has the characteristic unusual in orthodox doctrines of being repudiated by the majority of accredited teachers of the subject. But whether orthodox or not, I must be allowed to disclaim all connection with it; the more completely this survival of the *a priori*

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<sup>3</sup> It was because they made that distinction that most texts were called political economy, rather than economics. For a further discussion of this distinction, see (Keynes 1891). In Colander (2001) I explore this distinction in more depth.

politics of the eighteenth century can be banished to the remotest available planet, the better it will be, in my opinion, for the progress of economic science. (Sidgwick, 1885: 171).

The dual use of the concept of utility can also be found in the writing of Vilfredo Pareto (1906) who, in order to avoid confusion, argued that there should be two different terms for economists' concept of welfare: *ophelimity* and *utility*. *Ophelimity* referred to what people think is desirable for themselves, whether or not it actually was desirable for them; his *ophelimity* is what we now call *utility*. *Ophelimity* was about choice, not about welfare. *Ophelimity* was what might be measurable, and was the object of study in pure positive theory. Pareto contrasted *ophelimity* with *utility*, which is what I above described as the applied policy concept of utility. This applied policy concept was a short-hand welfare concept that was useful in policy discussions; it was a rough and ready measure that was to be used in applied policy, not in pure theory. The rough and ready nature of the concept was important because it allowed interpersonal welfare comparisons, and generalizations that were not fully supportable by the pure deductive logic, but which, its users argued, generally fit our best perceptions of reality and the normative views of the society.

Applied policy economists of the period were not especially concerned about the rough and ready nature of utility in their applied policy discussion because they saw economists' work as only an input into policy—not the final arbiter of policy. For that same reason, there was no major concern about the measurement not being precise, or involving value judgments. Their analysis was a rough working tool, with lots of problems, but that was fine for the type of workaday applied policy for which they thought economics relevant.

Applied policy economists followed this approach because they recognized the complicated nature of human psychology, and their inability to get an analytic handle on it. To make clear that their policy recommendations did not deal with all aspects of welfare, they emphasized that the object of their applied policy study was material welfare, not psychological welfare, and any discussion of policy would necessarily have to include a discussion of how increasing material welfare would not lead to a diminution of other aspects of welfare.<sup>4</sup>

### **The Path to Modern Day Usage**

The careful distinction between the art of economics and the positive economics was lost around the same time that the axiomatic foundations to choice theory developed. Starting in the 1930s economists attempted to pull policy implications directly from positive theory. As predicted by JN Keynes, the result was confusion. Let me now turn briefly to a consideration of how the distinctions were lost.

Surprisingly the blending of the art and science of economics begins with Alfred Marshall, who eschewed pure theoretical work and essentially argued that there was only

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<sup>4</sup> For a discussion of these issues, see Cooter and Rappaport (1984) and Hennipman (1988).

applied policy. His was a behavioral view of economic man so he definitely fits into the Sidgwick, not the Edgeworth, approach to economics. But Marshall saw so little value in the pure science of economics, such as done by Edgeworth, that he saw little need to even discuss it in his principles text. Thus, whereas previously, Classical economic methodology had carefully distinguished applied policy and pure theory by calling applied policy *political economy* and pure theory *economics*, Marshall gave up the distinction. He called his principles book, *Principles of Economics* (1890) rather than principles of political economy, as Mill, Ricardo, and other Classical economists had done. Moreover, he often did not make clear that his use of the concept, utility, was a rough and ready, normatively tainted, measure that reflected only material welfare, not all welfare.<sup>5</sup>

The Marshallian approach to applied policy was extended by A.C. Pigou, who formalized many of Marshall's loose ideas, while maintaining Marshall's applied policy approach.<sup>6</sup> In doing so, he was much clearer than was Marshall that he was not doing pure economics theory, but was instead doing applied policy work. To make it clear, he called his work "fruit-bearing realistic" economics, which was to be distinguished from "light-bearing pure" economics. [Pigou, 1920 (1952), 6] He writes "We shall endeavour to elucidate, not any generalized system of possible worlds, but the actual world of men and women as they are found in experience to be." (ibid. 6,7) To avoid confusion about how he was using the utility concept, he, like Pareto, carefully distinguished between utility, by which he meant a judgment concept that actually reflected individual's, and society's, material welfare, and desiredness, which was a reflection of individual's, and society's, choices. Desiredness, not utility was what determined prices in the market. (ibid. 23) To arrive at policy conclusions based on models of desiredness (the equivalent of Pareto's ophelimity) one had to introduce welfare judgments both in the case of individual welfare and interpersonal welfare considerations. Objectivity was to be maintained by using ones' estimate of society's judgments, not one's own judgment.

Pigou was also clear that model assumptions in his realistic economics embodied generally shared value judgments. He explicitly discusses, and defends, the interpersonal utility comparisons he made, and he argued for the homogeneity postulate in comparing individual's utility.<sup>7</sup> Thus, he explicitly ruled out treating one individual as creating more utility than another, and assumed that that unless we have a special reason to believe the contrary, a given amount of material goods may be presumed to yield a similar amount of satisfaction, not as between any one man and any other, but as between representative members of groups of individuals which was all his welfare economics was concerned

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<sup>5</sup> To be fair to Marshall, discussions of the limitations are to be found in his asides and broader discussions; as Joan Robinson has remarked; if you look hard every view can be found in Marshall.

<sup>6</sup> Aslanbeigui (1990) and Hennisman (1992) explore some of these same issues, with contrasting discussions of the history. The discussion in this paper offers a potential reconciliation of their different views by emphasizing that Pigou's focus was on applied policy as a separate branch of economics. It was the separate focus on applied policy that was lost in the 1930s which led to the demise of Pigovian Economics.

<sup>7</sup> That treatment of individuals as equal utility generators was based on the homogeneity postulate. See Peart and Levy (forthcoming) for a discussion of the importance of the homogeneity postulate to Classical thought.

with.<sup>8</sup> On this basis he could support progressive income taxation and redistribution as a way of increasing social welfare, not as a theorem, but as a precept. (Pigou, 1951)

Also, like his predecessor Marshall, Pigou was also careful to limit his argument to material welfare, not to a broader concept of welfare. For Pigou and for Marshall, economics was not the science of choice; it was the study of everyday people undertaking normal activities and relied heavily on observation of the economic world.

Marshall's and Pigou's disregard of pure economics theory led Lionel Robbins (1932) to criticize Marshallian/Pigovian approach as unscientific, which it obviously was if one was thinking of pure science. Unfortunately, rather than responding, Pigou largely ignored the criticisms. The result was the general abandonment of both the applied policy/pure theory distinction of Classical economics, and the rough and ready use of the concept, utility. The texts did not follow Marshall; they gave up the Marshallian definition of economics as the "study of mankind in the ordinary business of life" and replaced it with Robbins's definition of economics as "the science which studies human behavior as a relationship between given ends and scarce means which have alternative uses."

Ironically, there was far less difference between the views of Robbins and Pigou and Marshall than is generally thought. Robbins was a scholar of the classical tradition, and in defining economics as the science of choice, he was simply calling for the reintroduction of the Classical distinction between the pure science of economics—positive economics—and the applied policy branch of economics, which previously had been called political economy or the art of economics—the distinction that Marshall had blurred. This is clear from his discussion of political economy in his *Theory of Economic Policy in English Classical Political Economy* (1953) and in his Ely Lecture. (Robbins, 1981) In these, he makes clear his belief that there is a need to make value judgments in order to come to any policy conclusions and that economic policy makers should include such judgments in their analysis of policy. His point in his famous 1932 essay on methodology was not that policy should be conducted without value judgments; his point was that policy necessarily involved value judgments, and that it should be seen as a separate branch of economic study, which he called political economy, and that it should not be considered positive economics.

Economics did not focus on that separate branch of economics; instead, Robbins' and Pigou's approaches were viewed as contrasting, not supplementary. As the applied policy/positive distinction was given up, the discussion of utility and policy was simply put aside, and replaced with debates about the emerging Keynesian macroeconomics, monopolistic competition, and the introduction of Walrasian general equilibrium into the mix. Instead of Robbins's subtle methodological view winning over the profession, Abba Lerner's wonderfully teachable views did. (Lerner 1944) It was Lerner's specification of the welfare rules, which he had developed in a general equilibrium framework as part of the socialist calculation debate, that became the foundation of textbook economics.

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<sup>8</sup> In technical terms, his analysis did not provide a full ordering of all situations, but only a partial ordering, and was subject to caveats and adjustments for specific cases.

Lerner's conception of welfare economics was quite different from Pigou's, and fit well with the then developing axiomatic approach to choice. Lerner made no distinction between the two concepts of utility, nor between the art and science of economics. He pulled policy precepts out of axiomatic principles and thus allowed a direct connection between pure theory and policy. The Lernerian approach to welfare economics blended the ideas of Edgeworth, Pigou, and Robbins into a Walrasian general equilibrium setting, and drew policy conclusions directly from pure theory, in direct violation of Hume's Dictum (You can't get a should from an is.) which was a central tenant of Classical political economic thought. That blending led to the elimination of interpersonal utility comparisons from applied economics, and ultimately led to the New Welfare economics, with its almost complete focus on what came to be called Pareto optimality.

The New Welfare Economics approach to applied policy economics was soon recognized as sterile. For example, in his well known critique of welfare economics, I.M.D. Little argued that "economic welfare is a subject in which rigour and refinement are probably worse than useless." (Little, 1950, 279) and Graff in his famous study of welfare economics, concludes "the possibility of building a useful and interesting theory of welfare economics—i.e. one which consists of something more than the barren formalisms typified by the marginal equivalences of conventional theory—is exceedingly small." (Graff 1954, 169) But despite these indictments, Lerner's approach has remained the foundation of applied policy discussion in the principles and intermediate texts.

With the adoption of Lerner's structure by the texts, the applied policy concept of utility, as a rough and ready measure of applied policy economics, was lost, as was the economics/political economy distinction. Political economy as a separate branch of economics with different methodology rules disappeared. I hope that this history makes its reintroduction a bit more likely.

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