Toward an Analysis of Postdisaster Cooperation

By Louis De Alessi*

There is evidence that, in the period immediately following a disaster, cooperative behavior increases.[1] Individuals apparently become more generous toward each other, offering goods and services at prices below those they could have obtained under the existing time-dated pattern of current and expected demand, and supply conditions. Thus, for example, the prices of such things as shelter and "emergency" foods often do not increase enough to clear the market, and the allocation of these and other goods is marked by a variety of formal and informal nonprice rationing schemes.[2]

A number of apparently conflicting hypotheses have been offered to explain this behavior. Accordingly, it seems useful to reexamine the problem and to place current contributions in their proper perspective.

Section I contains a summary of the arguments regarding whether disasters occasion a shift in individual utility functions toward more charity, as suggested by Douglas Dacy and Howard Kunreuther, or simply a decrease in the price of charity, as suggested by the author. Section II contains a review of Jack Hirshleifer's addendum that some postdisaster cooperation is due to alliance activities.[3] Section III contains a critique of Christopher Douty's attempt, based upon the alliance hypothesis, to rule out utility interdependence entirely and to explain postdisaster altruism essentially in terms of informal insurance arrangements. The range of application of the various hypotheses is examined further in Section IV, and Section V contains a few concluding remarks.

I. Utility Interdependence

Dacy and Kunreuther, in studying the aftermath of the Alaskan earthquake of 1964, were struck by the apparent increase in cooperative behavior. Having noted that other disasters had given rise to similar results, they conjectured that disasters yield short-run structural changes in individual utility functions toward more "com-

* Professor of economics, George Washington University. I am indebted to the National Science Foundation for financial assistance and to Jack Hirshleifer, Douglas W. Webbink, and an anonymous referee for helpful comments.

[1] A disaster is defined as the sudden destruction of physical assets. Charity is defined as the intentional transfer of resources below their market prices for the purpose of making the recipients better off, as the donors see it, and is associated with utility interdependence. Cooperation is defined as charitable and seemingly charitable behavior (e.g., it includes wealth-maximizing business "gifts") and is used synonymously with altruism; thus, it excludes normal market interactions which in a broader context are a prime example of cooperative activity.

[2] G. Sjoberg, Douglas Dacy and Howard Kunreuther, Jack Hirshleifer, Christopher Douty, and the author, among others, discuss some of the pertinent evidence and note additional sources of information.

[3] A few words regarding the actual chronology of these contributions may be useful to readers puzzled by the apparent inconsistency of the publication dates shown. The study by Dacy and Kunreuther (1969) first appeared during 1966–67 in a series of Internal Notes, approved for external circulation, published by the Institute for Defense Analyses, Arlington, Virginia. The two papers by the author (1967, 1968) were drafted during the second half of 1966 as a result of several enjoyable conversations with Dacy and Kunreuther. One of the papers (1968) initially appeared in 1966 as an Internal Note, approved for external circulation, published by the Institute for Defense Analyses. Hirshleifer footnoted most of this material in his paper (1967), which he circulated privately.

munity feeling." Individuals presumably derive utility from increases in the welfare of others,[4] and respond to the suffering and distress occasioned by a disaster by attaching greater weights to the welfare of the victims. Utility functions thus shift, and individuals behave with greater charity toward the victims. In due course, as the emergency wanes, utility functions recede toward their original positions.

I have argued that a shift in utility functions is not necessary to explain the behavior observed. If individual utility functions are initially interdependent, then a disaster lowers the welfare of the victims and enables donors to obtain more utility from any given gift.[5] The search and information costs of finding worthy recipients (as the donors see it) also decrease, and the opportunity to make others better off expands dramatically. In effect, a disaster lowers the price of charity. Individuals predictably engage in more charitable behavior,[6] reallocating some of their resources from other activities (including other charities) to the relief of disaster victims until each donor's utility-maximizing equilibrium is restored.[7] Since a shift in individual utility functions is not observable and yields the same implications it is not necessary to explain the phenomena observed and thus may be rejected by the rule of Occam's razor.

The observation that, following a disaster, some business firms sell some goods and services at prices below the market-clearing level similarly is not inconsistent with an unchanged pattern of tastes. The owners' wealth-maximization hypothesis already implies that the managers of certain firms have the incentive to allocate business resources to altruism in order to acquire goodwill or to avoid badwill (see Orace Johnson). A disaster clearly provides additional opportunity for such behavior. Moreover, if the structure of property rights provides business decision makers with the opportunity to increase their own welfare at the expense of the fisc or of owners' wealth, then a decrease in the price of charity induced by a disaster implies that more business resources will be allocated to charity than otherwise would have been the case (see the author, 1968).

II. Alliance Hypothesis

Hirshleifer concurred with much of my analysis,[8] but suggested that it failed to account for some of the behavior observed. To remedy the situation, he proposed to extend the alliance hypothesis of Mancur Olson and Richard Zeckhauser to post-disaster situations.

[4] More precisely, the inputs used by individuals in satisfying the goals which enter their utility functions include some goods and services consumed by others. "Others" may consist of only one or two relatives and friends, or may include larger groups distinguished by some characteristic (e.g., religion, race) relevant to the chooser. Benevolence implies that individuals make gifts, including tied gifts, and there is much evidence of this behavior. For some individuals, however, an increase in the consumption of certain commodities (e.g., alcoholic beverages, drugs) by others may be a source of disutility; some of the consequences of malevolence will be noted later on.

[5] See the author (1967) for a diagrammatic exposition of the two contrasting viewpoints. As usual, individual utility functions are hypothesized to be single-valued, convex, and twice differentiable.

[6] The relative price of charity falls for all individuals, including victims. In the case of some victims, the movement down along the demand curve (the price effect) may be more than offset by the decrease in the demand curve occasioned by the disaster-caused loss of wealth, yielding a reduction in the amount of charity undertaken. Charity is taken throughout to be a normal or superior good.

[7] The utility interdependence hypothesis implies that aid will decrease and eventually cease as victims recover. Following a disaster, the victims—aided by gifts and by the resumption of community activities—begin to recover and to revise the profile of their assets and liabilities to cope with the new situation. As the welfare of the victims increases, donors receive less utility from additional gifts, and aid to victims decreases and eventually stops.

[8] Thus, Hirshleifer noted that "If [community feeling] means that disaster brings about a shift in the utility function, the phenomenon lies in the realm of psychology—so there is little for the economist to discuss" (p. 4).

Briefly, the alliance hypothesis asserts that the continuation of organized society is a collective good which benefits most of society's members (see Hirshleifer, p. 6). This provides even narrowly selfish individuals with the incentive to engage in alliance-supportive activities. The duties assumed under the social contract are enforced by custom and policemen (pp. 5–7). Disasters enhance the marginal effectiveness of individual actions for survival of the alliance, and thereby give rise to good behavior. The greater the likelihood that the society will be overpowered by the disaster, however, the greater the probability that bad behavior will occur, as each individual increasingly looks out for his own narrow interests. If stress exceeds whatever point may be optimal for a society in view of its customs, culture, and size, then the alliance will collapse (pp. 8–9).

In preparing his case for the alliance hypothesis, Hirshleifer agrees that the disaster-induced increase in the relative marginal utility to an individual of victims' consumption explains " . . . why relatively better-off individuals in disasters tend to help their less fortunate neighbors" (p. 4) and " . . . the universally observed fact that relief . . . tends to flow into a damaged area from the untouched outside" (pp. 4–5). On the other hand, he finds that:

> The opposite side of the coin, the implication that those relatively worse-off tend to be less altruistic than before, is also plausible, but there seems to be no evidence relating degree of altruistic activities inversely to the degree of relative deprivation. Also, this view provides no explanation as to why *general* impoverishment is met with general "good behavior," nor as to why exceptional cases occur in which "bad behavior" is observed. [p. 5]

The behavior at issue, however, does not appear to be inconsistent with the utility interdependence hypothesis. First, lack of evidence about an implication does not provide sufficient ground for doubting its validity. If the hypothesis suggested by Hirshleifer has been deduced correctly from the axioms of consumer theory under the appropriate antecedent conditions, then it receives indirect support from the evidence pertaining to other aspects of consumer choice and it may be taken to hold until more direct evidence becomes available.[9]

More importantly, Hirshleifer is quite right in calling attention to the possibility of bad behavior following a disaster. Such behavior, however, is explicable within the existing analytical framework. *Ceteris paribus*, the decrease in the price of charity faced by an individual within the disaster area is offset—to the extent that he is also a victim—by his loss of wealth. As a result, the degree of altruism observed within a community will depend upon the extent and dispersion of the damage among its members.[10] If the disaster is localized and the individual's survival is not at stake (conditions which were implicit in previous discussions), then cooperative behavior may be expected to dominate. More tragic conditions, however, generate both lower prices of charity and greater losses of wealth. Beyond some point, the wealth effect will begin to dominate, yielding a lower level of cooperative behavior. As the seriousness of the disaster increases, therefore, not only are more individuals harmed more seriously, but the decrease in altruism implies that a victim's expectation of *receiving* aid is also reduced. *Ceteris paribus*, this will increase the relative benefits

[9] A rigorous test of the hypothesis in question would be helpful. In doing so, however, it would be necessary to take into account such things as changes in the enforcement of laws and differences in the relative price of charity confronting different individuals.

[10] There is also the problem of weighing acts of altruism under alternative conditions, such as a helping hand when survival is at stake relative to a gift of shelter under less trying circumstances.

(for example, survival) to be obtained from bad behavior, and more of the latter will occur. A weakening of the enforcement mechanism similarly will encourage bad behavior.[11] Altogether, it is certainly plausible that the magnitude and form of some disasters will be such that bad behavior will dominate. In general, the mix of good and bad behavior and which one will dominate will depend upon such things as the relative taste for these activities (as influenced by custom and culture), the change in their relative prices, the extent of the disaster, and the size and kinship of the group.

In justifying the case for alliance, Hirshleifer denies " . . . the premise that substantially everyone's utility map has a positive partial derivative with respect to 'other fellows' income" (p. 5). If the statement is intended to deny that substantially everyone's income enters substantially everyone else's utility function, then Hirshleifer is quite right. Such a premise, however, is not necessary to the analysis. A sufficient condition is that substantially everyone's utility function has a positive partial derivative with respect to at least *some* other individuals' income, say just a few friends and relatives. This premise seems plausible, but even weaker ones would work. The validity of economic propositions does not require that all or even substantially all actors respond to a change in circumstances. In the case of disasters, where friends and relatives living in the same community are affected, even a fairly selective response at the margin would be enough to yield the consequences predicted. And some individuals undoubtedly recognize a larger kinship group.

Having explicitly adopted a weaker premise of utility interdependence, Hirshleifer suggests that many cases of negative taste for altruism—at least at the margin—may be expected to give rise to conflict and to cloud the effect of general impoverishment upon behavior. The importance of this point, however, could easily be overstated since the disaster-induced consequences of positive and negative altruism are not wholly symmetric. Using Hirshleifer's example (p. 5), let A view keeping up with the Joneses as a problem and their income as a bad. If the Joneses become victims of a disaster and A is untouched, A will gloat and move to a higher level of utility. As long as laws are enforced, however, A will find it costly, just as he did before the disaster, to visit additional misfortunes upon the Joneses. In general, A will simply abstain from aiding the Joneses while assisting the Smiths, who may be poorer, friendlier, or whatever. Indeed, if the Joneses are hurt enough, A may even help them. None of these statements, of course, is intended to deny the possibility of bad behavior (including the settling of old scores) noted earlier.

Although the alliance hypothesis does not appear to be necessary to explain the behavior observed, its case is appealing. Individuals do form organized societies in order to reap the benefits of increased social interaction (including greater specialization), and this implies that they have the incentive to preserve the society. Nevertheless, even if disasters and other threats multiply manifold the marginal effectiveness of individual actions in preserving society (see Hirshleifer, p. 7), an individual would undertake such actions voluntarily only to the extent that *his* benefits exceeded *his* costs. Otherwise, he would take a free ride. And since the social contract at best is vague, the enforcement of alleged duties is difficult and thus presents individuals with considerable scope for free riding.[12] Custom may help, and

[11] Major disasters often are accompanied by the introduction of martial law, a step designed to discourage bad behavior by imposing higher penalties earlier in time.

[12] Recall that the problem is to explain *voluntary* cooperation. Although policemen seek to enforce society's

Hirshleifer notes that the social contract is partially self-enforcing as education is used to convert duties into customary behavior (p. 6). However, on this tack, alliance seems to explain why the welfare of others is a good. The view that some utility interdependence is a desirable survival characteristic is encouraged by the observation of altruistic behavior among primates and other animals (see Dennis Krebs, pp. 261–62 and Konrad Lorenz), and would help to explain why, on the postdisaster evidence available, alliance behavior seems to be indistinguishable from utility interdependence.[13] Hirshleifer does not suggest tests which could be used to discriminate rigorously between the two alternatives, and such tests—for the reasons noted earlier—seem difficult to formulate.[14]

III. Informal Insurance

Douty sought to establish that postdisaster cooperative behavior may be wholly explained by a narrowly conceived view of self-interest, one which excludes utility interdependence entirely (p. 583).[15] Basing his case upon an expanded version of Hirshleifer's alliance hypothesis, he proposed informal insurance as the key explanatory hypothesis.

According to Douty, consensual agreement[16] provides the institutional environment which specifies the range of actions an individual can undertake in his own behalf and permits market interdependence and specialization (p. 584). A major task of government is to make sure that the benefits of stable institutions are widely diffused within a society (p. 584).

A disaster initially fragments a community into small kinship groups of family and close associates. As soon as the individual has been assured of the survival of members of his kinship group, however, he becomes concerned with the survival of the larger community and with the restoration of a viable institutional framework (pp. 584–85). This increase in community feeling, which results from the individual's memory of predisaster institutions and from his perception (clouded by uncertainty) of his current situation relative to the rest of the community (p. 584), suggests to Douty that the remaining stock of "necessity goods" must be distributed in such a way as to allow the victims to survive without leaving the disaster zone (p. 584). Since the prices charged must be within the means of all the victims, and since many victims are without accessible liquid funds, Douty concludes that nonprice rationing schemes must be adopted. Owners of necessity goods are pressured to conform (p. 585).

---

laws, there is no evidence that they typically seek to enforce informal rules of cooperation following a disaster. Some laws (e.g., liability) actually discourage such behavior.

[13] Hirshleifer notes other instances of alliance behavior, such as grueling hours worked by Washington bureaucrats and willingness of soldiers to die. All sorts of people work hard at their jobs, however, and alliance activity would have to be distinguished from more normal drives such as wealth and power. Patriotism, including the willingness to accept a nonzero probability of dying in war, appears to be a useful survival characteristic for groups of individuals and may be explained by alliance activity. On the other hand, it may also be explained by altruism (e.g., protect one's family), self-interest (e.g., earn the benefits of being a hero), duress (e.g., fight or be shot), play, and other motives either singly or in combination As noted earlier, such things as custom, culture, and the size of the group play the same role under either altruism or alliance.

[14] It may be argued that altruism relates primarily to the redistribution of goods and services whereas alliance concentrates upon the desires or opportunities for continued production This distinction, suggested to me by Hirshleifer, seems worth pursuing further

[15] The reader should be reminded that Douty died after he had submitted his paper but before he had an opportunity to respond to referees' comments M W. Reder kindly edited the manuscript (see Douty, title footnote, p. 580), but it must be presumed that he hesitated to undertake major changes that might not have been acceptable to the author. Had Douty been able to revise his paper, he might well have avoided some of the criticisms raised below.

[16] Douty indicates that his use of "consensual agreement" corresponds to Hirshleifer's use of "alliance," see fn. 10, p. 585.

According to Douty, "Reconciling this type of behavior with the hypothesis of individual utility maximization . . . presents an interesting theoretical challenge with several different, though not mutually exclusive answers" (p. 586). First, families and friends are linked together by unwritten, mutual insurance contracts against economic adversity. Strangers are included in the coverage as the community, responding to pressure induced by the disaster, acts as an informal reinsurance society to backstop the primary insurance network. Secondly, political, religious, business, and other community leaders recognize that their postdisaster activities are facilitated by such things as stable relationships and a respect for law and order. Accordingly, they press for and obtain community cooperation because they have the ability to reward and to punish. Thirdly, a disaster weakens the enforcement of private property rights.[17] This provides greater scope for community supervision of individual activities, thereby constraining individual choices toward more altruistic behavior.[18] In summary, the main thrust of Douty's argument is that individuals are tied together by an informal network of mutual insurance enforced by social pressure. When a disaster occurs, victims collect.

The informal insurance hypothesis has some initial appeal. Individuals normally sign a variety of formal insurance contracts. In the absence of any evidence to the contrary, it seems reasonable to suppose that they also execute informal insurance agreements. Following a disaster, the payment of compensation would then give rise to seemingly charitable behavior. Although this possibility had already been noted in the literature as a phenomenon additive to charity (see the author, 1968, pp. 528–29), its presentation by Douty as the key explanatory hypothesis is almost convincing on a casual reading. More careful examination, however, uncovers some serious flaws.

Perhaps the most striking flaw is methodological. Several passages in Douty's presentation suggest the inference (for example, p. 587) that the informal insurance hypothesis is superior to the utility interdependence hypothesis on the purely logical ground that it yields the same implications even though it uses fewer initial hypotheses. Indeed, it is difficult to interpret the main thrust of his paper in any other way. The minimum condition necessary to justify such an application of Occam's razor, however, is that both hypotheses yield identical implications. It simply is not enough to argue, as Douty does, that both imply altruism. If some of the lower level implications differ—and, as will be shown later, some do—then the relevance of the competing hypotheses can only be determined empirically. In the absence of such evidence, and none is offered, utility interdependence cannot be ruled out. Moreover, to exclude it would require more rather than fewer initial hypotheses.

Disregarding disaster-related behavior, there is a good deal of evidence that individuals do take others' welfare into consideration. For example, a variety of institutions (for example, most of the agencies receiving support through local United Giver campaigns) annually receive millions of dollars from anonymous contribu-

[17] According to Douty, "In the aftermath of a disaster, courts cannot function and soldiers cannot be mobilized" (p. 587). This statement would narrow the analysis to an unnecessarily small category of disasters. In particular, it would exclude most if not all examples of disasters used by Douty. Accordingly, it seems best to disregard it.

[18] It is not clear why this should be the case. As noted earlier, a breakdown of the enforcement mechanism seems to encourage bad behavior. At least in the United States, major disasters typically evoke the mobilization and deployment of National Guard units reportedly to maintain order and prevent looting. This suggests that otherwise bad behavior would have increased to unacceptable levels.

tors who could have given less (say, zero) without decreasing any of their present or future claims to assistance. Similarly, a good deal of insurance (for example, life) is for the benefit of others. This and other behavior is generally attributed to utility interdependence, and the hypothesis is now presented routinely in a variety of texts in economic theory (see, for example, Armen Alchian and William Allen, pp. 166–72; Gary Becker, p. 126).

If individual choices normally reflect a concern for the welfare of others, then to exclude utility interdependence in postdisaster periods requires the introduction of additional statements in the theory. Such statements yield a more complex rather than a simpler theory, and their introduction must be justified on methodological and, ultimately, empirical grounds. In particular, it is necessary to show either that the general utility interdependence hypothesis is false or that it is inapplicable in postdisaster periods. Douty does not even question the general applicability of the hypothesis. Indeed, he uses it to explain transfers from donors outside the disaster area (p. 588). Nor does he attempt to show that it is inapplicable in postdisaster periods. He merely offers a substitute hypothesis. But in the absence of any theoretical justification, it is clearly inappropriate—however convenient it might be—to ascribe *any* transfers from without to utility interdependence and *all* transfers from within to insurance or even to informal contracts of all types. Indeed, since information, search, and similar costs are lower for individuals within the disaster area, the latter may be expected to be even more generous—other things being the same—than individuals outside the disaster area.

The viability of any system of contracts depends closely upon the effectiveness of the enforcement mechanism, and Douty's analysis leans entirely upon social pressure for this purpose. There is little indication, however, why a utility-maximizing individual would have the incentive either to meet his own informal obligations or to incur costs to press others to meet their alleged, informal obligations. Under a narrow view of self-interest, an individual will seek to take a free ride. In particular, he will exert pressure on others only if thereby he can increase his receipts as a victim or decrease his contributions as a payer. And in choosing the extent to which he will meet his obligations and the amount and kinds of pressure he will bring to bear on others, he will take into account only *his* gains and *his* costs.

Postdisaster circumstances are ideally suited to free (if not easy) riding. The informal contracts discussed by Douty (and by Hirshleifer) relate groups of individuals (for example, victims and nonvictims) rather than specific individuals. Thus, it would be relatively easy for an individual to claim to have suffered greater losses than he actually had, or to claim to have already contributed, or any combination of these and other strategies intended to maximize his present wealth. No one is responsible for keeping track of who gave what to whom, and no individual (for example, the insured) has the incentive to make sure that another individual (for example, the insurer) is meeting his obligations. Moreover, legal enforcement agencies are constrained by formal laws, particularly those relating to due process and to other safeguards of individual rights. Together with the general disruption of normal information channels and the occupation of enforcement agencies with other tasks (for example, fighting fires, clearing rubble, coordinating outside help), the cost of free riding would be relatively low. Accordingly, it seems reasonable to conjecture that relatively few individuals would be constrained to meet their own obligations or to press others to meet theirs.

Since nonbeneficiaries have the incentive to shirk, social pressure would lack the broad base necessary to make it effective. After all, government is social pressure writ large and endowed with a monopoly on coercion in order to make enforcement viable.[19] Leaders' exhortations are not enough.

Even within the narrow approach chosen by Douty, however, there are no obvious reasons for limiting all informal contracts to insurance, which provides for the compensation of the givers if and only if they in turn become victims. All other informal contracts, such as loans and barter, also have to be taken into account.

Informal loans certainly would account for some seemingly charitable behavior. Immediately following a disaster, lending institutions would find it costlier than usual to establish the credit standing of would-be borrowers. At the higher cost less information is acquired, and both the higher cost and the increased risk are reflected in higher interest rates. Moreover, many borrowers would be seeking relatively small loans for relatively brief periods of time while they sorted out their affairs, and thus formal transactions would be relatively expensive. Under these circumstances, there would be greater scope than normal for negotiating mutually advantageous, informal loans among private individuals.[20] Such loans need not be limited to family, friends, and neighbors, and could profitably be extended to others. Informal loans, particularly if extended in real goods, could easily be mistaken for charity—or for informal insurance.

Informal transfers of ownership also might account for some apparently charitable behavior. For example, the disruption of various market institutions and the resulting increase in transaction costs would encourage some barter in goods and property (for example, blankets for bandages).

Of course, any argument that informal contracts (singly or in combination) fully explain any given transfer of resources must show that the transactions occur at the appropriate market prices. If the prices charged are below their market levels—after taking the appropriate pecuniary and nonpecuniary variables into account except those relating to utility interdependence—then the differential represents a transfer of resources that has to be explained some other way. In such an event, utility interdependence would be a prime candidate to explain the residual.

A more catholic approach to postdisaster altruism, one which consolidates most of the characteristics already noted, might be described as the public finance view of resource redistribution. Following a disaster, informal social arrangements—including some providing for the use of force against unwilling participants—are used to tax certain members of the community and to transfer these resources to others, including victims. One advantage of this approach is that it allows for involuntary transfers.[21] The question of why the in-

[19] Liberal disaster bills passed by Congress in recent years do not appear to support the insurance hypothesis. Indeed, the "liberality" of the bills in itself is evidence of the gift component. Such gifts are not inconsistent with the incentive present in democratic (and other) constitutions to use general tax funds to benefit special interest groups.

[20] The availability of low-interest loans and forgiveness grants from various government agencies such as the Small Business Administration would decrease the opportunity for informal loans, but would not eliminate it. Informal loans would still take place to tide individuals over the interim before government and other funds become available, to provide amounts too small to justify formal contracting costs, to finance activities unacceptable to government agencies, and similar options.

[21] Some involuntary transfers (for example, theft and robbery) presumably account for some seemingly charitable behavior Thus, an individual may be induced to sell goods and services below their open market prices in order to avoid their outright theft or to avoid harm to his person and to his property. Although Douty might disagree (p. 585), it seems best not to force such transactions into the mold of informal insurance.

formal tax system exists and why its provisions are enforced, however, remains open. The investigator is forced back to theories of the state (see, for example, Anthony Downs), utility interdependence (see, for example, Harold Hochman and James Rodgers; but see also Gordon Tullock), insurance, and so on. Since voluntary transfers apparently account for most postdisaster altruism observed (see Dacy and Kunreuther; Douty), however, this approach will not be pursued further.

At this point a few comments regarding business altruism seem in order. It has been recognized for some time (see, for example, Johnson) that under certain market conditions, the traditional owners' wealth-maximization hypothesis implies some altruistic behavior as firms "give away" resources in order to acquire goodwill or avoid badwill. In discussing postdisaster behavior in my 1968 paper, I further conjectured that, under certain ownership arrangements, utility-maximizing decision makers within business firms have the opportunity to satisfy their own taste for the welfare of others by giving away *more* business resources than would otherwise have been the case.

In keeping with his desire to explain postdisaster altruism without involving utility interdependence, Douty asserts that " . . . the postulated taste for altruism is not required if the argument is reframed in terms of the degree of involvement of the firm with the stricken community and the firm's size" (p. 587). To show that altruistic behavior may be deduced from the wealth-maximization hypothesis, however, does not exclude the possibility that at least some business transfers may be charitable.

Douty's analysis, though weak in parts,[22] simply suggests once again that altruistic behavior may be deduced from the standard wealth-maximization hypothesis. In order to rule out the possibility of some charity, however, it is necessary to show either that the implications of the utility maximization hypothesis have been deduced incorrectly or that its antecedent conditions are inapplicable. Ultimately, of course, the validity of the hypothesis can only be questioned empirically. Douty does none of these things.[23]

A final point deserves note. If a firm is to acquire goodwill through altruism, there must be a presumption that charity is a good within the community: the welfare of others matters. "Free" advertising is generally negligible, and narrowly selfish individuals would increase their patronage of "charitable" firms only to the extent that they expected thereby to benefit from *future* disaster-induced transfers. But even if, following a disaster, firms charged lower prices only to their own regular customers (a necessary condition to induce any increase at all in patronage), the present value of the gains expected by prospective customers would be small enough (even if the additional cost of patronizing the donor were zero) that additional patronage would be negligible.

---

[22] For example, the argument that the size and community involvement of the firm matter is vague and largely by analogy. No definition of size is provided, and some firms which fit Douty's description (e.g., brokerage houses with branch offices) do not appear to yield the desired implications.

[23] To buttress his case for the effect of firm size on altruism, Douty notes, fn. 18, p. 587, that the Southern Pacific was the largest benefactor of San Francisco following the earthquake of 1906 and that the Safeway stores in Alaska did not increase the prices of staples (some prices were actually lowered) following the earthquake of 1964. These observations, however, are too casual to be meaningful. For example, was the Southern Pacific the "largest" firm in San Francisco? Was the Safeway's rank order as benefactor similar to its rank order for size? How did other firms behave? Were other factors actually at work? Thus, Johnson's tentative study of corporate philanthropy does not support Douty's conjecture regarding size. His results indicate that the ratio of charitable contributions to profits does not vary directly with asset size, and suggest that other variables (say, degree of competition) account for the behavior he observed.

IV. Range of Application of the Competing Hypotheses

The analysis so far suggests that alliance activities, informal contracts, and utility interdependency may all account for some postdisaster altruism. Obviously, it would be helpful to establish the range of application of these hypotheses. Although a definitive answer must wait until more rigorous empirical evidence becomes available, various theoretical and empirical considerations encourage a preliminary answer.[24]

Utility interdependence already appears to provide the major if not the sole explanation for voluntary resource transfers from individuals *outside* the disaster area. The case for informal insurance is particularly weakened by enforcement problems and by the lack of incentive to make anonymous contributions, and even Douty acknowledges that pure altruism accounts for much aid from outsiders (p. 588). Alliance activity similarly would be strained to explain all such behavior (for example, foster parent programs).

Turning to altruistic behavior *within* the disaster area, a crucial characteristic which distinguishes insurance from charity is that the individuals who participate in an insurance scheme expect to be compensated should they become victims later on. Among other things, this implies that an individual will reveal a strong preference to help those victims who offer the best evidence of being able to compensate him in the future should the occasion arise. A donor, on the other hand, will prefer to aid those who, *ceteris paribus*, seem to have suffered most from the disaster. As a result, an insurer will prefer to aid young, healthy, wealthy individuals who are temporarily distressed rather than old, ill, and poor individuals: the latter are much less likely to be around and to be able to compensate the giver if and when the occasion arises. Although even the old, the weak, and the poor eventually might be aided under some sort of an informal assigned risk plan enforced by social pressure (how?), the expectation is that they would be helped last and least. A donor, on the other hand, will reveal a stronger preference for these people—controlling for family, friendship, and similar ties—exactly because they are less able to take care of themselves. Theoretical considerations noted earlier suggest that the insurance hypothesis is not likely to prevail. This conclusion is supported by strong evidence from psychological studies indicating that the single most important characteristic of recipients is dependency (see Krebs, pp. 277–79).

Alliance activity, particularly of the kind induced by custom, appears to be indistinguishable from charity. Indeed, as noted earlier, it could be used to explain it. Altogether, utility interdependence appears to have significant explanatory power within the disaster area as well.

Other informal contracts, where the parties to the exchange belong to amorphous groups and fulfillment of the contract is essentially random, are subject to the same limitations of the informal insurance program. Transfers of a more traditional nature, where the terms of the contract are specified and the individual parties to the transaction are clearly identified but simply do not bother to sign a formal contract, would give rise to behavior which to an uninformed bystander might seem to be charitable. It should be

[24] Douty's position on the range of application of the informal insurance hypothesis at best is equivocal. Although the whole thrust of his argument is that it explains the behavior observed without reference to utility interdependence, he concludes the theoretical presentation of his case with the statement that "Nothing further need be said about the characteristics of anyone's utility function, though, 'true altruism' may be present in postdisaster situations" (p. 587) But true altruism, as defined by Douty, arises from utility interdependence. Accordingly, something further *is* being said about individual utility functions: they are interdependent.

possible, however, to identify such events and to treat them accordingly.

Additional research, particularly at the empirical level, obviously is desirable to clarify matters further. Beyond some point, however, the explanation of altruism properly belongs to psychology and sociology. Unfortunately, the evidence here at present is also inadequate. Psychological studies have begun to identify a number of significant characteristics of givers and of recipients,[25] but researchers have not yet found a way to measure the motivational base of altruism, and the concept of altruism itself is still unclear (see Krebs, p. 297). Sociological explanations of altruism have focused upon norms of social responsibility (benefactors should help those who need help) and of reciprocity (beneficiaries should help, or not harm, those who have helped them) with mixed empirical support (see Krebs, pp. 294–97). Interestingly enough for present purposes, proponents of the reciprocity hypothesis (a norm which characterizes at least Douty's position) note only one exception to its range of application: emergency situations, where the norm of giving holds (see Krebs, pp. 294–95). Why such norms should exist—if, indeed, they do—awaits further research.[26]

V. Conclusions

Economic explanations of postdisaster cooperation initially focused upon utility interdependence and business wealth-maximization. Hirshleifer, however, suggested that these explanations failed to account for some of the behavior observed and proposed alliance activity to fill the gap. Douty sought to rule out utility interdependence entirely and to explain all postdisaster cooperation in terms of narrowly conceived utility maximizing behavior.

The papers by Douty and by Hirshleifer suggest that the consequences of various informal contracts deserve to be taken into account. Informal insurance and alliance activity, however, do not appear to have sufficient power to explain all the behavior observed. The presence of utility interdependence under normal conditions, the lack of an effective mechanism to enforce informal contracts, and evidence of disaster-connected charity (for example, anonymous gifts from outside the community) suggest that utility interdependence matters in postdisaster situations.

Different instances of postdisaster cooperation may have different causes, and it would be difficult to defend any one single explanation. Presumably, some transfers may be attributed to utility interdependence, others to informal contracts of various sorts (including loans and transfers of ownership shares), and still others, perhaps antecedent to utility interdependence, to such things as alliance activity.[27]

[25] Krebs' recent review of the psychological and related sociological literature on altruism reports the following main conclusions The results of experiments in which situational variables were manipulated indicate that individuals become more altruistic after experiencing success and competence as well as guilt and shame and after observing altruistic acts by others (pp. 264–77). In particular, there is evidence that individuals who perceive themselves to be competent in emergencies give more help in postdisaster situations (pp. 264, 266). The most important characteristic of a recipient in eliciting aid is dependency (pp 277–79); interpersonal attractiveness is the only other significant variable (pp. 279–81). Although personality traits of both givers and recipients do not seem to matter (pp. 281–86), several social and demographic variables do: sex, age, ordinal position, social class, and nationality seem to affect altruism (pp. 286–94). Regarding the social roles of recipients, it appears that individuals give to those who are similar to themselves, are prestigious, and are more likely to benefit them in the future Moreover, the receipt of favors elicits a general disposition toward altruism described as generalized reciprocity (pp. 295–97).

[26] According to Krebs, "Little psychological research has examined the norm of giving, even though it may have been antecedent to many altruistic situations" (p. 295).

[27] The reason why any good enters any individual's utility function ultimately must be selfish. The goal(s) which the good satisfies are the individual's goals, however determined, and the individual chooses the extent to which alternative goals are to be fulfilled, subject to the constraints which limit his choices.

Nevertheless, although utility interdependence may not be sufficient to explain all postdisaster cooperation, it certainly appears to be necessary—a statement which does not appear to hold for the other alternatives considered.

REFERENCES

A. A. Alchian and W. R. Allen, *Exchange and Production: Theory in Use*, 2d ed., Belmont 1969.

G. S. Becker, *Economic Theory*, New York 1971.

D. C. Dacy and H. R. Kunreuther, *The Economics of Natural Disasters: Implications for Federal Policy*, New York 1969.

L. De Alessi, "A Utility Analysis of Postdisaster Cooperation," *Papers in Non-Market Decision-Making* (now *Public Choice*), Fall 1967, *3*, 85–90.

———, "The Utility of Disasters," *Kyklos*, 1968, *21*, 525–32.

C. M. Douty, "Disasters and Charity: Some Aspects of Cooperative Economic Behavior," *Amer. Econ. Rev.*, Sept. 1972, *62*, 580–90.

A. Downs, *An Economic Theory of Democracy*, New York 1957.

J. Hirshleifer, "Disaster Behavior: Altruism or Alliance?" unpublished paper, 1967.

H. M. Hochman and J. D. Rodgers, "Pareto Optimal Redistribution," *Amer. Econ. Rev.* Sept. 1969, *59*, 542–57.

O. Johnson, "Corporate Philanthropy: An Analysis of Corporate Contributions," *J. Bus., Univ. Chicago*, Oct. 1966, *39*, 489–504.

D. L. Krebs, "Altruism—An Examination of the Concept and a Review of the Literature," *Psychological Bull.*, Apr. 1970, *73*, 258–302.

K. Lorenz, *King Solomon's Ring*, New York 1952.

M. Olson, Jr. and R. Zeckhauser, *An Economic Theory of Alliances*, RAND Corporation, RM-4297-ISA, Santa Monica, Oct. 1966.

G. Sjoberg, "Disasters and Social Change," in G. W. Barker and D. W. Chapman, eds. *Man and Society in Disaster*, New York 1962.

G. Tullock, "The Charity of the Uncharitable," *Western Econ. J.*, Dec. 1971, *9*, 379–92.