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Decision Choice under Pareto Optimal Criteria¹

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Abstract

According to the axiomatic foundations of social choice theory, not all decisions benefit everyone. Often, decisions that do not have any implied benefit for the decision maker are made in the (best) interests of others. When a decision is made concerning welfare of others, some individuals—including the decision maker, may be on the receiving end. For, it is impossible to make social decisions by taking into account individual preferences that satisfy all and everyone. This is on account of a great variety in individual choices and preferences ubiquitous among different individuals. Tastes vary among different people—so does individual preferences, and that’s natural. Conflict of interests arises due to subtle variances in individual preferences. In this paper, we discuss about the decision choice that seldom works for every conceivable set of individual preferences. Following Arrowian precepts, it is impossible to satisfy one and all, for there remains a great diversity in individual preferences that result in the problem of choice. Hence, in this research, we develop a taste-based theory of social choice that attempts to address the problem of choice by helping individuals choose the best and the most effective and optimal option among a given set of alternatives that’s assumed to be rational.

Keywords: *Choice, decision making, rational choice, social choice theory, Social welfare, taste-based theory of choice, welfare economic functions.*

JEL Classification Codes: I30, I38

¹ This paper is a continuation of the series of papers on the concept and the idea of “Social Choice Rationality”. By this term, I signify the social aspects of rational decision making that involve (rational) agents who make decisions that have consequences.

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1. Introduction

Sometimes we are left with but little option to make a decision in the sole interests of others; i.e., a decision by which someone else directly benefits from our actions. You make a decision from which either you gain nothing, or you deliberately lose something to let others win or allow others to gain from your own losses. Suppose that in some other condition, simply put, to let someone win, you prefer to lose. Under such scenarios, the decision maker do not profit from the outcomes since the benefits are accrued not by the decision maker. Rather, the decision maker may incur substantial losses, i.e., material, psychological, or financial. Not always, however, you lose by making such decisions. Nevertheless, how do you explain such a choice behaviour that might seem to some people being *irrational*? In essence, what do you *gain* from “losing”?³ You may know of this behaviour in the game of Chess when you offer your opponent a gambit. In business, often firms employ differential market penetrative strategies that make them offer their merchandises for free or at a huge bargain—a price much lower than what their competitors would offer. By this strategy, companies initially lose money to lure customers in the hope of gaining more of them that would enable them to gain a larger market share later on. Customers, too, gain from such a strategic pricing policy as they make a good deal (bargain). This sales strategy is a productive tactic which firms often implement to enter a new market or remain buoyant in a highly competitive market.

However, these kinds of behaviour are different from the one where decisions are made exclusively in the best interests of others. The behaviour marked by Philanthropy or Altruism (Fontaine, 2007) involve decisions aimed to benefit the receiver through generosity and benevolence. Social works done by various non-profit organizations and individuals come within this purview too. By such decisions, the decision maker actually gains nothing but

³ Here, one may ask, what’s the utility of knowing gains and losses of different other people? The answer lies in understanding how they lose, how they have gained, and why people lose.

recognition and experience. Rather, such decisions may incur material losses on the part of the decision maker. In certain other circumstances, individuals make certain sacrifices for others. Parents spend a substantial amount of their income on their children's education with an expectation that such investments will insure the success of their children. Finally, decisions made in the best interests of others like patients (Williams et al., 2014), children (Eekelaar, 2015), disable persons, mental patients (Fennell, 2008), and others who are incapable of making decisions on their own are kept outside the purview of this research, and readers are suggested to read articles on such topics to gain further and deeper understanding of the phenomenon characterizing decisions made in the best interests of others and their bioethical aspects (See, for example, Birchley, 2021).

Hence, in this brief research, by following a certain line of investigation, we undertake a formal discussion on the welfare economic dynamics of decision making concerning the welfare and wellbeing of others within the purview of social choice theory. We try to understand what makes people to choose to help others by making a decision that benefits the beneficiary but not the benefactor. How far rational are such decisions made in the interests of others? Do the benefactors gain from loosing materially? Our goal is to construct several *premises* so that we can draw conclusions based on true statements. The research also aims to underline the relationships of social behaviour associated with welfare economics to real world issues. We ask whether such decision behaviours fit within the Pareto optimal criteria. Can social scientists and policymakers design rational policies based on social choice theory that are beneficial for all and everyone? Although this research does not aim to analyze or synthesize Pareto optimal policies, it however, attempts to examine what influences how we choose to make decisions in the interests of others? When we choose to take any decision that is expected to benefit others—or such actions being taken in the interests of others, a welfare component from voluntary action (Lohmann, 1989) comes into

purview that explains part of our social preferences for helping others. In the next section, we explore this aspect of decision making having a welfare utility as a functional component.

2. What Explains our Social Decision Making Abilities?

What explains our social decision making abilities? In this research, we extend our line of thinking on the idea and the concept of social choice based upon the theory that attempts to explain how we choose to make rational decisions. We also discuss, using examples—how to chose more efficiently. It is not always plausible to compute individual utilities of each of the choices. If we take into purview variety in individual preferences, we find that people differ in taste, choice, and predilection. No single theory can explain how we chose socially, or what makes our choices rational, and what explains all aspects of our social decision making. However, it was Arrow's (1951) *social choice theory* which came closer to explaining how social choices are made. But it is fraught with certain problems inherent to social choice theory that highlights the issue of impossibility. This impossibility arises from the problem of making social decisions taking into account the individual (collective) preferences to satisfy all and everyone.

If we accept Arrow's theory of social choice (Arrow, 2012; Arrow, Sen and Suzumura, 2010) to be overtly explicit, then we must confront the theoretical constructs laid down by Vilfredo Pareto (Pareto, 1935). According to Pareto equilibrium, you can't win without making someone else lose. This is to say that, Pareto's optimality (Buchanan, 1962) in efficiency reverts back to square one by making someone better off while making someone else worst off. Therefore, the idea of an ideal social choice that satisfies everyone's preferences and meets everyone's needs is impossible. To satisfy all, others (or someone else) may be on the receiving end (left worst off). For example, any social and economic policy designed and implemented insofar helps some

people and hurts others. There is no way to go around it to escape from the brunt of this phenomenon. Does it really mean so?

Hence, as the search goes on for possible solutions to meet Arrow's criteria concerning social choice theory (Feldman & Serrano, 2006; Kelly, 1988), we search for solutions to this problem, and design our study based upon understanding in detail the utility of a choice and reason for choosing an option. This provides a fair ground for examination of the welfare function associated with social decisions based upon certain choices.

Although this does not fully offer a complete solution to the problem of social choice, it does—however, to a great extent, provide an opportunity to examine the utility-based model of choice. We may therefore, ask questions pertaining to this issue like for example, does an alternative policy increases the utility of a choice for the beneficiaries? And most importantly, what about such conditions where decisions are made in the interests of others? How does someone gain from losing? Questions concerning efficiency of a choice and its outcome could be addressed using the general equilibrium concept of Vilfredo Pareto, and applying the principles of Pareto Efficiency. But one needs more information to make an informed, rational choice that addresses the distributional issues considering conflicts of interests that may arise from disparities in individual preferences (Sen, 1977) that exist. Because making social decisions involve knowledge of states and information about preferences, you can't use information derived from other processes in making a social choice. Therefore, modern welfare economics must incorporate—as it does so more commonly, more information about peoples' states. A search for better alternative policies that could have more utility for the beneficiaries (people) would result in better outcomes—as well it would perhaps reduce the possibility of making a common mistake or error in decision making. Not knowing how to choose properly based on incomplete information will lead to suboptimal outcomes.

Nonetheless, if that is so, then what makes an option chosen while making a decision to generate optimal outcomes? What makes a choice *rationally* optimal? Therefore, this research is in search of an “optimal theory” that explains how social decisions could be made more efficiently, and, what would be the nature of welfare outcome from a decision made in the interests of others?

3. The Arrovian Problem of Impossibility

A decision made by a group through voting or selection procedure may have its utility for a maximum number of people, but it may not benefit everyone. Furthermore, you can't use voting information to make social choice—since this could be preposterous. Hence, to solve the Arrovian problem of impossibility, there exists different ways of modifying a choosing strategy that would most likely satisfy maximum number of individuals. For example, a collective decision made by a group may go against the interests of some individuals, but not all.

As I have discussed above within the introductory section 1, for economic judgments on policies to fit the Pareto optimal criteria, we will need to explicate the structural ideas behind the theory of social choice in the light of general equilibrium analysis. In a competitive scenario (economy, for instance) players need to compete, and by making someone else worst off, you can stay ahead by being better off than others. That is, you can't win without making someone else lose. But what about a decision that is deliberate, in the interests of others where the decision maker makes no gain out of making a choice? In such a scenario, do you gain anything from losing? Of course, the condition of Pareto Optimality isn't violated herein; since in this case as well, you intentionally make yourself worst off to make someone else better off. Again, let us consider how policy makers design socioeconomic policies with the intention of utility and benefit for all the people. To lift people out of poverty, the welfare function of a policy is evaluated too to see

that the outcome remains positive as anticipated. Therefore, policy makers are indeed in search of a magic bullet: i.e., a policy that is beneficial for all and everyone—without making some others worst off. Therefore, this pertains to a decision choice in the interests of everyone concerned to make them better off—without making someone else worst off. Here arises the *impossibility* of existence of such a policy which complies with the fundamental tenets of Pareto Optimality. Such impossibility arises on account of great variances in tastes and preferences among the population. To solve this problem, Voting has been adopted as a solution to break an *impasse* by giving a mandate to choose or reject a policy in favour of the most number of individuals who votes either in favour of or against a policy adoption. Through voting, people give their mandates in a coordinated fashion.

Regarding *win-win* situations where nobody loses or is allowed to take any unfair advantage, the possibility of expected outcomes are supposed to be good. Such outcomes predominantly benefit two parties. Does it violate the basic tenets of Pareto Optimality? No. Why? Let's discuss it within the next section.

4. A Decision in the Interests of Others

The decision outcomes in the interests of others need to be understood in the lights of social choice theory. There must be a myriad of factors that determine our intertemporal choices and preferences that vary greatly among different individuals (Sen, 1994; Chabris, Laibson, & Schuldt, 2010). In this section, we discuss the central theme of this research: how social choice theory can address the issue of decision making in the interests of others? What aspects of welfare function could be explained by the outcomes of a decision made in the interests of others? This raises several questions as well concerning our choice behaviour;

- How to evaluate the efficiency of a decision choice?
- What best policy could increase the efficiency of a choice strategy?

- What are the best criteria that could be developed to evaluate the merits of different policies concerning social and economic developments?
- In what respect our preferences for giving, i.e., charity, endowments and donations (acts of philanthropy) determine the marginal utility of a decision choice concerning such behaviour?
- Finally, will subsidization of private activities result in public welfare?

First of all, we must differentiate between the two concepts: to work in the interests of others, and to work for others. Most people work for others, and get paid in return. There may be a set of determinants that define or dictate our preferences to give and offer something in the interests of others. The individual preference to help others varies widely among the people of different countries and regions, cultures, and societies. Now whether such decisions are rationally correct would depend on how different individuals perceive such acts of goodness or kindness that result in economic welfare for others. However there seems to linger strong non-rational elements in decision-making that appear to correlate to the economic behaviours of (rational) agents. What are such non-rational elements?

Just as there are uses and benefits of knowledge, markets, and resources in society, so there exist uses and benefits of strategic policies and choices. Choices present as *options* for decision makers to choose from. A good choice makes a great difference in realizing the outcomes compared to a bad choice. Choices define our (rational) behaviours too. In essence, decision makers are characterized by their diversity in tastes and preferences, which differ between two individuals, and vary widely among the people. People differ in their propensities to consume, save, and invest. It may be so justified to accept the maxim that “great minds think alike”, and yet, it is also true that no two minds have similar predilections, choices, and tastes. This makes sense. For if everyone thinks alike, or made to think alike, there would be no creativity or innovation to be found among the people. The privileges of

liberty and the freedom to think and express by speech and thought depend on the *policies* that govern or limit human thinking and action. The welfare economics that works within this framework of equilibrium is bounded too, by the availability of resources, and guided by, the policies and strategies that permit how such resources needs to be allocated to improve and increase human welfare. Therefore, a change in policies could result in changes in resource allocation to improve welfare. This has been the central theme of Pareto's optimal criteria (Pareto, 1935): the questions concerning the efficiency of resource allocation. One may ask what best policies could increase the efficiency of resource allocation. And further, what factors help determine how individuals choose whether to consume, save, invest, or help others? A decision in the interest of others is a propensity—behaviour, or simply an attitude that results in actions that offer help to others. Therefore, going by Pareto's optimality criteria (Brennan, 1975), a person who chooses to help others by taking a decision in the interests of someone else *forfeits* the marginal utility from consuming, saving or investing an equal amount of resources offered as help to others. The decision to choose to help others is purely an individual matter at the discretion of the decision maker. But any social policy that directs people to offer help in the form of service to others is a mechanism that moderates allocation of resources to improve public welfare.

Some individuals often decide to help others by offering time and resources (capital). In return, they do not expect anything materially. This is in sharp contrast to firm behaviour that devises strategies to attract customers by offering something free of cost—or at a huge bargain. The capital dedicated to a tactic becomes a risk capital—and the investment becomes “risky”—the firm playing a gamble in the hope of recuperating the initial “losses” by way of potential gains in business and market share in future. This behaviour is risky, speculative, and opportunistic as it hunts for possible long term benefits from short-term losses. This kind of firm behaviour in a competitive market goes well with Pareto Optimal criteria. Can we assume that by such

predatory marketing strategies, firms tend to secure Pareto optimal position in competitive markets? This may be partially correct. However, it might be difficult to interpret “speculative behaviour” in the light of Pareto Optimality criteria within the general equilibrium framework having an effect on real-world welfare economics.

In sharp contrast to previous studies (See, for instance, Arrow, 1951; Sen, 1977, 1995, and 1999), we have taken a different route to examine how individuals chose to make certain decisions that are beneficial to others without benefiting the benefactor. In the markets, a two sided game is played between consumers and sellers; both having utility in through dealings. And yet often, wrong decisions are made for the right choice: this is the ultimate statement supporting the basic norms of utility, consumption and preferential theory is grounded. For instance, a man may choose to marry a wrong girl or vice versa. The decision to marry is a fundamental right and might be a correct decision—but the *choice* may have not been the best possible (optimal). This may be true in every sphere of human life. It may be otherwise explained in terms of an individual having made a “right decision” backed by a “wrong” choice. Herein, the possibility of making a mistake (an error) may arise from choosing a suboptimal option (wrong choice).

The penchant for opting to help others is a personal decision contingent not upon any implied benefit that’s to be derived from making such a choice in favour of others, but on the propensity of the individual in taking an intentional stance to help others. Now, one may ask, what induces one’s propensity to help others? What explains one’s propensity to make a decision in the interests of others? Given such instances, choosing to make a decision in the interests of others may not be a wrong decision at all, even if the decision maker hardly gains anything from it! In this case too, the same Pareto Optimal Criteria is complied with. For, again, it makes someone better off by making the decision maker worst off. Is it really so? Let’s see. The basic idea behind making a decision that benefits others corresponds to

one's own social dimensions, besides taking into purview other considerations such as moral factors, individual values, and good intentions. Here, the agent takes an intentional stance to decide to help someone else without expecting any return of favour. The decision maker assumes the foregone prospect of putting the resource (i.e., *capital*) spent by making such a decision. The decision maker has already considered the best use of the resource in the interests of others. If she has found the utility in serving others, it satisfies the basic tenets of welfare economic function of a capital resource serving a reasonable cause (put into good use!). This defines the rationality of a social choice and “justifies” the cause for which the decision was taken. It perhaps makes the choice a *rational* one for some people who might show similar propensity to contribute in the interests of others. This also explains our previously conceived idea of Social Choice Rationality (Chatterjee, 2022) in helping us to choose what's most rational for someone. It also satisfies Arrow's conditions of ‘social rational choice’ based on individual values—besides fulfilling the conditions that support your “right to choose freely”⁴ what *you* consider rational.

In markets that are highly competitive, rationality which seems to be the norm may present in a distorted view of affairs on account of wide variances in individual choices and preferences. This might be so because of the presence of strong non-rational elements that interfere with decision-making. Since markets function as an aggregate entity, it absorbs all the incongruities characteristic of a social entity consisting of diverse agents showing differential preferences which incorporates *bias* as well. Therefore, it might be impractical to make a policy decision that suits everyone's needs, tastes and preferences. Hence, making rational judgments based on choices that are ordinal wouldn't be sufficient enough. Rather, decision makers should strive to “think” beyond the ordinal in order to create more options to choose from.

⁴ You—and including everyone, have the right to choose what you think rational. However, your choices should not infringe on other individual's freedom of thought and actions, beliefs, values or other fundamental rights that define the universal idea of justice.

Barry Schwartz (2004) describes in his book “*The Paradox of Choice—Why More is Less*”, too much of many things available as options confuses us, and constraints our mechanism to choose efficiently. According to Schwartz (2004), too many options may confound a decision maker. The bounty in options that lies in front of a customer in a shopping mall is lot to choose from. The more liberal, open and competitive the markets are, more there are options to choose from. Furthermore, agents may have weak preferences or strong preferences over certain types of products or services. On the other hand, one may find it difficult to choose efficiently and get satisfied based on preferences over only a limited set of options. When we talk about preferences, we may say cogently that the entire social choice theory framework revolves around the relationships between individuals, preferences, and choices (Arrow, 1951; Sen, 1977). The best we could do is to evaluate a choice based upon certain information that could be mined from it to find the reason and logic behind its rationality. The ultimate idea behind this is to use sound reasoning and judgment to promote a social policy, decision, or a cause that has welfare economic functions. Decisions in the interests of others serve such a cause that serves the purpose of welfare.

The freedom to choose and decide demands individual liberty and respect of individual preferences. Thus, reflecting upon such decision choices that are philanthropic and altruistic, it could be said while judging the effectiveness of such decisions that they should be given adequate recognition. Recognition given to individual preferences would likely address the challenges of social decisions involving divergent interests, preferences, and concerns. This is one of the constructive possibilities of social choice. Now, it must be born in mind that not every social choice procedure is rationally reasonable, and neither every decision made has positive, fruitful outcomes—despite such decisions often being rational. This is analogous to saying that not all outcomes of voting are rationally correct. Also, one should bear in mind that a “best” choice may not be always a *rational* one. Again, what you choose may not be

the one you *prefer*. This phenomenon may result from three possible situations outlined below:

- Making a wrong, uninformed choice,
- When too many options are there to choose from that confounds your choosing capability,
- Too little options to choose from
- Your choice, say for example, to buy something is constrained by the amount of (or lack of) money that you have.

All these and others impose severe *constraints* on the social choice theory; i.e., on our ability to choose efficiently. It is important to note that with regard to decisions concerning others' welfare, the assumptions that we make is not just about *consumption*. So, is it more or less about foregoing the utility the decision maker could have derived out of consumption, savings or investment had he had not decided to make a decision in the interests of others? Perhaps yes. Nonetheless, it would be rather difficult or outright implausible to compute the expected utility of an outcome associated with such a choice in the interests of others. But indeed, it is a social choice that must have some corollary.

Hence, an individual's propensity to choose to help others is purely grounded on his or her own predilection to help. It too depends on an agent's consumption choices (Levin and Milgrom, 2004)—whether to consume or not, and if not, whether or whom to help, how much to give, etc. It is an aspect of individual decision making⁵. And, it depends on the agent's willingness to forgo the unrealized utility from the outcomes of such a decision made to assist someone in return for nothing. The decision to help others unconditionally by a benefactor may also arise out of sudden sympathy or empathy directed towards the beneficiary. It is a choice to decide to help others even if it leaves the benefactor worst off. This may include helping the

⁵ As far as I can conceive the idea of serving others without expecting something in return is an aspect of individual choice, as could be modelled from a similar unpublished and yet an important work done by Levin and Milgrom (2004).

poor achieve their educational goals, doing charitable works, social and economic aids extended to the needy families, financial support extended to the people in times of natural calamities and disasters, among others. Other philanthropic works include donating substantial amount of money as endowment funds to non-profit organizations dedicated to social and economic welfare.

The Model

Let us represent this mathematically with a proof based on a proposition and an assumption having a few corollaries. This model constructed will help us understand how an agent can choose effectively given a diversity of preferences. Further on, the model imposes constraint on the choice function to delineate whether the relationship stands as desired by the agent. It is also necessary to observe whether the decision taken by the agent complies with the criteria of Pareto Optimality.

Let K be an agent having two preferences, X and Y respectively. Now, X and Y are the two preferences, wherein the object of preference is voluntary, unselfish action:

$$\begin{aligned} X &\rightarrow \text{propensity to help} \\ Y &\rightarrow \text{propensity to consume} \end{aligned}$$

Again, Y has got two components; I & S that accounts for *investment* and *savings* respectively. Now, let $X \succ I$, and $X \succ S$ respectively. The relationship thus stands as;

$$K \succ Y \succ I \succ S$$

Hence,

$$K = Y \succ (I+S)$$

Definition: Let there be two agents K_1 and K_2 . The agent K_1 as more preference for a choice C_x than C_y , defined as $K_1 \rightarrow C_x \succ C_y$ where X corresponds to the agent (K_1)'s propensity to help, and Y defined as the agent K_2 's propensity to consume. Now, let's assume that $Y \succ (I+S)$, wherein Y

corresponds to consumption (C_y), and (I+S) *investment* and *savings* respectively. By definition, it is observed that the agent has a more preference for X defined as C_x than C_y .

From this definition, it may be clearly observed that one of the agents has a clear propensity to help, assist or provide aid to others rather than to consume (y), invest (i), or save (s) the amount of discretionary resource (R_n) which she owns. Herein, n takes a variable amount bounded by number of options available to the agent.

Propositions:

$P_1 \rightarrow$ *An agent proposes to undertake unselfish act in the interests of others.*

$P_2 \rightarrow$ *Agent's preference for helping others is not determined by any externalities⁶.*

$P_3 \rightarrow$ *Agent's unselfish actions cannot be interpreted in terms of Pareto optimal criteria, and neither has it generated negative externalities. .*

C: \rightarrow *The agent performs an unselfish action in the best interests of others that have welfare economic consequences.*

A mathematical approach confers precision to a model, and a model is best designed using structural variables working as a representation of the reality. Herein, we propose that the agent K_1 has both *weak* and *strong* preferences for and against taking an action in the interests of others. Agent K_2 , however, shows weak inclination to help others. Therefore, one of the agents, K_1 , prefers to help rather than to consume, save, or invest thus showing some degree of *transitivity*. Hence:

$$K_1 \geq K_2, \text{ whenever } C_x > C_y$$

We propose that preferences must have some objective framework—some value if something is to be preferred.

⁶ See, for instance, Dolbear, F. T. (1967). On the theory of optimum externality. *The American Economic Review*, 57(1), 90-103.

Assumptions: Our assumptions regarding agent preferences are built upon the theory of *social choice* that constitutes the foundational framework, which guides rational decision-making. However, it must be taken as granted that not all decisions are rational, and not all rational agents make good decisions. Rational decision making demands some degree of intelligence and logic from a decision maker, and this aspect of intelligence is ubiquitous; i.e., you don't need to be a highly learned person to make clever, rational decisions if you possess intelligence. It is occasionally seen that irrational decisions often have their origins from highly educated individuals, and vice versa. For instance, consider a well experienced trader who has been lured to take huge and unnecessary risk in trading with borrowed capital in the hope of windfall gain from trade. When his trade falters and incurs huge losses, the decision turns out to be irrational. On what rational basis does somebody put other people's money at stake? Perhaps it's "irrational exuberance"⁷. Or, was it rational for him to take the gratuitous risk?

Statement 1 *The relationship between risk, rationality, and preference is assumed to be nonreciprocal, if we consider the reciprocal of these three entities to be safety, unreasonableness, and indifference.*

Assumption 1 In the domain of empirical science, decisions are made based on empiricism; i.e., results are derived from rigorous experimentation under strict guidelines and protocols. It demands observation and testing that although based upon logical reasons often seem to defy rationalism, and the duel between these two still enjoys significant rapport (Backhaus, 2011). However, it is the duty of an investigator of philosophy or science to examine the theory and the reasons behind certain observations that defy rationality. Note that our rationality is bounded, and beyond the boundaries of rationality lays inconsistencies, complexities, probability and prospect (Kahneman and Tversky, 1979).

⁷ See, for instance, Shiller, R. J. (2015). *Irrational exuberance*. Princeton university press.

Assumption 2 *Let's assume that agent K_1 has more propensities to help others than the agent K_2 . This corresponds to a utilitarian social welfare function*

She takes decisions in the interest of others aimed to have some utility to the beneficiary without herself expecting if anything in return. The axiomatic basis of this choice is an 'affect' having its logical underpinnings in behavioural aspects of information processing and empathy. For the decision maker, the attempt is neither to make her choice look or seem rational or otherwise, nor it concerns the issue of complying with Pareto optimal criteria. The sole aim of the benefactor is to be of assistance by choosing to help others. We assume this behaviour to be *affective* other than bounded by rationality.

Lemma: *Now let us consider the **Statement 1** above to be true, and let's consider that the agent is a carte blanche, that is, she has the right to choose freely to make independent decisions.*

Here, no impossibility conditions arise. Compliance with Pareto optimal criteria seems not to be an issue. However, certain constraints on the choice function appear unavoidable. The conditions that define choice functions are as follows:

The set of choices include,

For preference X, it is $X \subset C_n$, and for preference Y, it is $Y \subset C_n$

For all agents, the choices are $K_n(C_x) = \{x \in C_x, \text{ and } y \in C_y\}$

Now, for all set of choices $\{C_x \in C(Y, I, S)\} K_1 \cap K_2$

Using the above all considerations, we model a formal equation to explicate the model as follows:

$$K_x = (C_x/C_y) + Y(I+S) \quad \text{Eq. 1}$$

$$K = \left(\frac{C^x}{C^y} \right) + Y(I+S)$$

Now, solving for X, we derive,

$$C^y K - C^x - C^y Y I - C^y Y S = 0 \quad \text{Eq. 2}$$

Again, solving for Y, we get,

$$Y = \frac{C^y K - C^x}{C^y (I + S)} \quad \text{Eq. 3}$$

Now, by substituting the values of the variables, we can compute and derive the result that may help us understand the maximization of underlying preferences from choice functions. From this model, we find that agents who make decisions that concern the welfare of others do not assume to realize benefits out of such decisions, a self-contradictory notion in utility theory. For, it requires an “object” to define preferences, and such objects must have some *value* to be preferred. Now, what value drives some people to make welfare decisions in the interests of others needs to be evaluated in detail.

Corollary: The significant knowledge obtained from this model is this: a choice has its utility. We may infer from the above model that uses several premises to construct several supportive statements that bear important relationships with our *primary* statement. It follows from the premises that decisions made in the interests of others has a behavioural component, and agents are free to choose given that they have discrete propensities to self-interest and their interest to help others when they decide to make choices in the good interests of others. As a result, agents who make decisions in the interests of others take very little consideration of their own benefit out of such welfare-economic behaviour⁸. Now, it must be that they forego certain utility when they decide to extend unconditional financial aid on the beneficiaries. The objective support for such actions rests on the agent’s predisposition to help others, for not everyone make decisions that are in the

⁸ Readers can refer to the classic work of Pigou on the economics of welfare, Pigou, A. C., & Aslanbeigui, N. (2017). *The economics of welfare*. Routledge.

interests of others. Many people take into account their own self-interests when making decisions that involve their own stake in fiduciary matters, and if that involves finance, a very few people are ever willing to make decisions in the interests of others—decisions that do not benefit the decision makers (benefactors) at all or in any manner. This is a kind of unselfish behaviour that can explain the economics of philanthropy and altruism (Fontaine, 2007). Nevertheless, the logical claims made above based on objective support thus have been verified using the construction of a model considering the axiomatic framework of Arrow's Social Choice Theory (SCT Framework) and that which incorporates the various aspects of rationality in decision making. The model helps us to examine the implications of Pareto optimality and how it affects social decisions that have welfare consequences. It does not, however, examine what makes a choice rationally optimal to comply with the Pareto efficient criteria.

5. Conclusion

When decisions are made concerning welfare of others, the decision maker takes into account the externalities that manifest as factors other than the ones on which we have some control (crimes, pollution, health status, natural disasters, etc.,). These factors generate the need for assistance and aid, which can be met using public goods and provisions. However, and too often, such welfare assistance is not enough, and hence individuals come into the scenario to contribute aid and assistance—often unconditionally to alleviate the sufferings due to such growing externalities. On such occasions, decision making takes the forefront, and decisions are often made in the interests of others—considering the externalities.

We may conclude from this study undertaken to examine and understand how decisions concerning others affect the welfare aspects of choice function. Decision making with regard to the interests of others may not fit well within the framework of Pareto's optimality criteria, and even if it does so, it doesn't

concern the real loss arising out of such self-less actions (decisions) of the benefactor. The utility or the benefit accrued by the beneficiary do indeed put the benefactor worst off in terms of Pareto optimality criteria, but this is an externality which the agent may write off.

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