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MULTIPLE UTILITY CONCEPTS – INDIVIDUAL CHOICE AS AN OUTCOME OF A GAME

KONCEPCJE UŻYTECZNOŚCI WIELOKROTNEJ – WYBÓR PODMIOTU JAKO WYNIK GRY

Summary: The paper aims to analyse individual choices within the framework of multiple utility concepts. These concepts are based on the assumption that people, while making their choices, strive for more than one value, and respectively make more than one ordering of bundles of goods or states of affairs. The paper presents, first of all, the relations between the notion of utility and the notion of the ordering of bundles of goods (states of affairs). Secondly, it discusses the mechanisms governing the individual choices suggested on the grounds of the multiple utility theory. In particular, an important issue of these theories is identified, namely, the matter of choice when one faces incommensurable values. Thirdly, G. Kavka's idea is taken into consideration, enabling its solution. Its crucial features are described, enabling, as it seems, to build a formal model of individual choice in the case of incommensurable values. The paper is based on the analysis of the subject-related literature and its content is of a theoretical nature only.

Keywords: multiple utility, consumer theory, rational choice.

Streszczenie: Przedmiotem niniejszej pracy jest analiza wyborów podmiotu w ramach koncepcji użyteczności wielokrotnej. Koncepcje te oparte są na założeniu, że ludzie w swoich wyborach kierują się więcej niż jedną wartością, względnie dysponują więcej niż jednym uporządkowaniem koszyków dóbr czy też stanów rzeczy. Praca przedstawia w pierwszej kolejności relacje pomiędzy pojęciem użyteczności a pojęciem uporządkowania koszyków dóbr (stanów rzeczy). Po drugie, omówione zostają mechanizmy wyborów podmiotu proponowane na gruncie teorii użyteczności wielokrotnej. Przede wszystkim zidentyfikowano zasadniczy problem tych teorii, a mianowicie wybór w sytuacji niewspółmiernych wartości.

Po trzecie, rozpatrzona została idea G. Kavki, pozwalająca na rozwiązanie tego problemu. Opisane są jej zasadnicze cechy pozwalające – jak się wydaje – na konstrukcję formalnego modelu wyboru podmiotu w sytuacji niewspółmiernych wartości. Praca bazuje na analizie literatury przedmiotu, a jej zawartość ma charakter jedynie teoretyczny.

Słowa kluczowe: teoria konsumenta, użyteczność wielokrotna, racjonalny wybór.

1. Introduction

Multiple utility concepts is the common name for the theories sharing the belief that the analysis of individual choices should assume that an individual makes his/her choices based on more than one value (or using the economy-related term: utility) or in parallel, that within the space of bundles of goods (states of affairs, etc.), more than one ordering is defined. The concept-related literature is scarce – comprising not more than several books and papers (plus several dozen remarks in the papers dedicated to other topics). Moreover, it is hard to consider them as a mature theoretical proposal, partly because of a certain problem which is the subject of this article. It should be, however, noted that amongst the authors of the multiple utility concepts, one can mention such prominent thinkers as A. Sen, R. Thaler and A. Etzioni.

The frameworks of multiple utility concepts have been created in opposition to the mono utility concept (one utility, one ordering), assumed by neoclassical economics. The theories should, as intended, better reflect the intuitions regarding the mechanisms of individual choices (in particular taking into consideration the ethical motives or distinguishing the private and public interest) or entail better explanations for empirical observations than neoclassical economics, by way of taking many (at least two) values (utilities) into consideration. One of the values (utilities), that the individual strives for, is always interpreted likewise in the mainstream economics – as the individual's satisfaction. As a rule, other values are interpreted as public or ethical values.

The most important papers within this trend are the works of H. Margolis [Margolis 1981; 1982], R. Thaler and H. Shefrin [Thaler, Shefrin 1981] as well as A. Etzioni [Etzioni 1986; 1988]. They include the more or less comprehensive formulation of multiple utility concepts. Other researchers do not formulate methodical theories, but rather topic-related remarks of a different nature. One may mention here A. Sen [1977], A.G. Isaac [1997], E.L. Khalil [1997], R.S. Dowell, R.S. Goldfarb, W.B. Griffith [1998], L. Minkler [1999], J. Heath [2001], J. de Jonge [2005a; 2005b], S. Ellis [Ellis 2006], D. Fudenberg and D. Levine, [2006], S. Lindenberg, as well as L. Steg, [Lindenberg, Steg 2007], and A. Rustichini [2008].

Despite ambitious objectives, multiple utility concepts deal with the problem related to the analysis of individual choices, especially when the values the individual is driven by, are incommensurable. The problem was noted by A.G. Isaac [1997],

E.L. Khalil [1997] and J. de Jonge [2005a; 2005b]. The first one concluded that such analysis requires, ultimately, that one assumes at least some formal commensurability of the studied values (utilities). J. de Jonge insists on the meta-preferences concept. Both authors encapsulate the issue of multiple utility in their objective, noting that we always reduce all utilities to one.

Yet, as it seems, the problem of the incommensurability of values has been, to a certain extent, and involuntarily, solved by another researcher – G. Kavka – back in 1991 [1991]. The foundations of the solution proposed by this author are the assumptions as follows:

- shared with some concepts of multiple utility stating that the individual is heterogeneous, which means that it has several 'decision-making centres',
- G. Kavka's insistence that such decision-making centres play a game one with another.

The major objective of the paper is to carry out a critical analysis of the multiple utility concept in view of their ability of explaining individual choices in the presence of incommensurable values, in particular to evaluate the solution proposed by G. Kavka. The objective requires, however, to deal first with the issue of utility and ordering.

2. Value and ordering

Consumer theory, as the theory of choice made by people is referred to in economics, aims at describing the consumer's preferences and the rules according to which such a consumer chooses a certain bundle of goods and not the other. Consumer theory exists in two versions. In the first one, the primary notion is the so-called utility which is attributed by a given consumer to bundles of goods (only one utility to one bundle) and which is understood as a certain mental state of the consumer, more or less equated with satisfaction or pleasure. As utility (pleasure in respect of satisfaction) may be smaller or greater, one may theoretically attribute a certain number – its measure – to each of such mental states. Obviously only such mapping makes sense, where a greater measure is attributed to a greater utility. Moreover, as it seems, there is no unit of utility so it can be measured solely according to the so--called ordinal scale where one gives importance solely to the more or less or equal relations between numbers (then we can talk about the ordinal utility). Consequently, the preferences of a given consumer may be described by means of an infinite number of equal mappings (utility – its measure), which are mutually monotonic transformations.

As only one utility matches each bundle, thus one may create a function which associates to each bundle a certain number interpreted as the measure of utility. The function is referred to as the utility function, which a method for describing the preferences of a consumer.

In the second consumer theory version, the primary notion is the relation of 'being at least as good' for the consumer, which takes place between bundles of goods. The relation is assumed to be coherent, which means that it has certain properties such as completeness, reflexivity, and transitivity. The assumption regarding the coherence of such relation is identified with the rationality of the individual. The second version of consumer theory is used most of all because it releases the economists from the obligation of the so-called psychological approach. One should simply assume that the individual is able to make the ordering of the bundles of goods – hence, to decide whether bundle A is better, worse or as good as bundle B. In mainstream economics, the second version is the primary one. It is, at the same time, interesting that to describe consumer preferences, within the second version, the utility function is also used, only that the values of such function are not interpreted as utility measure. They are simply numbers which must meet the following conditions:

- if two bundles are equally good for the consumer, the values of the utility function are also equal,
- if bundle A is better than bundle B, the value of the utility function for bundle A is larger than for bundle B.

One sometimes talks about instrumental understanding of the utility function as, in fact, the source sense of numbers constituting its values is disregarded. The three: bundle-utility-number is replaced by the two: bundle-number.

The question of which version of consumer theory version to choose is in fact unsolvable, as this is the question about the limits of economics. This paper assumes that the question of where the ordering originates from is of an economics-related nature and thus the first, wider version of consumer theory has been adopted, where the notion of utility is primary. Consequently, the utility function determines certain ordering, which is fairly intuitive as one may translate the relation between the measures of utility into the relation between the bundles. If the utility measures of bundles A and B are equal, one can say that they are equally good for the consumer. If the utility measure of bundle A is larger than the utility measure of bundle B, one can say that bundle A is better for the consumer than bundle B.

As already mentioned, the value maximised by the individuals is referred to in economics as the utility. However, when one switches to the multiple utility concept, a certain terminology-related problem occurs: whether one should call the thing that the individual maximises, or using a different expression, aims for, utilities or values? It is common practice in the literature to use the term 'utility' accompanied by an adjective ('economic', 'moral', 'public', etc.). On the other hand, however, it seems more natural to use the well-established and more neutral philosophical term – 'value'. In this paper both terms, namely 'value' and 'utility' (adjectival), are used interchangeably.

3. Individual choice and multiple utility concepts

While analysing economics-related decisions of individuals, mainstream economics assumes the existence of alternative ends and means of their achievement which are paired together as an end-means and the choice criterion, which is, mostly, the maximisation of utility. The end entails a utility increase (benefit), while the means entail utility loss (cost). The variety of alternatives generates decisions which are choices, while, thanks to the existence of the choice criterion, an individual is able to define net utility for each pair and choose the one for which it is the biggest. Thus the choice of ends which the individuals face is (according to the neoclassical paradigm) the subject of a fairly simple calculation (decision-making process), as it is not the end that is decisive but the net utility (the goal) connected with the given end-means pair.

The situation gets more complex when considering the multiple utility concept as there are at least two choice criteria, for example: maximisation of value V_1 and value V_2. Thus one may face a situation where bundle A is better than bundle B because of value V_1, while, because of value V_2, bundle B is better than bundle A. The rules governing individual choice in such a situation constitute the basic problem of the multiple utility concept. Hence it is worth tracing how the problem has been solved by the authors dealing with this issue.

Multiple utility concepts can be, basically, divided into two groups. The first one comprises meta-preference theories, seemingly suggested for the first time by A. Sen [Sen 1997], as an addition to the considerations over the principal assumptions of economics, and further developed, more systematically, by R. Thaler and H. Shefrin. The starting point for Sen's considerations was the observation that a wide class of moral motivations, namely commitments cannot be reduced to the maximisation of satisfaction. Consequently there are two different possible ways of ordering the alternatives of choice, depending on the assumed criterion. It can be easily noted that the analysis of the decision-making process in such a situation is the exemplification of what was referred to above, the basic problem of the multiple utility concept. Sen's idea on how to solve the problem is to introduce meta-ordering defined on the suborderings. Sen does not develop his idea, but it is fairly clear – meta-preferences are the last instance in the decision-making process.

Thaler and Shefrin developed the analogous concept of meta-preferences in a more systematic manner than Sen. Their analysis, however, differs from the idea of Sen in two points: it pertains to the intertemporal choice and refers to the notion of utility and not the notion of ordering. According to both authors an individual has, for each period, different decision-making centres and preferences as to consumption and saving, described by the utility functions. Moreover, the individual has also a meta decision-making centre and meta-preferences for all periods described by the utility meta-function, the arguments for which are the utilities for each of the periods. Such a utility meta-function is the last instance of the intertemporal choice.

The second group of multiple utility concepts is based on the assumption that there is no overriding utility or ordering. Let us call them one-level mono utility concepts. This group has two major exponents, H. Margolis [1981; 1982] being the first one of them. His starting point was to differentiate the two selves of one individual. The first concerns the private interest and makes the decisions regarding private spending, while the other concerns the group interest, and makes decisions regarding social spending. Moreover, private and social spending are 'internally public' in the sense that the choice made by each of the selves influences the utility of the other. As 'I' consumes the bundle selected by the 'private' self as well as the 'group' self. The individual choice is defined by the rule according to which the individual chooses such amounts of private and social spending that the marginal utility of social spending equals the marginal utility of private spending. This means that – as Margolis mentions – both utilities may be measured on the same scale.

The second exponent of the mono utility concept is A. Etzioni. He states that what lies behind the human behaviour are two motives, irreducible in respect of each other – the desire to maximise satisfaction (the so-called economic utility) and to follow commitments (Etzioni uses the term 'moral utility'). Considering the theme of our interest, namely individual choices, Etzioni tries to explain it in more detail, using the examples of the vague notion of 'balancing' between the motives. However, he does not give any description of the mechanism behind such choices, but when taking a closer look at the examples quoted by the author of *The Moral Dimension*, one can see that he treats morality solely as a constraint of choices motivated by the desire to maximise satisfaction, which was criticised by D. Swanson [1992]. Therefore, it is difficult to talk about the concept of multiple utility *par excellance*, where at least two values constitute the goals of the individual actions.

The issue of the incommensurability of values appears when we try to analyse individual choices and state that no meta-preferences exist. Let us assume that an individual has two alternatives: A and B ordered differently by two incommensurable values V_1 and V_2, incommensurable meaning such values which cannot be measured on a common scale. Which alternative then – A or B – should the individual choose? What comes to mind is to assign "weight", in the case of each alternative, A and B, to both values V_1 and V_2, and calculate the 'total' value for the given alternative. If one assigns 'weights' to values V_1 and V_2, it means that they are measured on one scale, hence they are commensurable. Therefore there is one property which can be assigned to the alternatives A and B. Implicitly one thus goes back to the concept of mono utility. One may also go back to the concept of meta-preferences, namely, also mono utility, in the last instance. According to these approaches, the basic problem of multiple utility concept is solved by the cancellation of these concepts. An example of such involuntary reduction to mono utility is the theory by Margolis.

Certainly, one may discard the idea of "weighting" within the framework of the monoutility concepts and insist that they are irreducible against each other. Yet the question about the mechanism behind the individual choice remains unanswered.

This is, seemingly, the case of Etzioni's concept, who tries in different ways, to describe balancing between economic and moral utilities, however he fails to do so.

The aforementioned formulation of the problem pertaining to the incommensurability of values is the reconstruction of the views by A.G. Isaac [1997], E.L. Khalil [1997] and J. de Jonge [2005a; 2005b]. It seems that they consider it to be the final argument against the concept by Etzioni, and thus against the concepts of one-level multiple utility.

4. Kavka's concept – intrapersonal games

In his paper of 1991 [Kavka 1991], Kavka addresses, in particular, the issue of choices in the presence of many values, namely compares them with collective choices. According to Kavka, a common view pertaining to the individual and collective choices is that the former is fairly easy, while the latter feature a complicated mechanism, and their analysis requires a more complex conceptual apparatus. The starting point for his article is the statement that, indeed, fairly frequently individual choices are made per equally complicated pattern as per collective choices. Therefore, in order to develop an adequate theory of rational individual choice, one should understand the values which lie behind the individual actions and the internal structure of such an individual.

Kavka begins his considerations from defining the point when a conflict of values arises. This happens when the individual makes the ordering of the available alternatives, according to many criteria or values. Only if all criteria result in the same ordering, is it possible to indicate one ultimately best solution. However, typically, alternatives (states of affairs) have a different place on the priority list depending on which criteria are used in ordering them. This means that in such situations (and this is common), one may never attain a maximum level of realisation of all the values. Such a situation was called by Kavka the conflict of values, and in this paper it is referred to as the basic problem of the multiple utility concept.

Since according to Kavka, individual choice, if there are many values, has an 'internal structure', it should be studied with the use of the methods applied in the case of collective choice. Hence he suggests an Interacting Subagents account, which is supposed to be a generalisation of the conventional approach towards individual choices. Its first assumption – shared, according to Kavka, with the conventional approach – is the statement that individual choices are defined by means of suborderings of the available alternatives as per different criteria or values. The second assumption is not, however, shared with the conventional view, as thelatter assumes that the individual choices are, ultimately, determined by the aggregated function of utilities, which assign a certain type of overall utility to alternatives. This occurs by way of assigning different weights to different sub--criteria. By making the choice, an individual, ultimately, makes intrapersonal comparisons between the suborderings.

The calculation suggested by Kavka is based on the premise that sometimes the individual choices are determined by strategic interactions taking place between subagents forming the individual. Each of those is 'responsible' for the maximisation of value determining the given subordering. The individual choice is, therefore, an outcome of a game between subagents, while the choices the individual makes depend not only on the suborderings, but also the rules of the game. One of the examples quoted by Kavka is the internal prisoner's dilemma.

This approach at first glance seems to be surprising, but it expresses an important intuition that people have different 'decision-making centres' playing games one against each other. Although the idea of multiple 'decision-making centres' is very old and well-established in psychology and philosophy, the concept of a game between them is probably new and undoubtedly refreshing.

The most important advantage of Kavka's idea is a fact that – most likely, not being aware of this – he solves the problem of choice provided there are incommensurable values. Since in the game, the values maximised by each of the players do not have to be commensurable, Kavka's suggestion seemingly solves the problem of choice if one deals with incommensurable values, but also brings new questions. The possibility that the internal choice of an individual may be driven by e.g. a prisoner's dilemma pattern (and consequently the individual behaviour as a whole may not be optimal), is certainly intriguing, but it is hard to base the consumer theory on the *ad hoc* assumed payoff matrices. It seems that there is a need for a more thorough analysis of preferences on which the intrapersonal game relies.

The result of choosing certain strategies by each of the players is a certain state of affairs corresponding to the entry in the payoff matrix. The game theory treats a certain form of the payoff matrix as given, without going into further details pertaining to the form of utility function of each of the players. However, it is possible to pose the question: what do the payoffs in the matrix depend on? If we present the issue at a less general level than Kavka and focus only on the consumer's choice between bundles of goods, interesting questions will arise. As the strategy of each of the players is to choose certain bundle of goods, it is also obvious that each of the subagents has its own preferences as per the consumed bundles, which can be described by means of its utility function. One may then ask reasonably: how does the payoff matrix look like for each of the players, depending on the type of the preferences? The issue becomes more complex if one accepts the assumption of Margolis, namely, that from the subagents' point of view, the goods chosen are the 'internally' public goods. This is a truly natural assumption, owing to which one may talk about the unity of an individual despite many decision-making centres existing within the individual. This assumption may be, obviously, extended to all values. Consequently the state of affairs corresponding to a certain entry in the payoff matrix is a bundle constituting the "aggregate" of bundles chosen by each of the subagents, while each of the subagents assigns to it a certain level of utility.

5. Conclusions

The concepts of meta-preferences solve in a certain manner the problem of choice in a situation of incommensurable values, but an important argument has been formulated against them. While discussing the concept by Thaler and Shefrin, Etzioni indicated its fundamental flaw, namely that this is *de facto* a concept of mono utility, but transferred to the meta-level. Abiding by the terminology proposed in this paper – there is one value, constituting the last source for ordering the bundles of goods. This ultimately means a return to the concept of mono utility. It should be added to the conclusion of Etzioni that the mere fact that the arguments of utility meta-functions are other utilities, and not the bundles of goods, does not change much. Etzioni's argument may be also easily referred to the idea of Sen.

On the other hand, the one-level concepts of multiple utility formulated by Margolis and Etzioni do not provide a description of the mechanisms of such choices at all. The proposed solutions are either a reduction to mono-utility (Margolis) or the use of the vague concept of "balancing" between values (Etzioni). From this point of view, Kavka's idea seems to be a promising approach, although it cannot be now considered as an alternative to the standard neoclassical theory of choice.

As shown, the idea outlined by Kavka gives plenty of room for future research. If taken, the first step should be to clarify the initial intuition pertaining to the existence of an intrapersonal game. It seems that the right direction would be to start analysing individual choices from a standard case, namely the choices of a consumer pertaining to bundles of goods, at the same time assuming their 'internally' public nature.

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