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INGREDIENTS OF FAMINE ANALYSIS: AVAILABILITY AND ENTITLEMENTS*

AMARTYA SEN

Famines often take place in situations of moderate to good food availability, without any significant decline of food supply per head. The paper presents an alternative approach to famines, which does not concentrate on availability, but on people's ability to command food through legal means available in the society (including the use of production possibilities, trade opportunities, entitlements vis-à-vis the state, etc.). The approach is explained, focusing on exchange entitlement mappings, fluctuations in which can lead to big shifts in the intergroup distribution of food command. The approach is then applied to the Bengal famine of 1943, the Ethiopian famine in Wollo in 1973, and the Bangladesh famine in 1974, and some general conclusions are drawn about the nature and classes of famines.

The main purpose of the paper is to develop an approach to famine analysis and to examine its implications. The entitlement approach, which contrasts with the more usual food availability approach, concentrates on the ability of people to command food through the legal means available in that society (including the use of production possibilities, trade opportunities, entitlements vis-à-vis the state, etc.). The main line of analysis is presented in Section II, relating endowment vectors to sets of alternative commodity entitlements through an exchange entitlement mapping. Application to famine analysis is discussed in general terms in Section III, including limitations of the approach, while entitlement failures are broadly categorized in Section IV. Then the approach is applied to studying three actual famines: the Bengal famine of 1943 (Section V), the Ethiopian famine of 1973 in Wollo (Section VI), and the Bangladesh famine of 1974 (Section VII). While data scarcity constrains some of the analysis, some firm conclusions do emerge. The limitations of the food availability approach—its cluelessness—come out sharply. Some general remarks on famine analysis are made in the concluding section.

I. THE AVAILABILITY APPROACH

Famines have received a good deal of attention recently, partly because they have continued to occur despite mid-twentieth century

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prosperity,¹ but also because much fear seems to be entertained currently about a coming "world food crisis."² It has even been suggested that "the biggest famine in history has just begun" [Dumont, 1975, p. 29].

The traditional approach to famines looks for a decline in food availability: "a sudden, sharp reduction in the food supply in any particular geographic locale has usually resulted in widespread hunger and famine" [Brown and Eckholm, 1974, p. 25]. This approach of food availability decline (FAD approach for short) has some superficial plausibility, since it seems natural to sense a shortage of food when people die as a result of not having food. The FAD approach also fits in well with Malthusian long-run analysis of increased mortality as food supply falls relative to the size of the population.³

However, starvation is a matter of some people not *having* enough food to eat, and not a matter of there *being* not enough food to eat.⁴ While the latter can be a cause of the former, it is clearly one of many possible influences. The next section is devoted to developing a different approach to starvation and famines based on the notion of entitlement.

II. THE ENTITLEMENT APPROACH

Ownership of food is one of the most primitive property rights, and in each society there are rules governing this right. The entitlement approach concentrates on each person's entitlements to commodity bundles including food, and views starvation as resulting from a failure to be entitled to any bundle with enough food.⁵

In a fully directed economy, each person i may simply get a particular commodity bundle that is assigned to him. To a limited

1. Important examples of recent famines include the Great Bengal Famine of 1943, the Biafra famine in Nigeria of 1968, the Ethiopian famines of 1973-1974, famine in the Sahel countries in the early seventies, the Bangladesh famine of 1974, and famines in Kampuchea and in East Africa in recent years.

2. See Ehrlich and Ehrlich [1972], Brown and Eckholm [1974], Aziz [1975], among many other contributions. See also Johnson [1975] and Sinha [1976] for general analyses of the available information.

3. Robert Malthus himself provided a closely reasoned short-run analysis of famines in Malthus [1800], following his long-run analysis of population growth in Malthus [1798].

4. The distinction corresponds to that between "goods" and "named goods," which is central to the welfare-based evaluation of national income (see Sen [1976b]). See also Hahn [1971] for a different use of the contrast, which can be related to Hicks's [1946] notion of "dated goods."

5. It may be worth mentioning that the use of "entitlement" here is descriptive rather than normative, and the entitlement approach presented here must not be confused with Nozick's [1974] moral theory of the same name. Some of the normative issues are discussed in Sen [1977a].

extent, this happens in most economies, e.g., to residents of old people's homes or of mental hospitals. Typically, however, there is a menu—possibly wide—to choose from. E_i is the entitlement set of person i in a given society, in a given situation, and it consists of a set of vectors of alternative commodity bundles, any one of which the person can decide to have.⁶ In an economy with private ownership and exchange in the form of trade (exchange with others) and production (exchange with nature), E_i can be characterized as depending on two parameters: the endowment vector \mathbf{x} and an exchange entitlement mapping $E_i(\cdot)$, which specifies the set of commodity bundles any one of which person i can choose to have through “exchange” (trade and production).⁷

I have examined elsewhere the formal characterization of entitlement relations and their use (see Sen [1981], Chs. 1, 5, 10, and Appendices A and B). It should be noted here that the exchange entitlement mapping, or E -mapping for short, will, in general, depend on the legal, political, economic and social characteristics of the society in question and the person i 's position in it. Perhaps the simplest case in terms of traditional economic theory is one in which the endowment vector can be exchanged in the market at fixed relative prices into any bundle costing no more, and here the *value* of the exchange entitlement mapping will be a traditional “budget set.”

Bringing in production (“exchange with nature”) will make the E -mapping depend on production opportunities as well as trade possibilities of resources and products. It will also involve legal rights to apportioning the produce, e.g., the capitalist rule of the “entrepreneur” owning the produce. Sometimes the social conventions governing these rights can be very complex indeed, e.g., those governing the rights of migrant members of peasant families to a share of the peasant output [Sen, 1975, 1981].

Social security provisions are also reflected in the E -mapping; e.g., the right to unemployment benefits if one fails to find a job, or the right to income supplementation if one's income would otherwise fall below a certain specified level. And so are employment guarantees when they exist—as they do in some socialist economies—giving one the right to sell one's labor power to the government at a minimum price. E -mappings will also depend on provisions of taxation.

Person i will have to starve if given his endowment \mathbf{x}_i and the

6. E_i can be seen as a subset of the nonnegative orthant X of n -dimensional real space (given n commodities).

7. $E_i(\cdot)$ is a function from X to the power set of X , the set of all subsets of X :

$$(1) \quad E_i: X \rightarrow 2^X, \quad \text{with } \mathbf{x} \in E_i(\mathbf{x}), \quad \text{for all } \mathbf{x} \in X.$$

exchange entitlement mapping $E_i(\cdot)$, no element of $E_i(\mathbf{x}_i)$ contains enough food. The "starvation set" S_i of endowment vectors consists of those commodity vectors \mathbf{z} such that he cannot meet his food requirements through exchange, starting from \mathbf{z} (i.e., the exchange entitlement set $E_i(\mathbf{z})$ contains no vectors satisfying his minimum food requirements).⁸

In standard models of general equilibrium for capitalist economies,⁹ it is assumed *in effect* that everyone's endowment vector lies outside the starvation set, and in this way the problem of survival is eliminated. As Koopmans [1957] puts it: "they assume that each consumer can, if necessary, survive on the basis of the resources he holds and the direct use of his own labor, without engaging in exchange, and still have something to spare of some type of labor which is sure to meet with a positive price in any equilibrium" [p. 59]. The advantages of such an assumption for general equilibrium models are clear enough, but it is not the case that, say, barbers, or shoemakers, or goldsmiths, or general laborers, or even doctors or lawyers, can survive without trading. The problem that is thus eliminated by assumption in these general equilibrium models is precisely the one that is central to a theory of starvation and famines.

The "survival problem" for general equilibrium models calls for a solution not in terms of a clever assumption that eliminates it irrespective of realism, but for a reflection of the real guarantees that actually prevent starvation deaths in advanced capitalist economies. This involves bringing in social security provisions, which precisely play this role, and there need be no great difficulty in incorporating such transfers in the formulation of a general equilibrium model with the state providing minimum entitlement transfers.

The real problem is not one of convenience of analysis but of *actual* existence of such entitlement guarantees, and starvation and famines can flourish in different parts of the world precisely because of the absence of such guarantees.

III. FAMINES AS ENTITLEMENT FAILURES

Person i can be plunged into starvation *either* through a fall in

8. The set of commodity vectors, each of which satisfies person i 's minimum food requirement, is denoted $F_i \subseteq X$. Person i will be forced to starve because of unfavorable entitlement relations if and only if he is not entitled to any member of F_i , given his endowment vector and his exchange entitlement mapping:

$$(2) \quad E_i(\mathbf{x}_i) \cap F_i = \phi;$$

$$(3) \quad S_i = \{\mathbf{z} | \mathbf{z} \in X \text{ and } E_i(\mathbf{z}) \cap F_i = \phi\}.$$

9. See Debreu [1959] and Arrow and Hahn [1971].

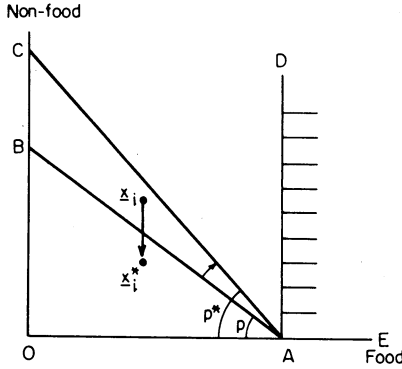


FIGURE I

the endowment vector \mathbf{x}_i , or through an unfavorable shift in the exchange entitlement mapping $E_i(\cdot)$.¹⁰ The distinction is illustrated in Figure I in terms of the simple case of pure trade involving only two commodities, namely, food and nonfood. The exchange entitlement mapping is taken to assume the simple linear form of constant price exchange. With a price ratio p , and a minimum food requirement OA , the starvation set S_i is given by the region OAB . If the endowment vector is \mathbf{x}_i , the person is in a position to avoid starvation. This ability can fail either (i) through a lower endowment vector, e.g., \mathbf{x}_i^* , or (ii) through a less favorable exchange entitlement mapping, e.g., that given by p^* , which would make the starvation set OAC .

It is easy to see that starvation can develop for a certain group of people as its endowment vector collapses, and there are indeed many accounts of such endowment declines on the part of sections of the poor rural population in many developing countries through alienation of land, sale of livestock, etc., and of consequent hardship.¹¹ Shifts in exchange entitlement mappings are rather less palpable, and more difficult to trace, but starvation can also develop with unchanged asset ownership through movements of exchange entitlement mapping. This will be impossible only if the endowment vector was itself an element of F_i , e.g., in Figure I, if it belonged to the region DAE .

Before proceeding to the use of the entitlement approach, a few of the limitations may be briefly noted. First, there can be ambiguities in the specification of entitlements. Even in capitalist market economies, entitlements may not be well defined in the absence of a unique

10. Note that this account, if taken as a real shift over time, involves a more short-run view of exchange possibilities than in the classic Arrow-Debreu formulation with present contracting of all future transactions.

11. See, for example, Griffin and Khan [1976] and Griffin [1978].

and reachable Walrasian market-clearing equilibrium,¹² and in pre-capitalist formations, there can be a good deal of vagueness on property rights and related matters.¹³ In many cases the appropriate characterization of entitlements may pose problems, and in some cases it may well be best characterized in the form of “fuzzy” sets and related structures—taking precise note of the vagueness involved.¹⁴ In empirical studies of actual famines the question of precision is compromised by data problems as well, and the focus here will not be on characterizing entitlements with pretended exactitude, but on studying shifts in some of the main *ingredients* of entitlements. Big shifts in such ingredients can be decisive in outlining entitlement failures, even when there is some “fuzziness” in the entitlement relations.

Second, while entitlement relations concentrate on rights within the given legal structure in that society, some transfers involve violation of these rights, e.g., looting or brigandry. When such extra-entitlement transfers are important, the entitlement approach to famines will be defective. On the other hand, many, though not all, recent famines seem to have taken place in rather orderly societies without anything “illegal” about the process leading to starvation. In fact, in guarding ownership rights against the demands of the hungry, the legal forces uphold entitlements, e.g., in the Bengal famine of 1943 the people who died in front of well-stocked food shops protected by the state¹⁵ were denied food because of lack of legal entitlement and not because of their entitlements being violated.

Third, people’s actual food consumption may fall below their entitlements for a variety of other reasons, e.g., ignorance, fixed food habits, or apathy.¹⁶ In concentrating on entitlements, something of the total reality is obviously neglected in our approach, and the question is how important these ignored elements happen to be and how much of a difference is made by this neglect.

12. See Hicks [1946] and Arrow and Hahn [1971].

13. There is also the critique by Dworkin [1977] of “legal positivism” disputing the view of law as a set of “rules,” and emphasizing the role of “principles, policies, and other sorts of standards” (p. 27), which are, of course, inherently more ambiguous. See also Summers [1978].

14. A similar problem arises from the ambiguity of values in economic planning, requiring “range”—rather than “point”—specification of shadow prices, leading to *partial* orders (see Sen [1975]).

15. See Ghosh [1944] and also Government of India [1945].

16. Also people sometimes *choose* to starve rather than to sell their productive assets (see Jodha [1975] for some evidence of this in Indian famines), and this issue can be accommodated in the entitlement approach only in a relatively long-run formulation (taking note of future entitlements). There is also some tendency for asset markets to collapse in famine situations, making the reward from asset sales rather puny.

Finally, the entitlement approach focuses on starvation, which has to be distinguished from famine mortality, since many of the famine deaths—in some cases *most* of them—are caused by epidemics, which have patterns of their own.¹⁷ The epidemics are, of course, induced partly by starvation, but also by other famine characteristics, such as population movement and breakdown of sanitary facilities, adding to the force of contagion.

IV. DIRECT AND TRADE ENTITLEMENT FAILURES

Consider occupation group j , characterized as having commodity j to sell or directly consume. Let q_j be the amount of commodity j each member of group j can sell or consume, and let the price of commodity j be p_j . The price of food per unit is p_f . Let F_j be the maximum food entitlement of group j . Clearly, $F_j = q_j p_j / p_f = q_j e_j$, when e_j is occupation j 's food exchange rate (p_j / p_f).

Commodity j may or may not be a *produced* commodity. The commodity that a laborer has to sell is labor power, and it is his means of survival just as commodities in the shape of baskets and jute are the means of survival of the basket-maker and the jute-grower, respectively. In general, it may be necessary to associate several different commodities, rather than one, with the same occupation, but there is not much difficulty in redefining q_j and p_j as vectors (with $q_j p_j$ as an inner product and e_j a weighted ratio).

A special case arises when the occupation consists of being a producer of food, say, rice, which is also what members of that occupation live on. In this case $p_j = p_f$, and $e_j = 1$, with $F_j = q_j$. Given the selective nature of calamities such as floods and droughts, affecting one food-producing group but not another, it will sometimes be convenient to take the group f to be a *specific part* of that occupation category.

It is worth emphasizing that this drastically simple modeling of reality makes sense only in helping us to focus on some important parameters of famine analysis; it does not compete with the more general structure sketched in Sections II and III. Furthermore, these simplifications will be grossly misleading in some contexts, e.g., in analyzing entitlements in an industrialized economy, because of the importance of raw materials, intermediate products, asset holdings, etc. Even in applying this type of structure to analyze *rural* famines

17. See Sen [1980] for a study of the pattern of mortality in the Great Bengal Famine.

in developing countries, care is needed to insure that the distortions are not too great.

For any group j to start starving *because of* an entitlement failure, F_j must decline, since it represents the *maximum* food entitlement. F_j can fall either because one has produced less food for own consumption, or because one can obtain less food through trade exchanging one's commodity for food. The former will be called a "direct entitlement failure," and the latter a "trade entitlement failure." The former will arise when q_f falls for some food-producing subgroup, while the latter can occur either because of a fall in e_j , or because of a fall in q_j , for a group that sells its commodity to buy food. Such a fall in q_j can occur either due to an autonomous production decline (e.g., a cash crop being destroyed by a drought), or due to insufficiency of demand (e.g., a laborer being involuntarily unemployed, or a basket-maker cutting down the output as the demand for baskets slackens).

It is, in fact, possible for a group to suffer *both* direct entitlement failure as well as trade entitlement failure, since the group may produce a commodity that is both directly consumed as well as exchanged for some other food. For example, the Ethiopian or Sahelian pastoral nomad both eats the animal products directly and also sells animals to buy food grains (thereby making a net gain in calories), on which he is habitually dependent.¹⁸ Similarly, the Bengali fisherman does consume some fish, though for his survival he is dependent on grain-calories, which he obtains at a favorable rate by selling fish—a luxury food for most Bengalis.

In the next three sections of following famines are briefly examined in the light of the framework presented in the preceding sections: the Bengal Famine of 1943; the Ethiopian famine in Wollo province in 1973; and the Bangladesh famine of 1974. They draw on fuller studies,¹⁹ but the intention here is to put them in a comparative perspective, using the ingredients of famine analysis presented here. There will be attempts to answer the following questions in each case:

- (1) Was there a substantial food availability decline compared with normal supply?
- (2) To which occupation groups did the famine victims chiefly belong?

18. See Chs. 7 and 8 in Sen [1981].

19. See Sen [1980a], which also examines other cases of famines, e.g., those in Sahel countries in the seventies and the starvation of nomads in the Ogaden region of Ethiopia in 1974.

- (3) Did these groups suffer from substantial entitlement declines, and if so, what were the characteristics of these entitlement failures (e.g., endowment loss *versus* unfavorable shifts in exchange entitlement mappings, direct entitlement failures versus trade entitlement failures)?

V. THE GREAT BENGAL FAMINE OF 1943

The Bengal famine of 1943 was characterized by an acute period of starvation during May to October of 1943. The death rate stayed up for several years because of epidemics that the famine unleashed. The contemporary official estimate of excess death due to the famine was 1.5 million in a population of around sixty million (see Government of India [1945, pp. 119–20]). However, use of later data, including reverse-survival estimates based on the 1951 census, indicates that 3 million was closer to the mark (see Sen [1980]). The famine was mostly a rural phenomenon, affecting every district in rural Bengal,²⁰ but Calcutta saw the famine mainly in the form of masses of rural destitutes trekking into the city and dying on the streets (see Das [1949]).

Was there a substantial food availability decline compared with normal supply? The official Famine Inquiry Commission, which produced an admirably detailed report, thought so, and diagnosed that the primary cause of the famine was “a serious shortage in the total supply of rice available for consumption in Bengal.”²¹ This FAD explanation would have seemed plausible, since there were several factors working negatively on the supply of rice, which is the staple food of the Bengali, and on the supply of foodgrains in general. To wit: (i) a cyclone in October 1942 had affected, in some areas, the main crop (*aman*) of rice to be harvested in December 1942; (ii) import of rice from Burma into India had been disrupted by the Japanese occupation of Burma; (iii) London persistently turned down requests from New Delhi of shipping allocation for importing grains into India; (iv) interprovince movements of grain were largely prohibited except through intergovernmental agreements that did not get organized until after the famine; and (v) a cunning British policy of “rice denial” to the oncoming Japanese led to removal of rice stocks from three coastal districts in Bengal in 1942 (without causing much anxiety to the Japanese, since they failed, for other reasons, to show up).

20. See the *Census of Pakistan 1951* and the *Census of India 1951*.

21. Government of India [1945, p. 77].

TABLE I
 FOOD AVAILABILITY IN BENGAL: 1940-1943
 Base: 1941 value = 100

Year	Index of rice output	Index of rice supply	Index of foodgrains availability	Index of foodgrains availability per capita
1940	125	124	122	123
1941	100	100	100	100
1942	141	135	131	130
1943	113	112	111	109

Source. Sen [1977b, Table 2].

Nevertheless, a careful tally of food availability in Bengal does not fit in with FAD explanation of the famine. Table I presents the results of food supply calculation, taking into account local production and trade, choosing—wherever the data permit—an assumption as unfavorable to 1943 as possible. Current availability of food grains was at least 11 percent higher in 1943 than in 1941, when there was nothing remotely like a famine. Even in per capita terms the current availability was 9 percent higher in 1943.²²

I turn now to the second question: who were the famine victims? There is overwhelming evidence that the famine victims came almost exclusively from the rural population.²³ Hardly any came from Calcutta, even if Sir Manilal Nanavati might have exaggerated the contrast in his claim that “in the end not a single man died of starvation from the population of Greater Calcutta, while millions in rural areas starved and suffered” [Government of India, 1945, p. 102]. Within the rural areas, a picture of relative destitution can be constructed from the sample survey carried out in the famine stricken areas of Bengal by Mahalanobis, Mukherjea, and Ghosh [1946]. Using these data, inter-occupation transition matrices can be constructed reflecting changes over the famine period (see Tables 9 and 10 in Sen [1977b]).

22. For the details of the estimation procedure, see Sen [1977b]. Since figures on carryover of stocks do not exist, two-year and three-year moving averages were also considered. The three-year moving average ending in 1943 is just marginally lower than that ending in 1941, while the two-year moving average ending in 1943 is higher than any since 1939-1940 (see Table 2 in Sen [1977b]). Splitting up the availability during 1943 to take note of trade flow variations during the year does not alter the picture substantially either (see Sen [1977b, pp. 40-41]). See also Alamgir [1980] and Sen [1981, Ch. 6].

23. See Government of India [1945], Ghosh [1944], Mahalanobis, Mukherjea, and Ghosh [1946], Das [19], and Mukerji [1965].

TABLE II
DESTITUTION INDICES FOR RURAL OCCUPATION GROUPS DURING THE BENGAL
FAMINE

Occupation groups	Index A	Index B
Fishermen	9.6	10.5
Transport	6.0	6.9
Agricultural labor	4.6	6.1
Other productive occupations	4.6	4.6
Nonagricultural labors	3.7	4.5
Craft	3.8	4.3
Trade	2.2	2.6
Professions and services	2.1	2.5
Noncultivating owners	1.6	2.4
Part peasant, part labor	1.4	2.0
Peasants and sharecroppers	1.3	1.4

Source. Sen [1977b, Tables 9 and 10]. Index A is the "transition" percentage to "living on charity"; it represents the percentage of January-1943-population of each occupation group responding in 1944 that they were "living on charity." Index B is the sum of destitution Index A and the "transition" percentage to "husking paddy"—a classic destitution occupation.

They include, inter alia, relative frequencies of destitution of different rural occupation groups, using two indicators: (A) transition percentage to "living on charity," and (B) transition percentage to "living on charity" or "husking paddy"—a typical destitution occupation with easy entry. The destitution indicators are presented in Table II.

The *most* affected groups in this list of rural occupations were fishermen, transporters, and agricultural laborers in that order, followed by "other productive occupations," nonagricultural labor, and crafts. In absolute number by far the largest groups of destitutes came from the class of agricultural laborers (see Mahalanobis, Mukherjea, and Ghosh [1946]). The surveys of the destitutes who trekked into Calcutta also confirm this (see Das [1949]), and so do other rural surveys dealing with destitution as well as occupation-specific mortality (see especially Mukerji [1965]).

The *least* affected group among the rural occupations was that of peasants and sharecroppers, as can be seen from Table II. Other studies again broadly confirm this.²⁴

Information about entitlements is very limited. However, Table III presents indices of rice exchange rate e_j for some of the occupations

24. For example, in the villages surveyed by Mukerji [1965], peasant and sharecroppers were the least affected with the exception of landlords and office employees. See also Bhatia [1967].

TABLE III
 INDICES OF RICE-EXCHANGE RATE e_j OF RURAL OCCUPATIONS DURING THE BENGAL FAMINE: BIRBHUM DISTRICT AROUND BOLPUR
 Base: (a) December 1942 values
 (b) Same month 1942 values

Month	Agricultural laborers		Fishermen		Barbers		Bamboo craftsmen		Rice-cultivating peasants and sharecroppers	
	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)
1941										
December	152	152	119	119	179	179	118	118	100	100
1942										
December	100	100	100	100	100	100	100	100	100	100
1943										
January	106	n.a.	77	68	93	48	100	75	100	100
February	114	n.a.	85	75	100	52	115	77	100	100
March	67	n.a.	55	48	66	34	81	45	100	100
April	55	n.a.	40	39	48	31	71	41	100	100
May	36	n.a.	32	36	32	24	51	32	100	100
June	39	n.a.	46	30	34	22	56	30	100	100
July	41	n.a.	45	31	34	23	55	31	100	100
August	47	n.a.	44	34	34	26	34	34	100	100
September	58	43	67	43	50	32	78	46	100	100
October	58	68	60	60	45	45	67	62	100	100
November	73	126	95	118	57	71	86	106	100	100
December	120	120	126	126	75	75	106	106	100	100

Source: Sen [1977b, Tables 4 and 5]. Rice price is that of grade no. 2 rice. Agricultural wages are those of unskilled, male, agricultural laborers (daily rate). Other occupations are represented by the following commodities respectively: *pona* fish (fishermen); haircut (barbers); bamboo umbrellas (bamboo craftsmen); grade no. 2 rice (rice-cultivating peasants and sharecroppers). Not available is denoted n.a.

from data contemporarily collected in the Birbhum district near Bolpur. The occupation classification in these statistics is rather different from the categorization used by Mahalanobis and his colleagues, except for agricultural labor and fishermen. But the rice exchange rates of barbers and bamboo craftsmen are also relevant, and those of peasants and sharecroppers growing rice can, of course, be put as unity on analytical grounds (as discussed in Section IV). Table III presents these rice exchange rates, defined as the amount of common grade rice that could be bought with one unit of the occupational commodity. They are indexed (a) with the December-1942-value as 100 (to indicate absolute changes), and (b) with the same-month-1942-value as 100 (to filter out seasonal patterns).

The contrast between the obvious stationarity of e_j for rice-cultivating peasants and sharecroppers and the devastatingly steep decline of e_j for agricultural laborers, fishermen, and other groups is striking.²⁵ This was mainly the result of rice price rise, with prices of other commodities and rural wages falling behind.

There was little information about quantities q_j , except the unquantified, but reported to be large, decline in the amounts of fish caught and river transportation because the government's "boat denial" policy was carried out in 1942.²⁶ That policy, like the "rice denial" policy, was also aimed at the elusive Japanese, and took the form of destroying or removing boats capable of carrying ten passengers or more in a vast area of river-based Bengal; it did not touch the Japanese, but played havoc with river-transport (widespread in river-based Bengal), and fishing. These quantity losses were reflections of endowment loss, compounding, at least in the case of fishermen, the decline in exchange entitlement mapping resulting from a fall in the rice exchange rate.

What happened to entitlements of the Calcutta population, which escaped the famine raging all around it? While there was a little decline of real wages (see Palekar [1962]), the Calcutta population was effectively insulated from the steep rise in foodgrains prices by subsidized rice being made available through a system of rationing covering more than a million employees and their dependents, and also through a network of "controlled" shops for regular residents of Calcutta. Virtually the whole of the Calcutta population was kept

25. A qualification is worth mentioning here. There is evidence that some peasants and sharecroppers had sold off their stock shortly after the harvest (often to repay loans), and had to buy back grains for consumption later in the year, and would have suffered from the high retail price of foodgrains.

26. See Government of India [1945, pp. 26-27]; also Ghosh [1944].

supplied with foodgrains at prices far below those ruling elsewhere (and indeed also below those existing in Calcutta for purchase outside rationing and control). There is little doubt that the government was successful in its policy of keeping the Calcutta population well fed, based on the belief that "the maintenance of essential food supplies to the industrial area of Calcutta must be ranked on a very high priority among the government's wartime obligation" [Government of India, 1945, p 30]. And indeed, war efforts were not disrupted in Calcutta.

It is not part of my program here to investigate the causation of the change of food prices and declines in rice exchange rates of rural occupation groups. I have tried to go into this question elsewhere [Sen, 1977b, pp. 49–55]), even though the explanations are speculative, and data limitations make any kind of proper testing virtually impossible. The main factors to emerge are as follows: (i) the importance of demand expansion connected with war-related military, industrial, and construction activities along with a massive increase in effective demand and money supply through 1942 and 1943; (ii) speculative withdrawal of rice in 1943 caused partly by panic after early reports of starvation, but also by the extreme profitability of holding rice even under the assumption of stationary expectation (rice prices nearly doubled in 1943, the year preceding the famine) and a relatively low money rate of interest (well below 10 percent); (iii) uneven distribution of the demand for labor reflecting the uneven impact of war-related activities, leaving most rural labor out of the activity boom; (iv) institutional sluggishness of the rural wage mechanism used to largely stationary rice prices in the quarter of a century preceding 1942; and (v) "derived destitution" through collapse of demand for commodities other than foodgrains (such as craft products, rural services, fish and other luxury food, etc.) as the purchases of these commodities fell into destitution.²⁷

The pattern of destitution suggests that the failure of entitlements, which was widespread and massive, was mainly *trade* entitlement failure rather than *direct* entitlement failure. Evidence of *endowment* loss was found for fishermen and rural transporters, but evidence of collapse of *exchange entitlement mapping* is much more widespread.

The rise in rice prices, which played a crucial part in this, does *not* seem to have been the result of an availability failure. There is, in fact, very little evidence for availability failure in the famine year. Indeed, rice prices had also nearly doubled in the year *preceding* the

27. See also Sen [1981], Ch. 6 and Appendix B.

famine, i.e., in 1942, a year in which food availability per capita reached a record level (30 percent higher than in the preceding year).²⁸ The clue lies on the demand side, and the entitlement failures associated with the Bengal famine seem to relate to the powerful, but uneven, expansionary forces working on the economy of Bengal. The Bengal famine was indeed a boom famine.

VI. THE WOLLO FAMINE OF 1973

The 1973–1974 famines in Ethiopia were associated with droughts. The main—*kremt*—rains in mid-1972 failed in parts of Ethiopia particularly in the northeast, and this was followed by a failure of the spring—*belg*—rains in early 1973. The famine that gripped Ethiopia in 1973 was centered on the province of Wollo. While the *kremt* rains of 1973 were good in the northeast, a new drought situation developed further south. When the famine of 1974 raged over the province of Harerghe, the northeastern famine had substantially ended. So Ethiopia experienced two rather distinct famines during 1973 and 1974, though the former was by far the larger episode, and it is with the former that this section is concerned.²⁹

The mortality estimates for the Ethiopian famines vary between 50,000 to 200,000 in a population of about 27 million.³⁰ Most of the deaths took place in 1973, in Wollo. Starvation reached its peak in Wollo around August of 1973.³¹

Was there a substantial food availability decline in Ethiopia in 1973 compared with normal availability? Data on this are difficult to obtain, and furthermore, the heterogeneity of types of food consumed makes overall indicators difficult to define (unlike in Bengal). The Food and Agricultural Organization of the United Nations does, however, present estimates of food availability per head in terms of calories consumed in the *FAO Production Yearbooks*. The 1973 availability figure, while just a bit lower than that of the preceding year, is hardly lower than for the 1961–1965 period, and a good deal higher than the figures for 1964–1969 and 1970.³² On this basis there

28. The entitlement decline of many of the occupation groups had already started in 1942, especially of agricultural labor (see Sen [1977b], Tables 4 and 5).

29. For an analysis of the Harerghe famine and a more detailed account of the Wollo famine, see Sen [1981], Ch. 7.

30. See Rivers, Holt, Seaman, and Bowden [1976] and Gebre-Medhin and Vahlquist [1977].

31. See Holt and Seaman [1976, p. 4] and Seaman and Holt [1975].

32. For a more detailed analysis (and examination of data consistency), see Sen [1981, Ch. 7]). The calorie estimates were interrupted in the Yearbooks for 1972 to 1975, but the 1976 Yearbook presents the figures for 1972 and 1973. 1971 is the only missing year, covered neither in the 1971 Yearbook, nor in the 1976 Yearbook.

is no reason to read a food availability decline for Ethiopia as a whole in the famine year 1973. (For a more detailed account see Sen [1981, Ch. 7].)

Should the FAD analysis relate to the Ethiopian food availability or to that in Wollo? It is, of course, always possible to make a FAD explanation work by choosing units sufficiently small, since some people dying of famine must mean that food was not "available" to *them*! However, Wollo is a big province, and given reported transport difficulties, may *deserve* to be considered on its own. I shall later take up the complex issue involved in the choice of focus for FAD, but will turn first to the food production and supply situation in Wollo.

Food production did fall quite drastically in the province of Wollo. As far as the main crop is concerned, dependent on the *kremt* rains of 1972, 90 percent of the districts had "below normal" production, with more than half of them "substantially below normal," according to a Ministry of Agriculture survey. No exact production figures have been reliably estimated for Wollo, but a big food production decline in Wollo seems indisputable [Hussein, 1976].

Was there a substantial movement of food into the deficit province of Wollo from the rest of Ethiopia? While there was some movement, no exact figures exist, but it appears that the movement was not very substantial during the famine year. Indeed, there is a record of movement of food *out of* Wollo into Addis Ababa and Asmera through the famine period (see Holt and Seaman [1976]). This would indicate that while food availability did fall in Wollo, something more than food availability had also fallen.

Who were the famine victims? While there is evidence that the pastoral population, especially of the *Afar* community, was among the first to face acute problems [Holt and Seaman, 1976, p. 3], and had a high proportional destitution rate [Hussein, 1976, p. 19],³³ most of the destitutes came from agricultural backgrounds. Indeed, it appears that "relief-centre populations were mainly made up of members of the farming peoples of principally low-land areas which are many times more densely populated than the *Afar* region."³⁴ While there were some urban-origin people in the relief camps,³⁵ the bulk of the

33. The *Afar* pastoralist suffered not only from drought but also from the loss of some of the best grazing ground, just before the drought, due to encroachment from commercial agriculture (see Bondestam [1974], Flood [1976], and Hussein [1976]). A similar conflict with commercial agriculture seems to have played a prominent part in the famine in the Sahel countries (see Comite Information Sahel [1974], Meillassoux [1974], and Copans [1975]). Sen [1981] takes up some of the issues raised.

34. Holt and Seaman [1976, p. 3]. See also Gebre-Medhin *et al.* [1974], and Belete *et al.* [1977].

35. These included daily male laborers and women in various service occupations: domestic service, water-carrying, beer-selling, and prostitution.

destitutes came from a farming background—a majority from the three *awrajas* (subregions) of Raya and Kobo, Yeju, and Ambassel,³⁶ belonging to the eastern lowlands of Wollo, severely affected by the failure of the *kremt* rains of 1972.

What about entitlements? For food-growing farmers consuming the food grown, the food exchange rate e_j is trivially unity. Thus, the production failure translates *directly* into an entitlement failure. The farming population faced starvation, since their own food output was insufficient and they did not have the ability to *buy* food from others, as food output is also their source of income.

It is the last point that provides a clue to the relative absence of food movement into Wollo from elsewhere in Ethiopia. For the farmers i in the region affected by drought, the collapse of the food entitlement F_f is a *direct* entitlement crisis related to a fall in q_f , without the overall food availability and markets making much difference (see Section IV).³⁷

This explanation could be challenged by arguing that food did not get to the famine-affected people in Wollo because of transportation difficulties, and not because of the lack of purchasing power. Indeed, the roads inside Wollo are few and bad, and a large number of complaints were heard about them in discussions on the famine. If bad roads rather than lack of purchasing power prevented food from getting to the famine victims, then one must treat the province of Wollo rather than the country of Ethiopia as the right focus for a FAD analysis, and must then give food availability decline an important role in the famine. Can this hypothesis be rejected?

There is indeed strong evidence against the hypothesis of transport limitation. First, while roads are few and bad in much of Wollo, two highways run through it, and the main north-south Ethiopian highway linking Addis Ababa and Asmera runs right through the area most affected by the famine (see Holt and Seaman [1976] and Belete *et al.* [1976]). Indeed, much of the early information about the famine came from travelers being stopped on this highway to ask for food (see Holt and Seaman [1976]). Nearly all the relief camps that were eventually set up were located near the highway, not merely because of easy access for supplies coming in, but also because of the high intensity of destitution in that region (see Belete *et al.* [1977]). Underdeveloped roads would not explain the starvation in these famine-affected regions.

36. See Belete *et al.* [1977], Tables I and II.

37. A farmer owning land and livestock can, of course, sell these endowments. But many farmers did not possess saleable land; land and livestock prices were severely depressed; and there was also much endowment loss in the form of livestock death.

Second, as mentioned earlier, there was some movement of food out of Wollo through the famine period. This was not very large in volume, but it did provide some support for the market entitlement view rather than the transport-limitation view of food shortage in Wollo.

Third, despite the disastrous failure of food output, food prices did not go up very much in Wollo. When in October 1973 Holt and Seaman started collection of food prices in the hardest hit district of Raya and Kobo, which had more than a tenth of its population in relief camps by May–June 1974,³⁸ they found that food prices were within 15 percent of the pre-drought levels [Holt and Seaman, 1976, p. 5].

Food prices in Dessie, the main grain market in Wollo, also rose relatively little. Taking the average prices of 1970–1972 as the “pre-famine” levels, prices in the famine year 1973 were, on the whole, remarkably close to pre-famine levels: somewhat higher for some (e.g., teff, millet), and somewhat lower for others (e.g., wheat, sorghum, barley, maize).³⁹ People starved to death without there being a substantial rise in food prices. In terms of entitlement approach, there is, of course, no puzzle in this. Since the farmers’ food entitlement is a *direct* entitlement (without going through the market), a collapse of it can operate without a rise in market prices. On the other hand, the transport-limitation view would have suggested a substantial increase in prices because of the excess demand arising from supply limitation.⁴⁰

The transport-limitation view is, therefore, not easy to defend. Insofar as the starving people in Wollo could draw on food from the rest of Ethiopia *if* they had the market power to pull food into Wollo, the appropriate unit for a FAD analysis has to be Ethiopia rather than Wollo. Food did not move into Wollo in sufficient amount (and some moved out), not so much because the roads did not permit such movements, but because the Wollo residents lacked the market command.

Finally, while the entitlement failure of the Wollo farmer was a *direct* entitlement failure, this led to *trade* entitlement failures of

38. See Belete *et al.* [1977], Tables I and II.

39. See Sen [1981, Table 7.4]. These prices, collected by the National Bank of Ethiopia and the Ethiopian Grain Agency, relate to the Ethiopian calendar. So 1973 corresponds to September 1972 to September 1973. While it begins a bit early (and no time breakdown could be obtained), it avoids the period of very late 1973 in which relief supplies started coming into Wollo in some volume. Also, the main crop failure was clear by September 1972, the *kremt* rains having already failed. I am grateful to Julian Holt for giving me these unpublished official data.

40. The Wollo grain prices in 1973 remained in the neighborhood of—typically only a little higher than—those ruling in Addis Ababa despite the starvation in Wollo, according to Ethiopian Grain Agency data.

other groups. Farm servants and dependents were dismissed. The usual food sales to urban markets were reduced, and demands for urban goods and services were cut, leading to "derived destitution" there. The multiplier process would lead to other destitutions as a consequence. The composition of the relief center population confirms such indirect entitlement failures.⁴¹ If the Bengal famine had the character of a *boom* famine, the Wollo famine certainly looks more like a contraction-based *slump* famine.

VII. THE BANGLADESH FAMINE OF 1974

The Bangladesh famine of 1974 is associated with floods that came during June to September of 1974 on an inflated Brahmaputra river. Reports of famine could be heard not much after the flooding began, though the official declaration of the famine did not come until late September. Some relief centers (*langarkhanas*) providing cooked food came into operation under private initiative in early September, and massively under government auspices in early October. At one stage nearly six thousand langarkhanas were providing relief to 4.35 million people—more than 6 percent of the total population of the country. By November the crisis seemed to be passing, and the langarkhanas were shut down by the end of November.

Mortality estimates vary widely. The official figure of deaths due to the famine is 26,000. Other estimates suggest that in the Rangpur district alone "80 to 100 thousands persons died of starvation and malnutrition in 2–3 months" [Haque, Mehta, Rahman, and Wignaraja, 1976, p. 43]. Another estimate suggests an excess-death figure of around one million during August 1974 and February 1975, and a further half a million in the year following [Alamgir, 1980].

Was there a substantial food availability decline? There were factors contributing to this. The floods did wipe out a part of the standing *aus* crop of rice, which is harvested in July and August, and also washed away rice seedlings being transplanted for the principal *aman* crop, harvested around December. Importing was proving difficult due to dollar shortage (see Islam [1977]), and food aid from the United States was in serious jeopardy because of the U. S. objection to Bangladesh's export of jute to Cuba, until Bangladesh agreed to stop further export (see McHenry and Bird [1977]; also Sobhan [1979]).

41. See Gebre-Medhin *et al.* [1974], Holt and Seaman [1976], and Belete *et al.* [1977]. See also other accounts of destitution, e.g., Hussein [1976] and Wood [1976].

TABLE IV
 FOODGRAINS OUTPUT AND AVAILABILITY IN BANGLADESH: 1971-1975
 (Base: 1971 value = 100)

Year	Index of per capita rice output (a)	Index of per capita foodgrains availability (b)	Calories per capita (c)
1971	100	100	
1972	90	103	1,900
1973	95	103	1,913
1974	105	107	2,023
1975	99	100	

Source. (a) and (b) calculated from Alamgir [1980]; (c) is obtained from *FAO Production Yearbook 1976*.

But *did* the food availability in Bangladesh decline in the famine year? Table IV provides the indices of rice production as well as of per capita availability of rice and total foodgrains. Far from being a bad availability year, it seems that 1974 was the year of peak availability in the first half of the decade. A similar picture emerges from the estimates of calorie consumption.⁴² It is difficult to defend a FAD explanation of the Bangladesh famine of 1974.

Who were the famine victims? The survey of langarkhana destitutes carried out by the Bangladesh Institute of Development Studies permits us to give an answer to the question in terms of rather broad categories. It appears that the destitutes were almost entirely from the rural areas. The breakdown among broad rural occupation groups is given in Table V. The biggest occupation group among the langarkhana destitutes was that of "farmers" (38.7 percent), followed by agricultural laborers (24.1 percent) and other laborers (20.4 percent). Farmers are also the most numerous occupation group in Bangladesh, and if we look at the relative *intensity* of destitution (see Table V), it would appear that rural laborers as a group had a much higher rate of destitution than the farmers—in fact, about three times as high. Incidentally, if we put the rural laborers together rather than splitting them into agricultural and nonagricultural (there is easy movement between the two groups), then they are also the most

42. The rice *output* figure for 1974 in the *FAO Production Yearbook* is low because it *includes* the December 1974 harvest and *excludes* the December 1973 harvest. The production figures given in Table IV here are based on Alamgir's [1980] estimation that rightly identifies the output relevant for 1974 as including the crop harvested in December 1973, and not that harvested in December 1974, which is consumed over the *next* year. The same method was used in estimating output of foodgrains in Bengal during the Bengal famine of 1943 in Section V above, and in Sen [1977b].

TABLE V
OCCUPATIONAL DISTRIBUTION AND INTENSITY OF DESTITUTION IN
BANGLADESH 1974

Occupation	Percentage of total langarkhana population (a)	Percentage of Bangladesh rural households by major sources of income (b)	Destitution intensity (a)/(b)
Farmers	38.7	58.6	0.66
Agricultural laborers	24.1		
Other rural laborers	20.4		
Total rural laborers	44.5	23.7	1.88
Others	16.8	17.7	0.95
Total	100.0	100.0	1.00

Source. (a) and (b) obtained from the results of sample surveys by the Bangladesh Institute of Development Studies, reported by Alamgir [1980].

numerous occupational group of destitution in terms of absolute numbers.

The study by the Bangladesh Institute separated out three districts as "famine districts" namely, Rangpur, Mymensingh, and Sylhet, because of incidence of destitution and effects of the flood as revealed by the survey. The langarkhana data support this diagnosis, and these three are certainly among the top four districts (Rangur, Mymensingh, Dinajpur, and Sylhat) in terms of proportions of their respective total population who lived on langarkhanas (respectively, 17 percent, 12 percent, 9 percent, and 8 percent). In the case of the fourth, Dinajpur, it appears that a considerable proportion of the local destitutes really "came from the adjoining district of Rangpur" [Alamgir, 1980].

How did these three "famine districts" fare in terms of food availability change? Estimates relating to this have been presented in Table VI. Rice production in all three districts *went up* substantially. So did food availability per head. Furthermore, in terms of absolute foodgrains availability per head, these three famine districts were among the *best supplied* five districts in a list of nineteen!

What about entitlements, especially of rural labor? Table VII presents the indices of rice-exchange for rural labor for each month

TABLE VI
 INTERDISTRICT VARIATIONS OF FOODGRAINS AVAILABILITY AND CHANGE:
 BANGLADESH 1974

District	Foodgrains availability per head (oz./day)	Percentage change of foodgrains availability between 1973 and 1974	Percentage change of rice production between 1973 and 1974
Dinajpur	25.1	+23.0	+32.1
Mymensingh	22.8	+10.7	+22.3
Sylhet	22.1	+ 3.3	+10.3
Bogra	20.8	+ 7.8	+25.8
Rangpur	20.1	+ 9.8	+17.1
Chittagong	19.7	+ 7.1	+12.6
Noakali	16.7	- 6.2	+ 6.5
Jessore	16.3	+11.6	+24.6
Khulna	16.2	+17.4	+42.2
Barisal	16.0	-14.0	- 9.6
Rajshahi	15.8	+ 1.3	+ 6.4
Patuakhali	15.7	-34.9	-33.0
Tangail	15.3	+ 4.1	+22.0
Comilla	14.9	- 7.5	+ 3.9
Chittagong Hill Tracts	14.4	- 2.7	+38.8
Dacca	13.8	- 4.8	+ 8.0
Kushtia	12.8	+ 6.7	+22.8
Faridpur	12.0	+12.5	+20.1
Pabna	10.8	+ 3.8	+12.4

Source. Alamgir [1980].

in 1974 with two alternative bases: namely, (a) December 1973 as 100; and (b) the same month in 1973 as 100. The decline of the e_j indices in the months just preceding the famine and through the famine months is very sharp indeed. The fall is a bit less if we use the same-month-previous-year base, which does something to eliminate the seasonal drop, but even there the fall is large. At the peak of the famine the fall is 35 to 45 percent compared with the same month in the previous year, for a group of people already close to subsistence.

The sharpest decline comes just after the floods started, and Table VIII presents the fall of the rice-exchange rate of rural labor during June to October. There was no such decline in the preceding year (see Table VII), and data for earlier years also show no substantial seasonal fall over these months.

TABLE VII
 INDICES OF RICE-EXCHANGE RATE e_j OF RURAL LABOR DURING THE BANGLADESH FAMINE 1974
 Base: (a) December-1973 values
 (b) Same-month-1973 values

Month	Rural wage rate		Price of rice		Index value of rice-exchange rate e_j for 1974 month	
	1973	1974	1973	1974	(a)	(b)
January	4.78	6.22	72.37	92.11	86	102
February	4.91	6.36	76.68	98.93	82	100
March	5.14	7.17	83.84	117.33	78	100
April	5.35	8.22	96.49	136.98	77	108
May	5.47	8.72	96.29	135.68	82	113
June	5.83	8.26	91.11	139.04	76	93
July	6.02	8.61	87.06	141.78	78	88
August	5.81	8.82	85.92	171.25	66	76
September	5.72	8.80	89.47	212.80	53	65
October	5.85	8.64	94.11	251.78	44	55
November	6.00	8.39	89.65	213.73	50	59
December	6.32	8.70	80.90	188.98	59	59

Source. Calculations based on data compiled by the Bangladesh Institute of Development Studies, reported in Alamgir *et al.* [1977, Tables 3.3 and 4.3].

TABLE VIII
 DECLINE OF RICE-EXCHANGE RATE OF RURAL LABOR IN BANGLADESH
 BETWEEN JUNE AND OCTOBER 1974

Area	Wage rate in October 1974 with June 1974 value as 100	Rice price in October 1974 with June 1974 value as 100	Percentage decline in e_j for rural labor between June and October 1974
Bangladesh	104.6	181.1	42.2
Mymensingh	69.0	225.9	69.5
Rangpur	80.0	190.3	58.0
Sylhet	100.0	236.0	57.6
Noakhali	100.0	209.8	52.3
Barisal	87.0	177.3	50.9
Chittagong Hill Tract	100.0	201.3	50.3
Tangail	106.3	211.4	49.7
Pabna	100.0	172.3	42.0
Chittagong	100.0	170.5	41.3
Patuakhali	100.0	167.9	40.4
Dacca	118.9	192.6	38.3
Khulna	96.2	153.9	37.5
Bogra	100.0	158.2	36.8
Dinajpur	114.3	179.1	36.2
Comilla	135.7	205.0	33.8
Jessore	108.3	155.0	30.1
Kushtia	112.0	151.4	26.0
Rajshahi	123.1	156.4	21.3
Faridpur	158.3	164.5	3.8

Basis. Calculated from Tables 3.3 and 4.3 of Alamgir *et al.* [1977, pp. 57-58 and 92].

The decline in the rice-exchange rate of rural labor for the districts are also presented in Table VIII. The three most affected districts in terms of precipitate decline of the rice-exchange rate are Mymensingh (70 percent), Rangpur (58 percent) and Sylhet (58 percent)—precisely the three “famine districts.”⁴³

What led to this severe exchange entitlement decline? The main factor would appear to be the rise in rice prices, but it is worth noting that in two of the three “famine districts,” viz., in Rangpur and Mymensingh, even the money wages fell, respectively, by 20 percent and 31 percent (Table VIII). The floods certainly did reduce employment in those areas in which crops or seedlings got washed away cutting

43. For more detailed analyses of the interdistrict pattern of entitlement decline and destitution, see Alamgir [1980] and Sen [1981, Ch. 9].

TABLE IX
COMPARATIVE ANALYSIS OF THREE FAMINES

Which famine?	Was there a <i>food availability</i> collapse?	Which occupation group provided the <i>largest number</i> of famine victims?	Did that group suffer substantial <i>endowment</i> loss?	Did that group suffer <i>exchange entitlement</i> shifts?	Did that group suffer <i>direct</i> entitlement failure?	Did that group suffer <i>trade</i> entitlement failure?	What was the general economic climate?
Bengal famine 1943	No	Rural labor	No	Yes	No	Yes	Boom
Ethiopian famine (Wollo) 1973	No	Farmer	A little, yes	Yes	Yes	No	Slump
Bangladesh famine 1974	No	Rural labor	Earlier, yes	Yes	No	Yes	Mixed

down the scope for fruitful work.⁴⁴ While the floods did not reduce the overall *aus* crop in Bangladesh, and could not reduce per capita food availability in any of the "famine districts" (given the relatively large *aman* harvest in the preceding November–January); nevertheless, the labor market during the *aus* harvesting and *aman* transplanting was clearly disrupted, particularly in the "famine districts." The reduced *aman* harvest of November–January 1974–1975 did not, of course, affect food availability in Bangladesh until *after* the famine was over, but its impact was *immediately* felt in the labor market since wage employment was curtailed straightaway.

But the rise in *rice* prices cannot be explained in terms of labor market disruption, and the question arises as to why rice prices rose so fast just after the floods hit. Anticipation of the coming shortage, seeing the effects of the flood, would have been a possible immediate reason, and there was clearly some speculative rise (see Alamgir [1980]). But inflationary forces operating on the rice market had started pushing rice prices up very sharply much before the floods hit. This had been going on throughout the early seventies (see Faaland and Parkinson [1976] and Islam [1977]). But the rise in the early months (January–April) of 1974 was particularly severe, and there was about a 50 percent rise between January and April in 1974.⁴⁵ In this inflationary development the floods that came in June and later could hardly have played a role.

Thus, while floods were associated with the Bangladesh famine and played the part of disrupting the labor market as well as leading to some loss of crops by farmers and consequent destitution,⁴⁶ the forces that wreaked havoc must be traced in part to *macroeconomic* factors operating on the economy of Bangladesh. The floods seemed to have made it impossible for some deprived groups, especially rural laborers, to keep up with the expansionary forces pushing food prices up in the economy (see Sen [1981], Ch. 9).

While the *explanation* of the entitlement shifts of the victim groups must remain somewhat speculative, the *facts* of the entitle-

44. See Rahman [1974]. Also Alamgir [1978, 1980].

45. There is a seasonal element in this too, but the rise was much sharper in 1974.

46. The langarkhana destitutes came mostly from the class of landless laborers or the little-landowning peasantry. Of the langarkhana destitutes surveyed, 81 percent owned no land or less than $\frac{1}{2}$ acres, compared with 26 percent for the average rural population of Bangladesh. 99 percent of destitutes owned less than $2\frac{1}{2}$ acres if they owned any land at all, compared with 65 percent of the average rural Bangladeshi population. The tendency toward land alienation had been strong in Bangladesh in the preceding years to the famine (see, especially, Rahman [1974], Khan [1977], Abdullah [1976], and Adnan and Rahman [1978]), and this endowment loss over the years would have made a larger population vulnerable to the famine that took place.

ment shifts are clear enough. It is also established that whatever might have caused these shifts, a substantial decline in food availability could not have played this part, for the simple reason that such a decline did not occur. It occurred neither for Bangladesh as a whole, nor for the "famine districts" within Bangladesh.

VIII. CONCLUDING REMARKS

This paper has been concerned with presenting the entitlement approach to famine analysis. The theoretical structure was outlined with critical discussion in Sections II–IV, and then the approach was used for analyzing three recent famines in Sections V–VII. The entitlement approach analyzes famines as economic disasters, not as just food crises. The empirical studies bring out several distinct ways in which famines can develop, defying the stereotyped uniformity of food availability decline (FAD). While famine victims share a common predicament, the economic forces leading to that predicament can be very different indeed.

Table IX presents a comparative picture of a few aspects of the four famines studied, though it misses out many other contrasts discussed in detail in Sections V–VII. (Other famines have been similarly scrutinized in Sen [1981].)

That famines can take place without a substantial food availability decline is of interest mainly because of the hold that the food availability approach has on the usual famine analysis.⁴⁷ It has also led to disastrous policy failures in the past.⁴⁸ The entitlement approach concentrates instead on the ability of different sections of the population to establish command over food using the entitlement relations operating in that society depending on its legal, economic, political, and social characteristics.

I end with five general observations. First, the entitlement approach provides a general framework for analyzing famines rather than one particular hypothesis about their causation. There is, of course, a very *general* hypothesis underlying the approach, which is subject to empirical testing. It will be violated if famine starvation is shown to arise not from entitlement failure but either from choice

47. In addition to explicit use of the FAD approach, very often it is implicitly employed in separating out the total food supply per head as the strategic variable to look at.

48. The failure to *anticipate* the Bengal famine, which killed about three million people (Section V) and indeed the inability even to *recognize* it when it came, can be traced largely to the government's overriding concern with aggregate food availability statistics (see Sen [1977b], section 7).

characteristics (e.g., people refusing to eat unfamiliar food that they are in a position to buy),⁴⁹ or from non-entitlement transfers (e.g., looting).⁵⁰ But the main interest in the approach does not, I think, lie in checking *whether* most famines are related to entitlement failures, which I believe would be found to be the case, but to characterize the *nature* and *causes* of the entitlement failures where such failures occur. The contrast between different types of entitlement failures is important in understanding the precise causation of famines and in devising famine policies: anticipation, relief, and prevention.

Second, it is perhaps of a certain amount of interest that famines can arise in overall *boom* conditions (as in Bengal 1943) as well as in *slump* conditions (as in Ethiopia 1973). Slump famines may appear to be less contrary to the "common sense" about famines, but it is quite possible for such a slump to involve contraction of outputs *other than* those of food (e.g., of cash crops). Boom famines might seem particularly counterintuitive, but as discussed, famines can take place with increased output in general and of food in particular if the command system (e.g., market pull) shifts against some particular group. In this relative shift the process of the boom itself may play a major part if the boom takes the form of uneven expansion (e.g., favoring the urban population and leaving the rural laborers relatively behind). In the fight for market command over food, one group can suffer precisely from another group's prosperity, with the Devil taking the hindmost.⁵¹

Third, it is important to distinguish between decline of food availability and that of direct entitlement to food. The former is

49. Cf. "Now, the people of Bengal are traditionally rice eaters and they would not change their eating habits; they literally starved to death in front of shops and mobile units where wheat was available" [Morales, 1975, p. 40]. There is, however, little evidence in favor of this account of the Bengal famine; see Ghosh [1944], Government of India [1945], and Das [1949] on people's willingness to eat anything during the famine. The explanation of people dying in front of well-stocked shops has to be sought elsewhere.

50. Such non-entitlement transfers have played a part in some famines of the past. As an example, see Walter Mallory's [1926] account of the 1925 famine in Szechwan: "The Kweichow troops invaded southern Szechwan and after some fighting were driven out. When they left they took with them all available beasts of burden, loaded with grain. The Szechwan troops who replaced them brought very little in the way of supplies and forthwith appropriated the remainder of the food reserves of the district—leaving the population, who had no interest in either side, to starve" [pp. 78–79].

51. When the fast progressing groups are themselves poor, the development of the famine may be accompanied by a reduction in the number of people below some general "poverty line," leading to a recorded reduction of poverty as it is conventionally measured, i.e., in terms of head-count ratio. The problem is somewhat less acute with distribution-sensitive measures of poverty, as proposed in Sen [1976a]. See also variants of such measures discussed in Sen [1973, 1979], Anand [1977], Hamada and Takayama [1978], Osmani [1978], Takayama [1979], Thon [1979], Kakwani [1980a, 1980b], Blackorby and Donaldson [1980], Chakravarty [1980], and Pyatt [1980].

concerned with how much total food there is in the economy in question, while the latter deals with each foodgrower's output of food that he is entitled to consume directly. In a peasant economy a crop failure would reduce both food availability as well as direct entitlement to food of the peasants. But insofar as the peasant typically lives on his own-grown food and has little ability to sell and buy additional food from the market anyway, the immediate reason for his starvation would be his direct entitlement failure rather than a decline in food availability in the market. Indeed, if his own crop fails, while those of others do not, the total supply may be large while he starves. Similarly, if his crop is large while those of others go down, he may still be able to do quite well despite the fall in total supply. The analytical contrast is important even though the two phenomena may happen simultaneously in a general crop failure. While such a crop failure may superficially look like just a crisis of food availability, something more than availability is involved. This is important to recognize also from the policy point of view, since just moving food into such an area will not help the affected population, and what is required is the generation of food entitlement.

Fourth, entitlement shifts also explain why the world has seen so many cases of "food countermovement," with food moving *out of* the famine area, rather than into it. The famine-affected region may lose out in market competition with people from other areas, and it may thus lose a part of even the food supply that it has. Some food countermovement was found in the case of the Wollo famine (Section VI). The classic case of food countermovement is, of course, the Irish famine of the 1840s, and as Woodham-Smith puts it: "In the long and troubled history of England and Ireland no issue has provoked so much anger or so embittered relations between two countries as the indisputable fact that huge quantities of food were exported from Ireland to England throughout the period when people of Ireland were dying of starvation" [Woodham-Smith, 1975, p. 70]. This is not the occasion to comment on the shortsightedness of British policy in Ireland, but to note that market forces would tend to encourage precisely such food movements when failure of purchasing ability outweighs availability decline.⁵²

Finally, the focus on entitlement has the effect of emphasizing

52. In China, British refusal to agree to a ban of rice exports from famine-affected Hunan was one of the causes of a popular uprising in 1906, and later a similar thing was involved in the famous Changsha rice riot of 1910; see Esherick [1976]. There is also evidence of food movement from Bangladesh to India during the Bangladesh famine, though the magnitude of such movements is a matter of controversy (see Alamgir [1980]), Ambirajan [1978], and Rashid [1980].

legal rights (see Section III). Other relevant factors, e.g., market forces, can be seen as operating through such a system of legal relations (ownership rights, contractual obligations, legal exchanges, etc.). The law stands between food availability and food entitlement, and famine deaths can reflect legality with a vengeance.

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