Chapter 1

Introduction

1. Motivations and Issues

This book discusses the composition of and fluctuations in the population and families of the Nōbi region, located in central Japan, from the late seventeenth to the mid-nineteenth century from the standpoint of historical demography. The term "historical demography" was first used in Europe over one century ago. However, modern historical demography began in France at the end of the 1950s,[1] and has since spread to countries all over the world.[2] Recently, abundant use has been made of high quality demographic and statistical methods and, through these, along with the growth in the use of computers, it has become possible both to process vast quantities of data rapidly and to achieve the highest standards of statistical analysis. In light of these facts, although I have made considerable revisions to my previous work, the publication of this book, which was written over a lengthy period of time, is quite a bold venture.

I collected the population data during the 1970s and 1980s, subjected the data to analysis, and unearthed several important and interesting facts. Through this book, I hope to make these results known to scholars around the world. This volume is based on articles published over a span of approximately fifteen years, including the research carried out by the Eurasian Project on Population and Family History. Some chapters, such as Chapter 4, were penned early on; others, like Chapter 9, represent comparatively recent work. Upon rereading the draft, I see that there are places which could be further fine-tuned to create a more coherent whole. However, the mission behind this book was essentially fact finding, so excluding corrections of mistakes in individual chapters, I have not made any great changes.

Before turning to the actual results, in this introductory chapter I will give an overview of the geographical and administrative characteristics of the region as background, as well as an account of Japanese population trends at the time and the implications thereof, in order to help the reader better understand the remainder of the book. For those who are not familiar with the history of Tokugawa Japan, I have prepared an Appendix and Glossary of important terms to help understand its features.

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1 On the naissance of historical demography, see Rosenthal 1997.

2 Saitō 1996.

2. The Geographical Background

The map at the beginning of Part I shows both the Nōbi region and related place names. The term Nōbi 濃尾 is derived from one Chinese character each from the character compounds for the old provinces Mino 美濃 and Owari 尾張. It was already in use in the Togukawa period (1603–1868) to refer to the region. The Nōbi region comprises one of Japan's numerous flatlands, located at the delta of the three rivers of Kiso, Nagara, and Ibi, as well as the hilly and sloping lands surrounding the delta.

Most of the flatlands are blessed with fertile soil, but the three rivers converge, leading to periodic flooding. In response to this, both the lord of the territory and the peasants had no choice but to fight against flooding by building levees between the rivers and the arable land. The region is called *wajū*, meaning "within the circle." This name is derived from the fact that the high levee forms a giant circle, protecting the cultivated land and the people residing within. However, this did not completely prevent flooding. Even today, despite the levees being higher and stronger thanks to modern technology, they still crumbled in 1974, causing great damage. During the Tokugawa period, the levees often collapsed, and when we read the diaries kept by regional village officials, it is apparent that the people of the time were extremely sensitive to rises in the water level from heavy rainfall.

Rises in the riverbed are said to result from intensive logging upstream. In pre-modern Japan, timber was considered to be an extremely valuable resource used both in construction work and as fuel. Orders from the cities in particular, which could not supply their own timber, brought about large-scale logging unseen before the Tokugawa period, forcing Japan into an environmental crisis. Fortunately, the lord of the territory became aware of problems caused by this excessive logging and, although the means were unscientific, some limits were imposed and total environmental destruction was avoided.

However, in regions such as Nōbi, where the great rivers flow gently across plains with almost no incline, large-scale mudslides washed down from upstream and accumulated on the riverbed, competing against the construction of the levees. During the Tokugawa period, when the river levels rose up higher than the cultivated land within the levees, and when the levees were destroyed, the interior of the *wajū* belt would be completely submerged. As a means of safeguarding residents, homes, and livestock, houses within the levees came to be built on earthen mounds, with boats moored in preparation beneath their eaves.

The heart of the region was the town of Nagoya, home to Nagoya castle, the residence of the Owari Tokugawa family—one of the three great Tokugawa branch families. Nagoya's population is thought to have reached 100,000 in the early nineteenth century. The Owari domain was comprised of the whole of Owari province and scattered villages in Mino province, under the rule of a daimyo worth 550,000 *koku*. (The term *koku* is explained in the Appendix.) In order to ensure the stability of the Owari territory,

during the 1750s the Tokugawa shogunate entrusted the building of the levees in Owari to the Satsuma domain in Kagoshima, the southernmost part of Kyushu, with whom Owari had no connection. This caused the famous "Hōreki Incident."[3]

The next highest-ranking daimyo was the Toda clan governing Ōgaki domain and resident in the castle in Ōgaki, Mino province. Ōgaki lay in the flatlands and Sekigahara, an important strategic point known as the boundary between eastern and western Japan, lay due west. The Toda clan was counted among the *fudai* daimyo, territorial lords who pledged their loyalty to the Tokugawa regime before 1600. The Toda daimyo was originally worth 100,000 *koku*, but was entrusted with directly controlled bakufu lands, thus in practice becoming a middle-ranking daimyo of 150,000 *koku*. This fact has a direct bearing on the historical data I used for this book; I shall return to it in detail in Chapter 6.

There were several other lesser ranking daimyo and vassals called *hatamoto* governing in Mino, as well as a significant number of directly controlled bakufu lands under regional administrators. Owari was a direct contrast to the one territory, one ruler system. If we refer to Mino as a non-territorial estate, Owari can be called a territorial estate. For further clarification, the system of regional government in the Tokugawa period is explained in the Appendix.

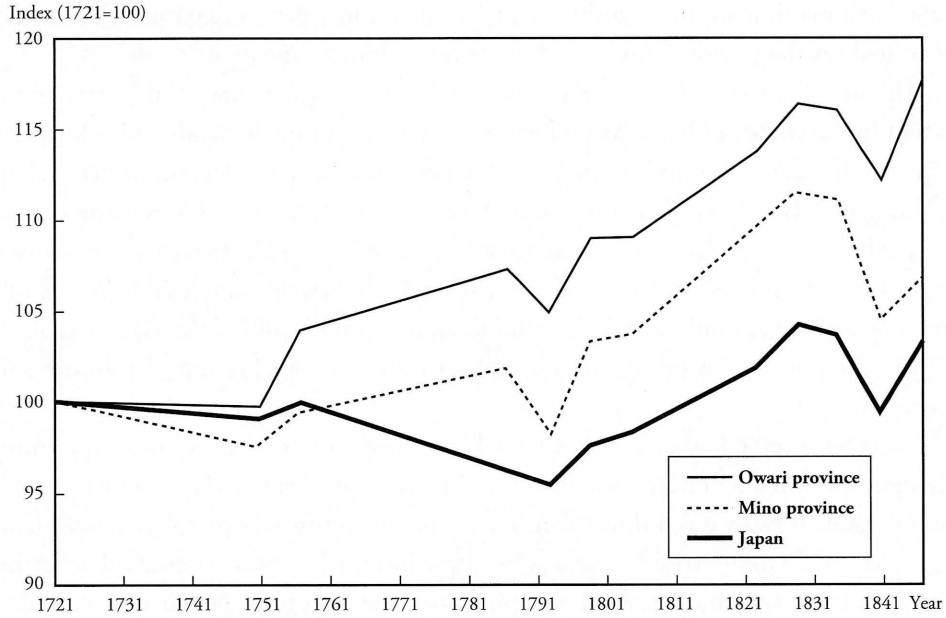
3. Trends in Population and Number of Households in the Nōbi Region

Figure 1-1 shows a comparison of population trends between Owari province, Mino province, and Japan as a whole taken from national censuses conducted by the Tokugawa bakufu between 1721 and 1846.[4] The national population in 1721 was 26,000,000; in Owari the population was 555,000 and in Mino, 546,000. These figures show that the populations of both Owari and Mino provinces were inching forward progressively in parallel fashion; this contrasts with the national population trend, which showed no fluctuations over the long term. The striking population decrease in eastern Japan during

3 The "Hōreki Incident" was the affair in which the *tozama* daimyo of Satsuma Kagoshima domain (the Shimazu clan) in the southernmost part of Kyushu ordered the construction (completed in 1755) of a levee in order to protect the Owari domain of the three Tokugawa families. The supervisor of Satsuma domain overran the budget excessively and committed suicide. The relationship between the Shimazu clan and the Tokugawa bakufu was not a good one, and this incident is said to have further worsened that relationship.

4 The national population survey begun by the Tokugawa government in 1721 was conducted after 1726 once every six years, in the years of the ox and the rat. It is possible to use the twelve results of the survey for each province individually, up until 1846, the twenty-second survey. See Hayami 1993 or Hayami 2001, pp. 46–51.

Fig. 1-1 Population Trends



Population in 1721; Japan=26,065,421; Owari=554,561; Mino=545,919

the 1780s (the Tenmei Famine) is not evident in this figure.

However, the reduction in the latter half of the 1830s due to the Tenpo Crisis appears very clearly. The population, which had been increasing linearly, temporarily fell. Compared with the populations in 1834 and 1840, the population in Owari province decreased by 21,000 (3.3 points) and in Mino province by 26,000 (4.3 points). However, the subsequent recovery was rapid, and according to the survey of 1846, the population in Owari province exceeded the figure for 1834 and shows the highest rates for this census in 125 years.

Within the Nōbi region, for territory controlled by the Owari Nagoya domain (209 villages, equivalent to 14% of the approximately 1,500 villages in Mino, and Owari as a whole), there are historical records that enable us to ascertain the populations of each individual village for both the early part of the Tokugawa period (1670s) and the latter part (1830s).[5]

Taking only villages for which the population is known for both periods and collating the population changes for the two provinces by district (*gun*), we find that the population in all districts increased. The rate of expansion in Owari province is 24.8% and in Mino province, 45.2%, so the difference between them is considerable. In reality, the populations of the *shinden* (newly reclaimed villages) developed between the two periods

5 For Owari province see "Kanbun muramura oboegaki" and "Owari junkōki." For Mino, see "Mino no kuni Owari ryō muramura oboegaki" and *Nōshū junkōki.*

need to be taken into account, but the strip of land along Ise bay in Owari province, which is examined in Chapter 4, is particularly striking. In this strip in Kaisai district, Owari province, the population increased by 48.5%, and 81% of this increase was yielded by the formation of the *shinden* villages.

Excluding such exceptions, population expansion in Owari province begins comparatively early, and it is thought that during the period for which observations are possible, the peak of the expansion had probably already passed. The number of households can only be examined for Owari province alone. Here, the most noticeable characteristic is that the increase in the number of households exceeds the increase in population and consequently, the average household size shrank from 5.55 during the 1670s, to 4.19 during the 1830s. According to the results I obtained from research conducted in Suwa district, Shinano province, the shape of the distribution including the large-scale households changes from spreading out to the right, signifying a broad distribution, to a high sharp peak at four people per household, signifying a narrow distribution.[6] The question of whether these changes in Owari province are due to the shift from joint families living together to simple or extended families, or to the eradication of serf labor, both of which occurred in Suwa district, cannot be answered in depth here as historical sources which show us the changing picture from the seventeenth century are few in number.

4. Changes in Numbers of Livestock

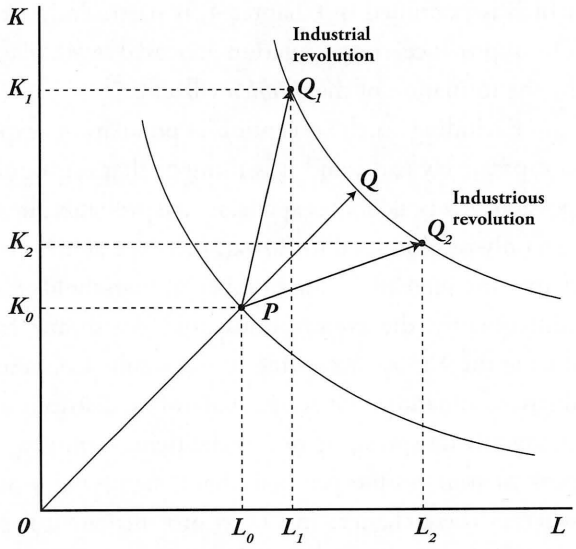
One other fascinating aspect revealed by the changes between the 1670s and the 1830s is the reduction in numbers of livestock. Excluding a few exceptions, such as the pottery production belt centered in Seto, Owari province, for example, the number of livestock (mainly horses) overall fell rapidly, from one horse per every four houses during the seventeenth century to one horse per twenty houses in the nineteenth century. If these horses were used communally by several houses during the seventeenth century, it is still possible that horses were used for cultivation and tilling, but this is absolutely impossible at the level of ownership found in the nineteenth century.

Normally, the development of agricultural production is accomplished through an increase in the number of livestock and an expansion in externally harnessed energy and the quantity of manure obtained. However, in the case of the Nōbi region, there was clearly a reduction in the number of livestock used. Although there are no clear historical sources to elucidate whether production increased or decreased as a result, no evidence can be found to suggest that the living standards of the peasants declined; rather, the

6 For research on the Suwa region, Shinano province, see Hayami 1973 or, in brief, Hayami 2001, pp. 66–119.

region was the most economically advanced in Tokugawa Japan, with developments in peasant cottage textile industries, pottery production, brewing, and so forth, and was also a region which saw the development of a small town network.

Fig. 1-2 Industrial and Industrious Revolutions



On the contrary, it is possible to maintain that in this case the reduction in the number of livestock caused an increase in productivity, peasant incomes, and economic development. This fact requires some explanation. For present purposes, the two factors of production in farming will be considered to be capital (livestock) and labor (humans). This being the case, it is possible to draw an iso-quantitative curve as in Figure 1-2, with capital (K) expressed as the vertical line and labor (L) along the horizontal line. In order to achieve a fixed volume of production, it does not matter which point above the line is taken for the combination of labor and capital. However, when production volume increases (or decreases, for that matter), the curve shifts. If production increases, the curve moves further to the outside of the point of origin. If the newly shifted point (Q) is above the extended line of the point of origin (O) and the point above the line prior to the shift (P), there is no change in the ratio between capital and labor. Put simply, there is no change in the structure of production. However, if it is not above the extended line, for example in such cases as Q_1 from P or Q_2 from P, not only has the volume of production increased, but there has also been a change in the structure of production.

The shift to Q_1 from P represents the development of a type of capital-intensive, labor-saving agriculture in which a greater amount of capital has been expended. On the other hand, the shift to Q_2 from P means a kind of labor-intensive, capital-saving agriculture. The former trend can be seen in Western Europe, in particular in England, where large-scale farming developed, enabling labor-saving agricultural production, using large quantities of livestock with the introduction of large-scale heavy farming equipment, resulting finally in the debut of the steam plough. The Industrial Revolution was accomplished in the fields. Of course, the agricultural revolution lays claim to various aspects too.

Although there were improvements in the soft aspects of the agricultural revolution underpinned by new crop rotation systems, selection of seeds, and improvements in

fertilizers, with regard to the expansion of capital and the saving of labor, it and the Industrial Revolution are basically a continual, interlinked process. Clearly the expansion of capital caused an increase in productivity, and the "saved labor" fulfilled the demands for unskilled factory labor newly created by the Industrial Revolution.

5. The Industrious Revolution

Tokugawa Japan instead experienced a change from P to Q_2, which is the classic development of labor-intensive agriculture. There may, however, be doubts as to whether this can be called "progress." The development of labor-intensive agriculture either reduces the quantity produced by each individual peasant, or it may mean a reduction in the quantity produced in labor units. Certainly, if Figure 1-2 is taken at face value, it leads to such a conclusion. If, however, an increase in productivity, for example, can be seen without the investment of capital through small improvements in farming implements, methods of tilling, breeding, fertilization, seed selection, etc., could this kind of "soft" technical progress not be more properly viewed as "evolution"?

Whether or not there was some sort of labor-intensive agricultural development specifically in the Nōbi region is a topic for future discussion, but given the fact that the number of livestock sharply declined, the population increased, and productivity per person also increased, evidently to some extent, there were improvements in the "soft" areas of agriculture. There may have been a greater investment of labor in agricultural productivity as well. At the same time, pre-Tokugawa period labor (indentured or serf labor) was eradicated, and a labor force that could withstand heavy work for lengthy periods of time—exclusively domestic labor—became the standard. This labor force understood that hard and thoughtful work on its own behalf could effectively yield a greater production of goods, increase incomes, and bring about an improvement in living standards. In other words, this labor force was motivated.

After the Tokugawa period began, production for market improved, and once production not only of the traditional annual tributes and for personal consumption, but also production aimed at the market started, competition arose, leading to the pursuit of highly rational production. Agricultural management using a dependent labor force has low productivity, so the ideal form is smallholding management centered on family labor. If a single plot for cultivation is small and centered on rice growing, as in Japan, large-scale management is impossible and the optimum type of labor for small-scale management is the family labor force. During the Tokugawa period, Japanese agriculture was all small-scale management centered on the family labor force, and on occasion the management employed live-in servants to whom they paid wages.

With such family management, the fruits yielded were linked to an increase in the family's own income, albeit through arduous work over a long period of time, and, because the family could hope for an increase in living standards, farmwork did not feel like mere toil. An even more important point is that this arduous work over a long period of hours came to be considered ethical and a virtue. There were also cases in which this work ethic was taught in primary schools attached to temples, called *terakoya*, although in the main it was passed down within the family, from parent to child and from child to grandchild.

This fact also appears in the literature of the day. For example, the works of Ihara Saikaku (1642–1693), a representative writer of the Tokugawa period, boldly assert the notion that to use money earned through work is in no way shameful. The *Genji monogatari* (Tale of Genji) written centuries earlier is considered throughout the world to be the most superlative work of the Heian period (794–1185), but its subjects are those of life at court, love stories, and so on, and never is the contemporary world of work taken up as a theme. *Tsurezuregusa*, which dates from the Muromachi period (1336–1573), dispenses with the contemporary world and explains the meaning behind entry into a cloistered life. Compared with the themes found in such pre-Tokugawa literature, the writings of the Tokugawa period reflect the basic ideas of the era itself.

At the same time, many agricultural treatises were written during the Tokugawa period, some of which were printed and some of which were transcribed by hand, and then distributed to peasants who could read and write. These treatises not only discussed agricultural technology, but also repeatedly espoused the virtues of diligence. In addition, the peasants themselves kept diaries and management ledgers. These facts can be interpreted as indicative of the will of the peasants to improve farming management efficiency.

I have named this basic state of change of labor in the Tokugawa period an "industrious revolution."[7] This is also a key word to explain Figure 1-2. In the figure, the change from P to Q_1 enables us to presage the advent of the Industrial Revolution. On the other hand, the change from P to Q_2 means an increase in the amount of labor invested. This too may result in increased productivity, but in cases like that of Tokugawa Japan, when the investment comes to be considered as ethical and virtuous, my basic thinking is that this should not be called an "Industrial" but rather "Industrious Revolution."

7 I first coined the term "Industrious Revolution" in 1977. See Shakai Keizaishi Gakkai 1977, p. 14. Also see Hayami, "Industrial Revolution versus Industrious Revolution," in *Journal of Japanese Trade & Industry*, Nov./Dec. 2001, pp. 1–5; included in *Population, Family and Society in Pre-modern Japan* (Global Oriental Ltd., 2009).

6. An Overview

The research presented here is the result of statistical observations of changes in the population, number of households, and numbers of oxen and horses in the Nōbi region. Incidentally, alongside these macro observations, in Tokugawa Japan there is micro-data that can be used to target observations of households and families, couples, and individuals. The historical data known as *Shūmon aratame-chō* (Religious and Population Investigation Register; hereafter SAC—the details are explained in the Appendix as well as my previous book)[8] furnish us with extremely detailed information concerning the lifestyles of people at the time. In this monograph, I have made a number of investigations into the historical demographic characteristics of several villages, using the SACs for the region, which have been collected on microfilm. SACs have the advantage of enabling us to handle simultaneously in a single document both historical demography and family histories, but such materials also have their weak points. Our examination was undertaken in full consideration of these factors.

Many observations and analyses have been made possible by these historical sources, and, through utilizing the technique of family reconstitution, other demographic measures can be obtained. Chapter 2 presents the results of observations based on marriages and births for 4,700 couples, compiled from the SACs of seventeen villages in the Nōbi region. In Chapter 3, migration is analyzed for four villages of Mino province. This analysis demonstrates how far from the truth is the assertion that the peasants of Tokugawa Japan were "bound to the land" with no freedom to migrate. The demography of one sea coastal village and one mountain village are examined in Chapters 4 and 5. As expected, population in the sea coastal village grew rapidly, but when crisis occurred in the mountain village, residents narrowly survived with multiple families co-residing in one household to avoid the extinction of solitary households.

In Part Two, focusing on one village—Nishijo village, Anpachi district, Mino province—which had the best record for historical demography, without a single gap between 1773 and 1869, I carry out several analyses of demography, particularly migration. In the case of Nishijo, of the 50% of males and 62% of females surviving to age eleven (see Appendix for Japanese methods of reckoning age) who experienced some form of work outside of the village at least once during their lives, two-thirds of them migrated to large or small urban areas, and half of those continued to live in the city until death.

In addition, the common assumption that age at marriage was early in premodern times sometimes holds true, but in this region during the latter part of the Tokugawa period, the average age at marriage or, to be precise, at the time when a couple were recorded in the SAC as husband and wife, was twenty-six *sai* for men and twenty-one *sai*

8 Hayami 2001, pp. 25–37.

for women. This can in no way be considered young or precipitous.

Moreover, despite the myth, also groundless, that in the past primogeniture was universal, when the true picture is examined using the SACs, as in Chapter 9, we find that, whilst inheritance by the eldest son was the most common form of succession, successors could also be younger siblings, grandchildren, second cousins, and other peripheral relatives, parents, and even, on occasion, women. The sources have the advantage of enabling us to examine in detail exactly who become successor and under what circumstances such succession took place.

7. National and Regional Trends of Population in Tokugawa Japan

The population of Tokugawa Japan has long been thought to be as follows: at the beginning, 18 million; in the early eighteenth century, 30 million; and at the end, 33 million. These figures suggested that the population of Tokugawa Japan increased to some extent in the early years and then stagnated. This view overlapped with presumption of the economic "stagnation" of at least the second half of the Tokugawa period. However, examining these figures, particularly the earliest one, it is clear that they do not have any concrete historical or numerical basis. I have discussed this problem in previous publications[9] so that there is no need to reiterate it here.

In short, the national population at the beginning of Tokugawa period was 12 million plus or minus 2 million—considerably less than initially believed. This is based on estimations by the author utilizing fragments of the population register of early seventeenth-century Kyushu, and through looking at the backward trend of population in Suwa district, Shinano province.[10] While the population at the beginning of the Edo period is rather small, the growth rate of population in the first half of the period must have been quite high, since the population in the 1720s seems to have been 30 million. According to the Tokugawa government's census research[11] the population was 26.1 million excluding the samurai population and several exceptions in daimyo domains. Considering these exclusions, the population figure of 30 million at the time is not so far from reality.

If the population at the beginning of the Tokugawa period (ca.1600) can be fixed at 12 million, and at 30 million in 1720, the population grew by an order of 2.5 between these two points in time. This represents a very high growth rate, annually a bit less

9 Ibid., pp. 43–44.
10 See Note 6 of this Chapter.
11 Hayami 2001, pp. 46–51.

than 1%. Is it possible to have such high growth continuing before the modern period? Looking at the example of Suwa district, I believe it is fully possible. The population grew over 1.0% annually from the 1670s to 1700, then diminished to zero growth in the middle of the eighteenth century. As population growth takes usually forms a logistic curve, the 1670s may be the midpoint, that is, the highest time of growth. Overall, 1% population growth per century is not unusual even in premodern times.

The next stage, from the 1720s to 1840, is rather a stagnant period from the viewpoint of national population. But when we look at population by region, the picture becomes more colorful. Basically, the population in northeastern Japan declined almost 20%, the north-central area increased but the south-central rather stagnated, and the southwest increased. Interestingly, the metropolis-centered areas—southern Kantō (where Edo was located) and the Kinai (including Kyoto and Osaka)—even declined. We should not say the population of Japan at the time was "stagnated." Rather, we must examine population trends by regions. One of the *raison d'être* of this book is to examine the population, composed of regional populations from 1700 to 1870 in the southern part of the central region utilizing micro population data.

In the final years of the Tokugawa period, after 1840, the population began to grow with some economic and industrial development, and continued to increase after the Meiji Restoration (1868). Again, an interesting feature of this period is that the populations of metropolises and large cities were declining, while middle- and small-size cities and towns flourished. An age of proto-industrialization had indeed begun.

Finally, the author would like to discuss the so called "three great famines" in Tokugawa Japan: the Kyōho (1733), Tenmei (1783–1786), and Tenpo (1837–1839) famines (named according to the era in which they occurred). Among them, it is clear now that the Kyōho Famine was caused by swarms of locusts attacking the rice fields of western Japan, causing a severely poor harvest. The rice prices in western Japan subsequently jumped upward. The Tenmei Famine was caused by continuous bad weather plus the eruption of Mt. Asama in1783, leading to a poor harvest in northeastern Japan. Perhaps this was the most serious disaster ever recorded, for thirty years earlier, another famine in 1755 had hit northern Japan, and the economy and society had never completely recovered.

At any rate, the above two famines were caused by very poor harvests directly resulting from calamity. But the Tenpo Famine was not. Rather, it was caused by some kind of disease affecting the digestive system, accompanied by high fever and diarrhea. The victims were mainly the urban residents. In fact, it may not be appropriate to label this as 'famine' at all. In this book I refer to it as the "Tenpo Crisis."