8 An atypical urban famine

Antananarivo, Madagascar 1985–1986

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Introduction[1]

This chapter documents and discusses the case of an urban famine that occurred in Antananarivo, the capital city of Madagascar, in 1985–1986. This famine is atypical in many respects, since it was an urban famine that occurred in peace-time and remained hidden for a long time. It was discovered *a posteriori* by an in-depth analysis of vital registration and causes of death data in the city. The details of the demographic analysis have been presented elsewhere (Garenne *et al.* 2002). The analysis here focuses on the economic and political factors underlying the crisis. The chapter demonstrates that the crisis of 1985–1986 qualifies as a famine, as defined by Thomas Downing (1990): 'an extreme collapse in local availability or access to food that causes a widespread rise in mortality from outright starvation or hunger-related illnesses'. The first part of this chapter presents a brief background on Madagascar; the second part documents excess mortality due to the famine; the third part explores the political and economic context of the famine; and the fourth part examines several underlying causes.

Background on Madagascar

Madagascar is atypical in many respects. The great island, one of the largest in the world (587,041 sq km), is located off south-east Africa, far from the main trade routes. Its landscape is highly mountainous, which makes communications particularly difficult between regions. Madagascar has several distinctive ecological zones. The central plateau (Antananarivo and Fianarantsoa) has a temperate climate, and is well suited for rice farming and cattle raising. The eastern coast has a tropical climate, favourable to tropical crops (coffee, vanilla, cloves and sugar-cane), and has the largest harbour (Toamasina). The western part (Mahajanga) is more arid, though it harbours fertile valleys. The southern part (Toliary) is very arid, especially the 'Androy' region, also called the 'spiny desert', though this area has the richest mineral deposits (chromite, graphite and

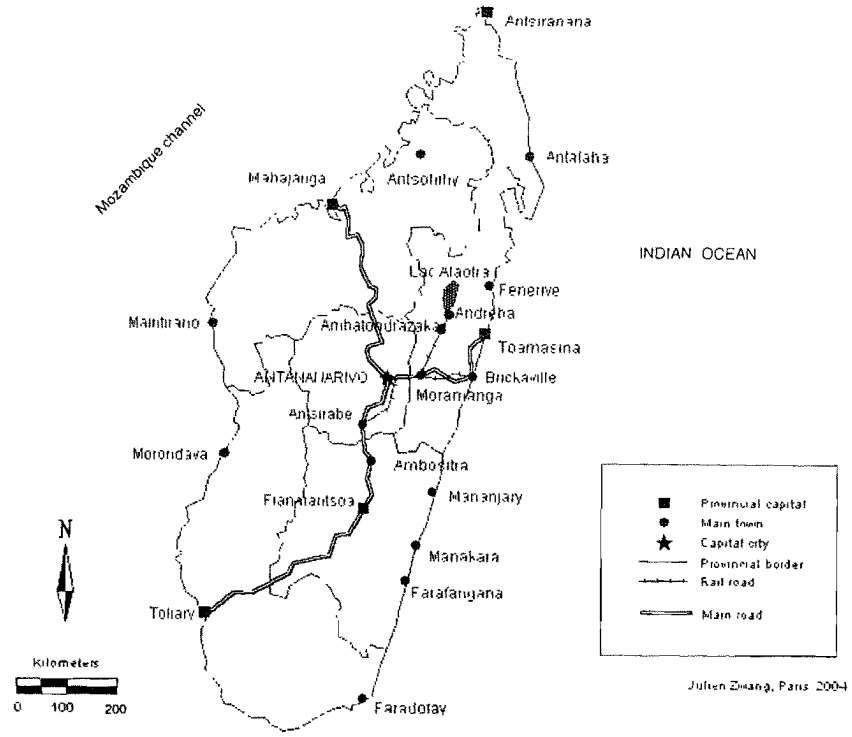

Figure 8.1 Map of Madagascar.

mica). The northern area (Anstiranana) lies behind the highest mountains, and remains topographically isolated from the rest of the country (Figure 8.1).

Due to its geographical isolation, Madagascar was one of the last areas to become peopled, probably at the end of the first millennium AD. The island was settled by several waves of migrants from diverse origins – primarily Indonesians and Africans, with small minorities of Arabs and Jews who were trading along the East African coast, and more recently by groups of Europeans, Comorians, Indians and Chinese. The precise history of this settlement is poorly documented prior to the seventeenth century, since there are virtually no written documents. It seems that until the arrival of Europeans the total population was small, and scattered all over the island. During the eighteenth century a central power emerged in the highlands, around a new kingdom called the *Imerina*, a dynasty of Indonesian descent. The country was unified during the nineteenth century by the Merina kingdom, and colonized by France in 1896.

In the early days of colonization, low population density was felt to be a handicap to the colonial [illegible]

based primarily on cash crops. However, the population increased dramatically during the twentieth century, multiplying seven-fold, and numbered about seventeen million by 2003. Even though population density remains low by European standards (29 inhabitants per square kilometre), it is relatively high given the topography and the arable land potential (5.5 inhabitants per hectare) (calculated from World Development Indicators). The population is unevenly distributed, with the majority living in the central highlands (50.2 per cent), followed by the eastern coast (16.3 per cent), southern province (14.5 per cent), western province (11.2 per cent) and northern province (7.8 per cent). Malagasy people have a strong identity, despite their diversity of ethnic origins. The Malagasy language, of malayo-polynesian origin, is shared by all eighteen official ethnic groups. The level of education is relatively high for Africa (4.53 years of schooling for women born in 1965–1969), especially given the low level of income (the average for sub-Saharan Africa was 4.01 years for the same group of women, according to Demographic and Health Survey (DHS) data).

Madagascar has maintained ambiguous relationships with Europeans over the centuries, sometimes friendly but at other times conflicting. The first Europeans who traded with Malagasy people in the sixteenth and seventeenth centuries were Portuguese, Dutch, British and French. All abandoned the island, after many attempts to control the trade. Europeans returned in the nineteenth century. They were the first military instructors to the new Merina kingdom, and also sent Protestant missionaries. However, the Europeans were expelled by Queen Ranavalona I (1828–1861), and missionaries as well as newly converted Christians were killed in numbers. Her successors, however (King Radama II and Queen Ranavalona II), were more open to European influence, and by 1869 the ruling family and the Prime Minister had converted to Protestantism. During the following decades the rulers tried to develop a modern political system, based on written law. French influence grew at that time, but was fiercely resisted. In 1890 England recognized the French protectorate, and France started to take over the country in 1895. It took about ten years to 'pacify' Madagascar, despite resistance, especially in the southeast. Colonial rule applied until 1960, the year of independence. Opposition to Western influence grew again in the 1970s, as will be seen, and is part of the famine story.

The Madagascan economy remains primarily based on agriculture, both food crops (rice, cassava, peas) and cash crops (coffee, vanilla, cloves), as well as cattle rearing. Rice cultivation seems to have been introduced by the first settlers, and is based on classic irrigation techniques found in Indonesia and India. By the eighteenth century, rice was cultivated in abundance, and Madagascar exported rice and other agricultural products, particularly to nearby Reunion. During the colonial period, many new crops were introduced and developed. However, rice harvests

continued to be abundant, and surpluses were exported – for instance to France during the First World War – until as recently as the early 1970s.

Famines did not appear to be a feature of the country in peace-time, except in the dry areas of the south (Gendarme 1960; Campbell 1992). However, famines did occur at times of civil unrest, in particular during the French invasion, and during the period of forced labour imposed by the colonial rulers to promote a cash economy. At these times the local population tended to abandon their rice fields to flee into hiding in the forests. Another famine occurred in the south during the so-called 'cactus war' (1924–1999), when colonial rulers used biological warfare to destroy the pear cactus in order to force farmers to change their production system. This considerably modified the fragile ecological balance between people, plants and animals, and obliged part of the population to move away, probably causing the premature deaths of small numbers of people (Kaufmann 2000). Otherwise, the main adverse climatic events in Madagascar are floods and hurricanes, which can occur all over the country, though they are rather localized in time and space (a situation similar to the West Indies) and are rarely a cause of famine. Only the extreme south (Andriana) is regularly prone to drought. Food shortages and minor famines, called the *kere*, were documented in the south in 1971–1972, in 1991–1992, and most recently in 2002–2003. We will come back to these events in the discussion. However, according to available documentation, no famine due to climatic events was recorded in the central highlands in the twentieth century.

Demographic evidence of the Antananarivo famine

Antananarivo, the capital city of Madagascar, lies in the highlands, in the central part of the country. The city had 577,000 inhabitants in 1985, and is characterized by slow population growth due to low migration inflows compared with most other African capital cities. This is primarily due to lack of economic opportunities and of international aid in the 1970s and 1980s, as will be seen below.

A long tradition of birth and death registration exists in Madagascar. This started before the colonial period under the successful reign of Queen Ranavalona II, was developed under French colonial rule and remained of high quality in the post-independence period. Vital registration seems to be virtually complete in urban areas, especially in Antananarivo. Comparison with DHS data and with demographic models reveals no evidence of under-registration of deaths in the capital city for the 1976–1995 period (Garenne *et al.* 2002). Not only are vital events properly registered, but causes of death are also available for Antananarivo – a rare situation in sub-Saharan Africa. Causes of death are certified by physicians, whether the death occurred in a hospital or elsewhere. These data existed but were not processed, published or analysed until a team led by

Pierre Cantrelle undertook a systematic coding of all mortality data and causes of death for the 1976–1995 period. This is how the 1985–1986 famine was uncovered: by analysing the demographic data and the causes of death before and after the 1985–1986 crisis. A full-scale life table analysis of the 1976–1995 data has been published elsewhere (Waltisperger *et al.* 1998).

The mortality data recorded in Antananarivo for the 1976–1995 period clearly show a typical famine in 1985–1986. Compared to mortality levels before 1985 and after 1987, death rates increased markedly in 1985–1986, and life expectancy in 1986 (at 49.0 years) had dropped by about 10 years compared with 1975 (59.4 years) or 1995 (59.8 years). The mortality increase bears all the characteristics of a famine: a strong relative increase among children, especially five-to-nine year-olds (risk ratio compared to baseline: RR=2.5) and young adults, especially young men aged twenty to thirty-four years (RR=2.2). In absolute terms, it was estimated that about 7,600 people died in 1985–1986 in excess of baseline mortality levels. About half the excess deaths were children under fifteen years old, with a small excess of boys; about a third were adults aged fifteen to fifty-nine, among whom 74 per cent were men; the remainder were elderly people, again with a higher male mortality. This implies that some 1.3 per cent of the city's population died because of the famine – a rate that compares to other moderate famines, though much lower than great famines where larger proportions of the population died of starvation or hunger-related diseases.

The main evidence for this excess mortality being due to famine lies in the profile of causes of death, which is especially clear for young adults. Mortality from malnutrition (starvation) among adults hardly existed before 1984 and after 1988, whereas it showed a pronounced spike in 1986 (Figure 8.2). The same spike can be observed for child deaths over the same period, even though some child mortality from malnutrition occurred before and after the crisis, as elsewhere in Africa. The peak in malnutrition-related mortality is mirrored by a peak of mortality from an exceedingly rare disease: alveolitis of the jaws. This disease occurs primarily in rodent populations, when animals facing food scarcity resort to eating roots and other food too hard for their teeth. It also occurs in human populations as a result of improper dental surgical procedures. This disease produces an infection of the jaws which is often lethal. It seems that in Antananarivo, starving people started eating sugar-cane and destroyed their jaws. Indeed, the few cases of death attributed by physicians to this disease were all concentrated in the crisis years.

In addition to typical starvation, deaths from other causes also increased: in particular, deaths from diarrhoeal diseases (often associated with malnutrition), deaths from acute respiratory infections and deaths from cardiovascular diseases among adults. There was, however, no evidence of significant epidemics of infectious diseases, such as typhoid,

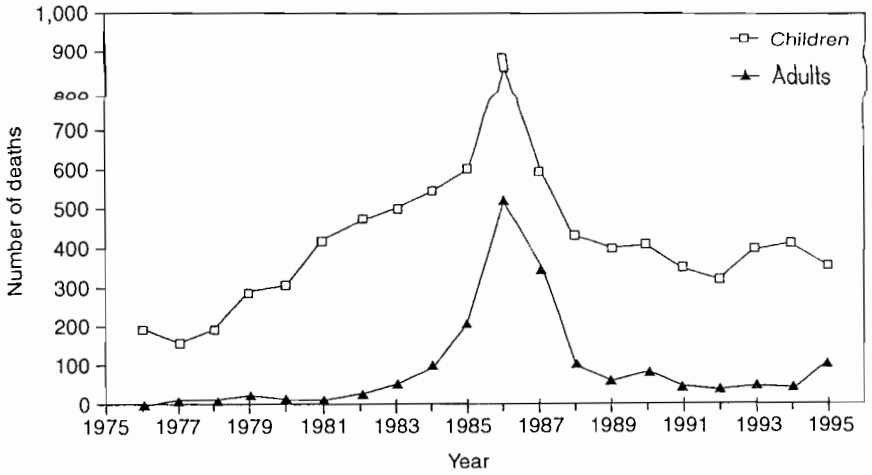

Figure 8.2 Number of deaths due to malnutrition, Antananarivo, 1976–1995.

typhus, measles, cholera or dysentery, as is often seen in famine situations It seems therefore that the famine deaths were primarily due to starvation and its metabolic consequences. The 1985–1986 period in Antananarivo therefore meets the demographic criteria of a famine, as defined by an increase in mortality from starvation.

Political and economic context of the famine

To understand what happened in 1985–1986 in Antananarivo it is necessary to review the contemporary political history of Madagascar. The great island enjoyed relative stability in the pre-colonial and colonial periods. Decolonization went smoothly: by 1958 a republic was formed under President Tsiranana, two years before formal independence (1960). The first eleven years of independence were quite peaceful, but civil unrest exploded in 1971 around economic and social issues in both urban and rural areas, which was followed by a series of *coups d'état*. In 1972 General Ramanatsoa took power, to be replaced three years later by Admiral Ratsiraka, who started the so-called 'Malagasy revolution' (second republic). The new regime followed a strict Marxist line, cut itself off from Western powers and received support and advice from Russia, China and North Korea. After about ten years of nationalizations and severe economic mismanagement, in particular the 1978–1980 period of 'extreme investment' (*investissement à outrance*), which bears some similarities to the Chinese 'Great Leap Forward', the country went virtually bankrupt. Around 1984 the government started changing its policies, re-established links with the IMF and the World Bank as well as with France and other Western

countries, and accepted the structural adjustment policies that were in vogue at that time. Free elections were organized in 1993, and were won by a liberal, Professor Albert Zafy, who changed the constitution (third republic). However, Ratsiraka was re-elected four years later, in 1997, and remained in power until December 2001, when he was replaced by Marc Ravalomanana, a liberal, after a severe crisis around the elections. These dramatic political changes are closely linked to economic performance, and to the 1985–1986 crisis.

During the colonial period Madagascar followed a classic path of rural economic development, with a priority on exported cash crops, in particular coffee and vanilla. In the late colonial period (1950–1959) and the early post-independence period (1960–1971) it followed a liberal import substitution policy, which was moderately successful but did little to promote industrialization. According to Maddison (2001), income per capita expressed in purchasing power parity terms (GNP–PPP) was increasing during this period, from an estimated US$951 in 1950 to US$1,246 in 1971 – a slow but consistent growth of 1.3 per cent per year. Compared with income levels in other African countries in 1971, Madagascar ranked in the middle – eighteenth in a list of thirty-eight for which income estimates were available – even though economic growth was somewhat lower than elsewhere during the 1950–1971 period (the median value for sub-Saharan Africa was 2.0 per cent).

Madagascar's economic situation deteriorated rapidly after 1971, and by 1998 income per capita in parity purchasing power had dropped to US$690, almost half what it was twenty-seven years earlier – a negative economic growth of –2.2 per cent per year. In 1998 Madagascar was in one of the worst economic situations in Africa, ranking twenty-ninth in the same list of thirty-eight countries, having experienced one of the most dramatic economic downturns for the continent, together with countries devastated by civil war such as Sierra Leone and Angola.

The situation in Antananarivo was no better than in the rest of the country. We know more about the capital city because of a series of five detailed household consumption surveys based on representative samples of the population. According to these surveys, real household income per capita in Antananarivo also declined regularly over the 1961–1995 period, from an estimated value of 1.42 million Malagasy Francs (MGF) in 1961 to 1.25 m in 1968–1969, 0.99 m in 1977–1978, 0.93 m in 1993–1994 and 0.79 m in 1994–1995 (Ravelosoa and Roubaud 1996). This decline in real income translated into declining food consumption over the same period, from an estimated 1,713 kcal per person in 1961 to 1,410 kcal in 1993–1994 for the three main food items: cereals, meat and sugar (Table 8.1). The composition of the diet also changed between 1961 and 1995, with decreases of 21 per cent in rice consumption, 42 per cent in bread, 52 per cent in sugar and about 60 per cent in meat consumption. As a result, mean height went down over the period – further evidence of

Table 8.1 Structure of household consumption in various years (from household consumption surveys), Antananarivo, 1961–1995

	1961	*1968–1969*	*1977–1978*	*1993–1994*	*1994–1995*
Household consumption (1983 MGF)	1,417,898	1,253,940	997,530	934,256	787,581
% spent on food	37.8	39.1	47.6	50.0	47.3
Caloric value of three main food items	1,713		1,355	1,410	1,217
% rice in caloric value	78.0	81.8	79.3	87.0	

Source: Ravelesoa and Roubaud (1996)

Note
Household expenditures are in constant 1983 Malagasy Francs. Caloric values of three main food items (cereals, meat, sugar) is given in kcal, converted from household consumption.

increasing malnutrition. The decline in mean height for adult women born after 1960, who reached puberty after 1974, is also documented for the whole country in DHS surveys.

Rice production, consumption and marketing

Rice is the main agricultural crop, and the main staple food in Madagascar. The country was largely self-sufficient, and even exported rice, as noted above, until several years after independence in 1960. According to FAO data, per capita rice production was increasing in the 1960s and culminated in 1968 at a peak of 194 kg per capita, exceeding the reference basic needs of 183 kg per adult per year. However, rice production started to decline steeply in the early 1970s, reaching a low point of 140 kg per capita in 1976, before increasing again for a few years to reach 168 kg in 1986 (the famine year) but declining thereafter to reach a new low value of 126 kg in 1996 (Figure 8.3). It should be noted that rice production in 1985–1986 was probably high enough to cover all needs, since children's needs are lower than average, and was rather better than in many preceding and succeeding years that were free of famine. Therefore, food availability decline cannot be considered as a valid causal factor explaining the 1985–1986 famine in Antananarivo.

The price of rice had been quite stable over long periods of time, despite seasonal and yearly fluctuations, with values around 217 MGF per kilogram in constant 1983 prices (Barrett 1994; Azam and Bonjean 1995; Araujo-Bonjean and Azam 1996). During the late colonial period and until 1971 the rice market was free, but the price of rice was stabilized, with minimum (floor) and maximum (ceiling) values, by a specialized government agency (the *Bureau de Commercialisation et de Stabilisation du Riz*, or BCSR). This was a common policy in colonial Africa and in the

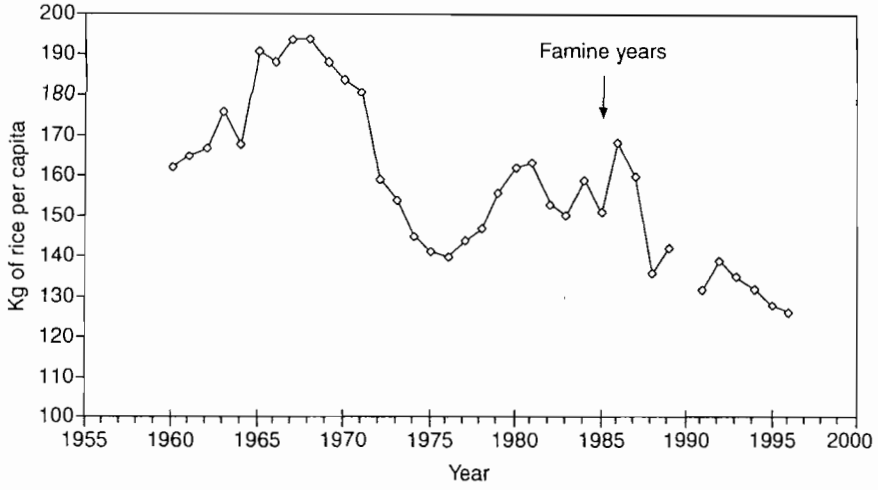

Figure 8.3 Rice production in Madagascar, 1960–1996.

early post-independence period, for the major food crops as well as cash crops. With the installation of a Communist regime, the rice market, both internal and external, was controlled by a state monopoly, and the price of rice was fixed by the government. In addition, the price paid to farmers for their rice was fixed at too low a level – which discouraged local producers, who decreased their production to a point where rice had to be imported and sold at a subsidized price to satisfy the increasing demand of the urban population. With the policy changes initiated in 1984, the internal rice market was opened to private merchants and producer prices increased somewhat. In 1985, price controls on rice were lifted, and internal trade was fully liberalized in 1986. International trade was opened to the private sector only in 1990. The 1985–1986 seasons were therefore years when domestic rice trading and pricing could be fixed by private traders, but imports of rice remained under state control.

Although many crops can be cultivated in tropical areas, rice is grown only once a year in the Madagascan highlands, and is harvested between June and September. In a normal year the price of rice is lowest in May and during the harvest season, then increases steadily until the next harvest – a classic case of rational expectations behaviour by stockholders (Araujo-Bonjean and Azam 1996). The range of price seasonality is moderate in normal years, at roughly ±15 per cent. However, during the crisis years price fluctuations were dramatic, and one consequence of the transition period policies was a massive increase in the price of rice on urban markets (Figure 8.4). The rice price, in constant 1983 Malagasy Francs, was 240 MGF in June 1985 – but increased to 640 MGF by December 1985, three times higher than its baseline average of 217 MGF. This seems to

have been due to the speculation of newly authorized merchants, who anticipated a price increase, wanted to increase their stocks, and expected that the government would not import rice (Araujo-Bonjean and Azam 1996). Trade between rural and urban areas had just been liberalized and was controlled by just a few agents. The rice price went down just before the next harvest, and averaged 315 MGF in May–June 1986 – still 45 per cent above the baseline price. It increased again in the months after the harvest and peaked at 415 MGF in October 1986 for the same reasons, before falling to its baseline level at the time of the next harvest, in May 1987. The famine mortality followed quite clearly the evolution of the rice price in Antananarivo (compare Figures 8.2 and 8.4).

The impact of the price increase can be understood by considering income levels and the structure of spending in household budgets. In household consumption surveys, food accounted on average for about half of total expenditure: 47.7 per cent in 1977–1978 and 50.0 per cent in 1993–1994 (Ravelosoa and Roubaud 1996). Among the food products purchased, rice and bread accounted for more than a third of the total (33.1 per cent in 1977–1978 and 43.2 per cent in 1993–1994), and rice accounted for some 90 per cent of cereals purchased (93.6 per cent in 1977–1978 and 85.6 per cent in 1993–1994). Altogether, rice provided about 80 per cent of the total daily caloric intake of Antananarivo households (81.8 per cent in 1977–1978 and 79.3 per cent in 1993–1994). These are average values for all households, rich and poor. When the price of rice trebled in a short period of time, expenditure on rice accounted for more than half of the total budget for the average household, and simply

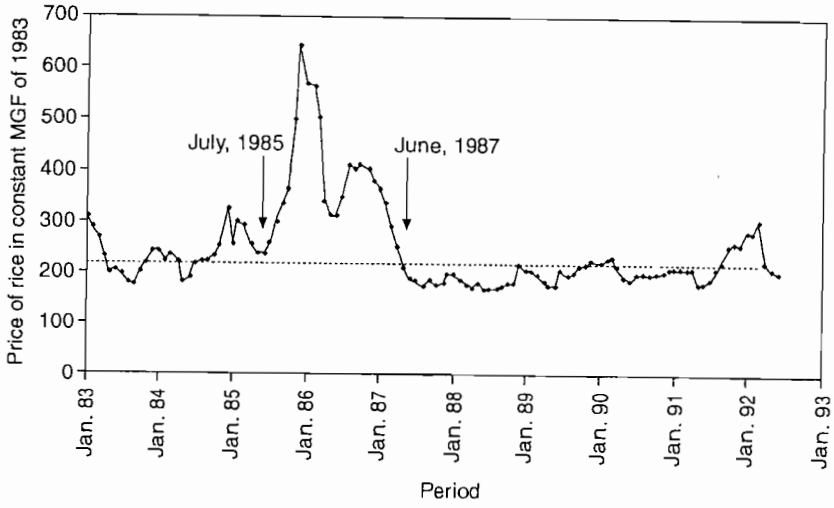

Figure 8.4 Market price of rice in Antananarivo, 1983–1992.

Table 8.2 Relative income of five socio-economic categories, Antananarivo 1961–1995

Category	*1961*	*1968–1969*	*1977–1968*	*1993–1994*	*1994–1995*
Professional, upper	2.22	3.21	3.13		2.53
Professional, medium	1.44	2.09	2.02		1.83
Clerical	1.13	1.20	1.05		0.97
Skilled workers	0.80	0.90	0.80		0.73
Unskilled workers	0.58	0.62	0.54		0.62

Source: Ravelesoa and Roubaud (1996)

Note
Relauve income is calculated as the ratio of the income for each socio-economic category to the average for the population.

exceeded the total budget of poor households. According to the above calculations, this was the case for those living on less than 55 per cent of the average household income – as was the case for unskilled workers (Table 8.2). Even if there was some substitution between rice and bread over the 1977–1994 period, this was minor since the price of imported wheat was much higher, and did not enable the poor to cope with the massive increase in the rice price.

Discussion: underlying causes of the famine

The mechanisms of the Antananarivo famine appear clearly in the economic analysis. Rapid deregulation of rice prices and rice markets, following a long period of strict state regulation and subsidized prices, but not accompanied by adequate public policies to mitigate the impacts of deregulation, induced a rapid increase in the price of rice – the staple food of a large majority of the population. The exceptional rise in prices lasted for about two years, from July 1985 to June 1987, as did the mortality increase. During this period the poorest strata in the city could not cope with the increasing cost of what constituted 80 per cent of their food intake, and many died of starvation as a result. Mortality fell back to pre-crisis levels as soon as prices reverted to their baseline levels. This famine was due to a combination of market failure and institutional failure, and occurred in a context of widespread poverty. It appears that the combination of adverse economic policies together with extensive poverty was the main immediate cause for the famine. Beyond these immediate reasons, however, several underlying causes played significant roles. We review and discuss some of these below.

Structural adjustment policies

The Antananarivo famine occurred in the mid-1980s – a time when many economic policies were suddenly changed in Africa, ostensibly in response to decades of mismanagement and failed economic experiments. Structural adjustment policies (SAP) were put in place all over the continent, at the express request of the Bretton Wood institutions (IMF and World Bank). Structural adjustment involved stabilization policies (a return to state budget equilibrium and trade balance) and liberalization policies (privatization of parastatal agencies, deregulation of prices, exchange rates and wages). These policies had limited economic impact in the short run, and probably induced a major crisis such as the Antananarivo famine only rarely, although detailed studies in the poorest strata of African cities are lacking.

One might have hoped that the tragedy seen in the 1980s in Madagascar would never occur again. However, the recent Malawi famine of 2001–2002 bears some common features with respect to brutal economic policy changes, even though it was primarily rural and triggered by crop failure. The Malawi famine was analysed in detail by Devereux and colleagues at IDS Sussex.[2] The Malawi crisis also occurred in a context of rapid changes in economic policies and poor interface with the international donor community. In the years prior to the famine, Malawi was required to commercialize the agricultural marketing agency that had been in place for many decades, to remove agricultural subsidies to farmers, to lift price controls on staple foods and to sell its strategic grain reserve in order to reimburse its international debt. Furthermore, the donor community was discouraged by evidence of corruption and economic mismanagement, and some donors had stopped providing aid in 2001. This adverse context made the food deficit much worse than it would otherwise have been: Malawi no longer had any safety net when the crisis arose, and it took several months to find appropriate solutions.

The twentieth century also witnessed other cases of faulty economic policies inducing famines, often with enormous demographic impacts, such as the Ukraine famine (1932–1993) in Russia and the 'Great Leap Forward' famine in China (1959–1961). Fortunately, the more recent adverse events have not been of such magnitude.

Food availability

According to conventional theory, famines usually occur after an external shock – climatic stress (drought, flood) or an epidemiological event (pests or plant diseases) – affects essential food crop production (cereals or tubers) and suddenly reduces staple food availability. However, in the Antananarivo famine overall food availability nationwide did not seem to

preceding and following years. A similar observation was made by economists working on famines in India (1943) and Bangladesh (1974). These famines occurred not because of declining food availability, which remained at average levels during the famine period, but primarily as a dysfunction of the economic system (such as a rapid increase in food prices relative to income, or a rapid decline in employment) which affected the poorest strata of the population (Sen 1981; Ravallion 1987; Drèze and Sen 1989). Rapid price increases as a result of 'price forecasting errors', or speculation by food traders, are not necessarily proportionate to food availability. Similarly, in the Malawi famine of 2001–2002, the deficit in maize production (the main staple food) was comparatively minor (–25 per cent) – lower than in other years during which no famine was noted, such as 1994 or 1997 – and occurred after two good years (1999, 2000) of higher than average production during which stocks could have been accumulated (Devereux 2002). In all these cases, a food deficit was not the leading trigger of the crisis. Even in a case of severe food shortage resulting from a natural disaster, such as the potato famine in Ireland in 1845–1847, food continued to be exported from famine areas towards markets where it could be sold at a higher price, so in this case again the food deficit was made worse by adverse policies or lack of appropriate mitigating policies (Ó Gráda 1993).

Poverty, income distribution and entitlement failure

Another important aspect of the Antananarivo famine, which is common to most famines, is extensive poverty. Madagascar has long been a poor country by international standards. Furthermore, as discussed above, poverty was increasing over the period preceding the crisis, and started to decrease only ten years later, after 1996. However, poverty *per se* was not the sole causal factor of the urban famine, since the years 1987–1995 were even worse in terms of average income per capita. Income distribution was another important element in the Antananarivo crisis. Although we lack data on the distribution of income among those who died, poverty certainly played an important role in the distribution of starvation. Wealthier people in the city did not suffer in the same way, simply because they had the means to cope. In purely arithmetical terms, the poor trapped in the city could not afford the higher cost of rice during the crisis years. Sen (1981) developed a theory that famines are often a consequence of 'entitlement failure', or 'exchange entitlement failure' – that is, a lack of rights to food and an inability to access food from any source, rather than a simple 'market failure'. If people had higher incomes or valuable assets to sell, or if they had access to credit, they would have been able to purchase the food they needed to survive the crisis.

Ravallion (1987: 18), also studying famines in the Indian subcontinent, has noted that even relatively small price increases may entail large mortality increases among the market-dependent poor.

> When potential famine victims rely heavily on current foodgrain markets for their consumption needs, high prices will reduce their survival chances. If those survival chances are also sufficiently concave functions of their incomes, foodgrain price instability will induce famine mortality.

Here again, poverty and income distribution appeared as major factors explaining famine. In the case of Madagascar, the proportion of the asset-poor, defined by the number of goods owned by a household, is extremely high. According to DHS surveys conducted in 1992 and 1997, 43 per cent of households own no 'modern' goods. This is one of the highest proportions recorded in all the African DHS surveys, together with Ethiopia and Rwanda, and twice as much as the African average. This very poor stratum had nothing to exchange for food. In Antananarivo, therefore, 'exchange entitlement failure' was another important feature of the famine.

Geographical isolation and transportation

We have noted already that Madagascar is geographically separated from the African continent, and that its various provinces are relatively isolated and linked by a poor road system. Geographical isolation is one factor that self-evidently affects the speed of response to a food crisis. This was the case to a certain extent in the Malawi famine of 2001–2002, because of the landlocked nature of the country, far from any sea route, and more importantly because floods had cut off many roads, bridges and even a railroad. However, this did not seem to be a key factor for Antananarivo. Even though the capital city lies in the highlands, it is linked by train to the major port (Toamasina) and also to the leading rice-growing region (Lake Alaotra). If geographic isolation played a role, it was rather through market segmentation, which was reinforced by public policies during the Marxist regime (see below).

Segmented markets

Historians have documented the role of segmented markets in famines of the past. For instance, Ó Gráda and Chevet (1999) showed that, more than 'market failures', it is 'market segmentation' that explains the Anjou famine in seventeenth century France. Similarly, highly localized markets and high costs of transportation may also explain features of recent Ethiopian famines (Devereux 1988; Ravallion 1997; von Braun *et al.* 1998). In Madagascar, the isolation of the various regions together with the high cost of road transportation and the underdevelopment of sea routes have all contributed to market segmentation. Furthermore, the low fixed-price policy followed during the Marxist period discouraged farmers from

own needs and to commercialize very little. Had the rice market been flourishing prior to 1985, prices would probably not have increased by such a large amount. In this respect, market segmentation in Madagascar appears as another element of the crisis, and of the overall 'market failure'.

Information and communication

More and more, famines have an international political dimension, and are becoming morally unacceptable for the international community. Sylvie Brunel (2002) has developed a typology of famines in relation to international politics and the international aid business. In her study of recent African famines, Brunel distinguished three categories of famines:

1 Famines 'hidden' by local political powers, primarily to avoid criticism of their own policies – this category applies to cases such as the Ethiopian famine of 1984, the Kivu (Congo) famine of 1996, and many famines in Communist countries
2 Famines 'exposed' (and sometimes exaggerated) by political leaders, in order to maximize the amount of food relief and international aid, which may also be used for other purposes – an example being the Biafra famine of 1968–1970
3 Famine conditions deliberately 'created' by political groups, in order to provoke international aid – such as the Liberia and Sierra Leone famines of the late 1990s – aid on which some guerrilla movements are totally dependent, as pointed out by Pérouse de Montclos (2002).

To follow Brunel's typology, the Antananarivo famine seems to have been 'hidden' from the start – probably to conceal the major failure of previous policies, a common feature of Marxist regimes, and possibly to not put the government's changing policies at risk. One could argue that the government might not have been aware of the food crisis; however, physicians who wrote death certificates with causes obviously related to starvation must have spoken to their peers, and the information must have reached the ministries one way or another. Certainly, as an urban famine with high impacts in the capital city, it is difficult to believe that people in power were totally unaware of it. Further potential sources of information were the economists who were working at that time on the economic reforms. However, their policy recommendations were based more on standard remedies developed in Washington, DC than on detailed local knowledge: the first DHS and Living Standards Measurement Survey (LSMS) in Madagascar was implemented only in 1992. Had the press been free to report the situation, and had economists been properly informed, relief mechanisms could have been put in place. The role of good information and a free press in preventing famines has been stressed by other famine analysts (Drèze and Sen 1989; see also Banik, Chapter 13, this volume).

Madagascar has undergone several natural disasters over recent decades, such as drought, cyclones, flood and locust invasion. Evidence of excess mortality in rural areas is scanty, however, and it remains possible that unreported minor famines have occurred in localized rural areas. However, the country is far more open now than before, and famine relief agencies are very active throughout Africa. Early warning systems such as GIEWS, supported by the FAO, and FEWS NET, supported by USAID, monitor food-security indicators quite closely and are able to mobilize support rapidly for those in need. The publication of data on the Internet is another powerful modern element of information and famine prevention. These services were not available in 1985, and the network of relief agencies was not as extensive as it is now. This new information technology, as well as more integrated markets, makes another famine in Madagascar less likely in the future. A good example is provided by the food crisis caused by drought that occurred in the southern province in 2002–2003. The crisis was rapidly picked up by charitable organizations and by the press, and numerous articles were published in the press and on the web. This induced a massive reaction from the international community (European Union, USAID, GTZ, Care, Japan Aid, etc.). Food aid was made available, and a food-for-work programme was started. In fact, this became a case of an 'over-exposed' famine, much exaggerated, to the point that experts later argued that there were no famine conditions at all. In any case, there was no evidence of increased mortality during the crisis years.

An urban famine in peace-time

The famine process in Antananarivo was not started by a natural disaster, as is the case in many rural famines. Nor was it started by violent events or a military blockade, as in other urban famines of the twentieth century, such as the Dutch famine, the Warsaw ghetto and the siege of Leningrad, all during the Second World War (see Watson, Chapter 12, this volume), or the German occupation of the Greek islands during the same war (Hionidou 2002). It was the changing economic situation of 1984–1986 that created a 'market trap' in Antananarivo. In a sense, this had an effect similar to that of a blockade, producing a sharp rise in food prices and denying access to the poorest. Rice was available in the country or could have been imported, but people could not afford to purchase enough to meet their needs. In this sense – being triggered not by a food availability decline but by an entitlement decline that was related to dubious economic policies, and displaying atypical features (being urban rather than rural, and 'hidden' rather than overt) – the Antananarivo famine is a variant on the 'new famine' concept as developed in this book.

Psychological factors

We know too little about the psychological aspects of famines. In principle, poor people in Antananarivo could have demonstrated in the streets to fight for their rights, or could have led visible political action to awaken the government and force politicians to take the appropriate measures. This did not happen. Devereux (1993, 2000) has noted apparently irrational aspects of human reactions to famine situations. People might make counter-intuitive economic choices by 'choosing to starve' rather than sell their assets for a variety of personal, social or economic reasons. Or they may be simply too weak to fight, after rationing their food consumption for too long. The people most in need in developing countries are often the 'voiceless', those who are never heard by decision-makers.

The situation of rural areas in 1986

We know little of the situation in rural areas during the 1985–1986 crisis. The mortality increase seen among children in the vital registration of Antananarivo over the 1975–1986 period, with a peak in 1985–1986 at the time of the famine, was also visible in the nationally representative sample of the DHS surveys in urban areas, and to a lesser extent in rural areas. No comparable data are currently available for young adults – a highly sensitive age group for famine mortality. It would require a special effort to code vital events throughout the country in order to answer this important question. It might be expected that peasants who grew their own rice or tubers were less likely to be affected by structural adjustment policies, and also had their own coping mechanisms which were not available to the urban poor. However, it should be noted that many of the poorest and most vulnerable farmers in Madagascar, as elsewhere in Africa, are net food buyers, since they produce too little to meet their family's subsistence needs and are dependent on the market for part of the year. These households would have been as adversely affected by sharp price rises as any market-dependent households in towns and cities.

Public policies to avert famine

Many public policies could have been introduced to mitigate the crisis, such as imports of rice to stabilize local food markets, requesting international aid, providing access to credit for the poor, or possibly providing jobs for jobless people. Ravallion (1987, 1997) has noted that in Bangladesh during the 1974 famine, foodgrain price stabilization would have reduced famine mortality. International aid could have been easily mobilized if the government had taken the appropriate steps.

Another element of international aid is the relationship with donors. In the case of the Malawi famine of 2001–2002, donors had stopped much of their non-emergency assistance to the country in 2001 because of alleged mismanagement of aid resources. Had the relationship been better, emergency assistance could have been provided earlier. Similarly in our case, Madagascar had a poor relationship with Western countries in the years leading up to the 1985 crisis because of its political alignment with Communist countries during the previous decade, and the nationalization of many foreign private companies which took place in the early years of the Malagasy revolution. In 1985, links were just being re-established with major donors, but the country had not yet gained full recognition. If these relationships had been stronger, information would have circulated better, donors would have been more responsive and aid might have been provided in time.

Conclusion

Ultimately, modern famines are above all abnormal 'institutional failures', since there are so many options to prevent them. Let us hope that they will tend to disappear in the twenty-first century. However, the turmoil of state development and the many government failures in Africa over the past twenty-five years do not lead to optimism. It seems that, above all, the international community must play an increasingly active role through the many channels available, if future famines are to be avoided.

Notes

1 I would like to thank Milasoa Cherel-Robson for helpful comments on an earlier draft.

2 See Devereux 2002; Stevens *et al.* 2002; also Devereux and Tiba (Chapter 7, this volume).

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