

Famines and Economics

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For their helpful comments on this paper, the author thanks Harold Alderman, James Boyce, Gaurav Datt, Karla Hoff, Peter Lanjouw, Michael Lipton, Pat McGregor, Munir Quddus, Amartya Sen, Dominique van de Walle, Etienne van de Walle, Nicolas van de Walle, Dennis Yang, and the Journal's referees. These are the views of the author, and should not be attributed to the World Bank or its member countries.

I. Introduction

SOME DOUBTFUL STARTING points for the analysis of famine can easily get embedded in its definition. Common usage allows two distinct definitions. One is that famine entails an extreme and general scarcity of food while the other defines it as widespread, unusually life-threatening, hunger. This paper follows the latter definition; I will say that a geographic area experiences famine when unusually high mortality risk is associated with an unusually severe threat to the food consumption of at least some people in the area. This definition does not require that there be a contraction in the aggregate availability of food—or even in its aggregate consumption—for famine to have occurred. But life-threatening starvation is present (even though checks and balances may eventually come into play to forestall mass starvation). Nor does this definition require that the set of people who face death is the same as the set of people who experience the threat to their food consumption; some may die due to diseases that spread during famines.

By this definition, or something like it, the twentieth century has seen famines in most parts of the world. In Asia,

famine occurred in Bengal (then part of British India) in 1943–44, and again in 1974–75 (in what is now Bangladesh). China had a famine in 1959–61. In Africa, there have been famines in Ethiopia, Sudan, Mozambique, Nigeria, Niger, Angola, Zaire, Uganda, Somalia, and Liberia, and a number of these happened since 1980. The former Soviet Union had three famines this century. In western Europe, Holland had a famine in 1944–45. A great many people died in these famines, though we will probably never know with much accuracy how many.¹ And the lost lives went

¹ For example, estimates for the China famine range from 15 to 30 million people (this famine was clearly the worst this century). (The upper estimate is that of Basil Ashton et al. 1984; the lower one is based on official mortality rates; see Carl Riskin 1990). The variance of estimates is as great for the Soviet Union's famines; it is estimated that between 5 and 9 million people died during the 1921–22 famine, and 5–11 million died in the 1932–33 famine, and 2–5 million in the 1946–47 famine (William Dando 1981). (Dana Dalrymple, 1964, quotes an even wider range of mortality estimates for the 1932–33 famine, namely from 1–10 million.) The Ethiopian famine of 1984–85 was clearly the world's worst since the 1970s, with about 8 million people deemed to have been affected directly of whom 1 million are estimated to have died (Helmut Kloos and Bernt Lindtjörn 1993). But nobody seems to have much confidence in mortality estimates for this famine either. On the difficulties in estimating famine mortality see John Caldwell and Pat Caldwell (1992).

hand in hand with lasting miseries of material and other deprivations for those lucky enough to survive. Yet surely (it has been said before) famines have been more avoidable this century than ever before.

Famines continue to raise deep questions about the performance of economic and political institutions. Did those institutions help protect people from starvation, or did they make matters worse? Economists have sometimes tried to answer such questions and to influence public policies towards famines. For example, the writings of Adam Smith, Thomas Malthus, and John Stuart Mill were used to support a *laissez-faire* policy with respect to food markets during the many famines in the British Empire during the nineteenth century.²

From about 1980, a new literature on famines emerged, also premised on a view that the tools of economic analysis can throw light on why famines keep happening, and what can be done to prevent or relieve them. The new literature has revisited many of the classic nineteenth century debates about famines, such as the extent and nature of appropriate governmental interventions in markets. Substantial progress has been made in developing a richer conceptual framework for understanding famines. Progress has also been made in advancing empirical knowledge. Some of the arguments advanced in past debates have been rigorously formulated and tested for the first time, though many remain untested, either because of lack of data or lack of effort. The empirical study of famines has posed a number of challenges. Traditional types

of data and other forms of “fair-weather research” (as Caldwell, P. H. Reddy, and Caldwell 1986, p. 696, nicely put it) may be quite uninformative about these events. For example, sample surveys during famines are rare, and aggregate data can be quite unreliable at these times. Studies of famines have relied on a wider range of types of data than normally found in applied economics; for example, accounts from direct observers, such as found in local newspaper reports, have been an important source of data, when used carefully.

This article offers an overview of this new literature on famines, and what issues endure. In addition to looking at what economic analysis can teach us about famines, the article tries to say something about what economists can learn from famines, including from the large body of work on this topic by non-economists. It is argued that the new literature suggests that famines can help economists and policy makers understand the tragic extremes to which otherwise adequate political and economic institutions can be driven when exposed to certain shocks. To understand famines one must understand how normal institutions work under stresses they do not normally confront. The article first examines famines from a micro perspective, emphasizing the multiple determinants of starvation and the likely nonlinearities. This is the topic of Section II. The article then looks at how the various markets and institutions which coordinate individual choices performed during famines. Section III takes up these issues. It argues that famines arise from severe aperiodic market and institutional failures in economies under stress. Arrangements collapse which had previously worked adequately. Understanding why that can happen helps us understand famines, and to understand the functioning of

² See, for example, Cecil Woodham Smith (1962) on the famine in Ireland in 1846–47, and S. Ambirajan (1978), Salim Rashid (1980) and Jean Drèze (1990) on the numerous famines in British India during the nineteenth century.

those institutions. Governments are among the institutions that often fail during famines, though recent literature also reports some real successes in intervention. Section IV tries to draw out some lessons for policy. Conclusions can be found in Section V.

II. *Microfoundations*

Attempts to understand the causes of famines, and what to do about them, have traditionally focused on a rather small set of economy-wide parameters, notably aggregate food availability and the rate of population growth.³ The main distinguishing feature of the new economic literature on famines is its emphasis on understanding the circumstances of individuals in famine-vulnerable settings, and how those circumstances interact with economy-wide variables.

1. *The Entitlements Approach and its Critics*

Famine is often blamed on some aggregate exogenous shock. This simple causal model can be questioned from a number of points of view. A shock of some sort can always be identified; a famine does not seem to have ever happened by “spontaneous combustion.” The most common shocks are spells of unusually bad weather and wars. It is not always obvious that the “shock” should be considered exogenous to the population in which the famine occurs; for example, a war is the outcome of certain peoples’ choices for which famine can be a predictable or even delib-

erate outcome. But even similar exogenous shocks can produce quite dissimilar outcomes, depending on initial inequalities in physical and human assets, the way the economy works given those inequalities, and the policies pursued in response to the shock. Some people suffer badly, while others may even gain. Yes, a shock of some sort can invariably be identified at the start of the chain of events leading to a specific famine, but to properly understand—and prevent—the famine one must understand that chain of events.

A better approach is to work from the perspective of those who suffer. That is the enduring lesson from the first and most influential contribution in the new literature on famines, namely Sen’s (1981) book, *Poverty and Famines*. This book was very much an economic analysis of famines, though it succeeded in attracting the interest of both economists and non-economists. Many economists were introduced to an important but somewhat neglected set of economic issues, and it offered many non-economists an insightful new perspective on those issues.

The central concept in Sen’s approach is an individual’s “entitlement set,” defined as all the commodity bundles that can be obtained from all the resources at the individual’s command in a given society, subject to the laws of that society. Starvation is then seen to arise from an “entitlement failure,” meaning that an individual’s entitlement set no longer includes enough food to stay alive. The failure can take any one of a number of forms, reflecting the fact that “people establish command over food in many different ways” (Sen 1990, p. 34). The entitlement failure could be due to a loss of endowments, or to a change in one or more of the various ways—through production, trade, or transfers—in which endow-

³ This article will not address the demography of famines, except to note that the Malthusian view that famines act as a check on population growth has been discredited (Susan Watkins and Jane Menken 1985; Caldwell and Caldwell 1992; Robert Fogel 1992). For an overview of the debates on demographic causes and consequences of famine see Siddiq Osmani (1996).

ments are transformed into entitlements. If a sufficiently large number of individuals experience an entitlement failure then a famine occurs.

One possible starting point for a chain of events leading to entitlement failure is a crop failure, such as due to a drought or flood. It is certainly true that some famines have been associated with a sharp drop in domestic food output.⁴ However, Sen (1981) rejected this as a universal explanation. A number of empirical studies have confirmed his conclusion that famines have quite often happened without a decline in current aggregate food availability.⁵ In some cases (including some severe famines) there was a food-availability decline (FAD) but it was relatively modest—more like a 10 percent drop in current food output than anything one could reasonably call a “crop failure.”⁶ In still other cases there was a small FAD, but *after* the rise in mortality.⁷ The link from aggregate food availability to starvation involves numerous economic and political factors. FAD need

not cause mass entitlement failure; indeed some severe crop failures in poor countries have not resulted in famines.⁸ And there are other possible starting points, including wars which disrupt the production or flow of food and other commodities within an economy, or a speculative crisis in food markets triggered by rumors of impending shortages.

Sen’s approach to famines carried a message that economics has a lot to offer both in understanding famines and in preventing them. That message was not lost on many reviewers, who clearly saw the attraction of encompassing the numerous ad hoc “single-cause” explanations for famines within a coherent framework; see, for example, the reviews by Kenneth Arrow (1982), Frances Stewart (1982), Shlomo Reutlinger (1984), and Robert Solow (1991, reviewing Drèze and Sen 1989). But others were unconvinced. Indeed, an often vociferous debate was instigated by Sen’s writings on famines.⁹ Some critics argued that Sen attaches too much importance to food, and too little to other factors such as disease. For example, drawing on field work in Dafur, Sudan, Alexander de Waal (1989) argues that it was not starvation but an unsafe health environment while migrating that caused death. Others argued that Sen undervalues the importance of aggregate food availability, and

⁴ See, for example, Sen (1981) on the famine in the Sahel in 1972–74, Michelle McAlpin (1983) on the famines in Western India in the late nineteenth century, Peter Nolan (1993) on the Soviet famines in 1931–33, and the Chinese famine of 1959–61, and Justin Lin and Dennis Yang (1995) on the latter famine.

⁵ Among others, see Fogel (1992) on famines in Europe between 1500 and 1800, Ajit Ghose (1982) on the famines in nineteenth century India, Paul Greenough (1992) on the Great Bengal Famine, Mohiuddin Alamgir (1980) on the Bangladesh famine of 1974–75; and Christopher Locke and Fredoun Ahmadi-Esfahani (1993) on the famine in Sudan in the mid-1980s.

⁶ Examples include the Great Bengal Famine of 1943 in which food output was only 5 percent below its average of the preceding five years (Sen 1981, p. 58), and famines in Ethiopia and Sudan during 1983–84 in which food output was 11 percent and 13 percent (respectively) below its level in 1979–81 (Drèze 1990).

⁷ For example, the harvest after the worst months of the 1974–75 Bangladesh famine was about five percent lower than the pre-famine harvest, which was above average (based on James Boyce 1987).

⁸ For example, Drèze (1990) points out that, at the same time as the severe famines in Ethiopia and Sudan in 1983–84, far larger food output declines (around a 40 percent loss of output) had occurred in Cape Verde and Zimbabwe yet there was no famine in those countries—indeed, mortality declined. Also see Sen’s (1981, ch. 8) discussion of the diverse outcomes in the Sahel in 1972–74, despite common shocks.

⁹ An excellent overview of this debate can be found in Osmani (1995). Also see Meghnad Desai’s (1988) and Stephen Devereux’s (1993b, ch. 6) discussions of the various critiques of the entitlements approach.

that in doing so he risks misinforming famine policy and thus worsening the situation (see, for example, Peter Bowbrick 1986; and Devereux 1988).¹⁰ And some critics have questioned whether *only* people facing current entitlement failure will go hungry, pointing to evidence that poor people with ample entitlements may prefer to go hungry at certain times rather than sell their assets.¹¹ While agreeing with the basic message, other critics have said there is nothing new in the “entitlements” approach, claiming instead that it is a long-standing explanation of famines dressed in new garb (T. N. Srinivasan 1983; Amrita Rangasami 1985; Edward Clay 1991).

In retrospect, I do not think one could reasonably say that all of this debate has been insightful or interesting. Some has been based on misunderstandings of Sen’s approach. A common misunderstanding is the claim that Sen proposes entitlement failure as a non-nested *alternative* explanation to FAD; for example, Devereux (1988, 1993b) interprets FAD as a “supply side” explanation of famine, while Sen’s is a “demand side” explanation. Such an interpretation is not well founded in Sen (1981) where he makes clear that the entitlements approach should be seen as an encompassing framework, within which food availability is only one parameter.

Some critics have seen the entitle-

ments approach as too “static,” pointing to anthropological and other (anecdotal but credible) evidence that avoiding current hunger may not be the main motive for coping efforts (Jodha 1975; Corbett 1988; de Waal 1989). The entitlements approach can, however, be readily be extended to accommodate inter-temporal choice by recognizing that people may choose a degree of hunger now in order to avoid starving in the future.¹² In an inter-temporal consumption model with borrowing constraints and random income fluctuations, a “stock-out” will eventually occur such that all remaining assets are consumed, at which point the household will clearly be highly vulnerable to a bad income draw (Angus Deaton 1989; Alderman 1996). The threat of a stock-out can explain the observation that some famine-vulnerable households initially forgo consumption rather than deplete assets. As will be argued at a number of points in this paper, there are ways in which richer dynamic models can help understand famines. But these models are perfectly consistent with the entitlements approach.

Some of the criticisms of the entitlements approach have also been tangential at best to the main point. For example, the fact that there were antecedents of the entitlements approach, particularly in the literature on famines in nineteenth century India, does not appear to be at issue (Sen 1990; Drèze 1990). The nineteenth century literature on famines in India was still, however, firmly anchored to the view that crop failure due to drought or flooding was the ultimate cause of famines, though recognizing that various factors intervened in determining the household-level impact, including ac-

¹⁰ Problems of measuring food availability, and conflicting estimates, have fueled some critics, though at least one appears to be driven by faith alone; Peter Cutler (1993, pp. 72–73) asserts that “Food availability decline is always an element of famine, . . . even if [it] is not measurable at national or regional level.”

¹¹ While such behavior has often been noted (see Narpat Jodha 1975; and Jane Corbett 1988, among others), its interpretation as something deemed to be inconsistent with the entitlements approach appears to be due to de Waal (1989). Also see Devereux (1993a).

¹² This point was anticipated by Sen (1981, p. 50) and answers de Waal’s (1989) and Devereux’s (1993a) criticisms of Sen’s approach.

cess to other employment opportunities (Osmani 1995). The term "entitlement" has also generated some confusion. The term carries a normative connotation, although the intended meaning in this context is entirely positive; Sen (1981, p. 2) was careful to point this out, and specifically to distinguish his usage of the word from the normative meaning found in, for example, Robert Nozick's (1974) "entitlement" theory of justice.

Some of the issues that have been raised in the debates over the entitlements approach are more substantive. One of these is the fact that what constitutes an "entitlement" is conditional on a specific legal system, as this defines property rights and (hence) personal endowments. If famines entail the collapse of law and order, it will be meaningless to search for an explanation in terms of legal entitlements. This problem too was recognized by Sen (1981, p. 49), as well as commentators since (Arjun Appadurai 1984; Charles Gore 1993). The extent to which it undermines the economic analysis of famines is an empirical question. Here one should be careful to distinguish a collapse of quasi-cooperative, "informal," arrangements for risk-sharing and assistance for the poor from a collapse of the legal apparatus which defines and enforces property rights. Endowments remain well defined in the former case, but not the latter; and while there is evidence (reviewed later) that the former often collapses during famines, it does not appear to be the case that the latter commonly does.¹³ Starvation and its avoidance are for the most part legal.

Another substantive issue is the role health plays. Sen's (1981, Appendix A)

characterization of entitlement failure as a cause of starvation assumes the existence of a consumption "floor," above which one lives, but below which one dies.¹⁴ Failure to reach some well defined food consumption level is clearly a rather simple view of what determines mortality during a famine. Food is not the only thing that matters. For example, it has often been observed that an important proximate cause of death in famines is exposure to disease associated with a poor health environment, especially among those who migrate during famines (Sen 1981, Appendix D; Kurt Jansson, Michael Harris, and Angela Penrose 1987; de Waal 1989; Tim Dyson 1991; John Seaman 1993; Helen Young and Susanne Jaspers 1995). There is clearly latent inter-personal variability and, hence, uncertainty about survival prospects.

Some critics of the entitlements approach have downplayed command over food as a factor in explaining famine mortality, arguing that the health environment is far more important (see, for example, de Waal 1989). These are not, however, independent causes. The health environment is determined in part by the same variables determining consumptions; for example, the exposure to disease of migrating people during a famine is not exogenous, but (it can be argued) an outcome of the same entitlement failures which led to migration in search of food. And while starvation is not often identified as the proxi-

¹⁴For convenience, I shall treat this consumption floor as a well-defined quantity of a homogeneous good. More generally it will be a vector. See Sen (1981, Appendix A) for a general statement. Also see the recent models of competitive equilibrium which have included sufficient conditions for human survival in equilibrium (Jeffrey Coles and Peter Hammond 1995; McGregor 1996); these models have also assumed that there exists a well-defined lower bound on individual consumption which is necessary and sufficient for individual survival.

¹³Though there are clear exceptions, such as the famine in Somalia in the early 1990s.

mate cause of death during famines, it does appear to have a strong potentiating effect on the incidence and severity of infectious diseases (Nevin Scrimshaw 1990; C. E. Taylor 1985; John Post 1990; D. L. Pelletier et al. 1995).¹⁵ It has also become clear that in understanding the synergies among undernutrition and susceptibility to infection one should consider more that the biological relationship (as might be identified in a controlled experiment in which one measures the infection rate as food is progressively withdrawn from a single person). Behavior can generate a strong synergy even if biology does not. One clearly wants a theory which allows for other factors influencing famine mortality, both directly and via their impact on the effect of changes in consumption. However, that need not mean that command over food is any less important than one would have otherwise thought.

What issues endure, more than 15 years after the publication of *Poverty and Famines*? We can surely agree that FAD has limited power to explain famines, which have happened with and without FAD. We can agree that the proximate causes of famine have much more to do with entitlements and (hence) economics. But that still leaves many questions begging. Is starvation only a matter of entitlement failure? What determines vulnerability to famines? Can similar shocks yield very different outcomes? What causes the entitlement failure? Why is it covariate over

so many people? Do markets and (governmental and non-governmental) institutions help or hinder the way aggregate shocks impact on entitlements? This article will review what the new literature on famines (within and outside economics) has had to say about these questions. The rest of this section will look at theory and evidence on the link between entitlements and mortality; later sections will take up issues concerning the causes of mass entitlement failure, and the implications for policy.

2. Micro-level Determinants of Mortality

Borrowing from another Sen concept, starvation is fundamentally a *capability-failure*, rather than a lack of command over commodities per se.¹⁶ The ability to avoid starvation depends in part on current consumptions, but also on the health-relevant aspects of the individual's environment, and various idiosyncratic attributes of the individual which may depend on past health and consumptions. Building on work in related fields, including health economics and nutrition science, recent literature on famines has begun to investigate these links, though a number of issues remain poorly resolved.

There have been a few recent theoretical studies of aspects of economic behavior in settings in which survival prospects are endogenous (Mark Gervovitz 1983; Ravallion 1987; Gerhard Glomm and Michael Palumbo 1993; Ludovico Carraro 1996). Following standard practice in much micro-economic analysis of the determinants of health, one can postulate a "health production function" relating individual health attainments to individual con-

¹⁵The same comment applies to some other causes of death during a famine. For example, suicide may be the immediate cause of death, but the hunger of that person or someone close to her is not far behind the scene; drawing on field work in Bangladesh during the 1979 drought, Bangladesh Rural Advancement Committee (1979, p. 11) writes that: "One woman in Rowmari became simply unable to stand the cries of her hungry children and, leaving them uncared, hanged herself."

¹⁶On the meaning of "capabilities" and their relationship to other conceptualizations of well-being see Sen (1985).