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### **Local Equity**

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# Local equity

## (L)abstraction does not guarantee generality

Hume's "Treatise on human nature" (Hume, 1739/1978) can be interpreted as an extended effort at bringing to bear experience on normative issues. In justifying standards (or norms) of good conduct he is relying on "*normative facts*" (i.e. what custom as well as people as a matter of fact demand, desire... to be, to be done, ...). As a *normative fact* an "ought" may exist as defined by conventions like the rules of a specific legal order. The secondary process of sanctioning non-compliant behavior and the primary demands of the legal rules specify what as a *matter of fact* "*ought to*" be done.

The query whether something ought to be done in this "factual" sense of "ought" can be answered empirically according to criteria (eg, the so-called rule of recognition of Hart, 1961) that are themselves not dependent on normative judgments but on facts. For example, whether or not in some society a male "should" raise his hat when encountering a female member of society can be answered in an empirical way for a specific society at a specific time. Describing the prevailing custom (as located in space and/or time) is enough.<sup>1</sup>

Not all "ought" is of the rather arbitrary kind showing up in customs of "hat-lifting". Experimentalists from psychology and economics have been doing some empirical "weight-lifting" on more interesting and relevant normative facts in recent years.<sup>2</sup> And, equity theory is arguably the most prominent and general case in point. However, as we shall argue, even according to a benevolent account of experiments "local equity"<sup>3</sup> seems to be more plausible than any universal conception of equity (as implicitly alluded to in particular in the nowadays rather popular theories of "inequity-aversion").

The view that neither in the descriptive nor the prescriptive sense there can be a general "moral science" seems to be vindicated by normative facts about equity. The point is not that social life is too "rich" for empirical abstractions. We do not claim to know better than the empiricist what is relevant and what not. The philosophical project of forming very general normative "theories of justice" while rejecting the viability of general empirical theories does not seem to be very appealing or coherent to us.<sup>4</sup> However, we believe that nurturing the illusion that we are in command of a general theory of "normative facts" about human behavior where none exists is worse than admitting that normative facts may be too complicated for forming general theories about them. The example of equity theory seems to corroborate both that empirical evidence is

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<sup>1</sup> Deriving an "ought from is" in a factual sense does not violate Hume's verdict against deriving "ought from is". It does not answer the question whether what as a matter of fact ought to be done ought to be done by a specific person. In particular the first person perspective on moral responsibility is a different matter altogether.

<sup>2</sup> We interpret the term "experimental" in the modern sense rather than the broader Humean sense of "experiential" (as still prevalent in books like Mayo 1996).

<sup>3</sup> Of course, we are alluding here to Jon Elster's concept of "local justice"; see for instance the book of the same title, Elster 1992, see also Schmidt, V., 1994.

<sup>4</sup> Theories searching for a reflective equilibrium on these matters as developed in Rawls 1970 need to take into account the relevance of "normative facts", see in a related vein Goodman 1978, the overview in Hahn 2000 and also for a related effort Güth and Kliemt, 2010.

relevant for discussions of normative issues and the limited nature of theories that we might develop.

### 1. Substantive equity – a stylized account of some older and recent results

Equity theory has a long tradition in social psychology (see originally Homnas 1961, Adams 1965 or Mikula 1973), philosophy (see Frankena, 1966 tracing it back to Aristotle). More recently experimental economists devoted quite some attention to equity or related theories. The theories have a core that can be formulated in general abstract terms. It can be isolated, represented and tested in experiments that eliminate the ambiguity of real life decision situations by design.

The preceding strategy of “labstraction” (abstraction by laboratory means) seems desirable for purposes of testing the abstract theoretical core. Yet in cases like equity theory it leads to a deceptive impression of generality as well. As we shall illustrate behavior may become qualitatively different if factors like stochastic/strategic uncertainty and competing aims like efficiency are admitted rather than eliminated by experimental design. This casts doubts in particular on the more simple minded claims to generality like for instance that of a universal “inequity aversion” (as in Fehr and Schmidt, M. 1999, Bolton, G. and Ockenfels, A. 2000). But before turning to criticism it is useful to identify and to present the core elements of equity theory in the conventional way.

#### 1.1. The classical core

To allocate rewards according to contributions to common projects is an established principle of social practice. In many classical as well as modern accounts of (distributive) justice it shows up in one way or other (see for instance the entries in the law and economics “New Palgrave”####). In a stylized representation we have:

$N = \{1, 2, \dots, n\}$ : the set of individuals contributing to some common project.

$I_i (> 0)$ : the individual contribution of  $i \in N$  to the common project.

$R_i (\geq 0)$ : the individual reward to  $i \in N$

The equity norm postulates that the allocation of rewards will be proportional to contributions

$$(*) \quad \frac{R_i}{I_i} = \frac{R_j}{I_j}, i, j \in N.$$

(\*) applies to a wide range of cases including some that at first sight might seem beyond its reach. For instance, in standard two person ultimatum or dictator game experiments it seems that there is nothing on which to base proportional assignment. None of the individuals has

contributed to the common project of producing the “pie” that is to be allocated by an individual who is afterwards cast either in the proposer or the dictator role.

However, this strict interpretation of equity conceptions may be precarious. In all standard cases it is common knowledge among the two actors that the “cake” to be divided is one “that none has baked”. In terms of equity theory this can be interpreted as stating that the two actors are aware that they contributed the same, namely nothing to producing the pie or cake. So, according to equity theory they must be treated the same way. Then an equal split of the pie seems natural. This explains why in ultimatum game experiments in which the so-called proposer and the so-called responder share the relevant knowledge proposers will allocate equal shares. Apparently they have no reason and no excuse to act otherwise. The responders tend to expect or to demand such allocations. It seems quite safe to conclude that the preference for equality observed in ultimatum games is a special case of equity-seeking behavior.

### 1.2. The modified core

Somewhat more formally and more generally speaking, we have to define first what is to count as a contribution of an individual. In case of a dyadic relation of two individuals from a set  $N = \{i, j\}$  let  $I_i, I_j$  denote the inputs of the two individuals from  $N = \{i, j\}$  to the project  $R = f(I_i, I_j)$ . Provided that the level of measurement allows meaningfully to add up and to divide values we can form the total contribution  $I = I_i + I_j$ . Assuming some type of separability we get  $R = f(I_i, I_j) = f(I_i + I_j)$ . The relative contributions to the joint product  $R = f(I_i + I_j)$  are  $\frac{I_i}{I_i + I_j}$  and  $\frac{I_j}{I_i + I_j}$  respectively. If the distribution is to be of the kind suggested by equity theory the size of the rewards for the individuals should be determined according to

$$(*) \quad R_i = f(I_i + I_j) \frac{I_i}{I_i + I_j} \text{ and } R_j = f(I_i + I_j) \frac{I_j}{I_i + I_j} \text{ for } i, j \in N .$$

Under the assumptions that variables can be added and separated (\*) emerges as obviously equivalent with (\*). This indicates that (\*) is more attractive when R depends on inputs in a (multi-)linear way (see Selten 1978, for a discussion of the pre-requisites of equity theory). We are content to let it rest at that and will focus more or less on “(\*)”.

### 2. Procedural vs. substantive aspects of equity

In standard dictator and ultimatum games not only the resource to be distributed but also the roles in which individuals act are exogenously assigned. The allocation of “procedural entitlements” to make substantive allocation decisions in an ultimatum or dictator game is quite asymmetric.<sup>5</sup> We can hardly say that it is equitable to make one actor a dictator while the other is at the receiving end in a dyadic interaction. In the ultimatum game the allocation of decision rights seems only slightly less inequitable.

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<sup>5</sup> The same applies also to intermediate cases as the “yes-no-game” as described in Gehrig et al 2007.

In both cases a fundamental inequity in role allocation is present. Yet despite of asymmetries in decision rights-allocation, the substantive allocation of resources seems to closely follow the suggestions of equity theory. This indicates how deeply the equity norm is rooted in behavior and judgment. We observe:

(O-1) If the relevant parameters of (\*) are clearly defined and commonly known, the basic equity norm tends to prevail (in spite of inequitable role assignment).

The early reward allocation experiments in social psychology (see again ####) were of a specific dictator game kind. The dictatorial allocation was taking place after individuals had worked together on some task to which they all contributed.

In cases with only two individuals, dictators would typically assign rewards according to relative contributions in the way introduced before. There was practically no deviation from the basic equity norm (\*) unless work was more of a fun type or a dictatorial allocator was granted the chance to be generous by the fact that he contributed more than half and allocated nevertheless equally to show her generosity (rather than the alleged inequity aversion).

In experiments in which the roles were also assigned endogenously, for instance in a bidding process the distribution of the bids became crucial. Winning her role as a dictator or a proposer the bidder was seen as entitled to use her discretionary powers in full. The allocation became equitable relative to the bids and inequitable with respect to the substantive pie allocation.

Even if equity demands proportional treatment of individuals the outcome may be different contingent on the variable perceived as relevant. Some actors may perceive subjective effort others objective contribution as relevant. The overall outcome will vary -- which will apparently not be in line with equity theory even though each individual dictator may still be acting according to the central proportionality requirement.

### 3. Stochastic and strategic uncertainty

In the standard dictator game experiments we are aware of, it is always the case that the fundamental parameters are commonly known; eg. in the dyad, actors  $(i, j)$ , commonly know  $(I_i, I_j, R)$ . It is somewhat unclear – at least insufficiently scrutinized – what would happen if individuals are less perfectly informed. There is some empirical evidence concerning private information in the case of ultimatum games, though.

Assume that the joint reward of co-operation can be either high or low. If only one of the actors is aware whether the joint reward is high or low a rather pronounced proclivity to offer merely the equitable (half-)share of the low reward can be observed (see Güth ####). This applies also if the private information indicates to the allocator but not to the receiving individual that the reward is high. The mere fact that the other individual will not know that the equity norm (\*) was not fulfilled is sufficient to induce the allocator to behave in ways that do not comply with the norm.

The preceding response to asymmetry in knowledge seems to indicate that observing the equity norm may not altogether represent intrinsic motivation. Individuals seem to be concerned more strongly with how they are regarded by others rather than what they know about themselves.

This does not imply that the norm does not play a role in guiding individual behavior. Yet the working of that norm is somewhat different from the way a “normal” moral norm is supposed to operate as an intrinsic motive.

(O-2) Private information and stochastic uncertainty that rule out the monitoring of parameters in (\*) render the prediction of equitable behavior precarious.

The (strategic or non-strategic) generosity that the allocator reveals in his individual behavior will be reduced by uncertainty. The complexities and imperfections of information will reduce the power of the equity norm as an intrinsic motive. The old cynical remark that being conscientious in the end boils down to the suspicion somebody might watch, seems to find some support here. The reputational aspect seems to be more important than the self-conscious one. What happens is not a matter of general principle but rather of circumstances.

#### 4. Opportunity costs of equitable behavior and consequentialism

The economists’ emphasis on opportunity costs coheres with the views of those philosophers who are weary of unconditional – non-local and non-circumstantial – ethical rigor. They will not accept the Kantian requirement that what is right is so “whatever the consequences”. For instance, Kant’s categorically affirmative answer to the query whether we must tell the truth even if asked by a murderer who on the way to her victim asks where the victim be does not appeal to most of us.

Other than Kant, practically all of us assume that all moral actors will *eventually* take into account consequences and costs. That does, however, not imply that consequentialism is operative across the board. Quite to the contrary, as long as opportunity costs of compliant behavior are not too high, norms like (\*) will play a non-consequentialist role in reasoning and guiding behavior. Rather than being traded-off at the margin norms like (\*) will be suspended in an either or way. They will be observed at acceptable costs and abandoned altogether rather abruptly when costs become unacceptably high.

We may in fact look at this the other way round as well. The strength of the influence of a norm can be measured by the extent to which even strong opportunity costs do not detract individuals from its application. For instance, in standard ultimatum game experiments the private payoff forgone in the responder role in case of a veto may be substantial. This shows that individuals may be strongly motivated by equity concerns.

#### 5. Equity and efficiency

What has been called a “generosity game” is useful to characterize conflicts between equity and efficiency concerns. In a two person ultimatum-variant<sup>6</sup> of such a game a proposer,  $i$ , is informed that he can earn  $x > 0$ , should the responder,  $j$ , accept an offer to be made by the proposer. To fix the size of the offer ( $R - x$ ), the proposer may be asked to choose a reward sum  $R \in [R_-, R^+]$ ,  $x < R_- < 2x < R^+$ . If the responder rejects the offer both actors get nothing, if the responder accepts what is on offer, the payoff vector will be  $(x, R - x)$ .

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<sup>6</sup> See on this and the dictator-variant of this kind of game Güth, Levati and Ploner, #####

Note that  $x$  is not dependent on proposer choice whereas  $(R - x)$  is. If the responder accepts what is on offer this is indicated by  $\delta(R) = 1$ , whereas rejection will be indicated by  $\delta(R) = 0$ . The payoffs will be  $\delta(R)x$ , for the proposer, and  $\delta(R)(R - x)$ , for the responder. With the externally imposed constraint that he will get  $\delta(R)x$  at best, the proposer can fix  $R = 2x$ , due to  $0 < x < R_- < 2x < R^+$ . Yet he can also go below or beyond  $2x$ .

Since  $R_- > x > 0$  a self-interested responder should always accept. Thus, if the proposer would place value on efficiency only he should choose  $R = R^+$ . A proposer interested only in equity should opt for  $R = 2x$  while a proposer who is most strongly interested in receiving relatively more than the responder would opt for the smallest possible,  $R$ , fulfilling  $R_- \leq R < 2x$  (which would be most distinct in the dictator variant of the game).

In terms of the material payoffs all reward choices  $R \in [R_-, R^+]$  and all corresponding allocations will be equilibria: Whenever the responder accepts, the proposer will receive  $x$  and the responder will receive a positive offer  $R - x$  (since  $R_- > x$ ). Assuming equilibrium play the proposer choice has no material opportunity costs for him. The responder chooses whether or not he accepts. In equilibrium he will always accept and therefore the proposer would then receive  $x$  as the fixed payoff.

Empirically two observations seem to be of interest. First, in the two-person generosity setting proposers tend to choose the generosity solution  $R = R^+$  twice as often as the equitable solution  $= 2x$ . Second, this result does not change much if the proposer is rendered a dictator. The latter seems to indicate that the considerations of the proposers are basically of a non-strategic nature. The relevant opportunity costs of achieving more of the one moral aim are measured in terms of foregoing the other moral aim rather than in terms of incurring a lesser or higher risk in terms of material opportunity costs (as brought about by rejection). Nevertheless, it would be premature to conclude that efficiency will dominate equity concerns not only locally but generally. To see why, consider a three person generosity game.

The personnel of the three person generosity game comprises a proposer  $i$ , a responder  $j$ , and a dummy player,  $d$ . As before the agreement payoff for  $i$  is given. It is given along with what either the responder or the dummy receive.

- (y) the responder payoff is exogenously fixed at  $y(>0)$   
then the agreement payoff for the dummy is  $(R - x - y) = z$
- (z) the dummy payoff is exogenously fixed at  $z(>0)$   
then the agreement payoff for responder  $j$  is  $(R - x - z) = y$

We consider only cases in which all three agreement payoffs would be positive.<sup>7</sup> Whether or not agreement payments are achieved depends on  $\delta(\cdot)$ , indicating acceptance or rejection by the responding actor.<sup>8</sup>

Again the proposer chooses the reward and then the responder can accept this or reject it in view of the fact that the payoff had been exogenously fixed or had been determined as a residual. In both the (y)-games – in which the payoff for the responder is fixed -- as well as in the (z)-

<sup>7</sup> see on this Güth, Pull, Stadler and Stribeck (2010).

<sup>8</sup> It might be noted that a dictator variant of the game could be used to eliminate certain strategic aspects.

games in which the payoff for the dummy is fixed the agreement payoff of the proposing individual  $i$  is fixed as well at  $x$ .

If the exogenous payoff fixing leads to either  $x \neq y$  or  $x \neq z$ , an allocation  $x = y = z$  is ruled out whatever  $i$  decides (equality is not among the opportunity costs). Empirically it can be observed that whenever an equal agreement payoff is possible for all players – whether it be in the (y)-or in the (z)-case – this equal distribution will be chosen. This is independent of whether the dummy or the responding actor have their payoff fixed. When it is non-viable to accomplish an equal distribution, efficiency will be the dominant concern.

That,  $x = y$  or  $x = z$  as well as  $x \neq y$  or  $x \neq z$ , lead to the similar results regardless of their strategic differences is remarkable. The proposer must be expecting in the first case that equality-seeking strongly dominates efficiency-seeking not only on her side but among all actors. Likewise, if equality is impossible efficiency-seeking seems to be the dominant concern.

(O-3) Even without private information and stochastic uncertainty the prediction of equitable behavior can be dominated by contextual variables.

We speculate that even in clear cases and under conditions of perfect information there will be conditions that will suspend equity. As an all-and-some clause (for all ... there exists...) this forms a semi-metaphysical background assumption that is neither verifiable nor falsifiable yet can be made plausible...

## 6. Equity as subsidiary “rule”

A norm that does not guide our behavior whatever the costs can nevertheless be observed in a non-consequentialist way *unless* the costs are too high. We act as guided by the norm rather than making case by case calculations of consequences in a realm in which the aspiration level of acceptable costs applies. The preceding expresses basically the same as the conventional distinction between absolutist deontological theories (eg. Kantian) and non-absolutist (eg. Rossian) ones. Another way to look at this emerges if we rely on the conventional distinction between within rule choices, which are deontological, and rule choices or choices of rules that are cast in terms of consequences.

Equity theory seems to work well in all situations in which the relevant variables are clearly defined and it is common knowledge that they are perceived as relevant. Then, as long as the opportunity costs of compliance do not become extreme the situation is akin to a within rule choice in a situation in which an established normative fact or convention exists. In a context in which such a normative fact does not exist equity principles might work as subsidiary principles or subsidiary rules. Quite in line with this view of the matter equity theory will work less well in situations in which some kind of ambiguity prevails. For instance, if in a production game preceding a dictator allocation there is no convention stipulating whether subjective effort or objective contribution matters more (or perhaps some combination of both) it is unclear what equity demands. Then we would expect as in the case of private information that equity principles would not apply with full and perhaps with no force at all.

## 7. Ethical theory and experiment

In economic (or psychological) experiments we can abstract away certain aspects of real-world interactions. “Labstraction” can help to isolate variables on which we intend to focus. However, in behavioral science abstractions in the lab typically suggest a false impression of generality. Though the experiments in stylized settings may provide some insights they will not directly be transferable to real world interactions. External validity may simply be lacking. The human mind and perceptions of the situation will impose “locality”.<sup>9</sup>

Under certain circumstances equity seeking and under other circumstances efficiency seeking, sometimes the one and sometimes another dimension of value are prevailing. In view of the complexities of the human brain and of the decision making procedures – either on the institutionalized or the deliberative level – it all always “depends”. Everything is local and equity is no exception to this. From a social science point of view this seems unsatisfactory yet it may still be better to admit this weakness than to claim such things as a universal proclivity to avoid inequality or, for short, “inequality aversion”.

In view of the many considerations the human mind can take into account it seems to be rather hopeless to develop a non-circumstantial theory. The hope that abstracting away circumstantial evidence in favor of very austere (naked) experimental games and decisions would lead to a generality is in vein. The austere payoff structure of an experiment is not the common core of all games with that material payoff structure. “Nakedness” or the reduction of the game to a description of material payoffs is just one possible “circumstance”. It is a special frame rather than a situation without a frame. A general theoretical abstraction is not the same thing as the abstraction induced in and by the laboratory setup.<sup>10</sup>

If it is practically common knowledge what the contributions and the rewards are for all individuals and if no other features play a strong role in that situation then the equity norm will influence behavior most strongly. It should be noted, however, that in even most simple cases like the preceding it is obvious that much depends on how contributions are measured.

For instance, if the dictator tends to focus on subjective exertion of effort (of doing one's best) he may come to quite different conclusions than from measuring some kind of “objective input”. The generous dictator could be motivated by some norm related to effort rather than contribution as measured independently of effort. In the one case, those who potentially could contribute more would be required to contribute more relative to their abilities. In other contexts we would think that it is appropriate that all depends on the causally effective objective contributions to rather than on effort exerted.

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<sup>9</sup> The Hayekian notion of “local knowledge” seems to apply even with stronger force than Hayek himself seemed to assume.

<sup>10</sup> Of course, there may be conditions in which perceptions of individuals for one reason or other are supposed not to matter – as for instance in the theory of markets – then the lab setting may be entirely adequate to test such theories; and as the work in particular of Vernon Smith suggests, there seems to be some evidence that things work under such conditions. Yet here the theory generalizes across institutions – for all institutions of a certain kind rather than across individual behavior.

## 8. Closing the circle

David Hume's "Treatise on human nature" is certainly a, if not the, crucial classical text for those affiliating themselves with an experiential, bottom up approach to both rationality and morality. How an individual *should* behave according to standards of rationality or morality is answered in ways referring to evolved or emergent practices (or broadly speaking "normative facts").

Conceivably there could be a general (indirect) evolutionary account of how the normative principles of rational or moral behavior can be "justified" in terms of contributing to some kind of objective evolutionary success function (see on this Berninghaus, Güth, and Kliemt, 2003). Whether or not rational or moral individuals in the last resort and as a matter of fact would pursue intentionally the aims, ends, or values ascribed to them by the substantive objective function characterizing evolutionary success is a question that is in fact answered itself by evolutionary processes.

Though the rationality as well as the morality that subjectively guide behavior must be such that those applying them will survive in competition, the evolutionary competition is hardly such that only extreme principles or extreme behavior as described in ideal theories of rationality and morality will survive (theorists like Aumann 1998 sometimes seem to go quite far in that direction). Moreover, even when people behave as if pursuing ideal principles there is no good reason to assume that they would intentionally do so in full knowledge of the consequences of their actions. And, as the simple and fundamental case of equity shows, even if they sometimes would follow an almost universal principle the complexities of human brains and perceptions are such that the local – as situated in space and time – will dominate the universal aspects such that no general predictions or prescriptions can be derived from the general principle.

This does not mean that abstractions are not useful for understanding normative issues as related to normative fact. Quite to the contrary they are most useful. However, they should be put to the right use: They will sharpen our faculty to judge and to improve our boundedly rational abilities to behave prudently. They are part of a bottom up approach and not as some seem to assume a new vehicle of top down and a priori argument, that is merely disguised as a posteriori empirical argument.

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