REDISTRIBUTION AND THE EFFICIENCY/JUSTICE TRADE-OFF

*by Hans-Georg Petersen**

1. Introduction

Social justice has become a main objective of economic policy, which in many cases dominates efficiency considerations. In the history of economic thoughts the trade-off between efficiency and justice has often been discussed but remained an unsolved problem. In using a simple approach of standard welfare economics, the trade-off can be clarified and at least some theoretical arguments found that compulsory income redistribution is usually connected with disincentives and more or less serious efficiency losses. Obviously the acceptance of such efficiency losses depends on individual evaluations made on the quality or degree of justice that has been realised within the society. In a democratic setting the individual decisions determined by individual value judgements influence the public policies (particularly tax and transfer policy) through majority voting[1].

Apart from the complex influences of the numerous actors in our representative democracies – for example politicians and political parties on differing levels of jurisdictions, governments, bureaucrats, interest groups, etc. – the objective of social justice itself is highly complex and overwhelmingly used as a political formula without precise definition. Therefore, under the banner of improving social justice, almost any interference with society and the economic system has been politically justified, leading to a permanent growth of the welfare state and compulsory social security systems whose enormous costs are currently the main reason for the economic malaise in many industrialised countries.

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[1] For simplicity's sake we neglect the principal agent problem which dominates representative democracies. For details see Petersen/Mueller (1999).

Hence, the most important task is to give a short and concise definition of justice, as done by Aristotle (384-322 B.C., here: 2001) many years before. In modern terms social justice can be divided into two components: the justice of ability (German: Leistungsgerechtigkeit) and the justice of needs (German: Bedarfsgerechtigkeit). While in a static neo-classical economy the justice of ability concept is in full accordance with Pareto-efficiency where the production factors labour and capital are paid regarding their marginal productivity's, for the justice of needs concept such simple technical rules do not exist. Because of the lack of information on the objective needs of the individuals and the impossible inter-personal utility comparisons, only two different extremes can be identified: on the one hand the physical minimum of subsistence and on the other hand equality regarding consumption volumes and structures[2]. Both targets seem to be equally unacceptable in democratic societies. To solve the connected problems at least theoretically Bergson (1938) has developed the concept of a social welfare function, in which social welfare is measured as a function of the utility levels of the single members within society. In this article the problems of the justice of needs and the redistribution (of income and/or consumption) are discussed (chapter 2)[3]. In chapter 3 the trade-off is presented in depth, which is then followed by some concluding remarks (chapter 4).

2. Justice of Needs and Redistribution

A voluntary redistribution that would be a Pareto improvement will occur without any problems, at least in a two person model, if the utility functions of the two individuals positively inter-depend, meaning a one sided or mutual altruism. With the instrument of the social welfare function an involuntary redistribution can also be justified (through the independence of the individual utility functions), whereby the state functions as a redistributing agent. It may even be the case if the economy is found to be in a Pareto-optimal situation. Before the problems of redistribution are discussed (in 2.2), the basics of the utility theory must be first dealt with (2.1). Then the effects of egoism, altruism, and envy on the large utility possibility curve will be analysed (in 2.3). The examination of the types of various social welfare functions will make up the end of this sub-chapter.

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[2] For more details see Petersen (1993, pp. 49).

[3] The consequences for the ability-to-pay approach in tax theory are discussed in Petersen (2003).

2.1. The Basics of the Utility Theory

The ideally typical market system is based on performance equal rewarding the factors of production, meaning performance equal wages and fair trading through market prices. In our principally individual approach, we accept dissimilarities between persons as being just, namely as the consequence of the justice of ability or barter equality. Inequality is thereby a constitutive element of the incentive mechanism of market systems, next to a rich choice in goods, performance orientated rewards for labour and capital as well as the individual property rights. Inequality sets the incentives for a social ascent and it is therefore the driving force for social development in an open society. Naturally there are hidden risks, then individual failures might lead to social decline. Without such sanctions performance orientated market systems would not function sufficiently, efficiency advantages would not bloom. Ascent and decline, profit and loss, prosperity and bankruptcy or generally expressed as chance and risk are two sides of the same market economical coin.

Naturally this has the effect of humans in a market economy based on the justice of ability who are temporarily or permanently unable to perform (so are unable to work[4] and do not have the necessary assets at their disposal). Obviously they are not able to independently or autonomously support themselves in such a system. Market economies that are constructed on incentives and performance mechanisms must or should take the needs of the not so able citizens into account, thus avoiding serious social problems without falling back into a system of pure justice of needs which is typical for collectivistic societies.

However, market economies have to take into consideration the needs, if they do not want to endanger the basis of their own society. What particularly happens is a question of the social ethical consensus of society, whether it be for example the securing of a physical or social cultural minimum existence, a wide reaching basic security and/or a highly developed (private and/or social) insurance system. If wide reaching security systems are created, the market economy then deserves to be called "social". In a social market economy it is not only the efficiency target that is important, but also those regarding social equality, which is in the end a redistribution of income from those (especially) competitive to the needy.

The questions of egoism, altruism and envy only play a part if we look at more than one person or group of persons. Let us assume that we are using our two families, two goods model (with families A and R, and the goods x

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[4] The problem of willingness to work will not be taken into consideration, then inability to work could of course be followed back to refusal to work (laziness).

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and y); then we can draw the following utility function (where A is for "poor" and R is for "rich")[5]:

$$U_A = U_A(x_A, y_A) \text{ and } U_R = U_R(x_R, y_R).$$

This means the utility of both families is completely dependent upon their consumption; no relationship exists between the two utility functions. We would be confronted with egoistic behaviour in both cases. In this case a voluntary redistribution from R to A or visa verse is out of the question.

With the term altruism (common weal, bonum commune) we denote the "general interests" with the interests of the individual or groups within society. The term is closely bound to the organisation of inter-human communication as well as the emergence of conflicts and the manner in which they are solved. One of the weakest forms of human cooperation is the "tit-for-tat" strategy. Through another definition the "common weal" can be characterised as a mutual basis for human existence, "dependent on all segments of society, whose social position, makes it possible to develop their personalities in a humane manner" (Kerber 1988, p. 244). This being the case the ethics of inter-human relationships must be far more than just simple cooperation without threatening behaviour – namely feelings of friendship, sympathy, apathy for the position of others, the love of thy neighbour, as well as thankfulness and guilt. Altruism in a formal sense could be seen as a positive dependency of utility function of humans.

Talking of altruism as being a positive interdependency between humans, one must not neglect the negative interdependencies, namely feelings of jealousy, enviousness, hate and revenge. In the end it is an empirical question, which kind of utility interdependencies exist within society. The more however altruism dominates a society, the less necessary it is for the state to intercede in the redistribution process and the stronger the implemented redistribution corresponds to the preferences of the persons burdened or favoured by this process.

Let us look at the case of altruism; to formally understand the utility function of an altruist, one has not only to look at the amount of emerging goods that he has at his disposal but also that others have at their disposal[6]. If R is the altruist then his utility function takes on the following shape:

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[5] This concerns the amount if goods consumed according to revealed preferences and those actually consumed by individuals.

[6] See, e.g. Gabisch (1985); Paqué (1986) also introduces two other possibilities to help the formal understanding of altruism (teleologic and deontologic ethics), in which next to individual utility exists an "ethical level of production" which is relevant for the total utility. For reasons of simplification we will not deal with this as in the end this approach will not lead to an additional substantial information.

$$U_R = U_R(x_R, y_R, x_A, y_A).$$

If a "rich" individual can also gain utility out of the consumption of a "poor" individual, then if necessary through a redistribution from "rich" to "poor" the utility of both economic subjects (or at least that of the "poor" individual) could be increased. Such a Pareto improving redistribution[7] would also voluntarily come into being in this two-persons-model, meaning through philanthropy (charity)[8].

How can altruism be economically justified? To explain this we must fall back on the "older" utility theories (old welfare economics, Carl Menger, William St. Jevons, Léon Walras). It is not just a goods hierarchy (necessary goods, "comforts" and "luxuries") that plays an important role, but it is also assumed that a cardinal utility function exists. This is taken to be realistically determinable[9], so that interpersonal utility comparisons are possible. In contrast the new utility theories (new welfare economics, Francis Y. Edgeworth and Vilfredo Pareto) exclude determining cardinal utility functions. Utility can only be ordinal comprehensible, so that only a rank order of utility (or differing utility levels) can be stipulated. Utility differences can not be measured in quantity, so that a comparison of the utility of a good that is consumed by two different persons is not allowed: interpersonal utility comparisons are not possible. Because of this utility becomes a subjective term whose content is imprecise[10].

The opinion has been formed that a personal distribution analysis cannot be done without an inter-personal utility comparison, where cardinality cannot be supposed but partial comparability can[11]. It is often argued that humans have a relatively unified reaction pattern. The intention of the inter-personal utility comparisons lies more or less in the idea that people share a general humanitarianism and the same basic sensations with regard to the satisfaction of their needs. "One merely has the choice in carrying out the interpersonal comparisons of either doing it sensibly that means reflectively, methodically and

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[7] A redistribution that improves the position of one member of society without worsening that of another.

[8] The case here is of one sided altruism; also conceivable is a mutual altruism where out of the utility function of the "poor" individual, the "rich" individuals quantity of goods emerge. A form of egoism, that goes beyond altruism, would then exist, for example when the "poor" individuals quantity of goods was to be found mainly or completely on the "rich" individuals utility function. One could use the examples of Albert Schweizer and Mother Theresa; both have however received the Nobel peace prize, and could therefore perhaps be interpreted as being egoists?
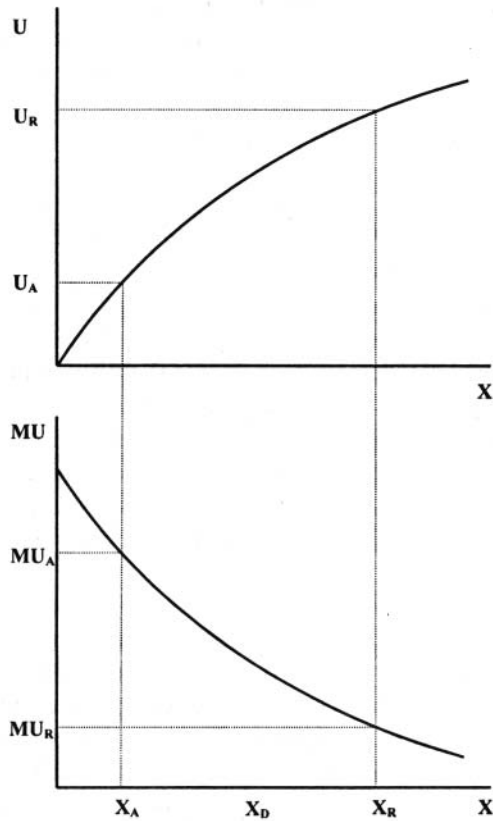
[9] See, e.g. Frisch (1932).

[10] See, e.g. Sen (1979, p. 463).

[11] So for example Sen (1992).

with revelation opening it up to criticism or by doing it implicitly, intuitively and thereby unconsciously hidden from criticism" (Homann 1988, p. 223)[12].

Fig. 1 – Utility Function U and Marginal Utility MU

We want to follow this view and suppose that a cardinal utility function U exists in the classical utilitarianism. We will assume that it is not only through the consumption of single goods but also with regard to increasing income that the individual utility grows with a decreasing rate, in other words that the marginal utility MU falls when income is increasing (fig. 1). The transition of the first Gossen law on income is very controversial, it does however assume a kind of income saturation[13]. This controversial fact again documents that all

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[12] For further problems of inter-personal utility problems see Brunner (1989, pp. 40).

[13] The famous Uncle Scrooge is exactly the opposite. His enjoyment of bathing increases with every new coin in his deposit box.

arguments concerning distribution are comparatively weak, namely they are based on value judgements that are not objective in a sense that all will see reason and understanding and therefore unanimously agree.

In figure 1 it is assumed that a poor man and a rich man show an identical total utility function with regard to income. The rich man with an income of x_R, achieves the high total utility of U_R, the poor man with an income of x_A, achieves the total utility of U_A. In the lower part of figure 1 it can be clearly seen that the marginal utility of the rich man MU_R is very low and that that of the poor man MU_A is very high[14]. Let us assume an objective perception according to Kant, in which case R will recognise these differences in utility and will voluntarily pass over a section of his income to A, if A is in need. The total utility of R is therefore reduced but not proportionally with the gain that A receives and through this society's affluence is increased. If R has positive utility interdependencies then even though he has transferred some of his income, his total utility will not decline, it may even increase. Through altruism society's prosperity will increase more strongly.

Going back to Bentham's idea of classical utilitarianism and the cardinal utility theory which has come into dispute because the maximisation of society's total prosperity (happiness is brought about by the largest number) which forms the basis of Bentham's social welfare function (see below) leads to disastrous distributive political consequences. Figure 1 has already shown that society's total prosperity increases through the transfer of income from R to A up until the point where R is taxed down to X_D (the average income) and A is lifted to the point X_D through transfer payments. The result would be the equal distribution of income which we will call the egalitarian solution.

This minimal sacrifice principal as an equality criteria in tax theory has the result of taxing all segments of income that lie above the average income with a marginal rate of 100%[15]. These tax payments are used through transfers to stock up the income of those who lie below the average income. It was very quickly noticed that implementation of such a principal in a capitalistic society would have disastrous consequences[16]. The sacrifice principles of taxation completely neglect the fact that rich people as well as poor people change their working behaviour according to incentives from taxes and transfers. If segments of income were to be taxed with 100% then it would be realistic to say that the rich would change their working hours, reduce their capital investments or move into areas which are not taxed. Tax avoidance and tax eva-

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[14] For the poor man without any form of income the marginal utility is infinite (he should really starve). The first income that he receives secures his chances of survival and therefore has a very high marginal utility.

[15] See Hinterberger/Petersen/Mueller (1987).

[16] Cautionary advice can be found in Edgeworth (1925, pp. 103) and Frisch (1932, pp. 129).

sion would explosively increase and the shadow economy would boom[17]. If the poor automatically receive the average income without having to work for it, then they will also work fewer hours, because the highest transfer they can achieve would be if they worked no hours at all (this means with the maximum leisure time).

The incentive effects of the implementation of the minimal sacrifice principle in the tax and social security system singularly have as result the reduction of labour input and capital investment in society. The total prosperity available to be redistributed will decline so much that those it was meant to support (namely the poor) would be worse off than if such scheme did not exist. This should however not lead to the cardinal utility theory being completely disregarded, moreover that leisure time should be included as an argument in the utility function[18].

A voluntary redistribution is possible with the altruistic behaviour (through donations made by the rich to the poor). It can take two different forms. Pure altruistic behaviour occurs when the rich donate money to the poor, who may then choose their preferred use for it. By doing this the rich person accepts the poor persons consumer sovereignty. If the rich person transfers goods which he feels are important for the poor regardless of the poor persons preferences, then he acts in a paternal manner. Paqué (1987, p. 33) talks of a "paternal altruism", there the consumer sovereignty of the poor person is not accepted.

Consequently altruism is the willingness to transfer segments of income to other individuals[19]. Especially in connection with the incentive effects the problem regarding how far altruistic behaviour should go has to be raised. For example does the rich man value the income of the poor man to the same extent as his own, in other words would he be prepared to transfer an unlimited amount of money to the poor person. Such behaviour goes beyond the Christian commandment of love thy neighbour[20] and can only be described as unselfishness. Altruism should only allow the redistribution of income to a certain extent. The wish of the rich person to transfer money to the advantage of the poor person, would start to diminish with the growing income of the poor person.

[17] See Petersen (1981, 1982, 1984 and 2004).

[18] This is the way the modern optimal tax theory proceeds.

[19] The individual R firstly values the increase in his own income; when two situations are compared where R has the same income but A has a higher income, and R prefers this to a situation where A has had a lower income, then this cannot be named altruism because no transfer of income from R to A occurred. This cannot be described as altruistic behaviour.

[20] This being the case St Martin would have had to give not half his coat to the beggar but the whole coat.

As in the case of altruism, envy emerges in the individual utility function through the consumed goods of the other members of society, however under a negative sign. Let us assume that the poor person is envious of the rich person (one-sided envy), then the consumption of the rich person reduces the utility that the poor person draws from his available amounts of goods. One may consider such a feeling in the Kantian sense as being irrational. In the view of real human behaviour, envy is here a fact, nevertheless being aware that as in our utility description an interpersonal comparison is connected with large problems.

Fig. 2 – The Envy Function E and the Marginal Envy ME
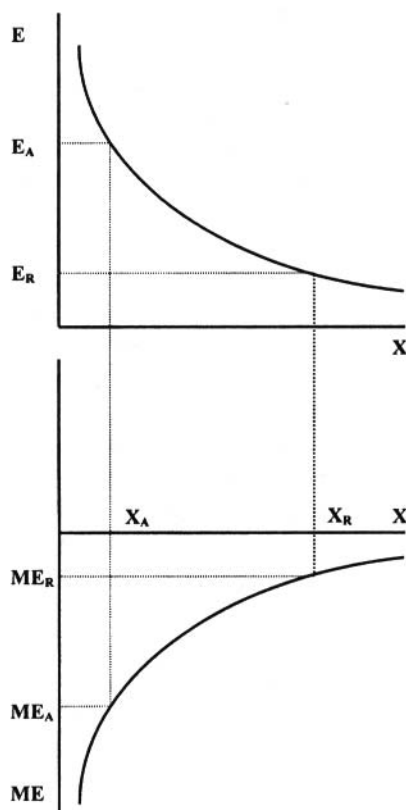
When aware of the restrictions the envy concept can be formulated similarly to the utility concept. Figure 2 assumes that envy E is dependent on income. When income is low (X_A) then the envy is high, with a high income

(X_R) it is low, where by the reduction of envy with growing income sinks. Marginal envy ME is negative and moves towards the income axis, with growing income in an asymptotic manner. The assumption of the envy function course seems to be justified, there the prosperous with a growing income are continually able to satisfy more and more material wishes, meaning that they are increasingly saturated. Therefore the reasons for envy diminish because their origins lie in a shortage of goods[21].

With one-sided, or particularly mutual envy is a society's total prosperity inevitably lower compared to the altruistic and egoistic behaviour of humans. Similarly to altruistic behaviour the question is asked if people feel envy across the board or whether they transfer from envious behaviour to altruistic and egoistic behaviour at a certain level of income (or at a certain level of income redistribution). Egoism, altruism, and envy all describe a person's behaviour with regard to another person, e.g. A is envious of R or R behaves altruistically towards A. This means that transfers from altruism to egoism and to envy flow into one another dependent on the individual income levels. The consequences for society's prosperity will be dealt with below.

A voluntary redistribution based on philanthropy works without doubt in a two-persons-(families)-model and surely in a transparent community, where donors and receivers of the private charities are mutually informed about the material situation of one another. Voluntary donations were an important issue of a pre-industrial social security. If a number of donors appear simultaneously, then the utility of these donors increases without them actually spending any money. Let us assume that there are two rich families, both conduct themselves in an altruistic manner towards poorer people. The donation of one family to the poor also increases the utility of the other rich family, which would then have no need to make a donation. Here we are confronted with a free-rider problem, there all parties profit from the donation of one family or in other words the exclusion principal fails, a voluntary redistribution through private transfers becomes questionable.

In a complex n-number of persons world, it is safe to say that there is incomplete information regarding the situation of every single individual. The individuals also develop diverging preferences regarding differing ideas about what level of income and wealth redistribution is sought. The state can then function as a redistributing agent, organising the distribution of income based on majority consensus. It can also by means of tax directives promote private charitable donations. However there exists between voluntary and state redis-

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[21] The possibility does naturally remain that envy can be connected with the uneven consumption of immaterial goods. Whereby the poor man may be a perfectly happy ascetic, which may in turn make the rich man envious. We are dealing with a many layered problem, the whole of which our simple model cannot possibly include.

tribution a close substitutional relationship (Paqué 1986). If for example a social pension scheme is institutionalised through compulsory membership of employees, then it can be assumed that the private efforts to save for security in old age will diminish. It is also to be remembered that state intervention can affect the peoples own responsibilities in a negative manner.

2.2. Social Welfare Functions and Redistribution

A social welfare function measures social prosperity as a function of the differing real utility levels of the single members of society. In other words the individual utility levels must be aggregated. The question that arises here is whether or not the single utility levels are to be weighted. Generally the welfare function (SW) can be expressed as

$$SW = SW (U_1, U_2, ..., U_i, ..)$$

where U_i is the utility level of the i-th person.

The Pareto efficiency's mathematical differentiation gives us within the utility diagram the possibility utility curve. This describes all efficient economic utility combinations from U_A to U_R that can be realised through the "original entitlements" (Nozick 1974), e.g. given resources (the inventory of the production factors labour, property and capital), preferences and given production technology. Figure 3 shows the utility possibility curve for our society, that contains the families A and R. The 45° line shows the situation of an equal utility distribution for both families (egalitarian solution). The stretch between zero on the coordinates and the point R represent the maximum utility level, that family A can achieve with the given starting provisions, the stretch 0A is that of family A. It is assumed that discrepancies exist from the beginning, differences in facilities and abilities. This means that 0R is larger than 0A because for example the family R puts in more work than family B, who happen to be very fond of their leisure time.

Every point on the utility possibility curve RA is in the economical sense efficient and describes a possible level of prosperity for society. The maximum levels of prosperity 0R and 0A are hypothetical. If one family would make the effort and try to reach this level of prosperity then the other family would perish. As the possibility to invest their resources in defence technologies exists, the situation would be such described by Hobbes, an anarchistic state of war, the consequence of which would be the decline and a lingering around zero (the natural situation).

Fig. 3 – Utility Possibility Curve and Social Indifference Curves
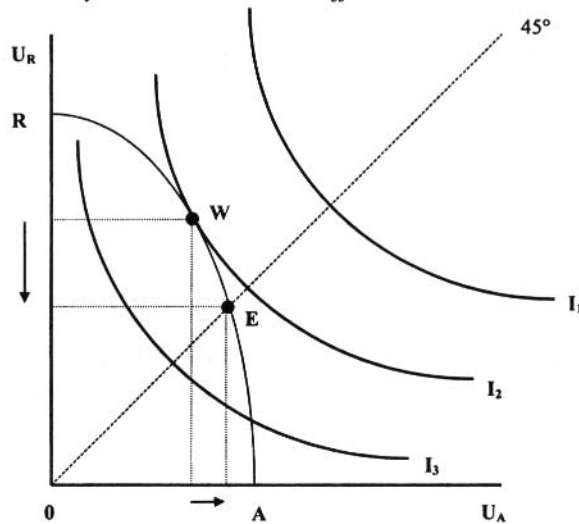
These so-called corner solutions are therefore non-cooperative solutions. With a cooperative strategy a solution would be found which would lie on the utility possibilities curve between points R and A. The cooperation of families A and R means in the first instance that they have to relinquish the chance of maximising their possible utility levels. It has to be proven that such an abandonment is in the long-termed interests of both families. The economic theory on the optimal prosperity does not however give us an explanation about the utility distribution (this means which point on the utility possibility curve) between R and A should be chosen. This choice would set the condition of an interpersonal utility comparison, the reason for which being that needs cannot be scientifically and objectively defined; this would inevitably be connected with value judgements. The optimal point for society can only be defined because the equality ideals developed by society can be taken into consideration. This is what welfare economics has done using the instruments of the social welfare function (Bergson 1938). A social welfare function is no different from an aggregation of the individual utility functions of family A and R (as members of society). The value judgement lies there in, how the utility of the single members of society is weighted in the social welfare function, in other words the laws of aggregation. The social indifference curves can be differentiated from the social welfare function, along those points where society is found to be on the same welfare level. According to the target of the optimisation of welfare the highest possible social indifference curve must be reached (this means the one furthest to the north east).

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The 45°-line represents the social indifference curve of a social welfare function, which excludes the utility differences between members of society. If this social welfare function gains a unanimous consensus, then it can be compatible with the principal of free decision making. If it however comes into existence in a non democratic manner, then it does not correspond to the individualistic approach but can be described as a collective social welfare function. The 45° line should still be used as the comparative standard. The optimum optimorum, the highest possible level of welfare, which would be in the case of an egalitarian social indifference curve point E on the utility possibilities curve (fig. 3). If we on the other hand introduce a host of individualistic social indifference curves, as for example the curves I_1, I_2, and I_3 in figure 3, the optimum optimorum can be found where the social indifference curve I_2 and the utility possibility curve W are at a tangent to one another. The welfare optimum W lies on a higher indifference curve than the egalitarian solution E because of the individualistic and free cooperation. A voluntary redistribution towards E can therefore be discounted, on the one hand because of the Pareto criteria (everyone should be in a better position and no one in a poorer position) and on the other hand the utility loss for family R is greater than the utility gain for family A (see arrows in figure 3) and society's welfare sinks from point W to point E.

To demonstrate that this result is determined by the starting provisions (original entitlements), figure 4 shows the solution if the starting provisions are identical (with regard to ability and talent that means identical quality and quantity of all factors as labour, property and capital) as well as fully identical family production preferences (meaning decisions regarding working hours and leisure time) and consumer goods (the same preferences with regard to consumption also means the families behave in an identical manner when it comes to savings). In this case of complete equality the egalitarian solution E fully agrees with the free cooperation of W.

Just like human capital (through training), or real capital (through the building up of savings) so the starting provisions can also be improved. Only when both families manage this to the same extent can the complete uniformity of the original situation (see Hobbes) remain in an evolutionary society. History really does give examples of societies where families were equal over longer periods of time. However it must be added that historical evidence clearly shows that the situation of equal distribution is not held up by the evolutionary process and can normally only come into being in situations of extreme poverty or threats from the outside[22].

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[22] See Markl (1991, pp. 274).

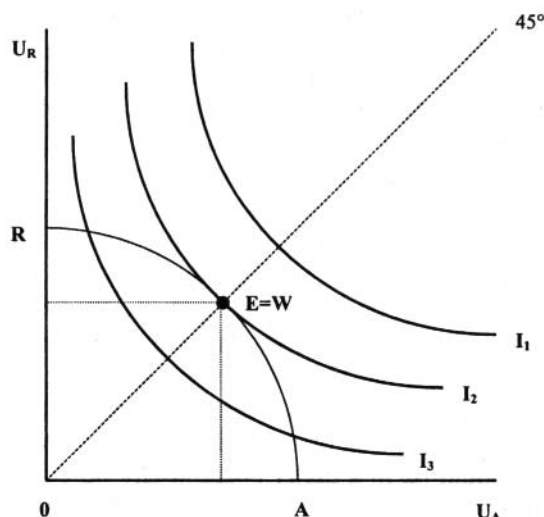*Fig. 4 – Optimum Optimorum at Equal Original Entitlements*

Figure 5 shows an evolutionary process where both families are better placed in their original entitlements, however R more so than A, which means the maximum utility that can be achieved by family R has now been expanded. As the original entitlements have been improved the utility possibilities curve moves in a northeasterly direction (because of high quantity and quality in human and real capital; the latter being technical progress). The distribution becomes increasingly unequal if we follow the development track in figure 5 from E_0 (= W_0) over W_1 and W_2[23]. This inequality can be followed back to the different implementations of labour and capital as well as diverging decisions concerning consumption and saving. Family R consume less and save more, they can therefore invest more in capital stock and through an increase in working hours raise the production, which has the effect of increasing their consumption possibilities (barter possibilities). Therefore the inequality is the result of the justice of ability, which is also plainly obvious for family A. As long as they are not envious they will tolerate this inequality. If the genetic based abilities of the two families do not differ too much, family A can then reduce this inequality by raising their labour supply and/or consuming less thereby enabling them to invest more.
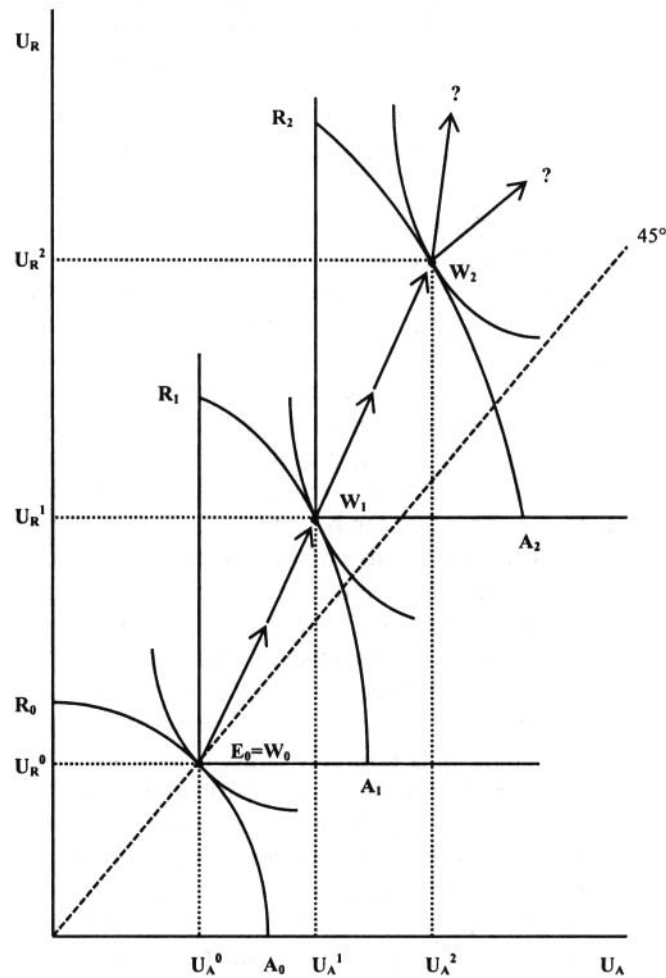
If it reacts in this way then the optimum will once again move towards the

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[23] In the first period holds $R_0=A_0$ and in the following periods $R_1 > A_1$ and $R_2 > A_2$.

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45° line. When compared to the original situation the evolutionary process has improved the situation for both families

($U_R^0 < U_R^1 < U_R^2$ and $U_A^0 < U_A^1 < U_A^2$)

Fig. 5 – Utility Possibility Curve in an Evolutionary Society

the Pareto criteria has therefore been fulfilled. Inequalities, as mentioned, are of fundamental importance for the development of society. They encourage those lagging behind to catch the frontrunners by increasing the utility of both. Apart

from this it becomes obvious in figure 5 why the two families neglect to implement the maximum possible utility level from the beginning. They have recognised that they are reliant on the other family's cooperation. It is firstly the allocation of labour between the families and the specialisation regarding the production of goods that allows both to move away from their starting point at zero in a north easterly direction. Both families act in the sense of a long termed interest, which determines the moral norms, especially those for the production and exchange of goods. Therefore no other reasons exist for the development of norms in the economic areas as in other areas involving human relations.

2.3. Utility Possibility Curves on Egoism, Altruism and Envy

We have already established above that altruism and envy can be described as being positive and negative respectively regarding utility interdependencies. There are almost certainly people whose welfare is influenced by the consumption of their neighbour (I feel ill, the Smiths are driving around in a new car and I can't afford that). Let us firstly look at the case above, the rich family behave in an altruistic manner and feel neighbourly love for the poor family. Figure 6 shows the utility possibility curve with altruism (the dotted is the egoistic utility possibility curve). Because of family R's utility, the utility possibility curve climbs up until the turning point L, where the utility of family A also starts to rise. This fact can be explained through the marginal utility theory. At the point R the rich family commands the whole of society's prosperity. They have reached a very high utility level. According to figure 1 the utility declines the more income rises, the marginal utility sinks. In other words the rich family find themselves to be in a situation that is marked by a low marginal utility. The poor family on the other hand without any prosperity is condemned to starvation and death. This situation cannot be accepted by family R. The marginal utility for family A is infinitely large, if they had enough prosperity just to be able to survive. The (voluntary) redistribution of welfare from family R to family A secures this survival. Since the marginal utility of family A is extremely large, due to family R's altruism society's prosperity grows above and beyond the value R because R's marginal utility is far lower.

The area of the utility possibility curve between R and L does not conform to the Pareto-criteria, because at every point the situation of both families could be bettered. If the criteria were to be implemented then the target would be point L, which may be achievable through the voluntary redistribution (philanthropy) of family R (Pareto improving redistribution). Let us assume a society with the indifference curve system (I_1, I_2, etc), then without altruism we reach the point W through the utility combination

U_A^1 and U_R^1.

With one sided altruistic behaviour by family R both families reach the higher utility level

$Z(U_A^2, U_R^2)$.

Fig. 6 – Utility Possibility Curve and Altruism of Family R
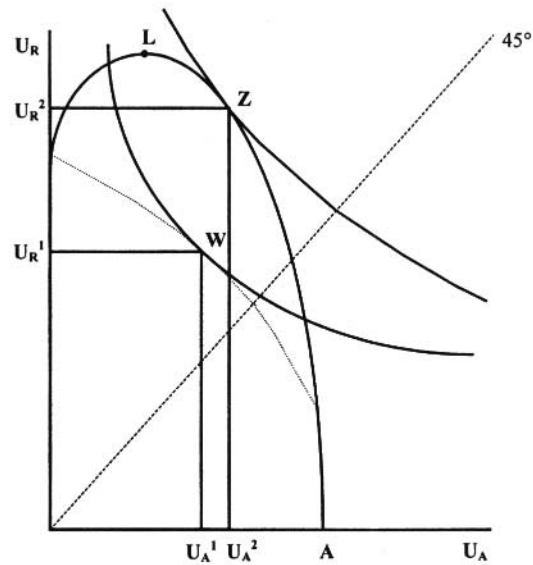
In figure 7 we assume the mutual altruism of the families A and R. With a low utility level of the other family both are voluntarily prepared for redistribution, which leads to mutual utility growth. The hatched area between the utility possibility curves with and without altruism could be termed as altruistic welfare growth (the latter being the shaded area).

In contrast to figure 7 our figure 8 shows the utility possibility curve with one sided envy of family A with regard to family R (the dotted line displays the course without envy). The point W is the optimum optimorum without envy. But with regard to the utility level of family R, that lies above the level U_R^0, family A is envious so that their utility level is reduced from U_A^1 to U_A^2 when family R remains constant at U_R^1.

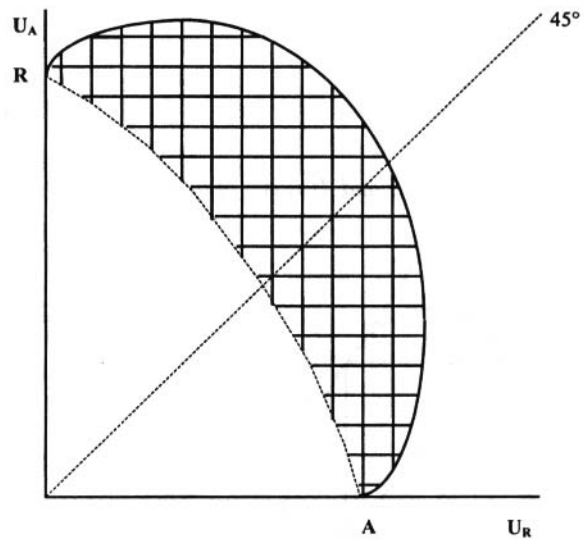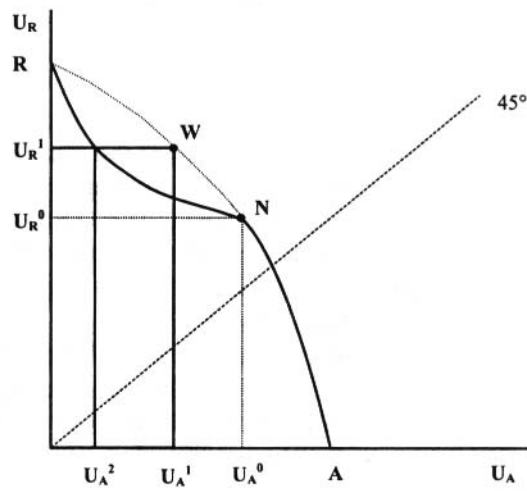*Fig. 7 – Utility Possibility Curve and Mutual Altruism*

Fig. 8 – The Utility Possibility Curve and the Envy of Family A

Just as mutual altruism is possible so is mutual envy; in figure 9 constant mutual envy is assumed[24]. The optimum optimorum once again lies at point W and the egalitarian solution at E (on the dotted utility possibility curve). With enviousness the egalitarian solution lies more southwesterly at point Z, so it is obvious that the solution is connected with a lower utility level for both families.

*Fig. 9 – Utility Possibility Curve and Mutual Envy*
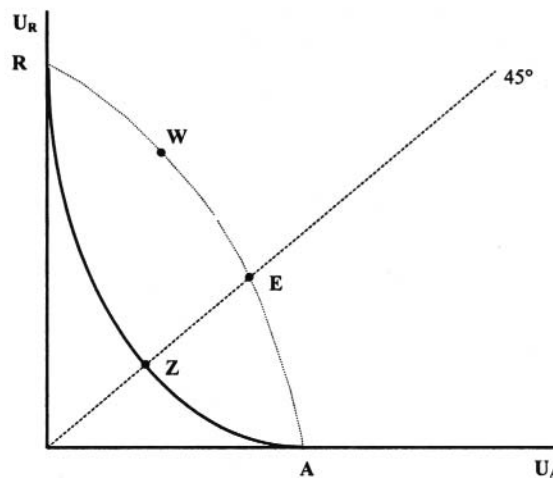
Altruism, egoism and envy in the mutual form are shown in figure 10. Whereas altruism with respect to egoistic behaviour leads to a raising of individual utility levels as well as a rising of society's welfare, envy causes in comparison to egoism a loss in welfare. The stronger the feelings of envy to one another the larger the loss in welfare (see the simply shaded area in figure 10). Apart from causing a loss in welfare, envy also causes a decline in society's general consensus, in other words the political divergence grows (polarisation), so that democratic majorities are harder to find for the supply of public goods or for the states motivation for intervening in distributive policies. Unanimity is unrealistic.

In societies where social justice is sought (in the sense of both justice of ability and justice of needs) and in which the majority of the citizens (as either producers or consumers) have taken the values of an open economy including the ethical foundation to heart, envy as a continual phenomenon will rarely crop up. This is because inequality has in the first instance to do with personal

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[24] Hackmann (1972, pp. 194) shows similar courses of utility possibility curves, however with a different reasoning.

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performance. It is perhaps not unrealistic that at some lower levels of utility and income firstly envy and then egoism followed by altruism will come through the strongest. The utility possibility curve of such a society would most probably be rather complicated.

Fig. 10 – Utility Possibility Curves, Egoism, Altruism and Envy
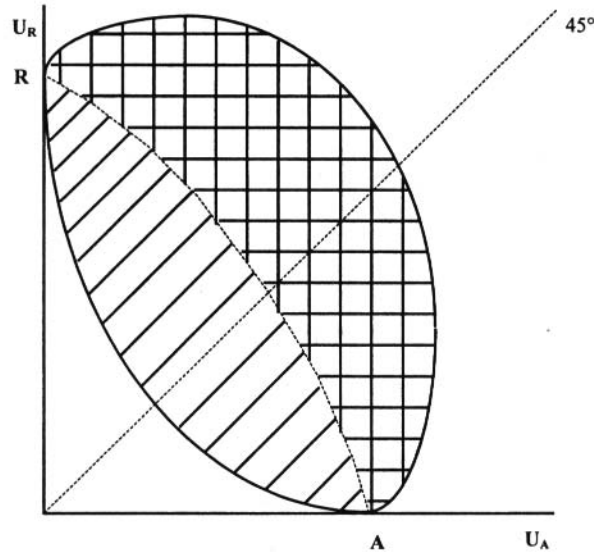
In figure 11 a more styled course of a utility possibility curve is portrayed. In observation of the possible course of the utility possibility curve it should be obvious that individual egoism leads to a satisfying level of welfare for the whole society. Above and beyond this it is ethically seen as acceptable human behaviour. Altruistic behaviour is surely to be rated higher, but realistically it will only appear in a restricted form. Not even Christianity requires of its believers selflessness.

2.4. Types of Social Welfare Functions

Social welfare functions are described as individualistic when they are based on the individual utility functions of humans. These can be more or less arranged through their "social commitment" that through the type of aggregation or consideration can be expressed through the individual utility. The Benthamian or utilitarian welfare functions assume that all people strive for happiness and welfare (hedonism). Therefore all participants should act in a man-

ner that is optimal for them. This is based on the consequential ethics in the sense that all effects of actions (including external effects) can be estimated. This is not just about a great happiness for the subjects but also about "the greatest happiness from the largest number". According to this the Benthamian welfare function SW_B adds up the single utility positions:

$$SW_B = U_1 + U_2 + ... + U_n = \text{max}!$$

and

$$SW_B = \sum_{i}^{n} U_i = \text{max}!$$

Fig. 11 – Utility Possibility Curve on Partial Envy and Altruism
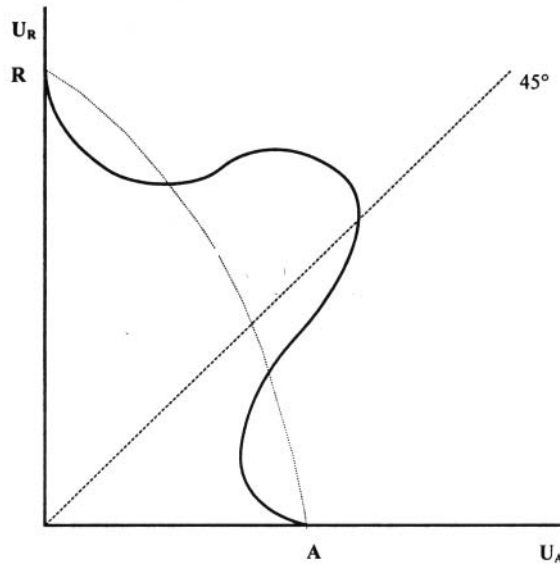
Utilitarianism is accused of bringing forward the position that leads to a higher total utility (apart from the consequences of distribution mentioned in the minimum sacrifice principal above). The distribution of the individual utility is not taken into account so that with the presentation of individual utility functions a distribution from rich to poor can also lead to a rise in the total welfare. "An impoverishment of certain social classes can be ethically justified according to the theory of conditional total utility maximisation" (Enderle 1985). On the other hand the positive side of utilitarianism must be brought to

the forefront, this being that not only the present, but also the future genera-
tions are taken into account in the decision making; this includes all living
creatures[25]. Finally fact is that the Benthamian welfare function does not ex-
clude the possibility of a maximum in which one or more persons receive no
utility at all ($U_{1,2} = 0$). These people will then be allowed to vegetate under
the physical minimum existence and starve. The social commitment of this
welfare function is so small that the basics of distributional policies in a social
market economy would have to be rejected if there were many people in such
a society that were unable to perform to the extent that they would be able to
achieve the social cultural minimum existence under their own steam.

Let us use our above developed instruments to clarify the connections. As
is easily shown the Benthamian social indifference curve is a linear function
with the slope of -1[26]; the utilities of the two families therefore go equally
balanced into the total prosperity. However with the Benthamian social indif-
ference curve an egalitarian solution E deviating optimum optimorum only
then results when the original entitlements were distributed unequally as as-
sumed in figure 12. This being the case the Bentham point then lies once
again on a higher indifference curve compared with the egalitarian point E.
With complete equality in the original situation both points fall together.

The Nash welfare function (Nash 1950) is a game theoretical function
which was derived as a solution to negotiations between two partners. In its
simplest form it postulates that the individual utility functions of the single
persons should be linked through multiplication (and not through addition as
in Bentham's theory) and to maximise the product of the utility levels:

$$SW_N = U_1 * U_2 * ... * U_n = \text{max}!$$

or

$$SW_N = \prod_i^n U_i = \text{max}!$$

The Nash welfare function excludes unlike that of Bentham that the indi-
vidual utility of a member of society is zero or negative, because otherwise
the total prosperity would be either zero or negative. In this respect SW_N
shows a higher extent of social commitment than SW_B. Beyond this the wel-
fare function from Nash is not indifferent to the redistribution from poor to
rich. For example family A has achieved a utility level of 4 and family R one

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[25] See, e.g. Waibl (1988).
[26] See, e.g. Atkinson/Stiglitz (1980).

of 8. In the case of the SW_B this would result in a social prosperity level of 12. If one utility unit is redistributed from A to R (3 and 9), it remains unchanged. Using a multiplicative link we would get a social prosperity level of 32. If one unit is moved from A to R (3 and 9), then the prosperity level sinks to 27. In the opposite case (5 and 7) it increases to 35. The highest possible level is achieved with equal distribution (6 and 6). This means that the Nash function shows to have an even higher level of social sympathy, moves in the general direction of equality. Formally the indifference curves of this function correspond to the figures 3 to 6 (I_1 etc.). The deviation from the egalitarian solution can be followed back to differing original entitlements or preferences.

Fig. 12 – Optimum Optimorum and the Benthamian Social Indifference Curve
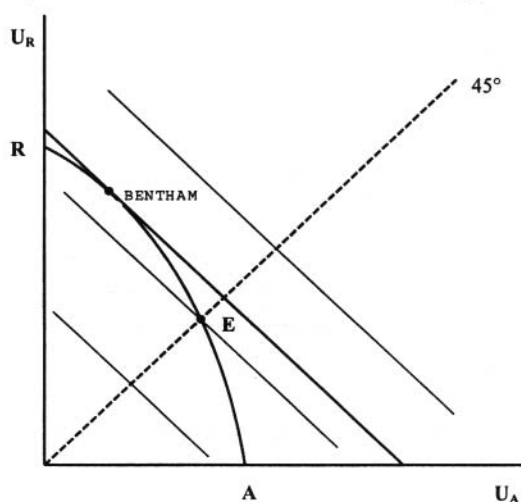
Rawls approach on equality is based on social fairness (Rawls 1975), this means that the advantages of one member of society should not be at the cost of another. In other words the members of society are not allowed to expect things to others that they would not do themselves. As a contract theorist Rawls believes that all individuals in their original situations are subject to a "veil of ignorance". If one had to make a choice on the rules of society then according to Rawls everybody would choose those, which one would still find acceptable if one "landed at the bottom of the heap" (Waibl 1988). Due to risk adverse behaviour a unanimous decision came into being about a rule that maximised the utility of the poorest person within society:

$$SW_R = \max \min (U_1, ..., U_n).$$

All people have an equal claim to freedom and human rights; social as well as economic inequalities are only acceptable if (a) the starting chance with regard to all positions and offices in society is equal and (b) if everybody gains advantages from the social and economic inequalities, this means the worst off individual is still better off than if an egalitarian distribution system was in operation[27]. So the social weighting of the poorest member of society is very high; the social indifference curve of this maximum principal lies on the 45° line and has an L-shaped course (figure 13)[28]. To make this relevant one has to be aware that the Rawlsian maxim in principal is based on an index of basic goods, which is neglected for the following argumentation.
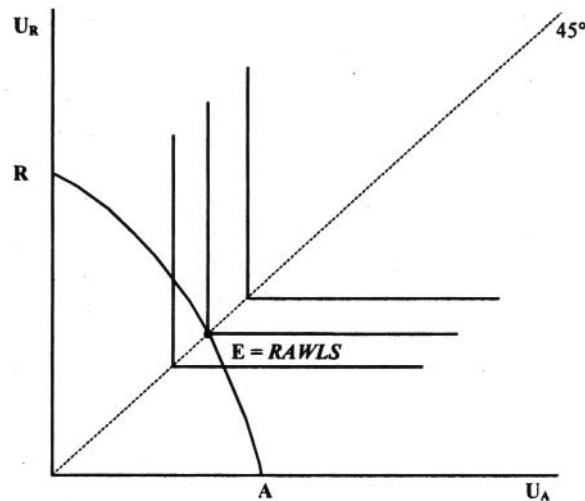
Fig. 13 – Optimum Optimorum and Rawls Social Indifference Curve

Whether or not (as assumed in figure 13) the original entitlement is unequal (R > A) or equally distributed, Rawls optimum optimorum matches the egalitarian solution E, in the case of pure egoistic behaviour[29]. This is also valid for

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[27] Regarding this there also exists an "elite" social welfare function, also known as Nietzsche's welfare function, which states that the maximum is only then achieved when the utility of the person who receives the highest utility is maximised:

$SW_N = \text{maxi max} (U_1, .., U_n)$.

On a first glance this principal would break leading equality ideals and therefore would not gain a general consensus.

[28] Atkinson/Stiglitz (1980) offer the mathematical proof.

[29] In Rawls description of the state of the nature he believes that people (families) show no

equal original entitlements and mutual altruism, whereas in the case of differing original entitlements and mutual altruism (as clearly shown in figure 14), Rawls solution does not appear to be egalitarian. In this case Rawls solution for family A is also connected with a higher utility level than the egalitarian solution E. Rawls maxi min principal leads then to an equality digressing result when the original entitlements (including preference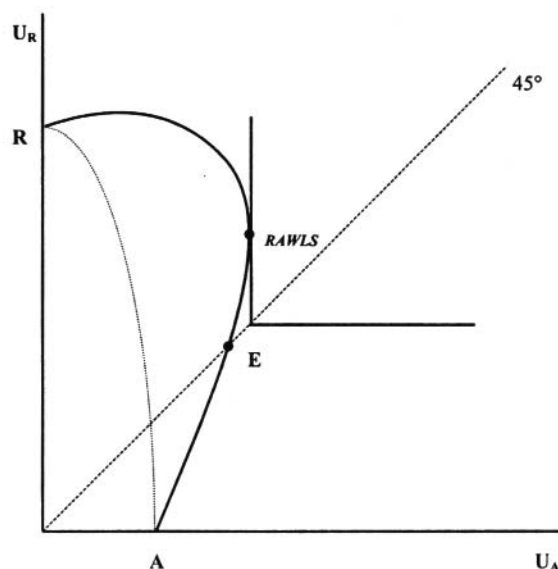s) are not identical and at least one family acts in an altruistic manner. If however redistribution is pushed beyond a certain level the utility interdependence transforms into egoism and finally envy[30].

Figure 14 – Optimum Optimorum, Rawls Social Indifference Curves and Mutual Altruism

Such as shown in figure 15, Rawls solution lies once again on the point of which it brings family A a higher utility than the egalitarian solution E, and simultaneously improves family R's condition and the prosperity of society.

Through the development path shown in figure 5 we can prove that Rawls maxi min principle only accepts inequality when this does not burden the poorest member of society. This is shown in figure 16. Up until Rawls point the distribution becomes increasingly unequal, however both (A and R) gain

interest for one another, which would verify the assumption of a pure egoism.

[30] This is identical with our explanations above, that rampant redistribution destroys the incentives of those able and willing to perform.

utility[31]. Beyond this Nash's and Bentham's welfare function are at a tangent on the development track thereby allowing the redistribution from the poor to the rich through which the utility of the poor family sinks. If we remember the Pareto criteria which states for an increase in society's prosperity that the increased utility of at least one individual member of society must occur without a worsening of the utility of others, the welfare function according to Rawls fulfils the Pareto criteria even from a dynamic perspective; it also avoids in the evolutionary process a worsening of the utility situation of family U_A. This does not occur with the welfare function by Nash and Bentham. It is also the case that the welfare function by Rawls shows a higher preference to social commitment and equality than that of Nash and especially Bentham.

Fig. 15 – Optimum Optimorum, Rawls Social Indifference Curve, Altruism and Envy

Our assumption that a gradual transmission from altruism to egoism and envy occurs can, in the face of realistic human behaviour, certainly be justified. Due to lessons on the effects of taxes[32], we are aware that a high tax burden on the well off leads to a cut in the supply of effort, they do not just accept the consequences of increasing redistribution. The attempt to produce equality through taxes and transfers would in our two families model, in

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[31] See Rawls (1990, pp. 96).
[32] See, e.g., Petersen (1981 and 1982).

which neutral lump sum taxes and transfers could be applied, lead family R as consequence of their uprising envy to reduce their input of labour and capital, thus reducing the welfare of both families[33]. Here again the problem of opportunity costs becomes obvious which are caused by the excessive persecution of the justice of needs concept leading to a reduction of prosperity. Perhaps there is something to be said for the phrase "If the rich are well, then so are the poor".

Fig. 16 – The Development Path and Different Social Indifference Curves

In case of the realistic assumptions that have been underlined here the maxi min principal does not lead to the egalitarian solution; the formerly often mentioned accusation that Rawls was an egalitarian can therefore not be backed up. Harsanyi's (1975) criticism of Rawls that the interests of the poor had priority, regardless of how high the opportunity costs were and that the maxi min principal stood in contradiction to the utilitarian as well as ruling social ethics is also inappropriate. Rawls' maxi min principal also only takes

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[33] Stiglitz (1988, p. 446) explains the course of the utility possibility curve with the distorting effects of non-neutral (proportional or progressive) taxes or transfers. This is not convincing, because lump sum taxes and transfers can be implemented in a two persons model.

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the provision with basic goods into account which does not necessarily in-
clude high quality luxury goods. If one takes this fact into consideration the
maxi min principal is compatible with political ideas in which society is only
responsible for the provision of basic security to the needy. In figure 15 the
physical minimum of existence U_{min} has been levelled out; if this should be
secured then only solutions that come into question lie to the north east of
U_{min}. Rawls' solution would then be compatible with the search for the high-
est possible social cultural minimum of existence, without total prosperity be-
ing drawn into strong feelings of apathy[34]. The solution is however far from
the egalitarian solution E. The welfare function according to Rawls certainly
proves itself to have the formerly mentioned highest social commitment.

The welfare functions that have been looked at up until now have all been
individualistic. In a non-individualistic or collective social welfare function
not just individual utilities appear, but also utility differences between the
members of society or simple collective utility sizes (e.g. the maximisation of
the utility function of the well meaning dictator). One of the first modifi-
cations would lie there in that individual utility arguments would continue to
appear in the social welfare function, however not in a monotone fashion.
Such a welfare function would still be individualistic but not paretian. The
implications of non-paretian targets are clarified through the principal of the
utility compensation (an extreme case would be the minimum sacrifice princi-
ple mentioned above) which is also termed as being an egalitarian principal.
The egalitarian target objectives, shown in point E in figure 17, are connected
to the utility differences between the individuals. For example is $U_2 > U_1$ and
the social welfare function sinks only with the utility of the second economic
subject, then point E becomes optimal, and the social indifference curve is in
line with the 45° curve.

Certain intermediate targets that take the "trade-off" between utility differ-
ences and utility levels into account may exist. For example, according to
Nozick, in the way that ($U_2 > U_1$ is presupposed) the weighted utility differ-
ence appears in the welfare function in the following shape:

$$SW = U_1 - \alpha (U_2 - U_1)$$

where α determines the extent of the tolerated utility differences[35]. The result
is a social indifference curve that runs more steeply than the 45° line (fig. 17).

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[34] In the example of figure 15 the individual utility levels for the poor and the rich families
in case of the egalitarian solution are lying below the physical minimum of existence.

[35] In the case $\alpha \to \infty$ utility differences will not be tolerated ($SW \to -\infty$), we receive an
egalitarian solution. With $\alpha = 0$ Rawls' solution ($SW = U_1$) would result.

The social optimum lies in the areas between E and Rawls solution and is determined by the extent of the tolerated utility differences.

A further deviation from the evaluation of the social welfare for reasons of individual utility can then exist when a paternalistic ideal is connected to the consumption of certain goods. This would be the case with goods like alcohol and tobacco (demerit goods) underlying specific indirect taxes. Beyond this Tobin developed the principal of specific equality, because society is not just confronted with the problems of general inequality, but also with the distribution of very specific immaterial goods. Extreme cases would be human rights and the right to vote, but also the supply of basic foods stuffs or health services in times of war. In such cases strict equal distribution is of the utmost importance. On the other hand certain goods exist, where an equal distribution is not necessary but guaranteed minimum consumption (minimum of existence) is (such as food stuffs in peace time, education and sufficient living quarters). These last objectives are already included in Rawls' welfare function which is based on individual utilities[36]. In dictatorial welfare functions, the degree of redistribution is dependent on the dictators ideas (or those of the ruling clique) on distribution.

*Fig. 17 – Egalitarian Social Preferences*

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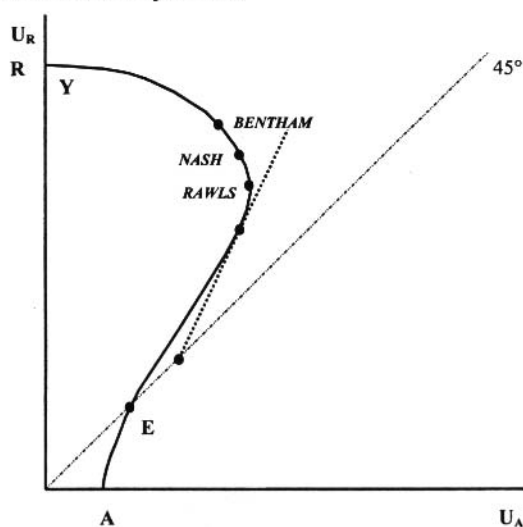
[36] Not necessarily in Bentham's welfare function, which allows zero utility by one or more members of society.

3. The Trade-off Problem

Material preferences, but also ethical ideas are enclosed in the individual utility functions. In certain circumstances the latter are expressed in a positive interdependency of the individual utility functions. With the idea of aggregating the individual preferences by using a social welfare function, the influences that the single members of society have on the total prosperity must be guaranteed. Further ethical ideals continue to go into the kind of aggregation of individual utility levels (in connection with the decisions on the aggregation rules). The utility levels themselves are equally balanced according to natural law[37], so that in the two families model family A's utility has no greater or lesser importance for the total prosperity than that of family R.

Fig. 18 – Equality in the State of Nature and Social Indifference Curves
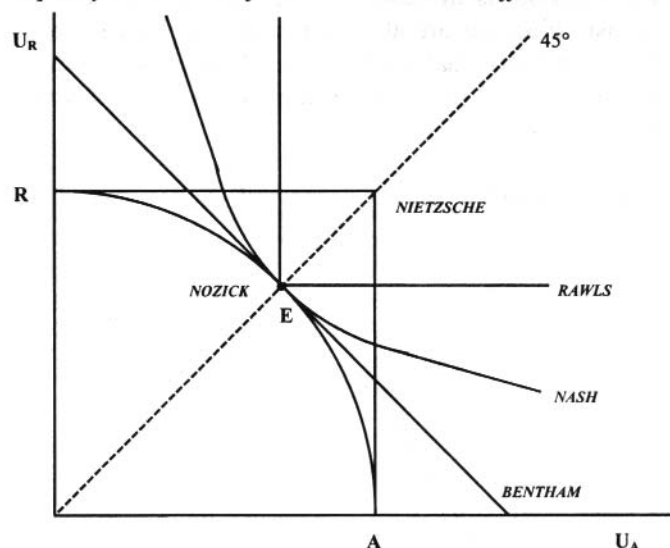
The various thinkable social welfare functions embody nothing more than a value judgement on the preferred distribution of society's prosperity. Whereby this distribution must lie on the utility possibility curve if it is to obey the basics of economic efficiency. Regardless which method of reasoning the advocates of a single social welfare function bring[38], it must be mentioned that in an open society the ideas of distribution must always be dis-

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[37] Expressed mathematically the isoelastic social welfare function is to be used.

[38] For example a unanimous decision as a result of a veil of ignorance as Rawls uses.

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cussed again and again[39]. Even if the idea of a social welfare function is a purely theoretical construction, that will never be put into practical use in a democratic society, the opinions on the equality of distribution and the extend of redistribution which is striven for nevertheless play an important role in elections.

This means that in practical politics people have differing opinions regarding distributional objectives in the hope of gaining a majority. In our approach we can clarify the differing opinions using social welfare functions and can let these at least hypothetically be decided on. In a two persons (or two families) model the vote following the majority principal should remain unproblematic, there a majority can only be reached with a unanimous decision. Firstly we want to look at this model approach before we consider a more realistic approach with a group of poor and rich members of society, the former of which contains more members than the latter. The conceivable social welfare functions are firstly summarised in one diagram whereby the minimal state by Nozick and Nietzsche's welfare function (or maxi max welfare function) will be added. In figure 18 we assume perfect equality (regarding factor entitlements and preferences). It is immediately obvious that the welfare functions according to Bentham, Nash, and Rawls all lead to an egalitarian solution. Because with equality one cannot see the reason to redistribute, Nozick's Minimal State would also be around point E. However Nietzsche's welfare function delivers a corner solution in A and R, so that a cooperative solution between the Families A and R will no longer come into being.

In figure 19 the situations at inequality, altruism, and envy will be portrayed[40]. As with Atkinson/Stiglitz, Notzik's minimal state is set autocratically. Because Nozick makes no comment in his minimal state regarding altruistic behaviour or that redistribution can be virtually disregarded, we are placing Nozick's minimal state on the dotted egoistic utility possibility curve. This placement explains that Nozick (1974) excludes Pareto improving redistribution and a voluntary redistribution caused by altruism which does not serve economic efficiency, and from the view of the social welfare functions portrayed here is not justifiable either. In our example Nozick's minimal state does not fulfil the criteria that should be the basis of an efficient and socially minded society. In our two families model, family R carries through a voluntary (Pareto-improving) redistribution without any form of ballot mechanism, as far as the point on the utility possibilities curve is at a tangent to Nietzs-

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[39] Tanghe (1987, p. 142) may be right when he says that stable fixed social welfare functions are typical for closed societies. That open societies have to be free anarchistic societies does not have to be examined any more closely.

[40] This depiction follows the portrayal by Atkinson/Stiglitz (1980, p. 338), but it is justified differently.

che's function. From this point onwards a voluntary redistribution without a ballot mechanism does not exist, because the Pareto-criteria is violated as family R begin to lose utility.

It should be beyond doubt that rational members of society who have no feelings of envy could completely agree with Nietzsche's solution. In a two families model, as long as the families accept the corresponding distributional decisions, unanimous solutions are conceivable with a view to the solutions by Bentham, Nash and Rawls (figure 19). This means a redistribution could be carried out without pressure from the state. On the other side of the solution by Rawls (in the direction of an egalitarian solution), there would most probably be no majority consensus, because the behaviour of Family R would change to egoism or envy[41].

Fig. 19 – Social Indifference Curves, Modern Normative State Theories at Altruism and Envy
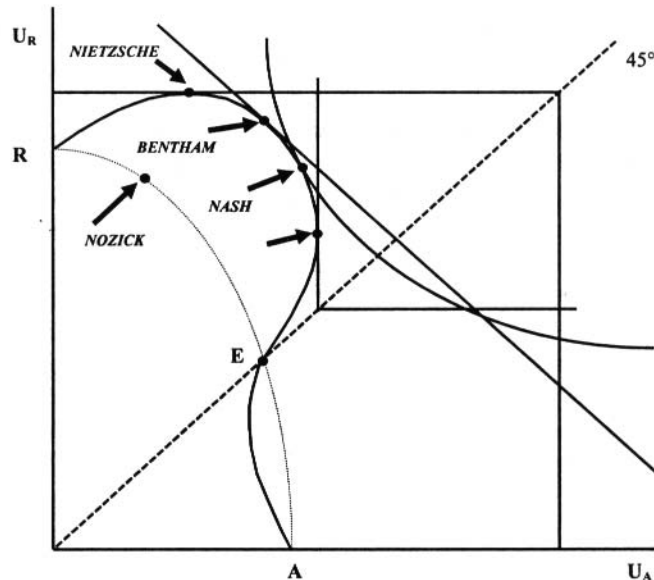
State intervention (or the state as a redistributional agent) is necessary when the two family model goes over to models with groups of people, with

[41] Rawls solution would define the outer most acceptable borders on redistribution. This no longer Pareto improving redistribution could be agreed to by the family R when for example they believe that family A will be put in the situation where they will improve their provisions with factors of production (labour and capital). This would lead to a utility possibility curve being resituated towards the north east in the future. Family R would also profit from this so they would probably agree unanimously because of a long termed personal interest.

differing numbers of people in each one. To stay with the two dimensional approach we will assume that we have a group of rich individuals and a group of poor individuals, whereby firstly the utility levels (income levels) are supposed to be equal in both groups and secondly the groups have the same number of persons. Such a model approach brings with it the problem that the group of rich people, who will pay the price of redistribution, have no complete information about their own situation or that of the poor group. This means that without coordination the transfer payments can overwhelm some of the poor while others remain empty handed. This could result in attempts of transfer fraud.

Also on the side of the rich problems will occur. With the interdependency of the utility functions (when the rich behave altruistically) a transfer payment by one of the rich members of society to the poor leads to an increase in utility for all the rich members of society. If these behave as free riders then the redistribution corresponding to the social welfare functions (see figure 19) would be agreed to unanimously, but not be implemented without the use of force, leading to the instability of the altruistic behaviour and an eventual disappearance of such. If the moral laws fail then the only help comes from the wish for redistribution backed up by state pressure (through a tax and transfer system).

Even if the groups are equal in size, a majority (or unanimous) consensus is also possible for a solution that goes beyond Nietzsche's solution. The area from Nietzsche's solution up to Rawls' solution on the utility possibilities curve R_A (figure 19) could be termed the area of democratic solutions, meaning the span of possible redistribution that may be achieved with a majority in a social market economy and open society.

The restriction of the redistribution to Rawls' solution can only be expected if the groups of rich and poor are equal in size; in reality this is not the case. It is typical that a small group of rich (to varying degrees) people on the one side and on the other a large group of poor (to varying degrees) people exist and in-between there is a more or less heterogeneous middle class. Let us assume for simplification that the group of poor people is larger than that of the rich people, but with regard to utility (income) they are homogeneous. In this case the line of equal distribution is no longer the 45° line, it must now be steeper, because the weighting of the poorer people has increased[42]. Apart from this as a consequence of the basic democratic principle "one man, one vote" the poor still have the majority position.

This is where the fears commented on by Buchanan link on, namely that in

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[42] Formally observed the weights in the social welfare function would no longer be equal, e.g. the partial utility elasticities within the Nash function would vary in height.

a democratic society the poor could try to exploit the rich[43]. They are in the majority and could implement a strong progressive system of taxation, and simultaneously set high transfer payments for the less able people, so that in the end Rawls' solution is overstepped in the direction of an egalitarian solution. Because politicians want to be voted back into office, in other words their motivation is one of personal power preservation, they will follow the moods of the majority. They are less likely to implement the taxation instruments as they fear the negative reaction of those taxed. Instead of this they will finance the transfer payments that are demanded by the majority through public debts, leading to the democratic societies sinking in national deficits and finally collapsing into bondage. This is a short description of Buchanan's and Wagner's book *Democracy in Deficit* which was described by Tobin (1978) as the basis of demagogy.

Whether it be demagogy or not, the historical developments appear to be verifying many of Buchanan's fears[44]. As he is an advocate of the contract theory approach, it is obvious that he is searching for types of constitutional barriers to protect the rich minority from the poor majority. The constitutional protection of minorities is one effective device. Another method would be to make it plainly obvious to the poor or less well off members of society how many opportunity costs are tied to such an excessive redistribution.

Our model approach which is in the end a theory on efficiency and justice makes the borders of redistribution very clear. Then the possible behavioural adaptations on the side of the rich and on the side of the poor would lead in case of a strong tendency for egalitarianism to a situation of general poverty. One has to remember that it is the rich who can avoid the burdens of the state with the greatest ease. Their avoidance elasticities are especially high. Capital is a much more mobile factor of production than labour, if it is overtaxed it will migrate to foreign countries[45]. If companies are overly taxed they will take up strategies for tax evasion or the entrepreneurs will privatise their capital and consume it. In every case it means a declining capital stock for society which would turn into a loss in jobs. Therefore the rich are not unarmed and in the hands of the poor. If it is not worth performing then nobody will perform in this society. If the majority is in favour of an egalitarian solution, then these costs must be carried in the form of a lower prosperity. Once this has become common knowledge then democratic majorities for egalitarian policies will no longer be found.

From the view of society's prosperity, the solution according to Bentham

[43] Especially expressed in Buchanan/Wagner (1977).
[44] See for instance Petersen (2000).
[45] See Petersen (2004) and Petersen/Fischer/Flach (forthcoming).

is the one that lies in the most northeasterly position and therefore demonstrates the highest level of welfare. In the movement from Nietzsche's solution to that of Bentham R loses utility, which is in turn overcompensated by A's gain in utility. On and on from Bentham to Nash and from Nash to Rawls, the loss of utility for R becomes greater than the utility gain for A and society's prosperity level sinks, while a stronger egalitarianism is simultaneously achieved in the utility distribution. The price for this greater social sympathy (or equality) lies in the loss of welfare. If this is demanded by the majority then the solution is economically efficient and socially justifiable.

Under the assumptions made here the judgement regarding the egalitarian solution E is obvious. The rich greatly lower the supply of effort and the rich as well as the poor lose out. Under the assumptions of real human behaviour this model shows exactly the same that real existent socialism brought to the forefront, namely the destruction of society's prosperity. This collective solution is theoretically weak from the start, practically it can only exist until experience of the system is available. In democracies collectivism is not able to hold a majority over any period of time, as the evolutionary process within the system would be destroyed.

4. Concluding Remarks

We have shown altruism, but also egoism as positive forms of human behaviour. The problems start then when cohabitation is dominated by envious behaviour. Figure 20 shows the utility possibility curves in the case of mutual envy. As A has a high marginal envy, the sacrifice of a large part of utility by R does not lead to the equivalent increase in the utility of A, which is much lower when compared to mutual egoism (see the dotted utility possibility curve in figure 20).

In an envious society further problematic questions appear, namely which social welfare function will be agreed on? In a two families or two class society (both being the same size) Rawls' solution will not be agreed upon, which does by the way correspond to the egalitarian solution. The Nash solution also falls away as it stems from cooperative negotiations. Envy coupled with egocentricity points to Bentham's solution, the result of which is the (defective) corner solution R (figure 20). In other words the rich family (class) will maximise its utility, because in this situation the highest total social prosperity is attainable. Should the poorer class be in the majority they will try to gain the maximum level of utility A (at the cost of R). Envy, egocentricity, and non-cooperation lead society into catastrophe. Therefore the development of a social ethics has a high priority which excludes envy as basic behavioural pat-

tern. The justice of ability concept is such an approach, which – when generally accepted – could avoid envious behaviour as one of the most destructive issues of society.

Fig. 20 – Optimal Welfare and the Envy Society
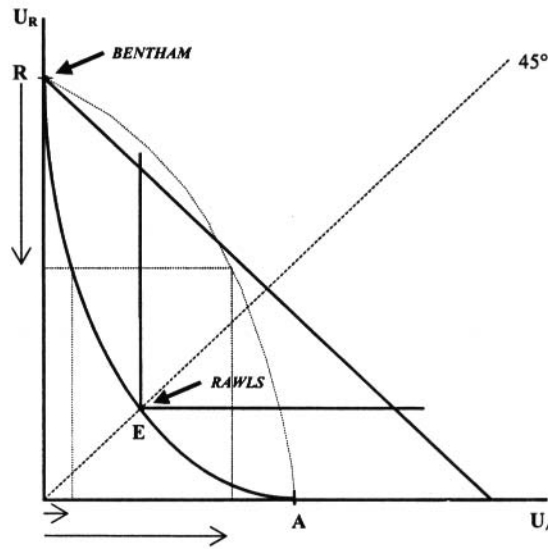
Economics alone surely cannot overcome the problems connected with the justice of needs concept. Just as important are the social ethics, and politics, which possibly through the efficient design of society's institutions enhance individual responsibilities and restricts the often occurring principal/agent problems. Our economic approach however has the advantage of highlighting the opportunity costs of an overdrawn equality due to the justice of needs approach. Open societies will not always be successful in finding the optimal level of distribution and in keeping it in equilibrium in an evolutionary process. However the permanent discourse above and beyond the narrowly defined modern disciplines about the possible costs of redistribution and the disastrous effects of envy may at least in the long run persistently support the willingness to reform and the search for new solutions.

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Abstract

Redistribution and the Efficiency/Justice Trade-off

The trade-off between efficiency and justice is one of the most important political conflicts in democratic societies. However, a clear definition of justice is helpful to come to a social con-sensus on a quasi-optimal mix of both important societal targets. While justice of ability is fully in accordance with economic efficiency, the justice of needs concept requires a more careful analytical investigation. Justice of needs and combating poverty is always connected with in-come redistribution; in case of altruism the redistribution often takes place on a voluntary basis, which is obviously positive from a social perspective and even trouble-free for economic effi-ciency. In case of egoistic sentiments, voluntary redistribution becomes questionable and the state as redistributive agent begins to play an important role. Whereas altruism and egoism overwhelmingly will lead to a societal agreement on anti-poverty strategies, envy as a negative interdependency in between the individual utility functions plays a harmful and dangerous role for a social consensus in democratic societies.

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