Rural Depopulation and Levels of Living in Post

War Japan: the Case of Kyoto and Shiga

Prefectures

by

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ABSTRACT

This research attempts to explain spatial variations in rural de-
population rates which were evident at the sub-municipal level in
Japan during the period 1965 to 1975. A random sample of 168 'agri-
cultural settlements' in Kyoto and Shiga prefectures is taken, and
net migration rates estimated using the Basic Demographic Equation.
The independent variable is a composite expression termed 'level of
living'. Approximately 60 variables, grouped into nine domains, are
combined to form this index. Account is taken of the 'behavioural'
aspects of environmental perception and subsequent migration by
incorporating priority preference weightings on domain scores, using
results derived from a questionnaire survey. In particular, two
population sub-groups are identified, representing 'young family'
migrants and 'young individual' migrants, and domain weightings for
the construction of level of living scores are adjusted accordingly.

The correlation coefficient between net migration rates and
levels of living for the 'young individual' sub-group is $r = 0.67$,
whilst for the 'young family' sub-group it is only $r = 0.17$. The
reasons for this disparity are discussed in the concluding chapters
of this research, when evidence drawn from three intensive village
surveys is utilized to provide a more detailed understanding of the
specific case histories of individual and family migrants.
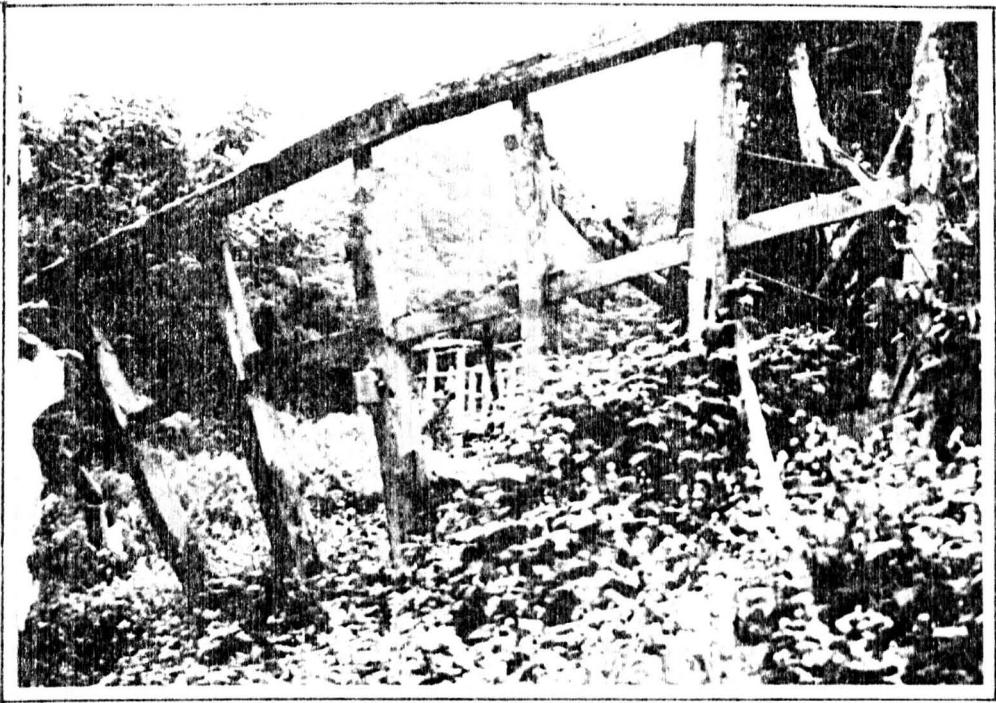
<u>Frontpiece</u>   Scenes from a deserted village in the
                 Tango Peninsula, Kyoto prefecture.

CONTENTS

PREFACE

This research highlights a rather neglected aspect of Japan's economic and social development in post war years: the so-called 'rural exodus'. In particular, it examines the reasons for significant variations in rural out-migration rates, notably at the sub-municipal level, and seeks to determine why some villages have become completely deserted as a result of out-migration, whilst others have maintained stable populations, or even grown in size.

Above all, it is hoped that completion of this project is some repayment of the huge debt of gratitude I owe to the individuals and organisations who have helped, instructed, and guided me over the past eight years. To begin with, this research would not have been possible without the assistance of the Japanese Education Ministry, who funded eighteen months initial fieldwork in Japan. During this time, from October 1976 to April 1978, I was fortunate to receive patient instruction and guidance from the staff and members of the Institute of Geographical Research, Kyoto University I would like to thank especially Professors I. Suizu and T. Oji who gave freely so much of their time, and who enabled me to acquire so many invaluable and unforgetable insights into the Japanese way of life. I would also like to thank Professor K. Sakaguchi, who first led me to some of the more remote rural areas of Japan, and who provided me with much of the initial inspiration for this research topic.

The organization of the many field-notes I made in Japan into a coherent research project would not have been possible without the assistance of the Social Science Research Council of Great Britain, and tuition from staff at the Department of Geography, Sheffield University. I am particularly indebted to my supervisor Dr. P.E. White, to Professor R.J. Johnston and Mr. B.E. Coates, and to my research colleagues in the Department, who remain a constant source of inspiration. I also wish to express my gratitude to

CHAPTER ONE.

INTRODUCTION

The restoration of the Emperor Meiji in 1868, and the
subsequent promulgation of a constitution for the Japanese
people in 1889, mark the start of a time of considerable
social and economic, as well as political, reform in Japan.
Many of the regulations imposed by the previous feudal
government were abolished, including one which had placed
restrictions on the right of individuals to move freely
between villages and towns (Kishimoto, 1971). Provided
that the consent of the household head was obtained, the
Civil Code of 1889 allowed individuals the right to choose
their place of residence (Steiner, 1950). In the years
which have followed, migration, particularly from rural
to urban areas, has played a crucial role in the process
of rapid economic and social change experienced in Japan.
The expansion and modernization of the Japanese economy
after the Meiji period (1868 - 1912) was aided considerably
by the ability of workers to transfer to jobs in urban
located manufacturing industries from the less productive
agricultural sector (Saito, 1973). By the early 1980s
Japan had attained the position of one of the leading
industrial nations in the world, and rural-urban migration
remained a characteristic feature of the high level of
economic activity still experienced there.

The outflow of the rural population to rapidly expanding
urban and industrial centres reached its highest levels
between 1955 and 1972: the so-called 'post war rural exodus'
(Takeuchi, 1974; 1976). Even viewed in a global context,
the scale of the rural exodus in Japan at this time was
considered to be massive. Described by Imai (1969; 17)
as 'the great movement of a nation' ('minzoku no dai-idō'),
it is estimated that between 1960 and 1970 there was a
6.6% decline in the number of people living in Japan's

rural areas. No other country in the world experienced a rural population decline of the magnitude over the same period (Davis, 1972). Within Japan, emphasis turned towards evaluating the social impact of such a large scale movement of people from rural to urban areas. The effects of increased population pressure in the cities, which have a limited capacity for areal expansion due to the rugged nature of the physical terrain, have been well documented (Coates, 1974; Kornhauser, 1976). The term 'overpopulation problem' (Kamitsu Mondai) was coined to describe the various difficulties associated with life in the main metropolitan centres in the 1960s , including severe shortages of housing space, soaring inner-city land prices, traffic congestion, and the need for long daily journeys to work (Jinkō Mondai Hangikai, 1974). By the end of the decade, the adverse effects that the exodus was having on the rural area itself were also noticed. Attention shifted to the 'underpopulation problem' (Kaso Mondai), and to rural settlements where the declining population base made continued operation of various social and welfare facilities difficult, despite the fact that the relative ageing of rural populations meant public transport services and medical provision were increasingly relied upon to provide help to the inhabitants of remote areas (Yoneyama, 1969). The situation was judged to be so serious, in fact, that in 1969 the Japanese government was forced to take the fairly unusual step of enacting a law to make special financial provision for areas which were suffering severe rural depopulation (Kaso Hakusho, 1975).

A detailed account of the post war rural exodus in Japan, and a review of the factors which have been proposed to explain its occurrence, are presented in Chapter Two. Virtually no attempt is made at international comparison in this research, although it is realised from the outset

that Japan's experience of a post war rural exodus, especially in the context of rapid economic growth and Japan's emergence as an industrial super-power, is of great potential relevance to studies of development in many 'Third World' nations. Many of the issues discussed in Chapter Two, including the complex relationships between manufacturing industries and agriculture ; the role of state intervention;changes in the social structure of traditional family groups and communities; and in the demographic structure of rural and urban àreas in Japan, will be of considerable interest to students of this topic. This is especially so in view of the fact that, even by the 1980s , relatively little has appeared in Western literature on the subject of rural-urban migration in Japan and on the social and economic changes experienced in Japan's rural area in the post war period. It is also surprising that evidence from the Japanese case has been used only rarely to support theoretical contributions to migration or development studies. Despite the massive size of the post war rural exodus in Japan; the active role played by the government in regional planning in this period; and the availability (in the English language) of comprehensive and reliable socio-economic and population data, very little work has been done to incorporate Japanese examples into arguments which relate, for example, to the role of migration in reducing regional income inequalities (Okun and Richardson, 1961), or to the counter viewpoint of 'cumulative causation' (Myrdal, 1957). An often cited paper by Tachi (1963), written more than two decades before the present research, is still the only important exception to this rule.

Although Chapter Two concentrates on explanations of the rural exodus at the macroscopic level, it is not the intention of this research to develop studies of migration in post war Japan at this particular scale. Despite the above-mentioned

discrepancies in research into inter-regional variations
in Japan, and into relevant international comparisons, it
is felt that these topics undoubtedly will be covered in future
years as increasing numbers of Western researchers gain
some familiarity with Japanese language sources, and as
more Japanese researchers find outlets for their work in
Western literature. Also, it is felt by the present writer
that studies of inter-regional variations in migration rates,
and related causal or dependent factors, cannot be concluded
satisfactorily until a detailed understanding is gained
of processes operating within this framework: at lower
orders of spatial interaction. That is, in terms of the
scale contrast identified by Clark (1973), before any attempt
is made to analyse the generalized spatial characteristics
of populations at the 'macroscopic' scale level, some
knowledge must be acquired of the social and economic
forces which direct the decisions of individuals at the
'microscopic' level. This is especially important in
research relating to Japan, which, because of its physical
and political isolation from other nations in the past,
has a unique cultural, as well as social and economic
background.

In this respect, there already exists in the English
language a number of important and well-researched studies
into Japanese rural settlement at the micro-level (Embree, 1939;
Beardsley, Hall, and Ward, 1959; Dore, 1978; Smith, R.,1978).
Also, more general works covering Japanese rural society and
relevant changes in the post war period have been produced by
Nakane (1967), and Fukutake (1967; 1974). Moreover, since
the mid 1970s at least two researchers have concentrated on
micro-level surveys of village communities in Japan, with
specific regard to the attitudes of individuals to urban
orientated migration and the effects on these communities of

the post war rural exodus (Takeuchi, 1974; 1976: Palmer, 1978; 1979; 1983). In addition, there is a large amount of work undertaken on these themes which has been reported in Japanese literature, following important pioneering studies by Adachi (1973) and Sakaguchi (1966; 1974; 1975).

Whilst these studies tend, by their very nature, to be highly selective with respect to their choice of area, there is nevertheless a sufficient accumulation of this type of work from which broad generalizations regarding the spatial characteristics of populations in the Japanese rural area may be drawn. In other words, although there is plenty of scope for more microscopic surveys of this kind to be undertaken, their potential usefulness in terms of a contribution to the development of existing knowledge and theory is limited by the law of diminishing marginal utility. However, with regard to understanding of the rural-urban migration process, in other countries as well as Japan, there exists still a quantum gap between the theory and level of understanding achieved at the microscopic scale, and that which is attempted at the macroscopic level. In particular, attention has been drawn to the apparent dichotomy between the behaviouralist understandings of the decision to migrate by family units or individuals (Wolpert, 1963), and normative explanations of migration applied to large, aggregate populations (White and Woods, 1980).

It is the aim of this research to attempt to bridge this gap by adopting an intermediate scale level, which may be termed, for convenience, the 'mesoscopic' level. That is, a comparatively large number of Japanese rural settlements are studied, drawn from a wide area, using data relating to a uniform period of time By placing emphasis on data taken from documentary sources rather than from personal interview, this approach allows a more systematic, analytical method to be applied to the study of variations in the spatial characteristics of rural settlements than is normally possible within the constraints imposed on a small set of individual microscopic surveys. At the same time, this scale level is

small enough to allow such variations to be measured adequately, for they tend to disappear at higher levels of territorial aggregation.

Encompassed within this framework are two specific objectives. The first is to account for variations in net migration rates which were evident within the rural area during the period of so-called 'rural exodus' in the 1960s and early 1970s . The extent of such variations are described in Chapter Three, by drawing attention to the contrast between the distributions of officially designated areas of 'severe rural depopulation' (Kaso chitai), and rural areas where population decline was not so severe or, indeed, where population actually increased during this period. Three spatially variable factors are introduced to offer a preliminary explanation for these differences in rates of population change (i.e. migration), namely, 'accessibility', 'agricultural environment' and 'climate'. In Chapter Four, a more detailed account of the choice of scale level is presented, and a study area is selected. In particular, it becomes apparent that the 'agricultural settlement' is the only suitable territorial unit for the study of intra-rural variations in net migration rates and, on this basis, a 5% random sample of agricultural settlements in Kyoto and Shiga prefectures, in central Japan, is taken. In precise terms, the study area adopted for this research comprises a total of 168 agricultural settlements, and the aim is to explain variations in net migration rates which existed between them during the period 1965 to 1975.

The second objective follows on from this, and concerns the evolution and development of a suitable theoretical framework to account for these variations in net migration rates at the 'mesoscopic' scale level. Specifically, an attempt is made to incorporate behaviouralist interpretations of the decision to migrate into a simple, normative explanatory model, although, at first glance, it may appear

that the 'mesoscopic' scale is singularly inappropriate
for the adoption of either the behavioural or normative
viewpoints. This is because behaviouralist ideas strictly
apply to the individual decision-maker, at the 'microscopic'
scale level, whereas normative models are generally most
successful at the 'macroscopic' scale level, where individual
irregularities tend to be obscured. In other words, " the
spatial behaviour of individual men" can never be "determined
absolutely", and normative methods are only applicable at a
highly aggregate level when "strong regularities may be
observed" (Abler, Adams, and Gould, 1972; 491) . It is
argued in this research, however, that the two approaches
are not necessarily mutually exclusive, and that, once
certain procedural difficulties are overcome, the 'mesoscopic'
scale is the only level at which they may be combined effectively
into a single explanatory model.

These 'procedural difficulties' are discussed in detail
in Chapter Five. Essentially, they relate to the problem
of adopting normative techniques within an intermediate
scale level, where the potential range of explanatory variables
is much greater than at higher levels of data aggregation,
and where serious problems of inter-correlation between
variables are likely to arise (Johnston, 1978). It is
shown in Chapter Five that these problems can be overcome
by combining all variables into a single, composite term:
'levels of living'. Moreover, it is proposed that 'levels
of living',defined here as 'an expression of the overall
state of well-being of individuals' (Knox, 1975;6), can
be directly related to the concept of 'place utility'
put forward by J. Wolpert in his discussion of the behavioural
aspects of the decision to migrate (Wolpert, 1963). The key to
this relationship is the suggestion that broad groupings of
individuals can be identified, who share similar personal
characteristics. needs, wants, and ambitions, and who hold

similar perceptions of their local environment in relation
to other known environments. Having accepted this argument,
it is a relatively simple matter to assess the priority
preferences expressed by different population sub-groups, by
undertaking a questionnaire survey, and subsequently to
incorporate these into the level of living analysis.
A model is thereby proposed where:

Net migration = f (levels of living),

where both terms of this expression are measured for specific
groups of individuals, who have shared personal characteristics
including age, sex, occupation, and so on. As the level of
living perceived by a particular population sub-group improves,
so the rate of net out-migration declines, and the rate of net
in-migration increases.

Of course, the higher the level of data aggregation, the
more difficult it becomes to isolate these population sub-groups.
At the inter-regional level, for instance, individuals will be
drawn from a wide variety of different backgrounds, including
urban as well as rural areas, and this is likely to affect the
relative ordering of priority preferences and subsequent
perceptions of place utility. For this reason, the 'mesoscopic'
scale, taking the agricultural settlement as the basic territorial
unit, is considered to be the most appropriate to test this model.
The problem, however, is that data availability tends to be
rather poor at this level, creating difficulties with regard to
the measurement of both levels of living (Chapter Six), and net
migration rates (Chapter Seven). The main effects of this are
that just over one-fifth of the sample settlements have to be
excluded from the analysis, due to the complete lack of suitable
information; net migration rates have to be estimated using
simulation techniques; and the choice of population sub-groups
is ultimately limited by the lack of suitable distinguishing
criteria. The likely implications of these modifications on
the outcome of the research are discussed when the results
are analysed, in Chapter Eight.

Finally, in Chapter Nine, the results of three intensive village surveys are reported. Although these do not comprise an integral part of the main analysis into the relationship between net migration rates and levels of living, they do provide an invaluable retrospective insight into the process of depopulation in selected agricultural settlements and, by discovering more about individual migration flows and the specific reasons for individual migration decisions, they enable a much clearer insight into the precise nature of this relationship to be made. In this respect, they highlight, above all, the value of combining different research methodologies, utilizing different levels of data agregation, to achieve a more complete understanding of the rural exodus in post war Japan.

CHAPTER TWO

THE POST WAR RURAL EXODUS

2.1 INTRODUCTION

In 1945, Japan's major cities and industrial centres lay
devastated by the incendiary bombing raids which had taken place
with increasing intensity during the final months of World War Two.
The people living there were for the greater part homeless, and
suffering a severe shortage of food and other essential supplies. For
many, the only chance for survival was to follow the large numbers of
women and children who had been evacuated to safer rural areas during
the earlier stages of the war, and seek food and shelter with relatives
who still lived in the countryside. This exodus was further augmented
by the many repatriated soldiers who returned to Japan after the
cessation of hostilities, and who now wished to go back to the rural
areas from where they had originally enlisted.

As a result of all this the population in the six largest cities
in Japan was reduced to less than half the total it had been in 1940,
whilst in many villages like Niiike, in Okayama prefecture, the number
of people swelled by more than 20% (Beardsley, Hall, and Ward; 1959).
Furthermore, the post-war Land Reform gave many of these refugees the
opportunity to buy small plots of agricultural land, so that the total
number of farm families in Japan increased between 1941 and 1949
by some three-quarters of a million, or 13% (Dore, 1959). Also, the
number of people engaged in agriculture increased from its pre-war
level of around 13.4 million, to 16 million in 1950 (Fukutake, 1967).
After 1950, however, the number of people engaged in agriculture showed

a consistent, and often rapid decline. By the mid 1950s it was apparent
that not only had most of the city evacuees returned to their homes in
the towns, which by now had been rebuilt, but that many rural people
were moving to the cities for the first time. The exodus from
the cities had now turned to a rural exodus, and this grew in volume
to such an extent during the latter 1950s, and 1960s that many villages
ended up totally abandoned by 1970 (Nōgyō Shūraku Kenkyūkai, 1977).

This chapter first of all traces the changes in volume of
internal migration in Japan after 1955, and identifies the major
patterns of rural-urban migration flow. The predominant trends are
clearly found to be a steadily increasing volume of movement, which
reached a peak in the year 1970, and then subsequently fell off
slightly. The principal direction of this movement was from rural
prefectures in the peripheral regions of north-east and south-west
Japan to the major urban centres along the Pacific coast-line in the
central regions of Japan, comprising an area known as the Tokaido
Belt.

The years between 1955 and 1970, when the volume of rural exodus
was greatest, coincide closely with a period of exceptionally high
growth in the Japanese economy and, undoubtedly, the two events
are strongly related (Adachi, 1971; Ikegami, 1975). Indeed, it has
been demonstrated how variations in levels of internal migration have
been closely associated with cyclical fluctuations in rates of economic
activity since the earliest days of Japan's modernization in the 19th
century (Minami, 1967). The main discussion in this chapter, therefore,
concentrates on the spatial aspects of Japan's post-war economic growth
and, in particular, highlights the increased concentration of manu-

facturing and service industries in the core regions of the Tokaido Belt, and the relative decline of primary industries in the rural periphery. Within this framework, special emphasis is laid on the factors which have had a direct influence on the increased volume of rural exodus after 1955. These include the attraction of higher wage levels in non-agricultural industries, and the creation of a labour surplus in the rural area through agricultural rationalization and the decline of traditional craft industries.

In addition, attention also focuses on the demographic and social background to rural settlement in Japan. In particular, factors relating to the post war 'baby boom', and farm inheritance patterns are considered in terms of their effects on the size of the rural exodus during the 1960s.

Finally, note is also made of the increased importance of part-time farming in Japan since the 1950s. This is where farmers take up non-agricultural employment without shifting their place of residence, and must therefore be viewed as a factor which has contributed to the gradual reduction in the pace of the rural exodus after 1970.

2.2 THE RURAL EXODUS: 1955 TO 1978

Changes in the volume of inter-municipal migration in Japan between 1955 and 1978 are shown in Figure 2.1. It can be seen that in 1955 there were 5.1 million migrants, representing 5.8% of the total population. This figure steadily increased, to reach a peak of 8.2 million in 1970, or 8.03% of the total population. After then, the volume of migration declined slightly, so that in 1978 the number of migrants had fallen to the kind of level previously exper-
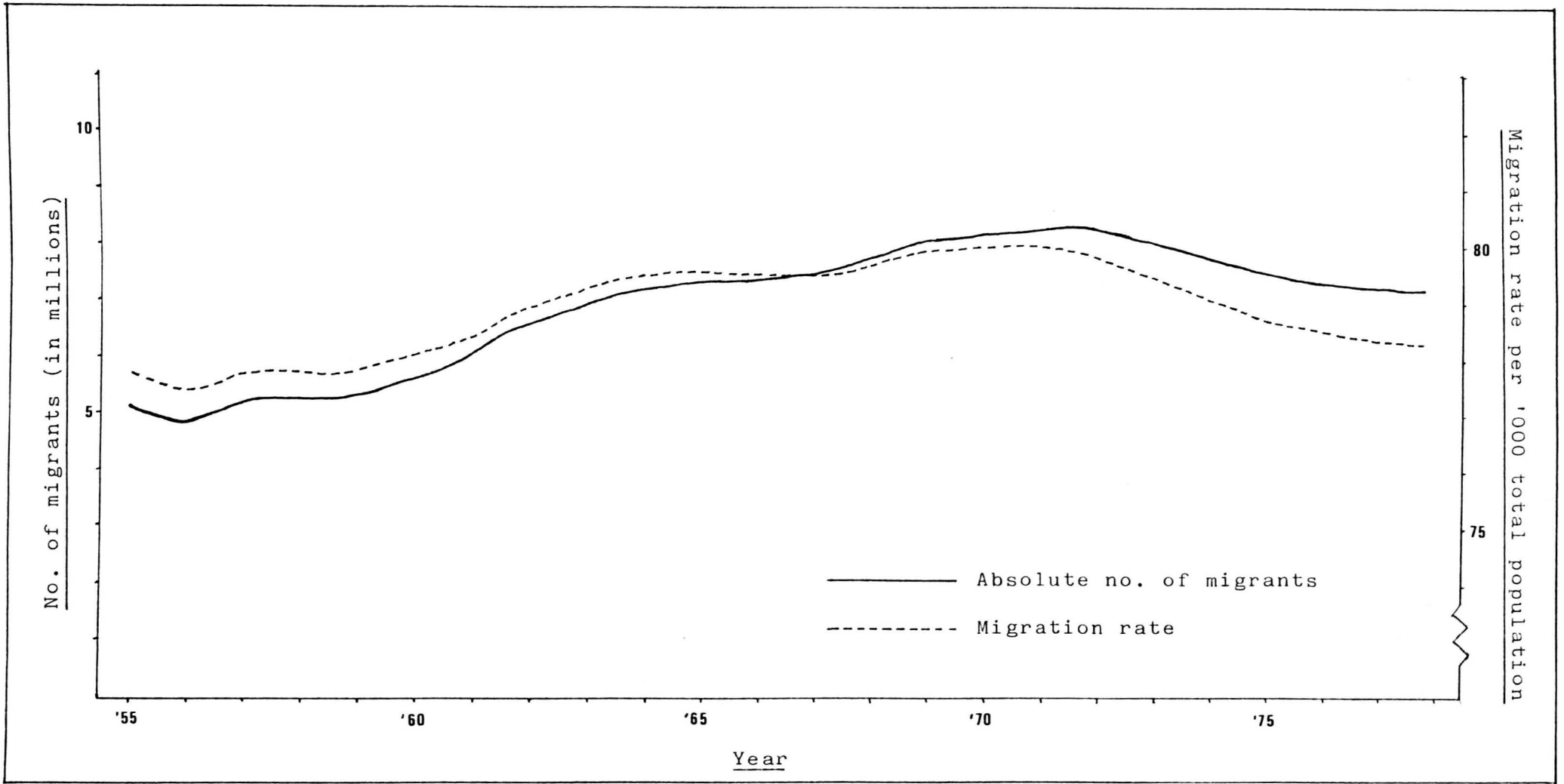
Figure 2.1   Number of inter-municipal migrants in Japan, 1955-1978.

ienced in the early 1960s. It is important to note when considering these figures that many more migrations occur within municipal boundaries, and that a significant proportion of these are likely to be rural to urban in character (see Chapter Four). Unfortunately, precise figures for the exact number of these moves each year are not available, but the 1970 Population Census does provide an indication of the number of all 'last changes of residence' which occurred during the period between October 1969 and September 1970. Altogether 12.4 million people were involved in such moves, representing 12% of the total population. Of these, 4.9 million changes of residence took place between places within the same municipality (Bureau of Statistics, 1970). This suggests that the yearly estimates of migration shown in Figure 2.1, which are based on the 'Report of Internal Migration in Japan', take account of only 60% of moves which actually occur.

With regard to the age selectivity of migrants, the 1970 Population Census records that 7.33 million people who made a 'last change of residence' after October 1969 were aged between 15 and 34 years. This group represents just under 60% of all migrants in that year, whilst the age group as a whole represents only 36% of the total population (Bureau of Statistics, 1970). Moreover, Imai reports that for the years 1960 to 1965, 65% of the in-migrants to the Tokyo metropolitan area were aged between 15 and 24 years, and a further 16% were aged between 25 and 34 years. Similar rates were also evident for the Osaka and Nagoya metropolitan areas during this period (Imai, 1968). Migrant selectivity is also apparent in terms of sex differentiation, with slightly higher proportions of males

migrating than females. In the year between October 1969 and
September 1970, for instance, it is recorded that 12.8% of the total
male population changed their place of residence, compared to 11.2%
of the female population (Bureau of Statistics, 1970).

Actual patterns of migration flow after 1955 are rather more
difficult to identify and analyse precisely. This is because,
in addition to migration streams from rural to urban areas, a number
of cross and counter-streams exist from rural to rural and urban to
urban places, as well as from urban to rural areas. Also, the
accurate delineation of rural and urban areas is extremely difficult
anyway, especially within the constraints of an inter-prefectural
or even an inter-municipality framework. However, Table 2.1
attempts to show that the main effect of internal migration since 1955
has been the reduction in the number of people living in 'rural'
households and an increase in the number living in 'urban' areas.
This, in turn, suggests that the predominant migration stream
throughout the whole period under consideration was from rural to
urban areas.

The main points to note in Table 2.1 are the decline of 36%
in the number of people living in farm households between 1955 and
1975, compared to a decline in the actual number of farm households
of only 18% over the same period. Simultaneously, the number of people
living in 'Densely Inhabited Districts' increased by more than 56%
after 1960, from 40.8 million to just under 64 million in 1975. It is
also important to note that in 1970, as many as 62% of the population
living in Densely Inhabited Districts were in the ten prefectures
which comprise the Tokaido metropolitan area, incorporating the three

Table 2.1: Changes in Rural (Farm household) Population and Urban (D.I.D.) Population, 1955-1975

Year	Total Population	Population Living in Densely Inhabited Districts	Population Living in in Farm Households	Total no. of Farm Households
1955	89276	–	36347 (40.7)	6043
1960	93419	40830 (43.7)	34411 (36.8)	6057
1965	98275	47261 (48.1)	30083 (30.6)	5665
1970	10?720	55535 (53.5)	26282 (25.3)	5342
1975	111934	63823 (57.0)	23197 (20.7)	4953

Figures in parentheses show percentage of total population

All other figures are expressed in thousands.

Source: Bureau of Statistics, 1977: "Japan Statistical Yearbook".

Figure 2.2   The Tokaido metropolitan area.

Source : Kaso Hakusho
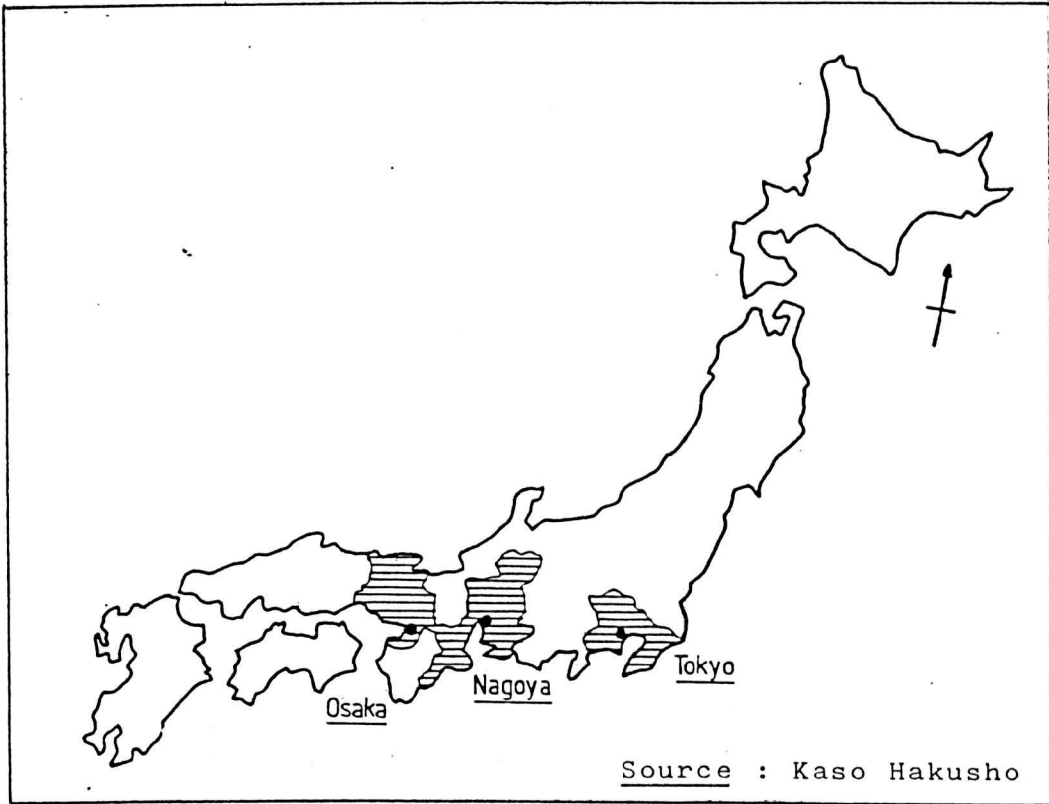
Figure 2.3   Net migration rates by prefecture,1972.

Source : Jinkō Mondai Hangikai, 1974
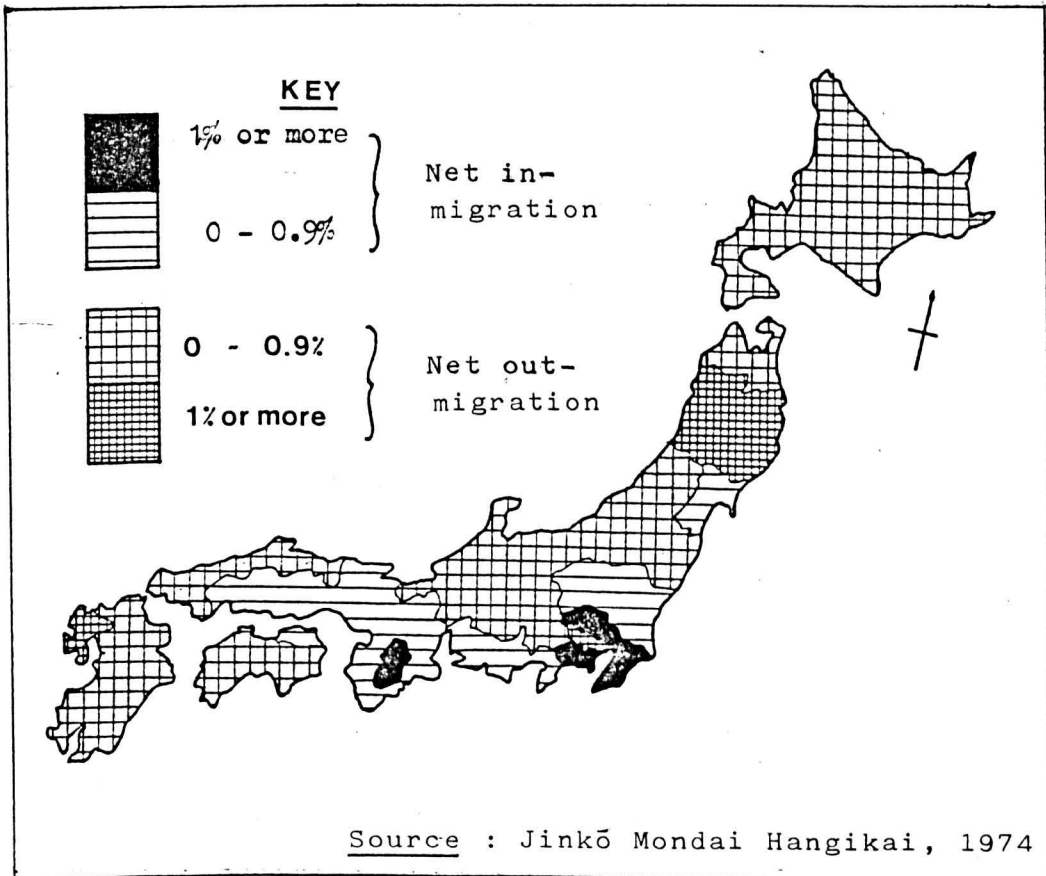
largest cities in Japan: Tokyo, Osaka, and Nagoya (Figure 2.2). It
is recorded that in 1965, one-third of all inter-prefectural moves
involved migration from places outside the Tokaido metropolitan
area to destinations within that area, and that 56% of these moves,
involving 670,000 people, were to destinations in the Tokyo
metropolis alone (Jinkō Mondai Kangikai, 1974).

Figure 2.3 shows net-migration rates by prefecture for the
year 1972. It is clearly seen that most prefectures either within
or bordering the Tokaido metropolitan area experienced net in-
migration, whilst there was net out-migration in the peripheral
districts of north-east and south-west Japan, and in prefectures
along the Japan sea coast. Heaviest rates of out-migration occurred
in Akita and Iwate prefectures, in the Tohoku region of north-east
Japan, and in Nagasaki and Saga prefectures on the island of Kyushu.
These can all be described as predominantly rural in character and,
in 1970, the percentages of the workforce in these prefectures
engaged in primary industries were 41.8%, 42.6%, 28.7%, and 33.3%
respectively, compared to the national average rate of only 19.3%
(Bureau of Statistics, 1970). 1972 is by no means an untypical year
in this respect, and similar patterns of high out-migration in these
areas are evident throughout the 1960s and early 1970s (Sōrifu Tōkeikyoku,
1977.)

The interesting feature which is highlighted in Figure 2.3
concerns the areas of net in-migration. In particular, highest
rates of net in-migration are found to occur, not in the major
metropolitan centres of Tokyo, Osaka, and Nagoya, but in areas just
outside these prefectures. In fact, Tokyo prefecture experienced

net out-migration, at a rate of 1.09%, in 1972. Rather than indicating a reverse flow back to the rural area, however, this illustrates a phenomenon referred to in Japan as 'doughnut expansion'. That is, people are leaving the central core districts of the metropolitan areas, where land is in restricted supply and rents have become prohibitively high, to move to suburban districts on the outer fringe of the cities. Here they are joined by migrants coming in to the metropolitan area from surrounding rural districts (Watanabe, 1972). Over time, the areas of most rapid growth have moved further and further away from the metropolitan centres (Table 2.2), until eventually the prefectural boundaries delineating the Tokaido metropolitan area have been crossed. Thus, it can be seen in Figure 2.3 that Nara prefecture experienced one of the highest rates of net in-migration in 1972, even though it is located just outside the Tokaido metropolis.

In 1976, for the first time, the combined prefectures of the Tokaido metropolitan area experienced net out-migration. Taken in conjunction with the fact that overall migration rates have steadily fallen since 1970, some commentators were lead to suggest that the age of massive rural to urban migration had come to an end (Mainichi Daily News; 23.5.1977). At the same time, a number of academics began to turn their attention to the study of the 'U-turn' phenomenon, or the return movement of migrants from urban back to rural areas (Kaino and Ōnishi, 1975).

Whilst this undoubtedly occurs to at least a limited extent, it is important not to ignore certain other vital indicators which suggest that one of the predominant migration streams after 1970 was still rural to urban in character.

Table 2.2:   Population Change by Area Within a 50 km Radius from the Centre of the Three Major

Metropolitan Districts 1955-1970

Metropolitan District	Distance from the Centre (km.)	Population Change					
		1955-1960		1960-1965		1965-1970	
Tokyo	0-10	549	(13.4)	-63	(-1.4)	-296	(-6.5)
	10-20	1213	(29.8)	1337	(25.3)	791	(12.0)
	20-30	387	(22.7)	846	(40.4)	1017	(34.6)
	30-40	259	(15.3)	717	(36.9)	1119	(42.1)
	40-50	55	(3.1)	274	(15.0)	423	(20.1)
Osaka	0-10	680	(20.7)	489	(12.3)	273	(6.1)
	10-20	269	(19.5)	681	(41.3)	530	(22.7)
	20-30	137	(13.3)	243	(20.7)	354	(25.0)
	30-40	130	(7.8)	252	(14.0)	316	(15.4)
	40-50	32	(1.9)	78	(4.5)	105	(5.8)
Nagoya	0-10	280	(19.1)	240	(13.8)	125	(6.3)
	10-20	100	(12.4)	220	(24.3)	216	(19.1)
	20-30	56	(7.8)	109	(14.0)	189	(21.2)
	30-40	98	(7.4)	123	(8.6)	83	(5.3)
	40-50	-5	(-1.0)	5	(1.0)	67	(12.4)

Population figures are expressed in thousands.

Figures in parentheses represent percentage change.

Source: Jinkō Mondai Hangikai, 1974; Nihon Jinkō no Dōkō, p. 198.

First of all, the number of commuters coming to work in Tokyo prefecture each day increased by some 400,000 after 1970, to reach 1.7 million in 1975 (Bureau of Statistics, 1975). This represents a massive rise of 30%, and must to some degree be explained by continued in-migration to the suburban area which surrounds the city. In view of the rapid outward expansion of this suburban area, it is likely that much of the in-migration was to places formerly considered to be outside the Tokaido metropolitan area. Prefectures such as Tochigi, for instance, situated to the north-east of Tokyo, are particularly notable in this respect. Here, there was a 2.4% decline of population in the period 1950 to 1960, which turned to a 4.4% increase in the subsequent ten year period then, between 1970 and 1975, the population increased by as much as 7.47% (Bureau of Statistics, 1975). One third of this population increase, in the five year period after 1970, was accounted for by net in-migration (Sōrifu Tōkeikyoku, 1977).

Further evidence of continued rural out-migration after 1970 is provided by a detailed comparison of population change rates, by municipality, for the periods 1965 to 1970 and 1970 to 1975 (Table 2.3). Municipalities are grouped according to whether they are in the Tokaido metropolitan area, or in tne non-metropolitan area, and then sub-divided into shi and gun areas. Shi or 'city' municipalities are generally taken to represent urban areas, whilst gun municipalities comprise 'towns' and 'villages', and may be taken to represent the rural area. A further sub-division is made by isolating 'prefectural capital' municipalities. These are the administrative territories in each prefecture which incorporate the kenchō, or prefectural office.

Table 2.3: Percentage Population Change for Urban (shi) and rural (chō-son) municipalities, 1965-1975

		$1965/1970$	$1970/1975$
Urban (shi) Municipalities	(Total Area	8.7	8.3
	((Tokaido Metropolitan Area	12.6	10.4
	(Non-metropolitan Area	4.3	5.7
Rural (chō-son) Municipalities	(Total Area	-1.9	0.2
	(Tokaido Metropolitan Area	-2.4	10.5
	(Non-metropolitan Area	-1.7	-2.2
Municipalities which incorporate the pre-fectural office (Kenchō)	(Total Area	5.9	5.2
	(Tokaido Metropolitan Area	3.5	1.8
	(Non-metropolitan Area	10.4	11.2
	Tokaido Metropolitan Area (urban and rural)	10.6	10.4
	Non-metropolitan Area (urban and rural)	1.8	2.7
	Japan	5.5	6.2

Source: Kaso Hakusho, 1975; 6

Usually they are found in the largest and most important town or city in the prefecture.

Table 2.3 clearly shows how population growth in the period 1965 to 1970 was concentrated in the Tokaido metropolitan area, where there was a 10.6% increase of population compared an increase of only 1.8% in the non-metropolitan area. In particular, highest growth rates occurred in 'urban' municipalities, whilst 'rural' areas experienced a net loss of population averaging 1.9%. This pattern is largely explained by the rural exodus of people from districts on the periphery of the Tokaido region and in the non-metropolitan area to the urban centres in and around Tokyo, Osaka, and Nagoya. Although natural population increase accounted for an increasingly important share of overall population growth in these metropolitan centres after 1965, there were few, if any, municipalities in the non-metropolitan area which experienced natural population loss at this time (Bureau of Statistics, 1970; Watanabe, 1972).

After 1970, population growth in 'urban' municipalities continued at a slower pace than during the previous five year period, whilst in 'rural' areas population loss turned to a modest increase. This could suggest a general reduction in the pace of the rural exodus after 1970, but it is important to note that the increase in rural population was entirely concentrated in municipalities within the Tokaido metropolitan area, whilst 'rural' municipalities outside that area experienced even greater rates of population decline than before. A more suitable explanation, therefore, is that this is merely a further manifestation of the outward extension of the suburban area surrounding the major cities of Japan. In Kyoto-fu, for instance, which lies within the Tokaido metropolitan

area, the 'rural' municipalities of Oyamazaki-chō, Tanabe-chō, and Kizu-chō all experienced net in-migration, in the order of 5% in the year 1975 alone. All these municipalities are within easy commuting distance from the major cities of Kyoto and Osaka, and most of the employed populations living there work in these two cities (Kyoto-fu, 1978).

Situated not far away from this area in neighbouring Shiga prefecture, is the prefectural capital, Otsu-shi. Although it is located just outside the Tokaido metropolitan area, the city houses many people who work in the Osaka-Kyoto metropolis. Along with most other 'prefectural capital' cities in Japan, Otsu-shi experienced substantial net in-migration after 1970. In 1973, just under 40% of the in-migrants here came from Osaka and Kyoto prefectures, whilst a further 20% came from surrounding rural municipalities within Shiga prefecture (Shiga-ken, 1973). Quite clearly, the high growth experienced here after 1970 derives from the increasing peripheralization of population around the core metropolitan centres, as well as continued migration from outlying rural areas. A very similar situation is found in most of the other non-metropolitan prefectures surrounding Kyoto and Osaka, notably in the prefectural capitals of Nara, Wakayama, and Okayama (Bureau of Statistics, 1975).

Besides Otsu-shi a number of 'rural' municipalities in Shiga prefecture began to experience net in-migration after 1970, as suburban growth moved steadily outwards from the metropolitan core regions. In 1976, Ishibe-chō received 3 in-migrants for every 2 people who left the municipality, and similar ratios were experienced in Shiga-chō and Rittō-cho. All these municipalities are situated in the immediate vicinity of Otsu-shi, and have good transport links

with Kyoto and Osaka. Further north in the prefecture, however, in
rural municipalities which are well beyond daily commuting distance
from these cities, net out-migration continued to be the normal
pattern throughout the whole period under consideration. Although
in 1976 migrant ratios tended to be no more than 11 out-migrants to
every 10 in-migrants, the total area thus affected amounted to more than
two-thirds of the entire prefecture (Shiga-ken, 1976). In prefectures
which are generally much more isolated than Shiga-ken, such as Aomori,
Iwate, Nagasaki, and Kagoshima, it seems likely that the incidence
of rural municipalities which experienced continued net out-migration
throughout the 1970s is even greater.

Despite the lack of sufficiently detailed information on gross
migration flows between, or within rural and urban areas, a general
summary of the rural exodus in post-war Japan can now be attempted.
First, in the period 1955 to 1970, there is little doubt that the
movement of population from rural districts to urban areas, centred
in particular on Tokyo, Osaka, and Nagoya, constituted the major
migration flow of the time. After 1970, the overall volume of
migration declined slightly, and migrant streams directed away from
the metropolitan core centres began to predominate. This movement
was directed to both urban and rural municipalities situated on the
fringe of the metropolitan area, or to large prefectural capital cities
located further away. As a result of this suburban growth, many
so-called 'rural' areas experienced rapid increases of population
through net in-migration, to such an extent that the rural exodus
appeared to be at an end. In fact, large numbers of rural areas

continued to lose population through out-migration after 1970, although it is possible that the actual numbers of migrants involved began to fall slightly. This, however, may be simply accounted for by the fact that base populations were declining anyway, as a result of previous out-migration. It is therefore suggested that, in areas which have remained so-far unaffected by metropolitan suburban growth, the rural exodus remains a major factor in the determination of demographic change.

2.3 INDUSTRIAL DEVELOPMENT, 1945-1972

The initial concern of the Allied Occupation authorities in Japan at the end of the War was to inaugurate a series of ideological reforms based on established Western principles of democratic government. The provision of a new civil constitution, and the Land Reform, which reorganized agriculture on 'a democratic basis', clearly reflect this attitude (Dore, 1959). Then, the gradual increase in intensity of the Cold War in Europe caused the Occupation authorities to realise the need for a powerful and economically independent ally in East Asia. As a result, their emphasis shifted during the late 1940s towards economic reform and the rebuilding of Japanese industry. Despite some initial pessimism concerning the ability of Japan to achieve high rates of economic growth (Kahn, 1970), America in particular arranged for considerable amounts of financial aid to be provided for the planned economic revival. In 1949 alone this amounted to more than 535 million dollars (Anthony, 1980).

It was the outbreak of war in Korea, however, which provided the greatest impetus to the rejuvenating Japanese economy. Manufacturing industries became heavily relied upon to provide all

manner of supplies to the Allied armies in South Korea and this earned considerable income, together with its associated multiplier effects, for reinvestment in industry. In contrast to the situation in 1945, when 44% of factories in Japan lay devastated, in 1951 the production index for manufacturing industries regained the level of pre-war production peaks, and by 1955 the wartime production peak established in 1944 had also been exceeded (Trewartha, 1965, 254.)

During the latter half of the 1950s it was the light industries sector, producing optical equipment, textiles, sewing machines, and the like, which fronted Japan's economic resurgence (Kornhauser, 1976). A characteristic feature of manufacturing industries in this sector is the 'dual structure', in which small firms predominate. In 1957, 75% of all manufacturing enterprises in Japan employed less than 10 people, whilst only 1.5% employed 100 or more people (Bureau of Statistics, 1960). These small firms either produce their own finished products, or they may be integrated with larger establishments and produce component parts only. A feature they share is a high degree of efficiency, coupled with low labour costs. Wage levels in these small enterprises were often no more than half those in larger companies (Trewartha, 1965, 268.) As a result, they achieved a highly competitive position in the international markets, and soon established a major export trade.

Another important factor at this time was the re-emergence of the zaibatsu (literally meaning financial group, or clique), such as Mitsubishi, Mitsui, and Sumitomo. In pre-war years the zaibatsu were family-owned financial-trading conglomerates, which exercised considerable, monopolistic control over Japanese production and trade. In

1947, the Occupation authorities attempted to break this control by dissolving the zaibatsu, with the aim of 'reducing economic concentration in favour of a system of intensive and relatively free competition' (Kornhauser, 1976; 127). This 'dissolution' was relatively ineffective, however, and companies like Mitsui & Co. were soon able to reform under a different trading name. Mitsui became Daiichi Bussan, and then in 1959 reverted back to its original name (Japan Business History Institute (ed.), 1977). In the 1950s, therefore, these companies still exercised a considerable degree of monopolistic control, with huge vertically integrated organizations which combined interests in production as well as trading and banking. By 1969, gross sales for the Mitsubishi group, the largest of the postwar zaibatsu, amounted to 4.6% of all Japanese company sales (Halliday and McCormack, 1973; 110).

The particular relevance of the reemergence of the zaibatsu is that they provided the means by which funds generated by export sales in the light industries sector could be transferred for reinvestment in the heavy industries sector. This was achieved either directly, where the zaibatsu had a controlling interest in light manufacturing firms, or indirectly from the profits generated by their role as export agents and financiers. The desire of the zaibatsu to reinvest in heavy industries was due to the simple fact that steel and chemical products in particular were considered to be indispensible to the successful running of a general trading company (Japan Business History Institute (Ed.), 1977; 193). This is because they are highly standardized products, used mainly as intermediate materials for other manufacturing industries. The large demand for steel and chemicals

means that trading companies inevitably benefit from the large volumes they handle.

Throughout the 1950s, heavy industries such as iron and steel, ship building, and petro-chemicals had been gradually rebuilding, to a scale much greater than that seen in pre-war years. By the time Prime Minister Ikeda announced his 'Income Doubling Plan' in 1960, these industries were able to assume the leading position in the industrial structure. Based on the latest technological developments of the time, Japan's heavy industrial products were soon able to achieve highly competitive positions in world markets. In terms of actual quantities, the production of crude steel was 5 million tons in 1950, increasing to 22 million tons in 1960, and over 93 million tons in 1970. By this time, Japan's share of world production was 15%, making Japan the third largest steel producer anywhere. Also by 1970, Japan was the world's largest ship builder, producing over 10 million gross tons of merchant vessels, and the world's largest producer of commercial vehicles, televisions, and radio receivers (Bureau of Statistics, 1973).

The shift in emphasis from light to heavy industries was inevitably accompanied by changes in the distribution of manufacturing industry. The Tokaido region offered obvious advantages for the siting of new plants. It was already the major centre of population and, in historical terms, had long been the focus of political power and economic activity in Japan (Trewartha, 1965). Also, the very name 'Tokaido', which literally means 'road along the eastern seaboard', is indicative of the fact it is located on the oldest and most important roads and lines of communication in Japan. Probably the

most important locational consideration, however, was the need for sheltered, deep water port facilities for vessels bringing vital supplies of imported raw materials, notably oil and iron ore. Only the Pacific shoreline offers these facilities, and ports such as Yokohama (near Tokyo), Kobe (near Osaka), and Nagoya became favoured sites. Significantly, the areas where coal - Japan's only major natural resource - was mined, in Hokkaido and northern Kyushu, remained comparatively undeveloped. This was the result of a deliberate policy in the immediate post-war years to switch from coal to imported oil as the principal fuel for the nation's power supply (Odell, 1970). Thus, other areas in Japan, including the small fishing and ferry ports on the Japan Sea coast which are suitable only for shallow draught vessels, began to seriously lag behind the Tokaido region in terms of industrial development.

The trend towards rapid concentration of industry in the metropolitan districts of the Tokaido region was given further stimulus by the running down of certain 'throw-away' industries, many of which were formerly located in peripheral rural districts (Economist, 1963; Kahn, 1970). Such industries included coal-mining, paper making, certain branches of textile production, and numerous other agriculture and forest related products. They were regarded as inefficient, or uncompetitive, by the Japanese government and the large trading monopolies, and subsequently allowed, by lack of positive assistance from these bodies, to run down. In effect, the zaibatsu were involved in the transfer of resources from inefficient to efficient sectors of the economy, a move which not only involved the transfer of capital from one sector to another, but also the transfer of labour (Kahn, 1970; 94).

Whilst the overall scale of this process is difficult to judge, the decline of selected rural industries can be readily traced. In the years before World War II, small sake (rice wine) brewing establishments, for example, were to be found scattered all over Japan. They were located in villages as well as towns, wherever rice was cultivated and where there was a good, pure water supply. With improved techniques of production and distribution in the post-war years, larger breweries with ready access to funds for investment, particularly those located in Kyoto and Kobe, were able to expand, and take an increasing share of the national market. They then took over many smaller breweries who were unable to compete, though for a while they still relied on many of these small, family run concerns for the supply of 'raw' sake. Ultimately, however, small rural breweries have virtually disappeared, as the larger enterprises continue to rationalize and centralize the production process. Thus, whereas in 1967 there were 3,800 breweries still in operation, the number had fallen to 3,200 by 1975 (Yokota, 1977). It is also of interest to note that many of the large breweries in Kyoto and Kobe still rely on skilled labour from the rural areas, who seasonally migrate to work in the breweries during the winter months, after the rice harvest.

Another rural industry which suffered a dramatic decline after 1960 is charcoal and firewood production. Traditionally, firewood provided the fuel for cooking in Japanese homes whilst charcoal was placed in clay hibachi, where it was   burnt for warmth. Since most homes in Japan are built of wood, open fires are clearly unsuitable and alternative fuel sources could not be used. Thus, in 1960, 3% of Japan's total energy requirement was provided by charcoal, and

5% by firewood (Ikegami, 1975). The so-called 'energy revolution' which followed the switch from solid to oil based fuels, and which saw the introduction of propane gas for heating and cooking in the late 1950s, was the main reason for the rapid demise of charcoal and firewood production. In 1960, over 1.5 million tons of charcoal were produced, but by 1965 production had fallen to 600,000 tons, and in 1969 to just 250,000 tons (Nōrinshō, 1975). In 1974, only 75,000 tons were produced, providing winter employment in just a few forest areas, mostly concentrated in the Kansai region. Here, high quality charcoal is still produced in small quantities to provide the Geisha houses in Kyoto with their traditional fuel supply (Kawanishi-shi Kyōiku I-inkai, 1975).

The significance of charcoal burning is perhaps only slight when considered in terms of the total value added by manufacturing in the country as a whole. Even in 1960, when many traditional rural industries still survived, the percentage of the total value added in the peripheral rural regions (including Hokkaido, Tohoku, Hokuriku, Sanin, southern Kyushu, and southern Shikoku) was only 14% of the national total. In contrast, the metropolitan regions of Kanto (Tokyo) and Kansai (Osaka-Kyoto) accounted for 56% of the country's value added by manufacturing (Trewartha, 1965).

The continued trend for industrial concentration in the Tokaido region is further illustrated by the fact that in 1963, 42% of all manufacturing enterprises were located here, rising to just over 45% in 1972 (Bureau of Statistics, 1972). Despite severe restrictions on space, new industries could still be attracted to the region by a number of coastal land reclamation schemes undertaken during the 1960s. Huge 'industrial parks' have been created by this means, such

as at **Mizushima**, in Okayama prefecture, which often incorporate apartment blocks for the employees, schools, and medical facilities, as well as factory and office space (Kornhauser, 1976).

By 1972, 56% of all manufacturing employees in Japan were engaged at factories located within the Tokaido region. In addition, the increasingly important roles of finance and banking, and of export and import agencies, all of which are concentrated in the financial centres of Tokyo and Osaka, produced an equivalent spatial concentration for jobs in the clerical professions. In 1972, 54% of all people employed in clerical and related occupations worked in the Tokaido region. Similarly, 50% of all sales workers were also employed here (Bureau of Statistics, 1972).

The scale of economic growth and industrial development which Japan experienced during the 1960s can be appreciated from figures showing the increases in the number of people employed in secondary and tertiary occupations after 1950 (Table 2.4). Between 1950 and 1970, the number of people employed in secondary industries increased by 227%, from 7.8 million to 17.7 million. Eighty per cent of this increase was taken up by extra employment in manufacturing industries alone. Over the same period, almost exactly the same rate of increase was experienced in the tertiary sector, where the number of people employed increased by 230%, from 10.6 million to 24.3 million. Such increases could not possibly have been achieved without a major occupational shift away from jobs in the primary sector, notably agriculture, where there was a 41% decrease in employment between 1950 and 1970.

This occupational shift is clearly shown in Figure 2.4. The triangular graph illustrates how there was a steady, and quite rapid

Table 2.4: Changes in the Japanese employment structure by

industrial Type, 1950-1970.

Year	No. of people engaged in primary industries	No. of people engaged in secondary industries	No. of people engaged in tertiary industries
1950	17208	7812	10568
1955	16111	9220	13928
1960	14239	12762	16704
1965	11738	15242	20623
1970	10087	17706	24298

Population figures are expressed in thousands.

Source: Jinkō Mondai Hangikai, 1974: Nihon Jinkō no Dōkō, p. 333.

Figure 2.4: Triangular graph showing changes in the

ratio of people employed in primary, secondary,

and tertiary industries, 1950-1970.
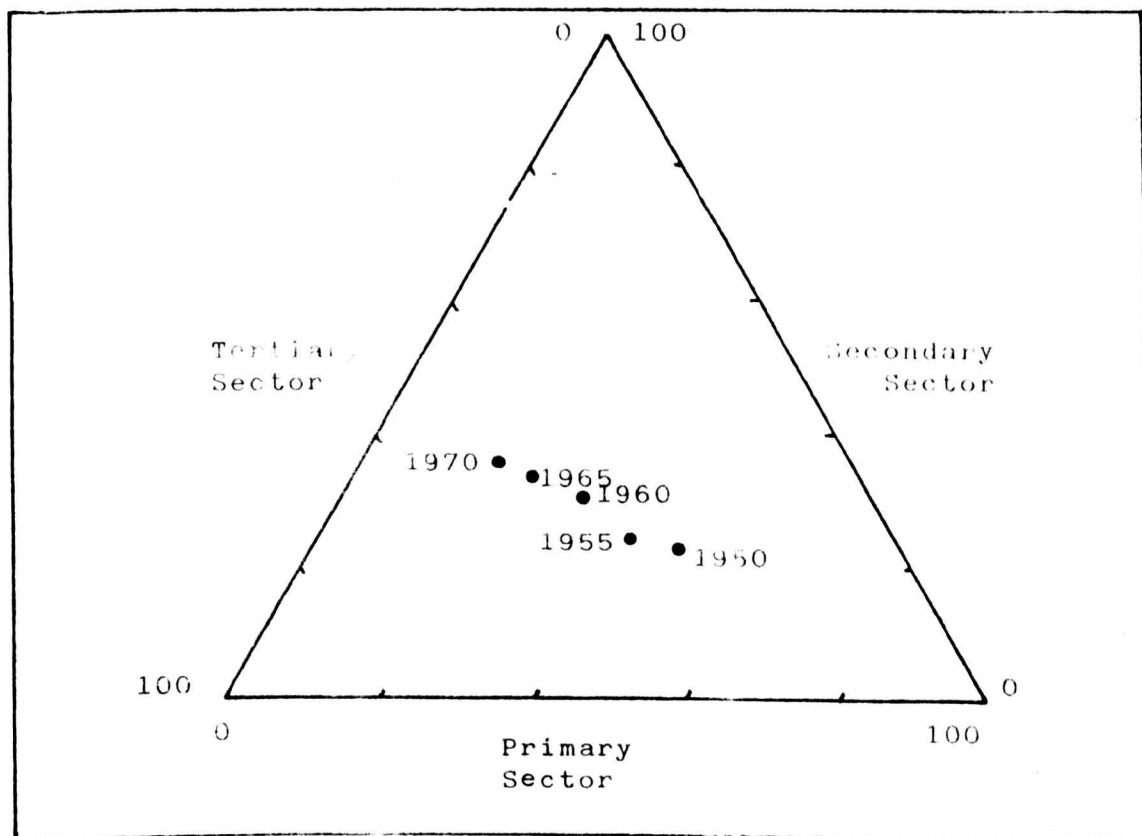
movement away from the primary sector after 1955 towards the secondary and tertiary sectors. Whereas in 1955 just under half the employed population were engaged in primary industries, with 22% in secondary and 30% in tertiary industries, by 1970 there were only 19% in the primary sector compared to 34% in the secondary sector and 47% in the tertiary sector. Having already shown that secondary and tertiary sector employment opportunities tended to be heavily concentrated in the Tokaido metropolitan region, the obvious conclusion is that the occupational shift away from agriculture was necessarily accompanied by a residential shift from the prefectures in the rural periphery to the urban centres around Tokyo and Osaka. Before looking in detail at the actual mechanisms by which the rural exodus occurred, however, it is necessary to gain a closer understanding of developments in Japanese agriculture during the post-war period, to discover the reasons why such a substantial part of the agricultural labour force could be released so readily.

2.4 JAPANESE AGRICULTURE

Compared to Great Britain, or the United States, where the proportion of the workforce engaged in primary industries is something in the order of only 3%, it may seem strange that a country like Japan, which has achieved a leading position in international markets for manufactured goods, should have maintained as many as 17% of its workforce in agriculture, even as late as 1970. Alternatively, it may be wondered how Japan managed to shed as much as two-fifths of its agricultural labour force in the relatively short 15 year period prior to 1970, without an apparent detrimental effect on domestic food product n (Nōgyō Hakusho, 1976). The fact is that a

very careful balance had to be kept between the desire of industrialists to draw the labour pool from agriculture into more efficient sectors of the economy, and the desire of government to maintain existing levels of domestic food production in order to keep reliance on imported foods as low as possible.

Japanese agriculture is dominated by rice cultivation, being "the single most important crop in terms of acreages, production, value, and general social significance." (Ginsberg, 1958; 96). Since 1945, rice grown in paddy fields has consistently accounted for about 55% of the total cultivated area, and between 50% and 60% of the total value of all agricultural products (Norinshō, 1977). Yet, despite a fall in the number of people engaged in agriculture, from 16.1 million in 1950 to 6.7 million in 1975, rice yields during the same period rose by just under 50% (Nōgyō Hakusho, 1976). It therefore seems clear that the people who quit agriculture after 1950 formed a rural surplus population whose marginal utility to agricultural production had become minimal, or perhaps even negative. In order to understand how this surplus population was formed, it is necessary to review government policies towards agriculture since the end of World War II.

The first major legislation affecting agrarian economy and society at the end of the War was the 1946 Land Reform. Its primary objective was to establish the many landless tenant farmers, who formed the majority of cultivators in the prewar period, as owner-occupier farmers (Dore, 1959). Under the pre war system, Japanese agriculture was controlled by landlords who operated a system of 'semi-feudal bondage' on their peasant farmers (Hasami, 1973; 8). In 1944, the proportion of farm land under tenant cultivation was about 53% for paddy, and 40% for upland. As much as half of the

cultivated land at this time was held by just 7.5% of all land-
owners (Trewartha, 1965; 181). Since the amount of land suitable
for cultivation in Japan is extremely limited, the relatively few
large landowners were able to exercise considerable control over the
more numerous tenant cultivators, who had no option but to accept the
conditions imposed on them. Rents, which were paid in kind, usually
amounted to at least half the rice crop, and landlords were often
able to exact extra charges - for the use of irrigation ditches, for
instance - and to impose conditions of extra labour and service
to be undertaken on their own farms. Not uncommonly, therefore,
farmers were 'chained' to their land in a situation of perpetual debt
(Beardsley, Hall, and Ward, 1959; 141).

In his 'Memorandum on Rural Land Reform', dated December 9th,
1945, General MacArthur stated that the purpose of the intended
Reform was to

> ... exterminate those pernicious ills which have
>
> long blighted the agrarian structure of a land
>
> where almost half the total population is engaged
>
> in husbandry (cited in Kajita: Agriculture Policy
>
> Research Committee, 16; 27)

Alongside the general principle of democratization of the
Japanese people, MacArthur realised that speedy enactment of the
Reform was essential to help solve the situation of acute food
shortage which existed at that time. In particular, it was recog-
nized that increased productivity could not easily be achieved under
the existing landlord system, since tenant cultivators would not have
sufficient incentive to experiment with new techniques, or to attempt
to clear marginal land (Hasami, 1973). Moreover, it was realised

that the huge numbers of displaced townspeople and repatriated soldiers coming into the rural area would have to be provided with gainful employment in order to lessen the burden on existing rural populations. The redistribution of land was regarded as the most obvious means to provide an income for these people (Misawa, 1971).

The main features of the 1946 Land Reform were that the government purchased, under compulsory order, 1.7 million hectares of agricultural land from the larger landowners. This was then resold to 4.7 million farmers, who became owner-occupiers, on very easy terms. Also, all absentee landlordism was abolished and it became unlawful to rent more than 1 hectare of land per household to tenant farmers. The result was an overall increase in the number of farm families, from 5.5 million in 1940 to 5.9 million in 1947, and an increase in the population employed in agriculture from 13.4 million to 16.6 million (Nōrin Tōkei Kyōkai, 1976).

The main criticism levelled against the Land Reform is that whilst it created improved opportunities for increased productivity, it did nothing to alter the situation of small, fragmented land holdings which characterize Japanese agriculture. In fact, the increased number of farm families meant that the average size of cultivated land holding was even less than it had been before the War. In 1950, the average size of holding was just over one hectare, with 71.4% of farms owning less than one hectare, 39.8% owning 0.5 ha or less, and 23.1% owning 0.3 ha or less (Nōrinshō, 1970). As Fukutake concludes:

> The problem of atomized holdings, the cancer of
> Japanese agriculture, was not cured by the post
> war Land Reform. It had in fact become even
> more serious (Fukutake, 1967; 21)

The problem is also highlighted by Smith, who suggests:

It may be said with some justice that ... the

hardest hit of all were the medium-sized and

small resident landowners and owner cultivators.

It is they who were left with holdings just

large enough to tie them to the land, but inade-

quate to provide them a living from full-time

agriculture (Smith, R., 1978; 95).

Within just a few years of the Land Reform, agricultural

production regained pre war levels and, in 1956, following the first

of many bumper harvests to come, a new record production level

was established. In this respect the Land Reform was successful

in its aims, but it was not long before government legislation was

required again, to ease other problems now facing Japanese agri-

culture. This was the time when industrial recovery was beginning to

proceed rapidly, and increased productivity rates in the manufactur-

ing sector were reflected in higher wage levels paid to factory

workers. In the rural areas, however, the potential for further

increases in productivity was limited by the small size of farm

holdings, and increases in agricultural incomes were kept to fairly

modest levels in comparison (Shimohirao, 1973). This was also a time

when the cereal self-sufficiency rate for the country as a whole

began to decline noticeably, largely due to a change in dietary

habits towards 'Western' style foodstuffs based on wheat rather

than traditional Japanese rice dishes (Yuize, 1978). In response to

these problems, the government recognized a threefold need to increase

agricultural productivity further, by encouraging the adoption of

labour saving machinery; diversifying crop production; and maintaining agricultural incomes at a level equivalent to incomes in non-agricultural activities. The last of these is a politically expedient aim, since the Conservative (Liberal Democratic Party) government in Japan is largely dependent on rural votes for its power base. Approximately 60% of LDP votes come from people employed in primary industries (Yuize, 1978).

In 1961, the government formalized these objectives in the Agricultural Basic Law: a "declaration of the direction in which Japan's agriculture should proceed", to stand "above all other laws and regulations relative to agriculture" (Yuize, 1978; 287). It was the first of the objectives - to increase productivity through the adoption of labour saving devices - which undoubtedly met with the greatest success. So rapid was the development and adoption of agricultural machinery, particularly during the latter half of the 1960s and early 1970s, that by 1974 Japan led the rest of the world in mechanized power per unit area (Fukutake, 1974; 47).

Although the use of mechanical devices is not a new phenomenon in Japanese agriculture - a form of Archimedes screw to raise water for irrigation was in use during the Tokugawa period - it is only since the war that electrical or petrol driven devices have been introduced on a large scale. Alongside motors for pumping, the first machines to be powered in this manner were threshers and hullers in the 1950s. Despite the relatively high cost of such machinery, farmers were not slow to realise their potential and, as a result, between 1946 and 1962, capital investment in farm machinery and other implements increased by 260% (Misawa; 1971).

The main drawback to the introduction of more agricultural machinery, however, was the problem of designing machines small and robust enough to be used in the minuscule paddy fields which are separated from each other by banks and irrigation ditches, and often terraced.

During the 1960s these problems were overcome with the development of three machines which, between them, could be utilized in the entire rice growing process. First of all the power tiller, which was in widespread use by 1965, removed much of the back-breaking labour involved in turning the heavy soil before planting. Then, the introduction of the harvester in the late 1960s removed the necessity for all family members to go into the fields and cut the rice by hand. Perhaps more than any other mechanical aid, however, the rice transplanter, which first went into mass production in 1968, has done the most to reduce the agricultural labour requirement. It "eradicated at a stroke the part of the process of rice production most heavily involved with ritual and co-operative behaviour." (Smith, R., 1978; 89). Prior to its introduction it was usually necessary for the whole village to get together to plant fields, one after the other, as they were flooded in turn. This was an extremely hard, labour-intensive operation requiring considerable speed. It relied heavily on people who normally, throughout the rest of the year, had little to do with agricultural operations. Even though it is still the custom for people to return to their native villages during the spring holiday season to lend a hand with the transplanting operation, the labour saving of the transplanting machine is considerable. Together with the introduction of other machines, and also a considerable range

of chemical fertilizers, insecticides, and weed-killers, these
innovations have resulted in substantial cut-backs in the agricultural
labour requirement. In 1953 the national average labour required from
ploughing to baling of rice was 187 man hours per 10 ares. By 1971
it had fallen to 110 man hours, and in 1975, after the widespread
adoption of rice transplanters, to only 82 man hours (Smith, R., 1978;
81).

The effect of this on the formation of a labour surplus in rural
areas, and subsequent migration to urban districts would, at first
glance, seem obvious. It is argued, for instance, that the labour
saved through the introduction of farm machinery was the principal
cause of the rural exodus in the period between 1952 and 1960
(Shimohiraō, 1973). Namiki (1960) similarly believes that one of the
main reasons that the labour replacement rate in agriculture fell
so rapidly during the 1950s was that the adoption of mechanical aids
meant less labour was actually required. On the other hand, the
findings of a survey undertaken in 1963-1964 reveal that 84% of
families purchased a power tiller for the main reason that the farm
labour force had already shrunk in size (Smith, R., 1978; 91). Whether
increased mechanization after 1965 played a causal role in the
continued rural exodus up to 1970 or so, or whether the declining
agricultural labour force made it necessary for farmers to invest
in new machinery remains, therefore, unclear. What is apparent
is that agricultural mechanization occurred co-incidentally with the
rural exodus and thus ensured that despite a fall in the agricultural
workforce, levels of agricultural production were not adversely
affected.

The second and third objectives of the Agricultural Basic

Law - the diversification of crop production, and the pegging of

agricultural incomes to wage levels in non-agricultural industries -

are closely related, and can be considered together. In fact, the

relationship has proved to be an inverse one, since the pegging of

agricultural incomes is closely linked with the amount of rice

grown by farmers. The resultant incentive to grow more rice has

necessarily reduced the desire of farmers to attempt diversification of

crop production, and this objective has consequently failed. This is

illustrated by the fact that reliance on imported foodstuffs, notably

cereals, has actually increased since 1960. In that year, Japan's

self-sufficiency rate was 83%, but by 1970 this had fallen to just

under 50% and in 1974 stood at only 40% (Mainichi Daily News, 21.11.1977).

A far greater problem, however, has been the gradual build up of a rice

surplus since the mid 1960s. By 1978 rice stockpiles amounted

to 4.5 million tons, equivalent to two and a half years supply

for the domestic market. This resulted in the introduction by the

government of enforced curbs on rice production and the payment of

non-production subsidies to farmers. The inevitable consequence

has been a further increase in the size of the agricultural labour

surplus.

Between 1965 and 1970 the proportion of farms dependent on

rice as their main source of income actually rose from 58% to 62.5%

(Nōrinshō, 1975). The only area where there was a noticeable shift

away from rice cultivation was in villages on the urban fringe, where

good accessibility to rapidly expanding centres of population caused

farmers to switch emphasis to more profitable market gardening

(Shiga-ken Tōkei Dayori, Dec. 1976). Elsewhere, although both
fruit and livestock production have increased since 1960, these
tend to be concentrated in upland fields in mountain villages and
have not affected production of rice. Also, cultivation of
citrus fruits, for example, is confined to the relatively narrow
south-facing sub-tropical coastline between Tokyo and Kyushu, so
the benefits which accrue from higher production levels are not
widespread. Production of cereals (excluding rice), on the other
hand, has shown a considerable decline in post-war years. Whereas in
1950 1.8 milliom ha. were planted in wheat, by 1970 the area under
wheat cultivation had fallen to just 230,000 ha (Nōrinshō, 1975). Much
of this land was paddy field which was double cropped, producing
rice in the summer and wheat in the winter months. Despite the
fact that wheat yields increased even more than rice in the period
1950-1973, the returns on wheat production have always been relatively
low - netting less than half as much per 10 ares as a good monthly
wage (Smith, R., 1978; 100). Domestic wheat producers were aided
to some extent by price support subsidies from the government but
foreign competition in the form of cheap imported grains has been
the crucial factor making wheat less profitable than rice production.
As a result there has been a consistent decline since 1950 in the
number of farmers making the effort to plant winter wheat, and farmers
now prefer to seek alternative sources of income.

Rice has for centuries been the staple crop of Japanese
agriculture. The development of a situation of rice surplus in
recent years, however, is directly attributable to specific rice
production policies adopted by the government since 1942. In that

year, in an effort to minimise the potential disastrous effects of
food shortage, the government passed the Staple Food Control Law.
This made it the legal duty of farmers to sell a pre-determined amount
of rice directly to the government each year. Delivery quotas, and
the price paid to rice producers were determined annually at a joint
conference between representatives from the Ministries of Agriculture
and Finance. Free market rice also could only be sold to official
government agents, who controlled the distribution of rice to the
consumer. In 1942 the delivery quota, which is expressed in terms
of a percentage of the estimated total rice crop, was 61.4%. After
the war, during the occupation, the quota was approximately 42%,
and by 1954 it had fallen to just under 30%. Bonus payments were
offered to farmers who sold more than the delivery quota to the
government, as well as schemes for advance payment and special tax
concessions (Dore; 1959; 230). A series of bumper harvests in the
early 1950s finally cleared the situation of food shortage and in
1955 the system of imposing delivery quotas was ended.

After 1955, however, the government continued to buy rice
directly from farmers. Then, in 1960 the government decreed that
the price paid to rice producers should be based on a 'production cost -
earnings compensation scheme'. In other words an attempt was made
to bring agricultural earnings on to a parity with industrial wage
levels. As a result rice payments during the 1960s increased by an
average of about 10% a year and in 1965 58% of the rice harvest was
sold directly to the government (Itsumi, 1973; 196).

In the mid-1960s domestic rice consumption began to decline -
from a peak of 118 kg of polished rice per capita in 1962 to 100 kg

in 1969. This reflected an increased demand for wheat products,
made from cheap imported grains, increasing from 26 kg per capita
in 1962 to 32 kg in 1969 (Yuize, 1978; 288). Under free market
conditions it may be reasoned that increased supplies of rice coupled
with a decline in demand should have produced a fall in the price
paid to producers. This would have reduced the profitability of rice
and possibly caused farmers to switch to other products. Instead,
price increases offered by the government of 10% a year continued
until 1969. The government placed no restrictions on the amount
they were required to buy, and the inevitable consequence was that
the farmers sold as much as they could produce, resulting in the build
up of a rice surplus. Because the rice Japonica strain is generally
unpopular on world markets, and because the cost of production to
the government was so high, Japanese rice did not hold a competitive
position and the surplus could not be exported. Meanwhile, since the
government relies heavily on support from the rural vote, Ministry
officials were reluctant to change the status quo. The farmers,
on the other hand, were happy with the situation, despite apparent
discord expressed at the annual contretemps between the Rice Payments
Commission and rice producers when it came to fixing the rice price
for the following year. They were offered a stable, high price -
removed from free market fluctuations - for as much rice as they
could produce. Every incentive was there to remain in rice produc-
tion and to increase productivity as much as possible.

In 1970 the government was finally forced to change their rice
policy and the Food Control Law was abandoned. Not only was there
considerable concern about the rice surplus situation, but the

increase in rice price which was passed on to the consumers began

to have an inflationary impact on the economy (Mainichi Daily News,

21.11.1977). In an attempt both to reduce domestic supplies of rice

and to lower rates of increase in the price of rice the government

adopted two new measures. The first involved an alteration of

the formula by which the price paid to rice producers was worked out.

Stated in simplest terms, the new formula assumed lower production

costs of rice than previously, so that a lower price would be paid

to producers. It also meant that farmers in regions of low

productivity would no longer be able to sell rice at a profit and

so, it was hoped, be forced to give up rice cultivation. Although

not actually stated, this move was, in effect, a renunciation of

the policies of 1960 which attempted to peg rice price increases

with wage levels in non-agricultural industries (Itsumi, 1973; 196).

The second policy was far more direct. Limits were first of

all placed on the amount of rice the government was required to

buy and, secondly, efforts were made to place restrictions on the

amount of rice actually produced. This was known as the gentan

policy. For this purpose, non-production subsidies were offered to

farmers who reduced the area under rice cultivation. Also, the

severe restrictions on leasing agricultural land made at the time

of the Land Reform were eased slightly, making it easier for some

cultivators to give up agriculture altogether. As a result of these

policies, rice production fell from 12.7 million tons in 1970 to 12.3

million tons in 1974 and, over the same period, the proportion of

the total rice crop sold to the government fell from 53% to 48%

(Nōrinshō, 1975). Even so, these reductions were not enough to

prevent the rice surplus growing further, let alone remove it altogether. Since 1975, therefore, the government has attempted a series of rather more stringent measures, which include the establishment of <u>gentan</u> quotas, specifying precisely the amount by which each farmer is expected to reduce rice production.

This brief outline of government policy towards agriculture since 1945 illustrates the conflict of interests between allowing the transfer of labour to more efficient sectors of production, and holding back sufficient agricultural labour to maintain levels of food production. On the one hand, policies which aimed to improve labour productivity in agriculture, such as promoting the introduction of farm machinery, have led to the growth of a surplus rural population. Also the failure to diversify crop production, resulting in the need to actually cut-back on rice cultivation has contributed to the formation of a surplus population after 1970.

In contrast, the barriers imposed on the leasing of agricultural land, the preservation of small-holdings, the high payment made for rice, and the desire of the government to preserve their share of the rural vote are all factors which tend to hold farmers to the land, and discourage rural out-migration. They may partly explain, for instance, why the number of farm households has hardly declined in relation to the number of people who have left agriculture. Compared to a reduction of more than half the agricultural labour force between 1960 and 1970, the number of farm households fell by only 18% in that time, from just over 6 million to just under 5 million (Yuize, 1978). Other reasons for this must also be explored, however, particularly those relating to the demographic and social structures of rural populations.

2.5 RURAL DEMOGRAPHIC AND SOCIAL STRUCTURES

The movement of young people from rural to urban areas has occurred in Japan throughout the whole of the twentieth century, and is not a phenomenon associated only with the post-war period. Between 1920 and 1940 there was an average annual population growth rate of 1.2%, and the total population increased from 56 million to 73 million. The number of people engaged in agriculture remained fairly constant, however, at around 14 million, and the number of farm households also maintained a steady level, around 5.5 million. In other words, since rates of natural population increase tended to be higher in rural than in urban areas, a 'natural' population surplus was formed in the rural area, which became the basis for a steady rural exodus of young people, averaging about 300,000 per year (Hasami, 1973).

One reason for the formation of this surplus is that Japanese rural society is based on a system of unitary rather than equal farm inheritance. The inheritor (atotsugi) is generally the eldest son who, in an extended family system, shares accommodation in the farmhouse with his parents, his marital partner and his own children. Once he has married, there is no longer any room for his siblings to continue living in the same household, and they move away to seek an alternative place of residence. Occasionally, younger sons were granted the right to establish a branch household (bunke) on a piece of land which formerly belonged to the main household (honke). This only occurred, however, if sub-division of the original holding did not have a substantially detrimental effect on the well-being of the main household. Since most land holdings were extremely small,

the establishment of a bunke tended to be the exception rather
than the rule (Smith, T., 1959).

Daughters, particularly first-born daughters, were often
able to remain in the rural area by becoming the wife of an inheritor
in another household. Similarly, it was a common practice for younger
sons to be 'adopted' by families with no children of their own, or
into families with no male children. Often, adoption would occur when
younger sons had already reached adulthood. In such cases the 'adopted'
son would marry the eldest daughter and, in a matrilocal arrangement,
the husband would adopt his wife's family name and assume the position
of atotsugi in that household. Younger sons and daughters who did not
find a position in other farm households usually had no option but
to leave the local rural area altogether. In the immediate pre-war
years, most left to become wage earners in the rapidly growing
cities (Hasami, 1973).

After World War II, the Occupation authorities initiated a major
revision of the Japanese civil constitution. In January, 1948, a
new Civil Code was promulgated in the National Diet which drastically
altered the traditional family and inheritance systems. The funda-
mental principle behind the revision was expressed in Article 13
of the new Code:

> All of the people shall be respected as individuals,
> and their right to life, liberty, and the pursuit
> of happiness shall, within the limits of public
> welfare, be the supreme consideration in legislation
> and government affairs.

Following this principle, laws of succession of property were completely revised in an attempt to ensure equal rather than unitary inheritance. The new law stipulated that one-third of the estate should pass to the widow and the remaining two-thirds be divided equally between the children.

This new inheritance system clearly posed a problem for farmers, however. Land holdings were already extremely small and fragmented so that equal inheritance between children was extremely difficult, if not impossible, to plan successfully. Even if it could be carried out, the only effective consequence would be to make Japanese agriculture more inefficient than it already was, and thus be of only limited benefit to the inheritors. In fact, the new Civil Code did not actually prohibit primogeniture inheritance, provided that all children are grown, and the consent of all parties concerned is obtained. The practice of unitary inheritance has continued in post-war years, therefore, although it is undertaken:

> with the uneasy conviction that circumstances
> are forcing ... (farmers) to break one of the
> nation's laws (Beardsley, Hall, and Ward,
> 1959; 237).

In effect, the formation of a 'natural' rural surplus population still occurred after 1945. The only substantial benefits received by 'non-inheritors' as a result of the revision of the Civil Code are, where circumstances permit, that parents attempted to compensate them for the 'loss' of land rights, by paying for such things as a full-education (Dore, 1978).

The increased volume of the rural exodus after the war, particularly in the 1960s, may be partly explained by the fact that the size of the

Figure 2.5: Changes in birth and death rates, 1920-1973.

RATE PER '000 POPULATION

YEAR

Births

Deaths
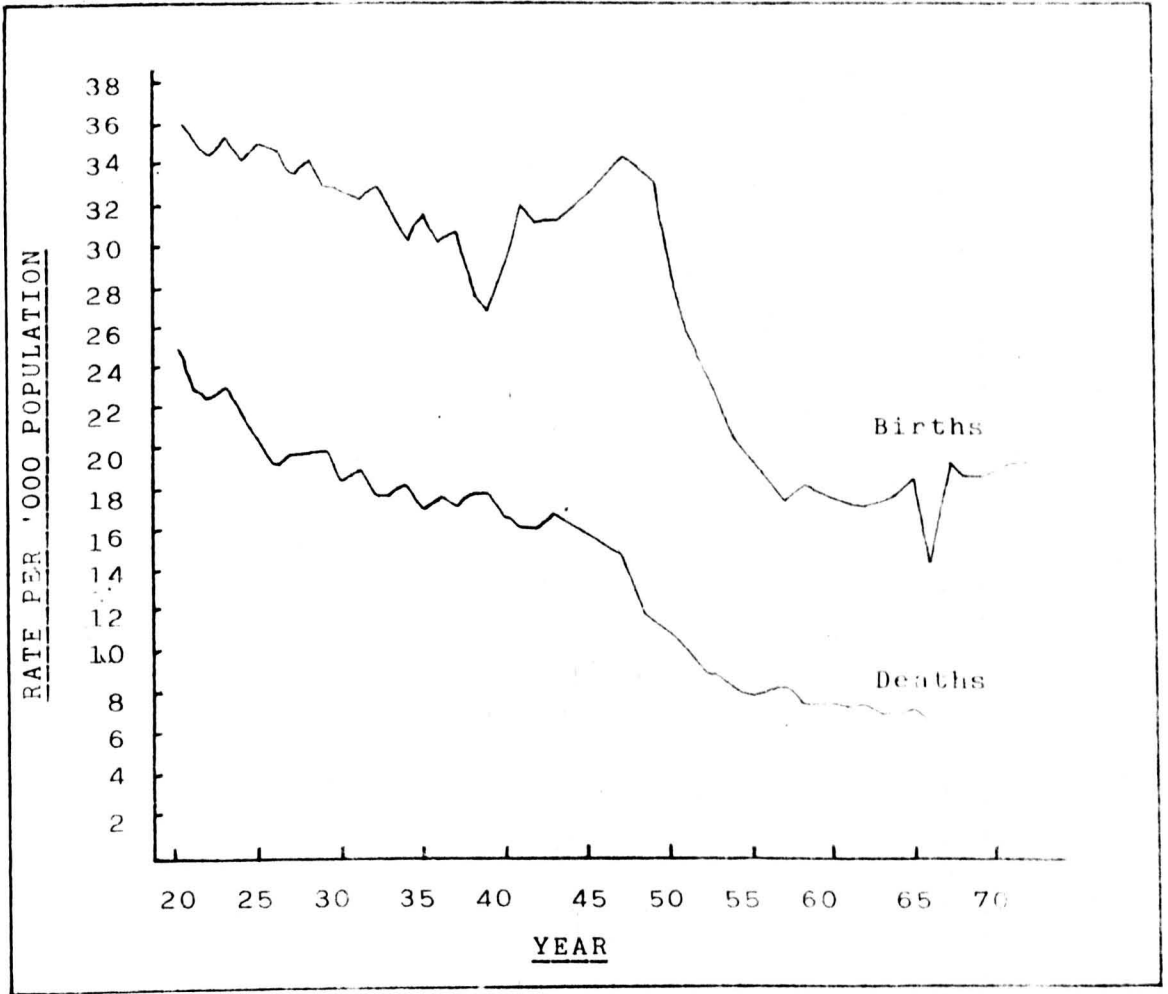
Table 2.5: Standardised birth rates for urban and rural municipalities, 1930-1970

Year	Japan	Urban (shi) municipalities	Rural (cho-son) muncipalities
1930	32.4	24.8	34.9
1955	21.5	19.2	24.5
1960	18.2	17.8	19.0
1965	18.6	19.0	17.6
1970	18.2	18.6	17.2

Birth rates are expressed as the number of live births per thousand population.

Source: Jinkō Mondo. ongikai, 1974: Niho. inkō no Dōkō, p. 104.

Figure 2.6 Population pyramids for 'urban' and 'rural' areas, 1955.

Shaded area represents standardised 'urban' population age distribution.

AGE

MALE   FEMALE

80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5

3   2   1   0   0   1   2   3

POPULATION IN MILLIONS ('rural' area only)
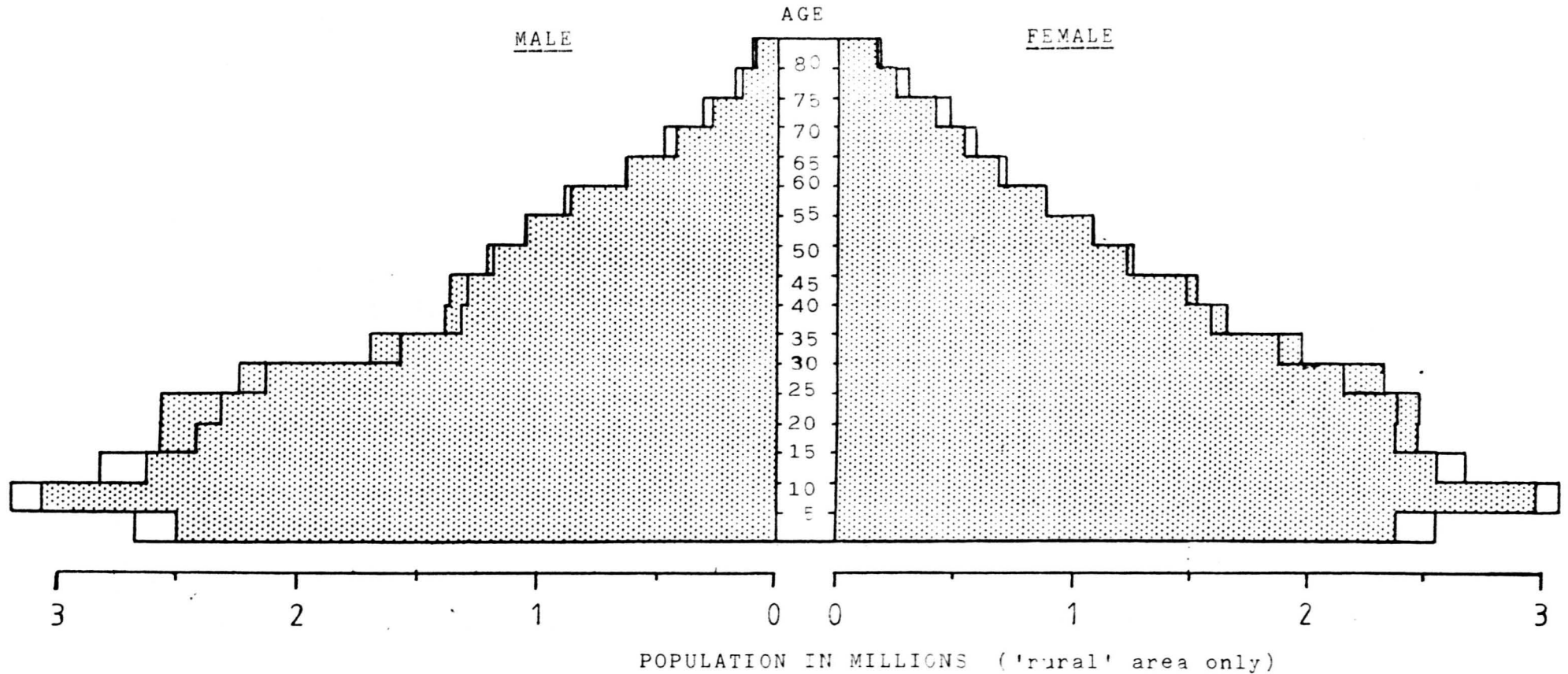
'natural' surplus population was much larger than in pre-war years.

Figure 2.5 shows changes in the national birth and death rates in

Japan between 1920 and 1970. Both rates declined steadily throughout

the period and the number of births each year remained consistently

higher than the number of deaths. This resulted in a natural increase

of population, averaging 12/'000 each year. The significant feature

is that Japan, in common with many other countries, experienced a

so-called 'baby boom' in the immediate post-war years, when the number

of births increased from 30/'000 in the late 1930s to more than

33/'000 in the years 1947 to 1949. From figures presented in Table

2.5 it can be seen that highest birth rates during this period tended

to be found in rural areas. It was not until the mid 1960s that

continued rural-urban migration of young people brought about the gradual

reversal of this situation, so that birth rates in rural areas became

less than in urban areas. It is therefore argued that the post-war

'baby boom' was concentrated in the rural area and that, in conse-

quence to this, the size of the potential rural surplus population was

increased.

Further evidence for this argument is provided in Figure 2.6.

Here population pyramids are used to compare the age distribution of

people living in rural areas (chō-son municipalities) in 1955 with the

age distribution of Japan's urban population in that year. If the

relative age distributions of people living in rural and urban areas

were the same, then no differences would be evident in the population

pyramids. However, it can be seen, for instance, that there are

relatively fewer people in the 'baby boom' parent generation (that is,

people aged between 40 and 49 years) living in rural than in urban

areas. Despite this fact, there is a considerable predominance of

children aged between 5 and 14 years, living in rural areas, many of whom would have been born during the 'baby boom'. On reaching adulthood in the mid 1960s or so the 'non-inheritors' within this age group must have contributed significantly to the increased size of the rural exodus at that time.

Unlike rural-urban migration in the pre-war period, when the exodus of young people had the effect of maintaining village populations at a constant level, the post-war rural exodus was so large that it brought about a decline in the number of people living in rural areas. This clearly suggests that, in addition to the removal of the 'natural' surplus population, large numbers of 'inheritors' also joined the movement to the cities. In fact, it was noted as early as 1960 that the number of atotsugi involved in the rural exodus had reached 'landslide proportions'. (Namiki, 1960). Actual evidence for this was provided by a survey carried out in 1963, in 4,415 farm households distributed throughout Japan, which revealed that only 58.5% of households believed succession by atotsugi was assured and in only 34% of all households was the atotsugi presently employed in agriculture (Jinkō Mondai Hangikai, 1974; 232). Such observations led to the conclusion that:

> Particularly today, when the availability of
> well paid employment is great, the majority
> of sons prefer to leave for urban areas rather
> than to 'succeed' by farming. (Nakane, 1967; 7)

Furthermore, Takeuchi has concluded:

> Whether the heir remains in the village as a
> farmer ... or emigrates to engage in non-agri-
> cultural activities, and, in the case of
> emigration, whether he returns to the village to
> succeed the farm household upon the retirement or
> death of his parents, are crucial factors in
> judging the demographic meaning of rural exodus
> (Takeuchi, 1974; 34)

Quite simply, the involvement of atotsugi in the rural exodus not only reflects a profound change in traditional rural social structure, but continued out-migration of inheritors must inevitably result in a decline in the number of farm households and even in eventual village abandonment.

The Japanese system of primogeniture inheritance in which the eldest son is appointed atotsugi is closely linked to a number of deep-rooted, traditional ancestral beliefs, collectively referred to as the 'family system'. Although this evolved in Japan over a period of many centuries, it was not until the promulgation of the Meiji Civil Code in 1889 that strict legal definitions were applied to the family system. Under this Code, the household head was vested with legal authority over other family members in all matters which related to the management, well-being, and future continuance of the household. The household head was held responsible for the management of the household economy, farm operations, and any other family busi-ness concern, and he was given autocratic authority over the affairs of individual family members, particularly with regard to choice of marriage partner, choice of occupation, and choice of domicile. His

primary concern, however, was to ensure that the household was passed
on intact, with undiminished resources and reputation, to future
generations. In this respect, the household (ie), which incorporates
not only the house itself and the adjoining land, but also all
family property, family members, and family responsibilities and
obligations, was considered to be the present manifestation of a long
ancestral tradition. Actual ownership of the property belonged to dead
ancestors and unborn descendants, as well as to present family members.
The duty of the family head was therefore to ensure continuance of the
household tradition, not only by careful and proper management of
existing family affairs, but also by ensuring there was a suitable
successor to take over these responsibilities (Nakane, 1967).

The eldest son, as atotsugi, was both morally and legally
bound to take over the duties of household head when his turn arose.
In the moral sense, since it was recognized that the head of the house-
hold represented the interests of the ie and, therefore, the family
ancestors, it was felt that:

> obstruction to his wishes because of considerations
>
> of personal happiness (was) a violation of filial
>
> piety toward the ancestors, which, according to
>
> Confucian ethics, is the supreme crime. (Steiner,
>
> 1950; 177.)

Legal authorization was provided by Article 749 of the Meiji
Civil Code, which stipulated that:

> The members of a house may not fix their place of
>
> residence against the will of the head of the house.

If a first son chose to leave his home, and so forego the responsibility
of being atotsugi, Article 749 further decreed that the household
head could exclude him from the house, and was released from any duty

to support him (Steiner, 1950). In a society where so much emphasis was placed on the family system, and the mutual support it provided for family members, this was indeed a powerful threat.

The revised Civil Code of 1948 removed all these legal restraints on the freedom of choice of the individual. However, it could do nothing to alter the moral responsibilities felt by atotsugi which still remained deeply ingrained in their social consciousness. This provides another reason why the attempt to introduce equal inheritance after the war failed since the duties of the head of the house are generally regarded as indivisible (Nakane, 1967). A survey undertaken in Miyama-chō, in Kyoto prefecture, in 1970 concluded that most atotsugi living there still wished to accept the ie legacy from their ancestors, and also drew attention to their belief that household succession remains a crucial element of this legacy (Ota and Inoue, 1971). On the other hand, many of the atotsugi who were interviewed, pointed out that they expected to leave their homes in the future, at least for a short while, in order to secure a better income than that offered by agriculture. In relation to this, they felt that the relative decline of agriculture since 1955 meant that the role of atotsugi as someone who should carry on the family business (i.e. farming) is no longer considered paramount. Rather, moral responsibilities, including the worship of ancestors, tending the graves of forefathers, and care for the well-being of family members are now the dominant considerations (ibid., 90). The desire to remain near the ancestral home has also been noted by Ōshima (1972; 30) in cases where adverse circumstances have forced households to move their place of residence. He found that migration distance tends to be

only as far as the nearest suitable environment and, if possible,
within 'grave distance'. By this he refers to the distance from
which it is possible to return to the ancestral home at regular
intervals in order to clean and repair family graves and tombstones.

Although atotsugi are no longer legally bound to stay in their
parental homes, it is clear that many still feel under a strong
moral obligation to do so. Areas where agricultural productivity levels
are high seem particularly able to maintain the traditional pattern
of male primogeniture inheritance (Jinkō Mondai Hangikai, 1974; 232)
If this is the case, a reason must be found to explain why such high
proportions of atotsugi have joined the post-war rural exodus.

The simple answer appears to be that life expectancy has in-
creased to such an extent in post-war years that atotsugi have a
much longer time to wait before their parents wish to relinquish the
responsibilities of headship of the household. The average length
of married life, for instance, has doubled since 1940, from 22
years to 44 years in 1972 (Jinkō Mondai Hangikai, 1974; 116).
Whereas before the war the three generation extended family may have
co-existed for three or four years before the headship was passed
down after the death of one, or both, parents a first son may now have
to wait up to twenty years after he marries before becoming household
head. Apart from the obvious pressures this is likely to create within
the family, mechanization of agriculture in post-war years has meant
that atotsugi are not even required to work full-time on farm
operations. Faced with this prospect of long term redundancy, many
atotsugi wish to leave their parental homes, hoping perhaps to return
to the farm when the time comes to take over the family headship
(Smith, R., 1978). This will itself create difficulties if they have

to relinquish secure employment in the cities, or if they have to
disrupt their children's education in order to move back. Not
only this, but many atotsugi will have lost, or never even gained,
an adequate knowledge of agricultural techniques. If, therefore,
atotsugi do not return, the decline in the number of farm households
will inevitably continue in years to come.

2.6 INCOME DIFFERENTIALS AND PART-TIME FARMING

The existence of an agricultural surplus population in the
rural area, and increased opportunities for non-agricultural employ-
ment in urban areas in the post-war period are factors which have
undeniably promoted the rural exodus but which, by themselves, do not
fully explain such a strong desire in people to move from agricultural
villages to the cities.

In his 7th 'law' of migration, Ravenstein states that:

> Bad or oppressive laws, heavy taxation, an
>
> unattractive climate, uncongenial social surround-
>
> ings, and even compulsion all have produced, and
>
> are still producing currents of migration but none
>
> of these can compare in volume with that which
>
> arises from the desire inherent in most men to
>
> better themselves in material respects. (Ravenstein,
>
> 1889; 286).

More specifically, Minami concludes that the propensity to migrate
in Japan increased with the relative rise in wages in non-agricultural
industries compared to those in agriculture and that, in particular,
the increased outflow of the agricultural population in the post-war
period is related to the increase in economic activity in non-agricultural
industries and to the rise in real wage rate in those industries

(Minami, 1967). Similarly, Tachi concludes that migration streams in the period 1955 to 1960 were a movement to balance the distribution of population against the regional distribution of income (Tachi, 1963). More recently, it has been shown that in regions where non-agricultural employment opportunities are limited, the main cause of the rural exodus is the relatively low level of agricultural income (Takeuchi, 1976).

All these studies firmly suggest that the prime motivation for people to move from rural to urban areas in post-war Japan was the simple fact that income levels in the secondary and tertiary sectors were much better than in agriculture. In the years from 1953 to 1961, for example, it is estimated that income per man hour labour input in agriculture was only between 34% and 40% that of income levels in non-agricultural industries (Yuize, 1964). Even by 1968, when labour productivity levels in agriculture were increasing by an average 7% a year due to the introduction of cost saving machinery, agricultural labour productivity levels were still only 35% of those in manufacturing industries, and average income levels only 50% of those in manufacturing (Misawa, 1971).

The desire in post-war years for farmers to 'better themselves' marks a significant contrast with attitudes prevalent in the pre-war period. Then, the emphasis was on self-sufficiency, economy, and frugality, and notions of bettering oneself in material respects were considered to represent a dubious moral philosophy (Hasami, 1973). Ideological reform, and the removal of many former economic and social restrictions during the years of Allied occupation played a major role in changing such attitudes, however. Now, frugality is no longer

considered as a virtue, but is regarded as a sign of social infer-
iority (Sum, 1977; 16). Evidence for this is provided by the number
of consumer durable and luxury items with have flowed into the rural
area. In 1975, 98% of farm households owned a washing machine, 97%
owned a refrigerator, and 56% owned a private car (ibid.).

The strange feature about these figures is that in all three
cases, rates of ownership were higher than in non-farm households.
How is this explained when income levels in agriculture are so much
lower than in non-agricultural industries? The simple answer is
that a change of occupation does not necessarily involve a residential
shift, and that work in non-agricultural activities may be actually
combined with agriculture. In fact, the tendency for farmers to
engage in side occupations in order to raise income levels is by
no means a new phenomenon in Japan. Even during the Tokugawa era
(1600-1868), large numbers of farmers relied on small, cottage
industry type employment to supplement their incomes during the
agricultural slack season (Smith, T., 1959). Conversely, many village
craftsmen and tradesmen maintained small plots of cultivated land
to grow just sufficient food for themselves, and were thus referred
to as 'farmers'.

By 1950, therefore, only 50% of farm households were engaged
in full time agricultural production (sengyō nōgyō). Of the remainder,
28.4% held side occupations, but gained most of their income from
agriculture (Type I kengyō nōgyō), whilst 21.6% also engaged in both
agriculture and side occupations, but received most of their income
from non-agricultural activities (Type II kengyō nōgyō) (Jinkō
Mondai Hangikai, 1974; 223). Since then, there has been a steady
trend for more farms to take up side employment, particularly in

occupations which provide a greater income than agriculture. Usually, this means taking a full-time salaried job in the manufacturing or service sector, and farming only at weekends. Thus, in 1960, the number of farms engaged full-time in agriculture had fallen to 34.3%, and to only 12.4% by 1975. The proportion of type II kengyō nōgyō households on the other hand, where agriculture is subsidiary to non-agricultural employment, rose to 32.1% in 1960, and to 62.1% in 1975 (Table 2.6).

The rapid trend towards type II kengyō nōgyō after 1950 had a dramatic effect on average farm household income levels. In 1971 about the same time that this form of part-time farming first accounted for more than 50% of all farm households, average farm incomes actually exceeded average income levels in non-agricultural households. By 1976, annual disposable income per member of farm households stood at ¥849,000, compared to ¥756,000 in non-agricultural households (Yuize, 1978). In relation to this, it is worth noting that since 1970 agricultural production has accounted for, on average, only 36% of total farm household income (ibid.).

Clearly, existence of inter-sectoral wage differentials has resulted in an occupational shift away from agriculture, but this has not necessarily been accompanied by changes of residence. It may be argued, therefore, that the increased use of farm machinery in the late 1960s, and the subsequent fall in agricultural labour requirement, merely enabled farmers to take on full-time salaried employment and undertake farm operations only in the evenings or at weekends, or simply leave these tasks to their wives and other family members. A series of studies made in the Kosei region of

Table 2.6: Ratio of full-time (<u>sengyō</u>) to part-time (<u>kengyō</u>) farm

households, 1950-1975

Year	Total farm households	Full-time (<u>sengyō</u>)	Part-time (<u>kengyō</u>)		
			Total	Type I <u>kengyō</u>	Type II <u>kengyō</u>
1950	100.0	50.0	50.0	28.4	21.6
1955	100.0	34.9	65.1	37.6	27.5
1960	100.0	34.3	65.7	33.7	32.0
1965	100.0	21.5	78.5	36.8	41.8
1970	100.0	15.6	84.4	33.7	50.7
1975	100.0	12.4	87.6	25.5	62.1

n.b. Type I <u>kengyō</u> represents part-time farm households where
agriculture is the main activity

Type II <u>kengyō</u> represents part-time farm households where
non-agricultural employment forms the main activity.

Source: Bureau of Statistics, 1977, <u>Japan Statistical Yearbook</u>

Shiga prefecture, for instance, where non-agricultural employment opportunities are generally readily accessible, concludes that most farmers, and their successors, prefer to remain in their ancestral homes (Kyoto Daigaku Jinbun Chiri Kenkyū-jo, 1975). Thus, much of the rural surplus population created by agricultural mechanization and rice reduction policies, for example, may be re-absorbed within the rural area so long as alternative, non-agricultural employment is available.

In a study of three rural settlements in Hyogo prefecture, Palmer has similarly concluded that the availability of part-time non-agricultural employment was "the decisive factor in retaining the population" (Palmer, 1978; 28). Moreover, she suggests that if more such employment opportunities were available in the villages they would be very likely to attract people who had previously migrated to the cities back to the rural area. This is known as the 'U-turn' Phenomenon in Japan, and is a subject which has attracted considerable interest in the 1970s, during the period of apparent slowing down of the rural exodus.

A number of factors have been proposed to explain this phenomenon. First, it may be noted that the period in the early 1970s when average farm household incomes began to exceed income levels in non-agricultural households coincides with the time when the volume of internal migration in Japan reached its peak, and subsequently began to fall. At the same time, the 'oil shocks' of 1973, followed by a period of recession in the Japanese economy, brought an end to the situation of severe labour shortage in manufacturing and service industries in the Tokaido region. Unemployment levels in these sectors began to rise, and in 1975 reached their highest point

for 16 years (Smith, R., 1978; 117). No longer did personnel officers
need to be sent into the rural area by their companies to seek
and recruit employees (Palmer, 1979; 3).

In addition, people began to grow more acutely aware of the social
and economic disadvantages associated with life in the metropolitan
cities. In particular, problems such as overcrowding, the high cost of
accommodation, high levels of pollution, traffic congestion, and the
necessity for long daily journeys to work were highlighted at this
time (Jinkō Mondai Hangikai, 1974). Furthermore, the cost of living
in Tokyo and Osaka was found to be generally much higher than elsewhere.
In 1974, for instance, the estimated average monthly expenditure per
household in Tokyo was ¥156,000, about 25% greater than in cities in
Kyushu or Shikoku where expenditure levels ranged between ¥120,000
and ¥135,000 per month (Sōrifu Tōkeikyoku, 1977).

Whilst jobs became harder to find in the metropolitan centres.
and the social environment and cost of living steadily worsened,
efforts were being made in the rural area to increase the number of
non-agricultural job opportunities and to improve local social infra-
structures. In 1970, the Emergency Measures Law for Severely De-
populating Rural Areas provided for a total of ¥72.5 billion to be
spent over the following ten years to improve local transport networks,
medical facilities, schools and other services in areas which had been
most severely affected by the rural exodus (Kaso Hakusho, 1975).
Just over 20% of this budget was allocated to promoting industry and
employment opportunities in these areas, and this was followed in
1972 by the Industrial Relocation Promotion Act which encouraged
firms to relocate in designated reception areas by offering inducements

such as loans, subsidies, and tax exemptions. Mainly designed to
relieve pressure on congested metropolitan regions, this law did
succeed in opening up 84,000 hectares of industrial land between 1973
and 1975 in rural areas scattered over various parts of the country
(Murata,1980).

The ability of manufacturing enterprises established in the rural
area during the 1970s to absorb the surplus agricultural population
has been called to question, however (Palmer, 1979; 22). Many
firms which relocated in designated reception areas brought their
most skilled, and managerial staff with them, leaving only the low
paid, low satisfaction jobs to be filled by local workers. As a
result, people with initiative and ambition continued to out-migrate to
seek better opportunities. Nevertheless, there can be no doubt that
in some rural areas at least, the number of non-agricultural job
opportunities increased in the 1970s so that an occupational shift
away from agriculture no longer required a residential shift away
from the rural area.

2.7 CONCLUSIONS

The inter-relations between 'push' and 'pull' factors which
brought about the post-war rural exodus in Japan are highly complex.
In simplest terms: high economic growth in the 1950s and 1960s, and
the intense concentration of new industry in the Tokaido region resulted
in severe shortages of labour there until the 1970s. At the same
time, a policy of agricultural rationalization resulted in increased
productivity levels, and the formation of a considerable labour
surplus in the rural area. The relatively high level of wages
offered in secondary and tertiary industries attracted people to give

up agriculture, to leave their rural homes, and to go to live in the metropolitan districts surrounding Tokyo and Osaka.

Within this simple, normative explanation, however, is a whole range of other factors relating to traditional social structures, demography, the inconsistencies of government policy, and the ability of people to change occupation without moving residence which cloud and confuse the issue. Some factors, like the rice growing reduction policies in the 1970s, the demographic effects of the 'baby boom', and so on, may have stimulated out-migration from rural areas whilst the growth of part-time farming, attitudes concerning farm inheritence, and the reluctance to give up ownership of small, fragmented parcels of profitable rice growing land may have retarded the process. It is the relative strength of these individual factors which probably ultimately determine variations in the size and direction of the rural exodus, but the problem is even more confused by the fact that many of them are influenced by spatial variations within the rural area. The effect of reductions in rice quotas, for instance, is likely to be felt differently in an area with high rice productivity to an area with low productivity. Similarly, the number of opportunities for part time non-agricultural employment will be much greater in rural areas which adjoin the metropolitan districts than in isolated communities in the peripheral regions of Japan.

The fact that spatial variations exist in the circumstances of different rural communities is the most likely explanation for the differences in rural out-migration rates which exist in the non-metropolitan area, outlined in the opening sections of this chapter.

A detailed understanding of the reasons for the rural exodus cannot be achieved, therefore, without a close study of environmental differences within the rural area, and the effects these have on local out-migration rates.

CHAPTER THREE

'KASO CHITAI' : AREAS OF SEVERE RURAL DEPOPULATION.

3.1 INTRODUCTION

On May 1st, 1970, the Japanese Government promulgated the
Emergency Measures Law for Severely Depopulating Rural Districts
This identified a total of 776 municipalities in Japan where rural
out-migration had occurred to such an extent that severe social and
economic problems were created for the inhabitants left behind in
those areas. The relative ageing of the residual populations because
of age selective out-migration of young people, for instance, meant that
increased proportions of local government expenditure had to be directed
to the building and upkeep of public welfare and health facilities.
Also, the reduction in the number of children of school-age required
substantial rationalization of local schools and education systems.
Yet, the very fact that population levels had fallen resulted in a
decline in the local tax bases. This placed considerable pressure on
local government authorities to actually curtail levels of public
service expenditure, at a time when there was increased reliance and
dependence on such services.

Whilst the main aim of the Emergency Measures Law was to provide
capital investment to improve the social infrastructures of
these areas, it has also provided an ideal basis from which to study,
in close detail, spatial variation in rural depopulation rates in
Japan. Furthermore, by focusing attention on areas of severe rural
depopulation (kaso chitai), it is possible to highlight certain
characteristics which are shared by these districts and which

differentiate them from other rural areas. This in turn leads to a much clearer understanding of the forces which give rise to spatial variations in rural out-migration rates.

This chapter first of all looks at the distribution of kaso chitai in Japan, and considers some of the qualitative explanations which have been put forward to explain this distribution. Finding these explanations either unsatisfactory, or inadequate, a rather more systematic approach is adopted whereby a number of characteristic features common to many, if not all areas of severe depopulation are recognized. These may be summarized under the headings: poor accessibility, poor agricultural environment, and poor climate. Each of these features is then considered in turn, noting the possible extent of variation across the whole rural area, and the likely effects that different conditions have on local rural out-migration rates.

3.2 THE DISTRIBUTION OF KASO CHITAI

The criteria by which kaso chitai (areas of severe rural depopulation) were defined in the 1970 Emergency Measures Law are:

i) Rates of population decline over the five year inter-censal period between 1960 and 1965 should be 10% or more.

ii) The fiscal index; the ratio of expected income from local taxes to estimated local government expenditure, should be 40% or less during the 1968 fiscal year.

The Law further stipulated that the number of kaso chitai should be reviewed according to the results of each successive five year Population Census, with an appropriate change in the year for which the fiscal index is calculated. This is to say, whilst the number of kaso chitai would not be reduced if subsequent decline

rates of less than 10% were recorded, municipalities which showed a rate of decline greater than 10% in either of the periods 1965 to 1970, and 1970 to 1975 would be able to achieve kaso chitai status provided they also met the fiscal index requirement. This stipulation did not extend beyond the 1975 Census since the investment plans outlined in the Law were scheduled to terminate in 1979 (Kaso Hakusho, 1975).

The 1965 Population Census revealed that out of a total number of 3375 municipalities, 2574 (76%) lost population over the previous five year period. Of these, 897 (26% of the total) suffered decline rates of greater than 10% but, since 121 municipalities failed to meet the fiscal index requirement, only 776 (23%) were declared kaso chitai when the Emergency Measures Law first came into effect (Takeuchi; 1974). Following the publication of the results of the 1970 Population Census, in April 1971, a further 274 municipalities were given kaso chitai status, making a new total of 1050. The subsequent amalgamation, or consolidation into larger administrative units of several of these municipalities brought about a slight fall in this total, to stand at 1044 in May 1975. Then, after the 1975 Population Census results became known, the figure rose again to reach a final total of 1093 (Kaso Hakusho, 1977).

All of these municipalities have experienced population decline rates equal to, or greater than 10% during at least one inter-censal period between 1960 and 1975. They represent just over 34% of the total number of municipalities in Japan; they were inhabited in 1975 by 7.6% of the total population; and they cover 44.1% of the total land area.

Figure 3.1 shows the distribution of the 1093 kaso chitai. Despite the fact that they are found in all but two of the 47 prefectures

Figure 3.1 Map showing the distribution of 'kaso' municipalities in Japan, 1977.

Table 3.1: Distribution of kaso municipalities by region, 1977

Region	No. of municipalities	No. of kaso municipalities	% which are kaso municipalities
Hokkaido	212	149	70.3
Tohoku	518	166	32.0
Kanto	647	102	15.8
Tokai	332	44	13.3
Hokuriku	111	20	18.0
Kinki	327	53	16.2
Chugoku	319	162	50.8
Shikoku	216	111	51.4
Kyushu	521	286	54.9
Japan	3203	1093	34.1

Source: Kaso Hakusho, 1977; 3

in Japan, Osaka-fu and Kanagawa-ken are the exceptions, a considerable
degree of spatial concentration is evident. A regional breakdown of
figures presented in Table 3.1 shows that in Hokkaido, the northernmost
island, Chugoku, Kyushu, and Shikoku, in southwest Japan, more than
50% of municipalities are designated kaso chitai. Areas of severe
rural depopulation in the Tohoku region, in north-east Japan, represent
32% of all municipalities there, whilst in the rest of the country,
in the central regions between Tokyo and Osaka, the figure does not
exceed 18% (Kaso Hakusho, 1977).

Before attempting an explanation of these variations in the distri-
bution of kaso chitai, it is necessary to make clear the distinction
between rural depopulation and rural out-migration. Rural depopulation,
on which the definition of kaso chitai is based, takes account of natural
population loss due to an excess of deaths over births as well as
population loss through net out-migration. If out-migration is age
selective and principally involves young people, the inevitable
consequence is an ageing of residual populations so that ultimately,
natural population loss will also occur. Over the rural area as a
whole, the number of births has consistently been greater than the
number of deaths during the period under consideration, but it is notice-
able that in some kaso chitai a small degree of natural population loss
has been apparent since the early 1970s or so (Jinkō Mondai Hangikai;
1974; Prefectural Yearbooks). A suitable compilation of the relevant
figures is unfortunately not available, but it does appear from results
published in various prefectural yearbooks that in municipalities where
natural population loss has occurred, the loss is not nearly as great
as that resulting from out-migration. In other words, by 1975 the
significance of natural population loss was still slight compared
to the effect of net out-migration in producing high rates of rural

depopulation in kaso chitai. Thus, the distribution of areas of severe

rural depopulation can be taken as more or less synonymous with the

distribution of areas which experienced the highest rates of rural

out-migration in the period 1960 to 1975. This is also the view

implicitly taken in the annual White Paper on Severely Depopulating Rural

Districts (Kaso Hakusho).

In some regions, such as Hokkaido, explanations of the high con-

centration of kaso chitai can be related to specific local events.

Here, depopulation is attributed to a substantial decline of agricultural

production in recent years and, in particular, to the decline of the

region's coal mining industry since the mid 1960s (Kaso Hakusho, 1975;

8). It is reported that of the 138 kaso chitai in Hokkaido in 1970;

68, representing just under half the total number, suffered depopulation

as a direct consequence of mine closures after 1965 (Ōshima, 1972; 24).

Attempts to explain why rural depopulation is generally more wide-

spread in south west Japan than in the equally remote agricultural

region of Tohoku, in north east Japan, tend to emphasise apparent

qualitative differences in the social and economic backgrounds of the two

areas. Imai, for instance, suggests that farmers in south west Japan

are more commercially oriented than those in Tohoku, and that as soon

as agriculture failed to return suitable profits they migrated to seek

better opportunities. Farmers in Tohoku, on the other hand, are believed

to hold a stronger attachment to their ancestral lands and are therefore

more reluctant to move, even when agricultural operations fail (Imai,

1968; 11-12). It is also argued that Tohoku farmers can continue to make

a living by dekasegi, or seasonal migration. In an area where the climate

is too cold to allow crops to be grown in winter, farmers have traditionally

left their homes for up to six months each year to work in factories or on construction projects. Continued reliance on this system is held to be the main factor accounting for comparatively low rates of out-migration in the Tohoku region (Takeuchi, 1974).

Whilst it is true that the highest incidence of dekasegi occurs in the Tohoku region, where 78% of agricultural settlements have at least one farm household reliant on seasonal migration, this argument seems to ignore the fact that dekasegi commonly occurs in other parts of Japan, and in south west Japan in particular. The comparable rate for southern Kyushu in 1975, for instance, was 69% of all agricultural settlements (Nōgyōshūraku Kenkyūkai, 1977; 171). In any case, whilst dekasegi may be the preferred system in some parts of Japan, the general trend towards part-time farming should not be forgotten since this has a similar effect of retarding rates of population outflow. In fact, after 1970 or so, the trend has been for a shift in emphasis away from seasonal migration towards salaried employment (i.e. part time farming) in local factories and offices, even in areas where the dekasegi tradition is strong. The mechanisation of agriculture, the gradual dispersal of industry into the rural area, and improved local communications are all cited as playing a role in this respect (Kajii, 1976; 248).

Attempts to explain the distribution of kaso chitai in terms of perceived qualitative differences between regions seem generally unsatisfactory, therefore. Instead, a more systematic approach could be adopted whereby the locational characteristics which distinguish kaso chitai are contrasted with the characteristics of rural areas which have not suffered severe depopulation. In this respect, the White Paper on Severely Depopulating Rural Districts provides an indication of

whether or not kaso chitai are also eligible for other forms of fin-
ancial aid specified in previous government legislation. Four laws,
passed by the Japanese Diet between 1953 and 1965 are given special
attention:

i)   Law 72, 1953:   "Law for the improvement of small islands"

ii)   Law 73, 1962:   "Law for special countermeasures for regions of
                        heavy snowfall"

iii) Law 88, 1962:   "Law for special measures for financial aid
                        for the improvement of public service facilities
                        in remote districts"

iv)   Law 64, 1965:   "Law for the promotion of mountain villages"

    Of the 1093 designated kaso chitai in May 1977, 85.7% were
also registered as 'remote districts', 61.6% as 'mountain villages',
37.4% as areas suffering 'heavy snowfall', and 10.6% as 'small islands'
(hanare shima). Only 8.3% of kaso chitai were not included in any
of these alternative categories. Of these, roughly two-thirds are in
the island of Kyushu, mostly in the abandoned coal field districts in
the north west of the region (Kaso Hakusho, 1977).

    From this list of laws, three important variables can be
identified where it appears that conditions range from good to bad
across the rural area. These are:

1)   Accessibility ('Remote places' and 'small islands')

ii) Agricultural Environment ('Mountain Villages')

iii) Climate ('Heavy Snowfall')

    In all three cases, it appears that severe depopulation arises
when these conditions are worst. Subsequent discussion in this
chapter therefore concentrates on a closer examination of these

variables, to check the validity and significance of this
suggested relationship.

3.3 ACCESSIBILITY

The definition of remote districts (henchi) provided by
Clause 2 of the 1962 Law for special financial measures for these
areas states that they are:

> Mountain districts, small islands, and other
> out-of-the-way places where, due to unfavourable
> natural, economic, and social conditions, and to
> poor transport and communications facilities,
> living standards are markedly lower than elsewhere
> (Kaso Hakusho, 1975; 158).

In order to be eligible for special aid, municipal authorities
had to show these conditions existed within their jurisdiction, in
one or more areas which were at least five square kilometres in
size and inhabited by at least 50 people. Because 'remote district'
status was awarded to the whole municipality, however, and not just
to the areas thus affected, it is not easy to draw an accurate
picture of the distribution of relative levels of accessibility using
this guideline alone.

Even a cursory look at the topography of Japan reveals the
considerable extent to which communication between villages in
Japan's rural area is likely to be a problem. Japan is a mountainous
country, and although generally not very high, the surface is steep
and heavily dissected. 75% of the land has a gradient steeper than
15 degrees, and only just over 15% is believed suitable for culti-
vation and human settlement (Trewartha, 1965; 26). Typical features
of this terrain are sinuous, narrow, and steep sided valleys, only

the alluvial floors of which may be given over to rice production,
or provide suitable land for housing. Although the major transverse
lines of communication through Japan's interior are able to follow
the courses of larger valleys, and tunnel through any high dividing
passes, many smaller valleys remain impassable to motorized trans-
port. Thus, the communications network in Japan assumes a dendritic
form, with the result that settlements located at the very edge of
the system, such as villages at the head of small valleys, are
considerably more isolated than those nearer the centre. Only on
relatively small areas of the lowland plain can systems resembling
a central place lattice, with multi-directional lines of communi-
cation between rural settlements, be observed.

In 1960, it was estimated that only 45% of Japan's non-
metropolitan population lived in lowland plains (Trewartha, 1965; 139).
This means more than half of the inhabitants of rural areas lived in
the kind of mountain or upland region where problems of poor
communications are most likely to arise, although the actual extent
to which these people can be said to live in remote areas really
depends on the coverage and quality of the transport network in these
districts. Rail transport in Japan is largely restricted to
coastal routes, running along both the Japan Sea and Pacific shores,
connected by a series of transverse lines passing through breaks in
the inland mountain chain. Large tracts of land in Japan's interior,
therefore, are left without any rail service, so it is the road net-
work which plays the more vital role in terms of local accessibility
for villages in mountain districts. The Japanese government has
been particularly slow in the provision of funds for building and

Table 3.2: Accessibility of Agricultural Settlements

Time required to travel to nearest D.I.D.	No. of agricultural settlements %	No. of agricultural settlements where municipal roads are:			
		Completely unpaved %	Less than 5% paved %	50%-80% paved %	More than 80% paved %
Less than 30 mins.	36.6	13.4	22.3	17.3	47.0
30 mins. - 1 hour	35.5	19.4	22.3	15.4	42.9
More than 1 hour	27.8	29.0	22.6	14.1	34.4

Source: Nōgyō Shūraku Kenkyūkai, 1977; Nihon no Nōgyō Shūraku p. 242

maintaining public highways, however, and in 1961 only one third of
the national road network was properly surfaced with cement or
asphalt (Trewartha, 1965; 300). Even by 1975, one fifth of all
agricultural settlements in Japan still had unsurfaced roads (Nōgyō
Shūraku Kenkyūkai, 1977; 241).

Perhaps the most useful way to compare different levels of access-
ibility in agricultural settlements is to consider them in terms of
the time it normally takes to travel to the nearest Densely Inhabited
District. Table 3.2 shows how just under 37% of settlements are
located within 30 minutes journey time of the nearest urban built up
area, whilst 27.8% are located more than one hour away. Also, it is
clear that settlements furthest away from urban areas tend to have the
worst roads. 29% of settlements in this group have completely
unsurfaced roads, whilst the figure is only 13% for settlements closest
to Densely Inhabited Districts.

The problems associated with remoteness, and poor roads have been
highlighted in a study made by Adachi in Yasaka-mura in Shimane
prefecture (Adachi, 1973). The village he surveyed was situated 7 km
from the municipal offices and, since the road was not suitably paved
nor wide enough, there was no inter-connecting bus service. In fact,
parts of the route were impassable even to cars. This meant that
services could not be delivered directly, and daily newspapers and mail,
for instance, had to be collected from the next village, normally
by children on their way home from school. Needless to say, the
difficulty of transporting bulky essential items such as propane gas
cylinders caused tremendous problems, especially for old people.
Similarly, emergency services could not gain ready access to the
village centre and if, for example, a fire broke out, villages had
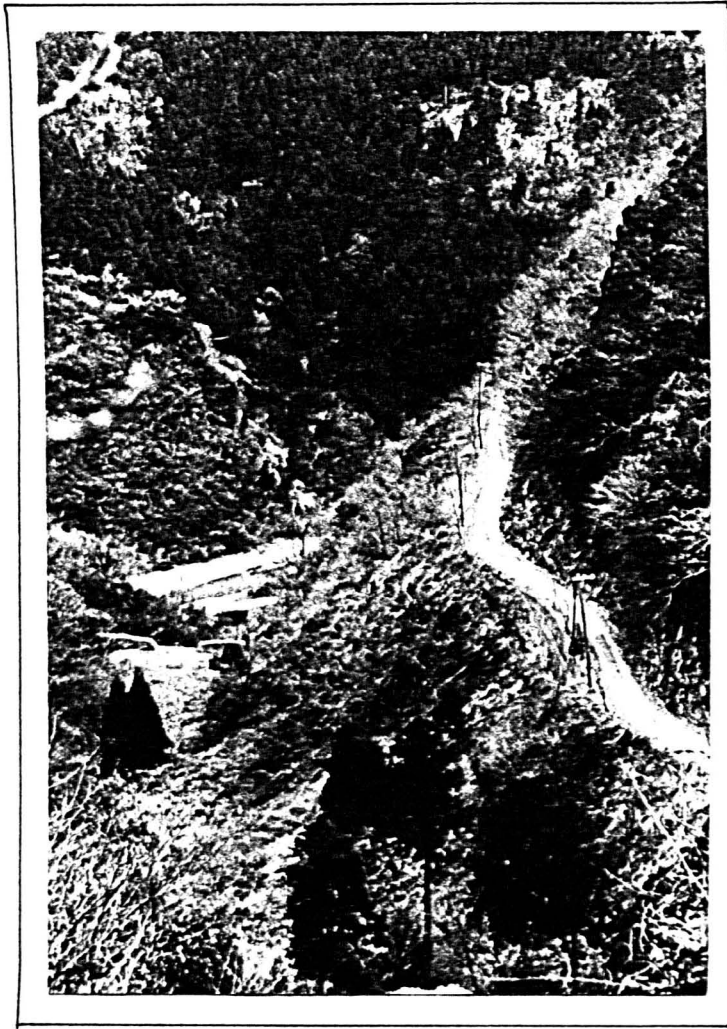
Plate 3.1 A precipitous, unpaved track is the only route to a remote mountain village community in Taga-cho, Shiga prefecture.
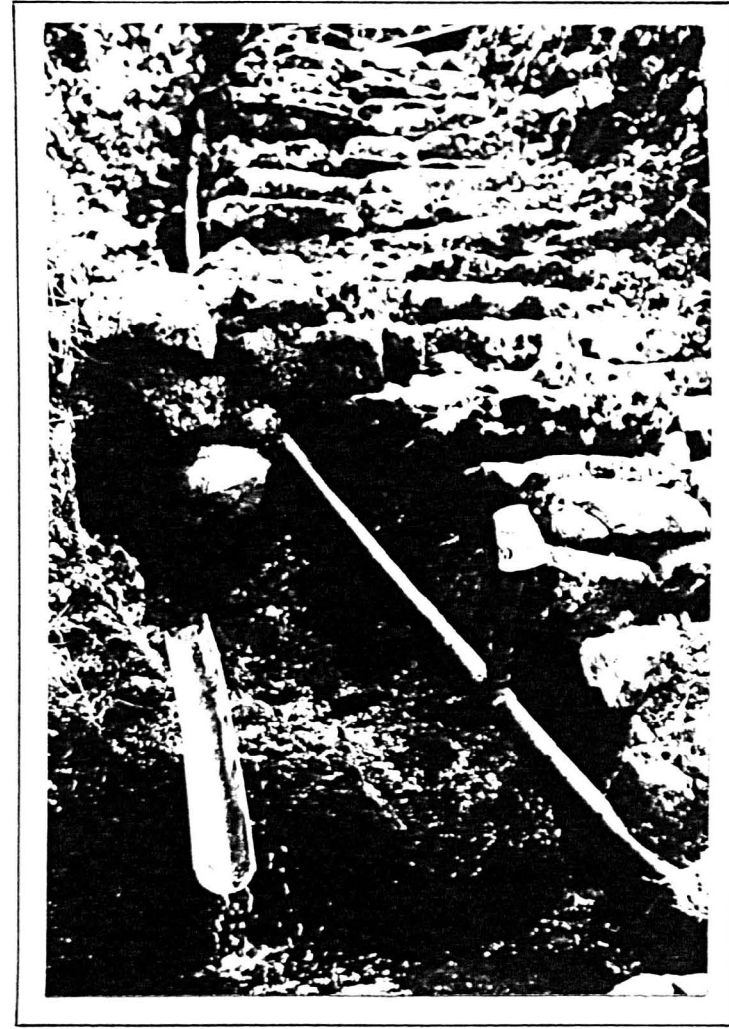
Plate 3.2 The primitive water supply for a farmhouse in Taga-cho. The pipe contains drinking water, the bamboo shute directs water for washing.

to be left to their own resources. In a country where homes are
built principally of wood, this danger is viewed extremely
seriously.

Also affected by problems of accessibility are the hundreds of
small island communities, particularly in the Inland Sea region
and off the western coast of Kyushu. Most depend on ferry services
with the mainland for access to non-agricultural job opportunities
and essential services, although some larger islands like Futagami, near
Matsuyama, are linked by underwater cables which carry electricity
and telephone lines (Graves, 1972). This particular island is
served by a daily supply boat, but the nearest junior high school is
on a neighbouring island, and children have to travel to Matsuyama,
19 km away on the mainland, for senior high school education. Whilst
there is heavy out-migration of young people from Futagami, the
island of Moroshima in Wakayama prefecture has already become
completely abandoned (Ōshima, 1972; 33). This is simply because
communications with the mainland, and the provision of essential
supplies, proved too difficult to maintain. In times of rough
weather, for instance, the connecting ferry service often could not
operate at all.

A rather more general picture showing the inverse relationship
between levels of service provision and the degree of remoteness
is presented in Table 3.3. This clearly illustrates how the more
inaccessible agricultural settlements (i.e. those located more than
1 hours' journey time from a Densely Inhabited District) tend to be
much further away from medical facilities than those settlements which
are located closest to urban built-up areas. In fact, as many as 13%

Table 3.3: Distance to nearest medical facilities from

agricultural settlements, 1970

	Distance to nearest medical facility				
Time required to travel to nearest D.I.D.	Less than 1 km %	1-3 km %	3-5 km %	5-10 km %	More than 10 km %
Less than 30 minutes	18.2	41.1	22.4	14.2	4.1
30 minutes - 1 hour	17.1	36.2	22.9	15.4	8.5
More than 1 hour	11.8	28.3	24.3	21.4	13.2
All agricultural settlements	16.0	35.8	23.1	16.6	8.5

Source: Nōgyō Shūraku Kenkyūkai, 1977; Nihon no Nōgyō Shūraku, p. 246.

of 'remote' settlements are situated more than 10 km away from the nearest medical facility and, taken in conjunction with the fact that roads here tend to be much poorer, this leads to severe problems in times of medical emergency. It is not unknown, for instance, for villagers to have to be carried by their neighbours to the nearest doctor because the roads are impassable to cars (Ikegami, 1975; 28).

The extent to which poor accessibility, especially to medical facilities, affects relative feelings of well-being in rural areas is shown in the results of a number of surveys. In 1973, a survey undertaken in 288 severely depopulated settlements in Okayama prefecture posed the question:

What are you most dissatisfied with regarding

daily life in your village?

The responses indicated:

Poor roads	(19.3%)
Long way to medical facilities	(15.2%)
No nearby workplace	(14.7%)
Difficulties of maintaining local roads and paths	(14.1%)
Long way for children to travel to school	(11.1%)
Difficulties of obtaining daily shopping requirements	(9.5%)
Lack of sufficient public transport	(6.2%)
Other factors	(9.9%)

Thus, more than three-quarters of all responses related directly to problems associated with remoteness and poor accessibility, with 'long way to medical facilities' and 'no nearby workplace' given particular emphasis (Ikegami, 1975; 27). A slightly broader survey conducted in 1975 by the National Land Agency, amongst 15,884 inhabitants of mountain villages, produced similar results. In answer to the question:

What do you believe are the inconvenient aspects

of daily life in your village?

'medical facilities' was ranked first (20.8%), followed by 'transport'
(19.8%), 'childrens education' (12.5%), and 'daily shopping' (11.3%)
(Kokudōchō Chihō Shinkōkyoku, 1975; 2). Also, a national public
opinion survey supervised by the Prime Minister's Office in 1974
suggests that people living in rural areas regard 'muddy and narrow
roads' to be the worst aspect of their local environment (33%), followed
by 'lack of medical staff' and the fact that 'medical centres are
located too far away' (15%) (Nōgyō Shūraku Kenkyūkai, 1977; 24).

In addition to the problem of poor social infrastructures, it
is likely that many people in remote areas are adversely affected
by the poor availability of non-agricultural employment opportunities.
Since these tend to be concentrated in urban areas, settlements which
are more than one hour away from the nearest D.I.D. are often outside
the range from which daily commuting is possible. Thus, income
levels in remote areas are held relatively low, and out-migration to
seek better opportunities is the inevitable consequence. This
further reduces the demand for local services and also weakens the
local tax base which, in turn, forces further curtailment of service
provision. The result of this is an effective increase in levels of
inaccessibility, leading to further out-migration (Ikegami, 1975;
70). An example of this process is provided by the fact that between
1970 and 1975, 30% of settlements located more than one hour from
the nearest D.I.D. suffered a reduction of bus service provision,
whilst 27% of settlements located within 30 minutes of the nearest
D.I.D. benefitted from an increase in bus service provision (Nōgyō

Shūraku Kenkyūkai, 1977; 243).

Finally, it should almost go without saying that the incidence
of settlements in designated areas of severe depopulation (kaso chitai)
increases with increased levels of inaccessibility. That is, whilst
just over 12% of settlements located within 30 minutes of the nearest
D.I.D. are in designated kaso chitai, the proportion for settlements
located more than one hour away rises to 46% (Nōgyō Shūraku Kenkyūkai,
1977; 213).

3.4 AGRICULTURAL ENVIRONMENT

Following publication of the 1975 Population Census it was
revealed that just over 60% of all kaso chitai were also areas receiving
special aid under the scheme for the 'Promotion of Mountain Villages'.
The term 'mountain village' incorporates a number of meanings and,
in fact, more than one definition of 'mountain villages' (sanson) is
used by different government agencies. The 1965 Law for the Promotion
of Mountain Villages simply defined them as municipalities where
75% or more households held forest land and where population density
did not exceed 1.16 per square hectare. A total of 1,358 municipalities
were thus declared eligible for special aid, representing approximately
40% of all municipalities in Japan (Ikegami, 1975; 120). In contrast,
the Ministry of Agriculture and Forestry has adopted a rather more
stringent definition of 'mountain villages' for use in its classifi-
cation of agricultural settlements by economic type (Nōrinshō Tōkei
Jōhōbu, 1977). Here, a much wider variety of factors are considered,
including characteristics of terrain, and agricultural potential, as
well as forest holding and population density. By this means, the
number of sanson municipalities was given as only 635 in 1975,

representing just 20% of all municipalities in Japan (Ibid., 2).

Whichever definition is taken, the crucial point to note is that a considerable amount of variation exists, particularly with regard to the type of agricultural environment, within Japan's rural area. As a result of this, relative income levels and standards of living also show a great deal of variation. In very general terms, this variation is closely linked to changes in terrain, so that the worst agricultural environments tend to be associated with the more mountainous areas and, in consequence, these areas usually experience the highest rates of rural depopulation.

Some of the differences in agricultural environment between mountain and lowland areas are highlighted in Table 3.4. In mountain areas as well as lowland, cultivation of rice was the major agricultural activity in 1969. At this time, rice growing still offered the highest cash returns in relation to labour and capital input, and government price support policies made rice immune to the fluctuations of free market pricing. However, the difficulties of terrain and climate in mountain areas meant a significantly lower proportion of the cultivated land area was suitable for rice production than in lowland areas. Furthermore, the narrow valley floors in mountain districts placed greater limitations on average size of holding, and restrict irrigation and the use of mechanised aids. Thus, both land and labour productivity levels tend to be considerably less than in lowland areas, with the result that agricultural income levels are also much lower. In 1968, average agricultural income per farm household was 1.7 times greater in lowland plain villages, standing at ¥628,000 compared to only ¥366,000 in mountain villages.

Table 3.4 Agricultural conditions by village type, 1968

	Cultivated land area per farm household (ha.)	Value of agricultural produce per hectare (¥ '000)	Proportion of cultivated land area which is rice paddy (%)	Proportion of farms which are full-time (sengyo) agriculture (%)	Agricultural income per farm household (¥ '000)
Suburban villages (Toshi kinkō)	7.92	57.7	63.2	14.7	442.2
Lowland Plain Villages (Heichi nōson)	10.81	59.8	67.9	21.2	627.6
Agricultural Mountain Villages (Nōsanson)	8.91	50.7	54.0	20.4	435.2
Mountain Villages (Sanson)	8.06	47.2	53.4	13.6	366.3
National average	9.36	55.4	61.2	18.9	501.3

Source: Ringyō Kōzō Kenkyūkai, 1978; Nihon Keizai to Ringyō - Sanson Mondai, p. 304.

To some extent, farmers in mountain villages have attempted
to reduce those disparities by greater diversification of agricultural
production (Takeuchi, 1974; Adachi, 1973). Whilst production of
fruit, vegetables, and livestock have all been greatly increased,
however, the difference in average agricultural incomes between
mountain and lowland villages has remained unaffected. In 1973,
agricultural income per farm household had increased to ¥501,000
in mountain villages, whilst the corresponding figure for lowland
villages reached ¥944,000 (Nōrinshō Tōkei Jōhōbu, 1977; 229). It is
important to stress, on the other hand, that these figures do not take
account of incomes derived from forest products. Since, according
to the definition of sanson in the Law for the Promotion of Mountain
Villages, these areas include a high proportion of farms who also
own forest land, the potential significance of this additional source
of income is considerable. Over the country as a whole, some 60%
of the land surface is covered by forest and, because this area is
restricted to land not suitable for rice cultivation or human
settlement, it is almost entirely concentrated on steep-sided hill-
slopes and in the mountain regions (Nōrin Tōkei Kyōkai, 1976). In
fact, agricultural and forest operations are so intricately bound
together in mountain villages, in the social as well as the economic
sense, that it is meaningless to compare relative income levels without
taking forest income into account.

This is by no means a straightforward task, however. In the
first place, forest incomes may be derived in a wide variety of
ways, including the sale of timber from privately owned plantations;
the manufacture and sale of 'secondary' products such as charcoal;

the production of forest-related crops such as mushrooms (where

spores are implanted into sawn timber-trunks and left under the shade of

forest cover); wage labour in other private, or state-owned forests;

and, simply, by the sale or leasing of forest lands.

Secondly, the very nature of timber production, where trees

require at least 40 years' growth before they can be felled to

fetch a profitable market price, often results in long periods when

forest owners receive no income at all. In other words, true income

statistics should be averaged against production costs over the whole

period of growth, and should take account of trees presently standing,

which represent long term capital assets, or future income potential

(Sanson Shinkō Chōsakai, 1972; 69). This is, of course, difficult

to calculate on a yearly basis, although official forest income

statistics presented in the annual White Paper on Forestry do take any

increase or decrease of forest stocks into account when calculating

the difference between forest earnings and forest management costs

(Nōrin Tōkei Kyōkai, 1976).

Thirdly, there is considerable diversity in the type and scale

of forest holdings. 60% of the total forest area in Japan is owned

privately, and the remainder belongs to state, prefectural, or

municipal governments. Of the privately owned forest land, 70% is owned

by individual households (nōrinka) and 30% by commercial enterprises

or other private institutions such as temples and shrines (Nōrin Tōkei

Kyōkai, 1976; 112) The size of forest holding varies tremendously,

between individual households, ranging from less than one hectare

to many hundreds of hectares. In this respect it is worth noting

that the 1947 Land Reform, which had the effect of equalizing the size

of agricultural land holdings, did not affect forest ownership at all.
Generally speaking, forest holdings tend to be larger in mountain
villages than elsewhere. Whereas average holdings for all nōrinka
amount to just 5.6 ha., in mountain villages they average 23.7 ha
(Sanson Shinkō Chōsakai, 1972; 52). In all areas, however, the
distribution of land holdings by size is heavily skewed. Over the
country as a whole, 90% of private forest owners have holdings of
less than 5 ha., amounting to no more than 30% of the forest area
owned by all nōrinka (Nōrin Tōkei Kyōkai, 1976; 112). Equivalent
figures are not published for the total 'mountain village' areas
in Japan, but they are available for individual municipalities.
Summing the totals for sanson in Kyoto and Shiga prefectures, it is
found that 82% of nōrinka in these districts have holdings of less
than 5 ha, whilst 45% own less than one hectare. Compared to an average
holding of 4 ha., these figures suggest that a heavily skewed
distribution of forest holdings exists in mountain areas too
(Nōrinshō, 1975; Vol. 25-26).

Variations in the size of forest holding are especially important
because of their effect on relative income levels in forest households.
In 1975, average forest income in households with less than 5 ha. was
¥78,000, compared to ¥297,000 in households which owned more than 5 ha.
(Nōrin Tōkei Kyōkai, 1976; 113). Similarly affected is the relative
importance of forestry to total household income. In 1960, for instance
nōrinka which owned between 1 and 5 ha. of forest land received, on
average, only 14% of total household income from forestry, whilst
agricultural earnings contributed 65%. Households with more than
20 ha. of forest, on the other hand, gained 50% of total income from

forest earnings, and only 40% from agriculture (Ringyō Kozō Kenkyūkai, 1978; 314). Also important is the fact that size of holding has a strong influence on the type of forest production.

The great majority of forest owners, with holdings of less than 5 hectares, cannot rely on sales of timber for a steady, constant income. In view of the fact that even softwoods require 40 years growth to reach maturity, their holdings are simply too small to utilize the careful forest management techniques required for such an enterprise. In 1975, only 14.5% of gross forest income for holdings of less than 5 ha. came from the sale of felled timber. In contrast, 54% of forest income was accounted for by firewood, charcoal, and mushroom production (Nōrin Tōkei Kyōkai, 1976; 113). Originally, these small forest holdings were maintained as an essential resource for agricultural production. They provided an area to graze domestic farm animals, and a source of green manure for crop cultivation. In addition, they provided all essential building materials and fuel for cooking and heating. In the early Taishō period (1912-1926), when the national economy started to expand rapidly, farmers began to realise the full potential of their forest holdings. Whereas timber production accelerated on the larger holdings, it was charcoal burning which provided the most suitable form of production for farmers with small plots of forest land. Charcoal is ideally burned in the winter months, when the amount of sap in the wood is lowest. In mountain areas in particular, this period coincides with the agricultural slack season since the climate is too cool to allow winter grain crops to be grown. Charcoal production was thus able to fill this gap, and complement agricultural production.

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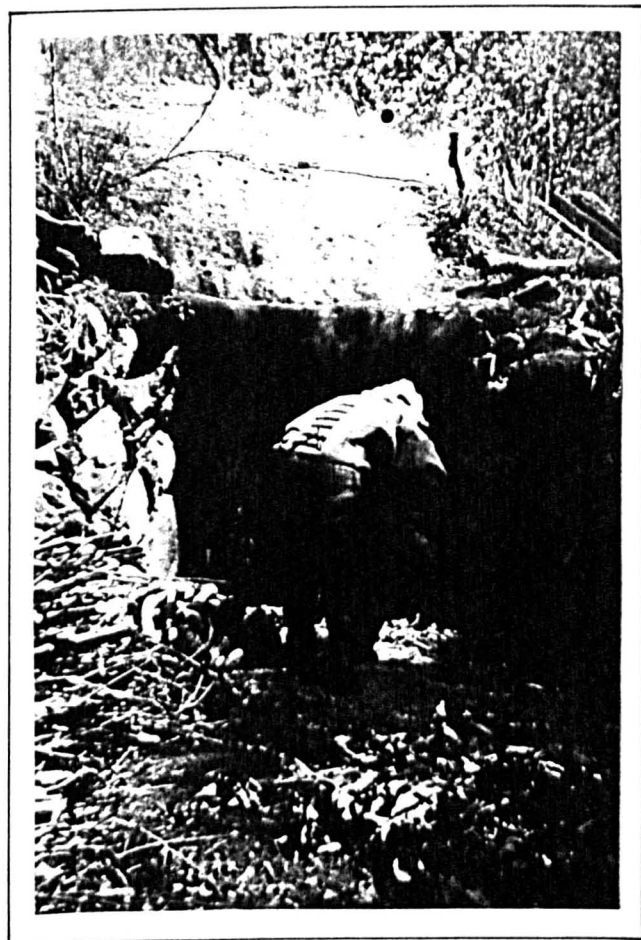
Plate 3.3 Charcoal
burning in Kawanishi-
shi, Osaka prefecture.

Plate 3.4 Mushroom cultivation under the shade of
forest cover, Kyoto prefecture.

The best charcoal is produced from deciduous hardwoods, such
as chestnut or oak, and, since young trees of just four or five
years growth are suitable for burning, the process of natural
regeneration was usually sufficient to provide ample timber supplies,
even on small holdings. When charcoal production fell into rapid
decline after 1960, therefore, there was no alternative form of
production to which farmers could immediately turn, apart from selling
mature stands of hardwood trees for building and construction. But,
since regeneration is slow, this source of income could not be sustained
for long. After 1970, however, mushroom cultivation began to
gain increasing popularity and in 1976, it accounted for 42% of gross
forest income in households with less than 5 ha of forest land (Nōrin
Tōkei Kyōkai, 1976; 113). Mushroom spores are implanted into metre
lengths of oak logs, which are then stacked under the shade of forest
cover (Plate 3.4). The labour input requirement is relatively small
compared to the high cash returns for this very popular food item
in Japan but, even by the late 1970s, production was not as wide-
spread in mountain villages as charcoal burning had once been (Sōrifu
Tōkeikyoku, 1976).

On many larger forest holdings, where the emphasis tends to be
concentrated on sales of timber, production has suffered as a result
of severe over-cutting during the war and in the immediate post-
war years (Ackerman, 1953; 266). Not until 1961, when the government
enacted a revision of the old 1897 Forestry Law and forbade the
deforestation of young trees and made provision that any deforestation
must be followed by afforestation within two years, did the situation
of overcutting finally come to an end. The effects are still felt,

however, and in 1970, as many as 84% of all plantation softwoods were planted less than 30 years previously (Sanson Shinkō Chōsakai, 1972; 52). This meant that, even as late as 1980, many forest owners did not receive any substantial income from forest production whilst the costs of forest management remained high in comparison. In order to offset possible losses, and to secure a sufficient income to maintain daily household requirements, many forest owners have found it necessary to sell part of their forest lands. Traditionally, forests were sold in order to raise money for a daughter's marriage dowry, but in recent years the sale of forest land appears to have been the only way for forest households to 'ride the storm' until their remaining trees reach full maturity. In 1975, for instance, 44% of gross forest income for households with more than 5 ha. of forest land came from the sale of 'standing trees' (Nōrin Tōkei Kyōkai, 1976; 113). It is clear, therefore, that many forest households, whether they operate small or comparatively large forest holdings, have faced severe problems in forest production in post war years. Despite the considerable income potential of Japan's forest resources, many forest owners have suffered a decline in forest earnings, particularly as a result of the demise of charcoal production. As a result, by 1970, forest products contributed less than 1.5% to average farm household income, compared to a 46% contribution from agricultural sales (Sōrifu Tōkeikyoku, 1976; 120).

In conclusion, there are two points which follow from this. First, it is apparent that the policy of running down certain 'throw-away' industries in the 1950s and 1960s (Kahn, 1970), notably charcoal

and other forest related products, probably had a greater impact on mountain village communities than any other area of Japan. It destroyed the only opportunity for part time non-agricultural employment in these districts whereas in less remote areas, jobs could still be found by commuting to work in the expanding metropolitan centres or in prefectural capitals. Second, the poorer climate and terrain in mountain village areas means that agricultural productivity levels are much lower here than elsewhere, and that a huge income disparity for agricultural produce exists in consequence. Rice reduction policies introduced in the 1970s have further weakened the agricultural potential of mountain village areas, and so the income disparity continues to grow. Taking all revenue sources into account, therefore, average farm household income in 1975 was only ¥2.98 million in mountain village areas compared to ¥3.5 million in lowland plain villages (Ringyō Kōzō Kenkyūkai, 1978; 340).

The lack of job opportunities in remote mountain areas has prompted many people to undertake seasonal migration, or dekasegi, to find extra income, and this is reflected in the fact that rates of dekasegi in mountain villages are higher than in any other type of community (ibid., 307). Alternatively, a number of mountain village communities have exploited the features of their harsh natural environment for tourism, winter sports, and hydro-electric power generation to gain additional income, and have therefore managed to avoid severe depopulation (Miida, 1979). The great majority of mountain villages, however, are losing population rapidly through out-migration as a result of the income disparity with other areas. This has occurred to such an extent that the words sanson and kaso are often regarded as synonomons (Imai, 1975).

3.5 CLIMATE

Most of Japan lies in the sub-tropical latitudes, and has a
climate which is characterized by hot, humid summers with plenty of
rainfall, and cold, dry winters. This provides for abundant plant
growth and is especially suited to rice cultivation. A considerable
degree of climatic variation exists within the country, however,
which is largely determined by latitude and by the nature of the terrain.
Inevitably, this gives rise to the kind of variations in agricultural
productivity which were discussed in the previous section, but rather
than concentrate on this aspect, emphasis here is placed on the more
extreme climatic conditions which exist in certain parts of Japan,
and the effects these have on people's lifestyles in some rural commun-
ities.

Perhaps the most well-known severe weather condition associated
with Japan are the typhoons which approach from the Pacific each
October. The strong winds cause considerable damage to buildings and
property and can destroy young forest plantations and other crops.
Even more dangerous is the high level of rainfall which typhoons bring,
which can cause landslides on mountain slopes often resulting in loss
of life. Areas in the south west of Japan, including the islands of
Kyushu and Shikoku, are most regularly affected by typhoons, but they
can sweep across any area of the country. Rather like earthquakes,
therefore, which similarly affect all parts of Japan, they are simply
regarded as an unpleasant fact of everyday life by all Japanese people
and, since all areas are more or less equally affected, there is no
point in moving house to try to get away from the danger. Only perhaps
in very remote and inaccessible places, where emergency services cannot
get to quickly, might the risk of damage or personal injury by typhoon

encourage people to consider moving to an area where fire-fighting and medical facilities are more readily available.

In contrast, heavy snowfall between January and March each year affects only certain regions of Japan, and can be positively linked to large volumes of out-migration. In the winter months the dominant climatic influence on Japan is a continental high pressure system, centred over Siberia, from which bitterly cold northerly winds emanate. These winds pick up moisture from the Japan Sea which is precipitated as snowfall on northern Japanese coastal areas, where the air is forced to rise over the mountain barrier which stretches the whole length of this region. The fall is exceptionally heavy, and each year snow accumulates up to depths of four metres on the mountain summits of the Hokuriku region, whilst areas on the coast receive depths up to two metres. The highest recorded depth of annual snowfall ever was 11.82 metres, on Mount Ibuki in Shiga prefecture (Fukui, 1977; 244).

The whole of the Japan Sea coastal area remains under snow cover for periods ranging between one and four months, with the longest period of cover in areas in more northerly latitudes and at highest elevations. For many villages in this region, particularly in mountainous districts, this snow presents a considerable number of problems. First of all, as the snow actually falls it is usually necessary to climb onto the roofs of buildings to shovel it off. Otherwise, the accumulated weight of snow would cause many buildings to collapse, and tales of people being killed in this manner were reported during the course of fieldwork in the Tango penninsula, in the north of Kyoto prefecture. On this occasion, during a particularly heavy snowstorm in 1975, as much as two metres fell in just one night.

In many isolated villages, where mechnical snow clearing facilities are unavailable, people are often forced to remain in their homes for periods of a week or more following heavy snow storms. It is also common for villages to remain inaccessible to motorized transport for periods up to four months. 6.8% of all agricultural settlements in Japan are cut off in this way for 100 or more days each year, whilst 17.5% of settlements are cut off for at least 30 days (Nōgyō Shūraku Kenkyūkai, 1977; 169). This creates obvious difficulties for getting to work, or to schools, shops, and medical facilities, and is a major dis-incentive for firms seeking to re-locate in rural areas. It is for these reasons that special legislation was passed in the Japanese Diet in 1962, to provide financial aid to regions adversely effected by heavy snowfall. Altogether, 193 municipalities in Japan were considered eligible, representing 3% of the Japanese population. 92% of these municipalities were all located in the Hokuriku, Tohoku, or Hokkaido regions (Ikegami, 1975; 122). The only possible advantages arising from heavy snowfall are the attractions it offers to winter sportsmen and tourists. Whilst a considerable amount of income can be generated in this way, the proportion of villages with adequate facilities for winter tourism is comparatively small and, because many villages are too isolated, they receive no cash benefits at all.

As a result of the hardships associated with life in areas of heavy snowfall, especially the difficulties of earning an adequate income, many people have left these districts permanently to seek more convenient lifestyles. The particularly harsh winter of 1963, for instance, has been cited as the main reason why so many people left their villages in the northern districts of Kyoto prefecture in that

year (Sakaguchi, 1970; Watanabe, 1970). It is also worth noting that

of the 193 municipalities receiving special aid because of heavy

snowfall, 55% are designated areas of severe depopulation (Kaso

Hakusho, 1975).

3.6 CONCLUSION

The identification of kaso chitai, or areas of severe rural

depopulation, highlights not only the severity with which some areas

have been affected by the post war rural exodus, but also the extent

to which migration rates vary between different rural areas. Between

1970 and 1975, for instance, when the rural exodus began to slow down

in many areas, and when some rural municipalities actually began to

experience population growth through net in-migration, there were still

almost fifty municipalities in Japan where depopulation accelerated

to such a degree that these areas became eligible for kaso chitai

status (Kaso Hakusho, 1977). Clearly, the size and pace of the rural

exodus are not evenly distributed across the rural area, with some

areas much more severely affected by out-migration than others.

It follows from this that whilst economic and political factors

operating on the national level initially gave rise to the situation

of a rural exodus, the relative volume of out-migration experienced in

different rural areas is principally determined by local environmental

considerations. Areas with highest rates of rural depopulation and out-

migration, for instance, tend to be those with the most unfavourable

climate, where the harsh terrain results in low agricultural product-

ivity, and where levels of accessibility are poorest. Furthermore,

although this argument has been presented in terms of the dichotomy

between kaso and non-kaso areas, it should be apparent that migration

rates and the range of possible explanatory factors are spatially variable along a continuum. That is, the level of accessibility, for example, can be represented along a continuous scale ranging from very good to very bad, and it is reasonable to suggest that migration rates will vary accordingly, in a similar fashion.

Systematic analysis of this kind of relationship is made complex, however, by the fact that accessibility, or agricultural productivity, and so on, can each be measured in many different ways. In other words, 'accessibility' is really a composite term describing ease of access to the nearest town, and to job opportunities, shops, schools, health facilities, and administrative offices, and should incorporate a description of the state of local roads and the quality of public transport provision. Also, some form of weighting procedure may have to be considered, to take account of the fact that poor access to job opportunities may have a greater bearing on the decision whether or not to migrate than, say, poor access to local shops.

Nevertheless, it is clear that a full understanding of the post war rural exodus can only be achieved on the basis of a detailed consideration of spatial variations of factors which are likely to influence the migration decision. Before any attempt is made to analyse the complex inter-relationships between these factors, however, it is necessary to consider the most suitable scale at which variations within the rural area can be identified.

CHAPTER FOUR

THE STUDY AREA.

4.1 INTRODUCTION

The very definition of migration is intricately bound with the concepts of space and time (White and Woods, 1980). Before any change of residence by an individual, or group of individuals can be recorded as a migration, certain spatial and temporal criteria must be established so that "at least one boundary between areas of a spatial framework is crossed and that a certain length of time is spent over that boundary in a new area of residence" (Woods, 1979, 165). The areal units which comprise the spatial framework may vary in size from the household at the smallest level, ranging through to regions, nations, or continents at the other extreme. In the context of the present research, which seeks to establish the reasons for spatial variation in rates of rural out-migration, the size of areal unit must clearly meet with two requirements. In the first place it must enable rural areas to be distinguished from urban places, and secondly, it must facilitate the comparison of out-migration rates between different districts actually within the rural area (Figure 4.1).

The form and structure of the spatial framework also has a strong influence on the choice of variables used to explain the variations in rural out-migration rates (Haggett, 1965: Chisholm, 1980). Economic growth rates, for instance, are usually only measured at the national or regional level, not for villages or households. Conversely, the distance to the nearest hospital as a measure of accessibility is generally more appropriate for

individuals, or single settlements than for larger aggregations
of population at say, the prefectural level. Here, variations
between individuals within the prefecture are likely to be so great
that the measure becomes meaningless. In general terms, the smaller
the areal unit of data aggregation the greater will be the potential
number of relevant causal factors. One reason for this is
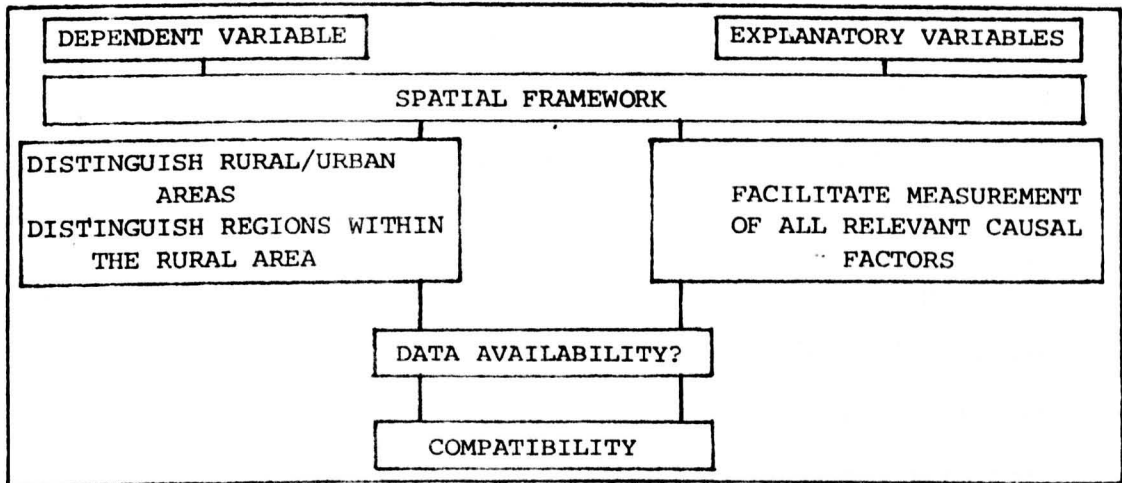
Figure 4.1 CRITERIA FOR SPECIFICATION OF SPATIAL FRAMEWORK

that variables which are measured at large areal scales, such as
economic growth rates, often hold a contextual relationship
with factors measured at lower levels of the scale hierarchy.
Individual wage levels, job opportunities, and so on, are strongly
influenced by levels of growth in the national economy. Furthermore,
knowledge that a state of high growth exists may modify the
aspirations of potential migrants, thus providing the context within
which the decision to migrate is made. This form of relationship
only works down the scale hierarchy, however, and not the other way
round (Harvey, 1973; 352). The important requirement for this research,
therefore, is to select a scale level which is small enough to allow
measurement of all the relevant causal factors outlined in the previous

chapters, but not so small that the range of possible factors becomes too great to handle adequately. In addition, the most useful maxim to take as a guideline for the selection of scale level for measuring both out-migration levels and the accompanying range of explanatory factors is to ensure that 'within unit variation is minimized and between unit variation maximized' (Harvey, 1973; 354).

Unfortunately, scale choice is often restricted because empirical research invariably has to rely on data which are already aggregated for pre-defined administrative territories. Furthermore, the criteria which the researcher may wish to employ for his choice of scale level are usually not the same as those used by local or national government officials in their method of scale determination. This in turn may mean that the data which a researcher might wish to use may not be available at certain levels of scale presentation. Furthermore, it is imperative that data on migration rates and causal factors are taken for the same areal units. This means data should ideally be taken from the same statistical source, or, if this is not possible, they should be drawn from entirely compatible sources.

As a preliminary to scale choice, therefore, it is useful to consider all the relevant data sources, with particular regard to their content, and compatibility.

4.2 DATA AVAILABILITY AND SCALE LEVELS

There are three data sources in Japan which can provide information on gross migration flows: the Population Census; the Report on Internal Migration in Japan; and the Basic Residential Register.

The quinquennialPopulation Census of Japan has incorporated questions on migration since 1960. In 1970, for instance, two

questions on migration were asked. The first elicited when the last change of usual place of residence occurred, to the nearest year or five year period. The second asked respondents to record their previous address if they had moved since 1965.

The tabulated results, which incorporate population breakdowns by age, sex, and occupation, provide details of all moves made between prefectures in the period 1965 to 1970, as well as moves to and from most municipalities. In this instance, some municipalities are named as major migrant origins or destinations, whilst the rest, with only minor migration flows between them, are all grouped together under the heading "others".

No information is presented on migration flows within municipal boundaries, although the overall volume of intra-municipal migration is recorded.

The Report on Internal Migration in Japan is published annually, and has provided the basis for all yearly estimates of internal migration flow since 1951. It is compiled from municipal accounts, based on migrations recorded in the Basic Population Register. This register maintains a continuous record of the place of residence of every individual in the Country, as well as details of date of birth, sex, and family status (Kono, 1969). Because registration is necessary for school enrolment, health insurance, and so on, people are required by law to report a change of residence within 14 days of moving. Each month, every municipal office compiles a tally sheet of all the in-migrants to their municipality, together with a list of the prefectures of origin (and wards in the case of the ten major cities) These lists are collated at the Office of the Prime

Minister in Tokyo, and then presented in the Annual Report on Internal Migration.

The Report includes details of all inter-prefectural moves, broken down by month, and by sex of the migrants. It also tabulates the total number in-migrants to each municipality each year, but does not, in this case, provide information on area of origin.

In addition, some Prefectural Yearbooks tabulate information compiled from Basic Population Register accounts. They often provide, for instance, an annual record of the total number of migrants entering and leaving each municipality in the relevant prefecture, but these are rarely accompanied by records of migrant origin and destination (e.g. Shiga-ken, 1976; 14).

It is also worth noting that 11% more inter-municipality moves were registered in the Report on Internal Migration for the period 1969 to 1970 than in the corresponding Population Census estimate (Johnson, 1976). This is because the Report is based on a continuous account of all permanent and semi-permanent moves, whilst the Census only records the last change of usual residence.

The Basic Residential Register is itself available for public inspection at local municipal offices. A detailed search usually means it is possible to trace changes of residence for any individual who has lived in a particular municipality, for any length of time, since 1951, when the Register was first introduced.

Compiling migration statistics from individual histories in this way means, of course, that they can be aggregated for any range of spatial and temporal parameters. Also, this is the only means by which precise data on gross intra-municipal migration flows can be

gathered. The obvious limitation, on the other hand, is the amount of time required to find and record each individual move. This imposes a severe restraint on the scope of the research, and the degree to which variations in rural out-migration rates can be effectively identified.

Apart from gross migration flows, net-migration estimates can be made for any areal unit where suitable demographic data are available. Using the Basic Demographic Equation, where net migration is the residual after population change has been adjusted for the natural increase or decrease in population, merely requires data for total population at any two points in time, and for the total numbers of births and deaths which occur during the intervening period (Woods, 1979; 166). These data are readily available at the prefectural and municipal levels, in the Census of Population, and in annual reports issued by the Ministry of Health and Welfare entitled "Vital Population Statistics". Since adequate details of gross migration flows are already available at these levels, however, the estimation of net-migration rates for prefectures or municipalities is unnecessary. For areal units smaller than the municipality, on the other hand, there is only one data source providing regular population totals. This is the Population Census, with results broken down by enumeration districts (chōsa-ku).

Publication of the returns for enumeration districts has accompanied every Population Census since 1965, although these are only available for inspection at Prefectural Offices and at the Bureau of Statistics, in Tokyo. They include only a limited range of the statistics presented in the full Census tabulations, but they

do incorporate population totals broken down by age, sex, and occupation

The main criterion for establishing the areal extent of individual enumeration districts is that each should incorporate about 50 households (Bureau of Statistics, 1970). This means that their actual size is principally dependent on the local density of households, so that in urban areas they tend to be very small, and in rural areas they are much larger. Nevertheless, a typical rural municipality with about 2000 households would be divided into approximately 40 enumeration districts. Data taken for these individual districts can then be aggregated if required, to form slightly larger spatial territories.

Although population totals are available for enumeration districts, for the years 1965, 1970, and 1975, there is not, unfortunately, any record of the number of births and deaths at this level. The estimation of net-migration rates can only be made, therefore, after the numbers of births and deaths are themselves estimated. Whilst procedures are available to carry out this, it does mean that the resultant net migration figures may not be entirely accurate or reliable. Moreover, net migration figures provide much less information about migration flow and total migration volume than gross migration figures. Set against these arguments, this data source is the only one which permits migration analysis at the sub-municipal level, whilst at the same time allowing the study area to be sufficiently large to incorporate the full range of rural area types.

In contrast to the fairly limited range of demographic and migration data sources, there is an extensive coverage of material for the measurement of socio-economic causal factors. Nearly all of this is presented at the prefectural and municipal levels, including information in the Census of Population, the Census of Agriculture and Forestry, the Census of Industrial Production, and so on, and also including extensive summaries presented in Prefectural Yearbooks.

At the sub-municipal level data sources are again very limited, but there is one survey, the Census of Agricultural Settlements, which does present a considerable amount of useful information on the social and economic structures of individual rural communities. 'Agricultural settlements' (Nōgyō Shūraku) were first defined in 1960, as:

> groups of farm households which co-exist on the
> basis of strong mutual co-operation with regard
> to agricultural operations ... and which have
> developed, over the course of time, powerful
> physical bonds between households which form the
> basis of a wide variety of social and other group
> relationships. (Nōgyō Shūraku Kenkyūkai, 1977; 3)

The boundaries between agricultural settlements are contiguous, and taken together, the whole agricultural settlement area covers nearly all the land surface of Japan. Only in inner city areas, where no farms are to be found at all, are agricultural settlements not recognized. This means, of course, that many non-agricultural households are included in the agricultural settlement area, and in some settlements on the urban fringe, non-agricultural households may vastly out-number farm households. Generally speaking, however,

agricultural settlements may be considered as historically and morphologically independent communities, ranging in :size from small hamlets with just a few households, to suburban settlements with many hundreds of households.

The Agricultural Settlement Census is quinquennial, but the content and scope of the information it presents varies considerably from one Census to the next. The most detailed is the 1970 Census, which includes figures on farm production and productivity, as well as on the social organizations within each community, access to the major welfare and administrative establishments, and the overall economic structure of each settlement. Clearly, this list covers many of the factors which have been proposed to explain variations in rural out-migration rates. The only variable not covered in sufficient detail, unfortunately, is population size and structure.

From this list of five major data sources, it is now possible to consider the various scales at which a study of rural migration may be undertaken. The easiest means to contrast the different scales is to look at the total number of units which Japan is divided into at each level. Figures are approximate, and based on the year 1975 (Table 4.1)

TABLE 4.1 MAJOR DATA SOURCES AND SCALE LEVELS

Data Source	Scale Level	Total No. of Units
Population Census, Report on Internal Migration, and Others	Prefecture	47
	Municipality	3,200
Agricultural Settlement Census	Agricultural Settlement	143,000
Population Census, Returns for Enumeration Districts	Enumeration District	650,000
Basic Residential Register	Individual People	110,000,000

Whilst the quality and reliability of migration data at the inter-prefectural level is probably the best, it should be clear that this level is unsuitable for the accurate measurement of variations in rural out-migration rates. All 47 prefectures in Japan have at least one major concentration of urban population, including areas defined in the Census of Population as Densely Inhabited Districts. At the same time, all prefectures have areas which by any definition must be described as distinctly rural in character. Tokyo prefecture, for instance, which includes one of the largest urban concentrations of population anywhere in the world, also incorporates six kaso municipalities, all of which are also defined as 'remote districts' (Kaso Hakusho, 1975). It is impossible, therefore, to describe any prefecture as exclusively urban, or exclusively rural. Moreover, it is found that about half of all inter-municipality migrations occur within prefectural boundaries (Bureau of Statistics, 1975). The likelihood is that many of these moves are from rural areas to urban destinations, and these would have to be entirely excluded from consideration if the prefecture were taken as the basis of a spatial framework for this study. This would be clearly unacceptable.

At the other extreme, the possibility of basing any form of systematic analysis of spatial variations in rural out-migration rates on just a few individual migration histories is also clearly out of the question. Whilst the Basic Residential Register is an extremely detailed and interesting data source, it requires considerable time to elicit migration statistics. Collecting sufficient information on a wide enough sample of population to represent all rural environments is simply not a practical proposition. The best that

can be achieved would be an intensive, micro-level survey (for which

the Register is ideally suited), for just one or two rural settlements.

Whilst this may provide detailed and useful information on certain

migrant characteristics, or on migration flow in specific areas, it

would not fulfil the main objectives of this study.

With regard to the other data sources at the sub-municipal

level, it will be realised that neither the Census returns for

enumeration districts, nor the Agricultural Settlement Census contains

detailed information on both demographic and non-demographic variables

together. The former contains mostly demographic information whilst

the latter presents socio-economic statistics. Furthermore, the two

data sources are based on rather different scale levels. These

problems can be overcome, however, by combining enumeration districts

so that the new territories are exactly equivalent to agricultural

settlement areas. The relevant data from the enumeration district

returns may then be merely aggregated. If this is done, the choice

of scale is now between the municipal and agricultural settlement

levels only.

4.3 A SPATIAL FRAMEWORK: THE MUNICIPALITY OR AGRICULTURAL SETTLEMENT

At first glance, the municipality may seem the obvious base

for constructing a spatial framework for the analysis of rural out-

migration rates. The range of data available at this level is

certainly much greater than for agricultural settlements, and

migration data in particular are more detailed and more reliable.

Also, the municipality is already used as the basis for the

delineation of 'areas of severe rural depopulation' (kaso chitai)

by the National Land Agency (Kokudo-chō), and by the Ministry of

Agriculture and Forestry for their classification of settlement

types (Nōrinshō Tōkei Jōhōbu, 1977). In the latter case, the

distinction made between mountain villages (sanson), plain villages

(heichi nōson), and so on, clearly indicates that variations between

different rural environments can be effectively recognized at this

level. Furthermore, the municipality is often used as the basis for

distinguishing urban (shi) and rural (gun) areas, particularly with

respect to the measurement of rural-urban migration flows (Trewartha,

1965; Davis, 1972).

The shi-gun distinction arises from the fact that municipalities

throughout Japan are grouped into one of three possible classifications:

city (shi), town (chō), and village (son). Specific criteria are

laid down by the national government for the definition of shi, whilst

the distinction between chō and son municipalities is left up to

prefectural governments (Suekawa, 1978; 188). To become a shi a

municipality must have a population of more than 50,000 people, and

60% of the employed workforce must be engaged in non-agricultural

industry. Also, 60% of all households must be located in the

central built-up district (shigai), and further additional criteria

may also be imposed by prefectural governments. Other municipalities

which do not meet shi requirements (i.e. chō and son), are grouped

together into gun regions. These no longer appear to have any

functional significance, however, apart from identifying particular

regions within a prefecture. Normally, each gun comprises about

three or four 'town' and 'village' municipalities.

Before the municipality can be accepted as the basic spatial

unit for this research, it is imperative to discover the degree of

homogeneity between settlement types within each municipal

boundary. This is because, between 1965 and 1970, as many as 40%

of all last changes of residence occurred between places within the

same municipalities (Bureau of Statistics, 1970). If, for example,

it is found that areas with a distinctly rural character are found

within shi municipalities, or urban places are found in gun areas,

the degree to which rural-urban migration can be adequately measured

at the inter-municipal level must be called to question.

Concentrating for the moment on shi municipalities, it will

be recalled that at least 60% of all households in these areas must

be located within the central 'built-up' areas. The question arises,

'what about the other 40%?'. What type of environment are they

located in, and how far away are they from these built-up areas? A

partial answer can be provided by comparing the distribution of

shi municipalities with the distribution of Densely Inhabited Districts

(Figure 4.2). (Densely Inhabited Districts, or DIDs, are defined

in the Census of Population as groups of contiguous enumeration

districts with a population density greater than 4000 per sq. km.,

constituting agglomerations of 5000 inhabitants or more.) It can be

seen that in Kyoto and Shiga prefectures, in 1970, the general

arrangement of shi and DID areas is one of fairly close coincidence.

All shi municipalities, for instance, contain at least one DID.

It is also clear, however, that the overall DID area is much smaller

than the shi area. In Nagahama-shi, or Hikone-shi, for instance,

the DID is equivalent to only about one tenth of the area of the

municipality, and this proportion is even smaller in other

municipalities such as Otsu-shi, Ayabe-shi, and Maizuru-shi.

Moreover, it can be seen that Densely Inhabited Districts also
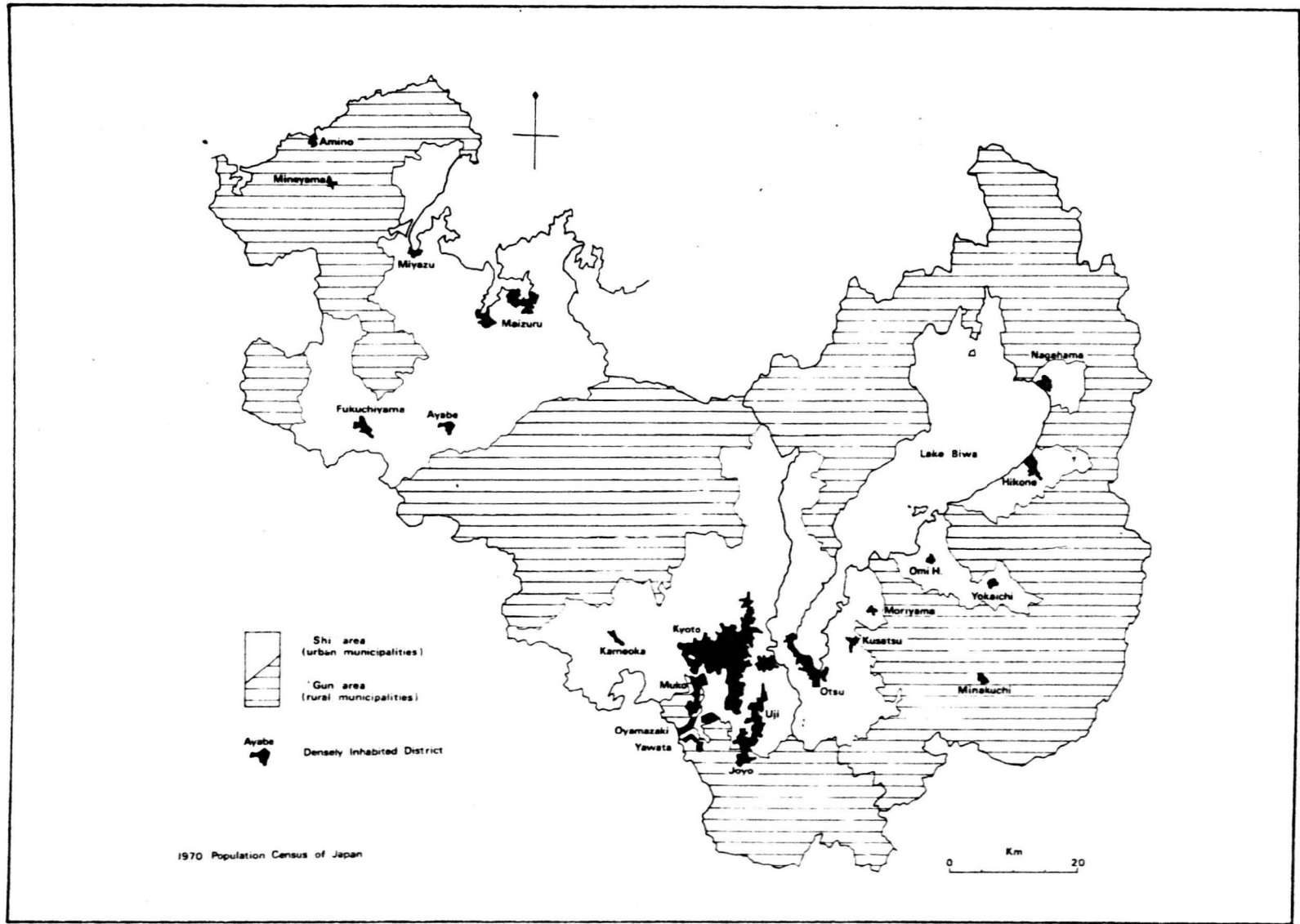
Figure 4.2   Shi-Gun boundaries in Kyoto and Shiga prefectures, and the
distribution of Densely Inhabited Districts.

Map labels:
- Amino
- Mineyama
- Miyazu
- Maizuru
- Nagahama
- Fukuchiyama
- Ayabe
- Lake Biwa
- Hikone
- Omi H.
- Yokaichi
- Moriyama
- Kyoto
- Kameoka
- Kusatsu
- Mukol
- Minakuchi
- Uji
- Otsu
- Oyamazaki
- Yawata
- Joyo

Legend:
- Shi area (urban municipalities)
- Gun area (rural municipalities)
- Ayabe   Densely Inhabited District

1970 Population Census of Japan

Km
0   20

117

occur in some of the 'rural' gun areas, like Minakuchi-chō,

Mineyama-chō, and Amino-chō.

An indication of the type of environment which may be assoc-

iated with non-DID areas in shi municipalities is provided from a

detailed look at the development of local government organization

in modern Japan. Following the Meiji Restoration in 1868, there

have been a number of local government reforms (notably in 1899,

1953 and 1956) which resulted in the enlargement of municipal

territories by merger and consolidation. In consequence, the number

of village (son) municipalities fell, from approximately 18,000

in 1868, to only 989 in 1961 (Tsujita, 1962; 96). One of the main

reasons for these reforms was to make prefectural government

more convenient and efficient, but the 1956 Shi-chō-son Merger

Law, in particular, had the additional aim of resolving the fiscal

difficulties of small municipalities (Takeuchi, 1974). This meant

that instead of merging two or more village municipalities to form

a new chō or son municipality, the authorities preferred to incor-

porate these village areas into financially viable shi municipalities.

In Kyoto prefecture, for example, the area of Fukuchiyama-shi

was enlarged by the addition of eight village municipalities,

Ayabe-shi was enlarged by five such municipalities, whilst

Kameoka-shi was formed by the merger of Kameoka-cho and as many as

17 village municipalities (Kyoto-fu. 1978; 3). The clear indication

is that many shi municipalities now incorporate areas which are

distinctly rural in character, including many small agricultural

settlements and hamlets.

Striking evidence in support of this comes from a study made by

Sakaguchi (1975) of two settlements, Ogose and Omi, which are

located in Kyoto-shi. Despite the fact that they are within the city

boundary, they are situated deep in the mountains, about 600 metres

above sea level, and about 20 km from the actual city centre. They

are served by extremely poor roads, and are at least two hours walk

away from the nearest bus-stop. In other words, they have the

characteristics normally associated with remote, inaccessible mountain

villages, yet they are in a municipality which had a population of 1.4

million in 1970, making it the eighth largest 'metropolis' in the

country. Moreover, after a period of extremely heavy out-migration

in the early 1970s, they became completely abandoned. Hardly any

of these migrations were recorded at the inter-municipal level,

however, since they were nearly all made to the DID area in Kyoto-

shi, within the same municipality (Sakaguchi, 1975; 588). The overall

population of Kyoto-shi, meanwhile, increased by 3% between 1970

and 1975 (Kyotofu, 1978).

Whilst measures of net-migration, or population change made at

the municipal level in this particular case are clearly insensitive

to changes occurring in certain agricultural settlements within the

municipal boundary, this single example cannot provide any real

indication of the extent to which mis-representation might occur in

other districts. It is useful, therefore, to make a more widespread,

and systematic comparison of municipal and agricultural settlement

population change rates before making any final assessment. Population

change, rather than net migration rates are taken because of the

relative ease with which they can be calculated. To do this, population

totals are taken for groups of enumeration districts, which are

combined so that they are equivalent in area to agricultural settle-

ments. In a random sample of 5% of all the agricultural settlements

in Kyoto and Shiga prefectures, however, it is found that comparable population totals over time are not possible in 35 out of 168 cases. This is because certain enumeration district boundaries have been altered between successive Census counts, particularly in areas of rapid population growth near Kyoto-city. A much more detailed explanation of this procedure is outlined in Chapter Seven.

In Figure 4.3, population change rates, over the period 1965 to 1975, for 134 agricultural settlements in Kyoto and Shiga prefectures are compared with the distribution of kaso chitai (areas of severe rural depopulation) for the same area. These kaso chitai are officially designated municipalities which have experienced population decline in excess of 10% over a five year period since 1960 (see Chapter Three). This is taken as equivalent to a population decline greater than 2% a year.

Altogether, there are 11 kaso municipalities in this region, representing 13% of the total number. By comparison, almost exactly the same proportion of agricultural settlements have a rate of population decline exceeding 2% a year, with 22 out of the total of 168 sample settlements falling into this category. In this respect it is worth pointing out that nearly all of the settlements for which accurate population data are unavailable are known to have experienced population increase over this period. Whilst these relative proportions of areas suffering severe depopulation are similar, there are important differences in the distributions of kaso municipalities and 'kaso' agricultural settlements. It may be seen, for instance, that only about one-third of agricultural settlements which have a rate of population decline greater than 2% a year are actually located in
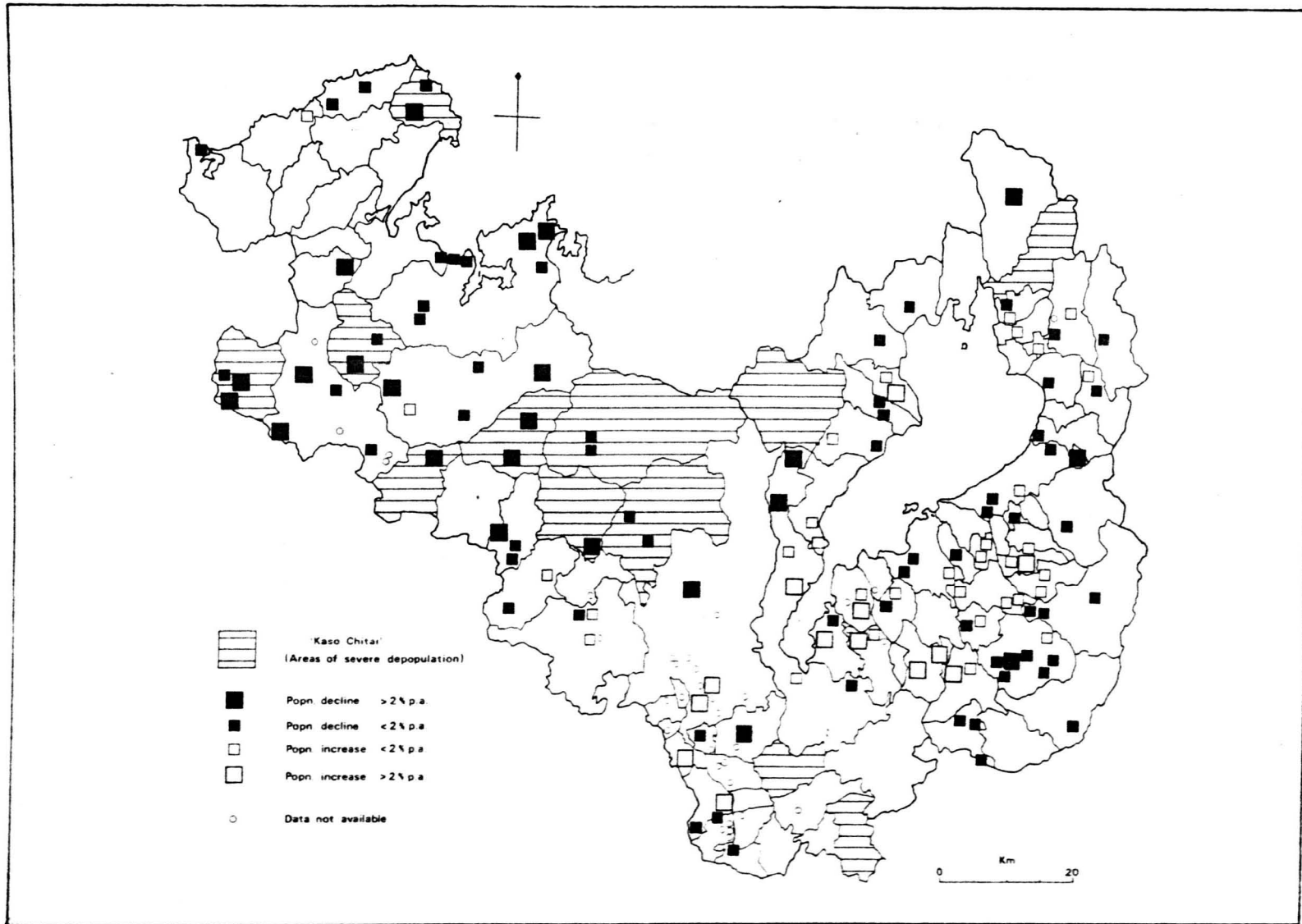
Figure 4.3   'Kaso Chitai' in Kyoto and Shiga prefectures, and population
change by sample settlements, 1965 - 1975.

Legend:

'Kaso Chitai'
(Areas of severe depopulation)

■ Popn. decline   > 2 % p.a.
▪ Popn. decline   < 2 % p.a
□ Popn. increase   < 2 % p.a
□ Popn. increase   > 2 % p.a

○ Data not available

Km
0   20

official kaso chitai. Of the remainder, as many as ten are

located in 'urban' shi municipalities, including Kyoto-shi, Otsu-shi,

Fukuchiyama-shi, Maizuru-shi, Ayabe-shi, and Hikone-shi (see Appendix

II for maps showing the location of these areas).

The most important feature to note from Figure 4.3 is the great

diversity of population change rates experienced by agricultural

settlements throughout the rural area and, in particular, the

differences in population change rates which are evident between

settlements within the same municipality. Of the six sample settlements

in Otsu-shi, for instance, one experienced a population increase

greater than 2% a year; two had a population increase less then 2%;

one experienced a population decline of less than 2%, and two

settlements suffered 'severe depopulation' in excess of 2% a year.

In Kyoto-shi too, there are settlements with very high rates of

population increase as well as a settlement with population decline

of 'kaso' proportions.

From this it is clear that the municipal level is insensitive

to local variations in population change rates, particularly in so-

called 'urban' municipalities. As a result, the spatial pattern of

population change rates measured at the municipal level, as evidenced

by the distribution of kaso chitai, provides an incomplete, if not an

inaccurate, picture of actual variations throughout the rural area as

a whole. Following on from this, it seems likely that variations in

socio-economic and environmental conditions are also inadequately

expressed at the municipal level. Using the same 5% sample of

agricultural settlements, this can be illustrated by comparing agri-

cultural (rice) productivity levels in Kyoto and Shiga prefectures

(Figure 4.4). Here, municipalities are shown according to their

'rural settlement type' classification, as defined by Ministry of
Agriculture and Forestry (Nōrinshō Tōkei Jōhōbu, 1977).

From the evidence presented in Chapter Three, it may be
anticipated that 'suburban' (toshi kinkō) and 'lowland plain' (heichi
nōson) settlement areas should have high rice productivity levels,
whilst in 'agriculture-mountain' (nōsanson) and 'mountain' (sanson)
settlement areas, productivity levels should be much lower. This
general picture is confirmed in Figure 4.4., with agricultural settle-
ments in the 'suburban' and 'lowland plain' municipalities to the east
and north-east of Lake Biwa, in Shiga prefecture,showing productivity
levels as high as 540 kg. of rice per 10 ares (0.1 hectare), whilst
settlements in the sanson municipalities across the centre of the
region, and along the eastern boundary of Shiga prefecture, have
productivity levels averaging just 300 kg/10 ares. It may also be
noted that in both heichi noson and sanson municipalities, productivity
levels are fairly consistent between different settlements within
those municipal boundaries. In toshi kinkō and nōsanson areas, on
the other hand, there appears to be considerable diversity in prod-
uctivity levels between settlements in the same municipality. In
'suburban' areas such as Kyoto-shi and Otsu-shi, for instance,
rice production levels range between 240 kg/10 ares and 420 kg/10 ares.
A similar spread of values is evident for settlements in Hino-chō,
which is one of the 'agricultural-mountain' areas in the south-east of
Shiga prefecture.

The reason for these disparities is that whereas variations in
rice productivity levels are mainly accounted for by differences in
landform and in height above sea-level, the delineation of municipal
boundaries does not accurately reflect the division between upland
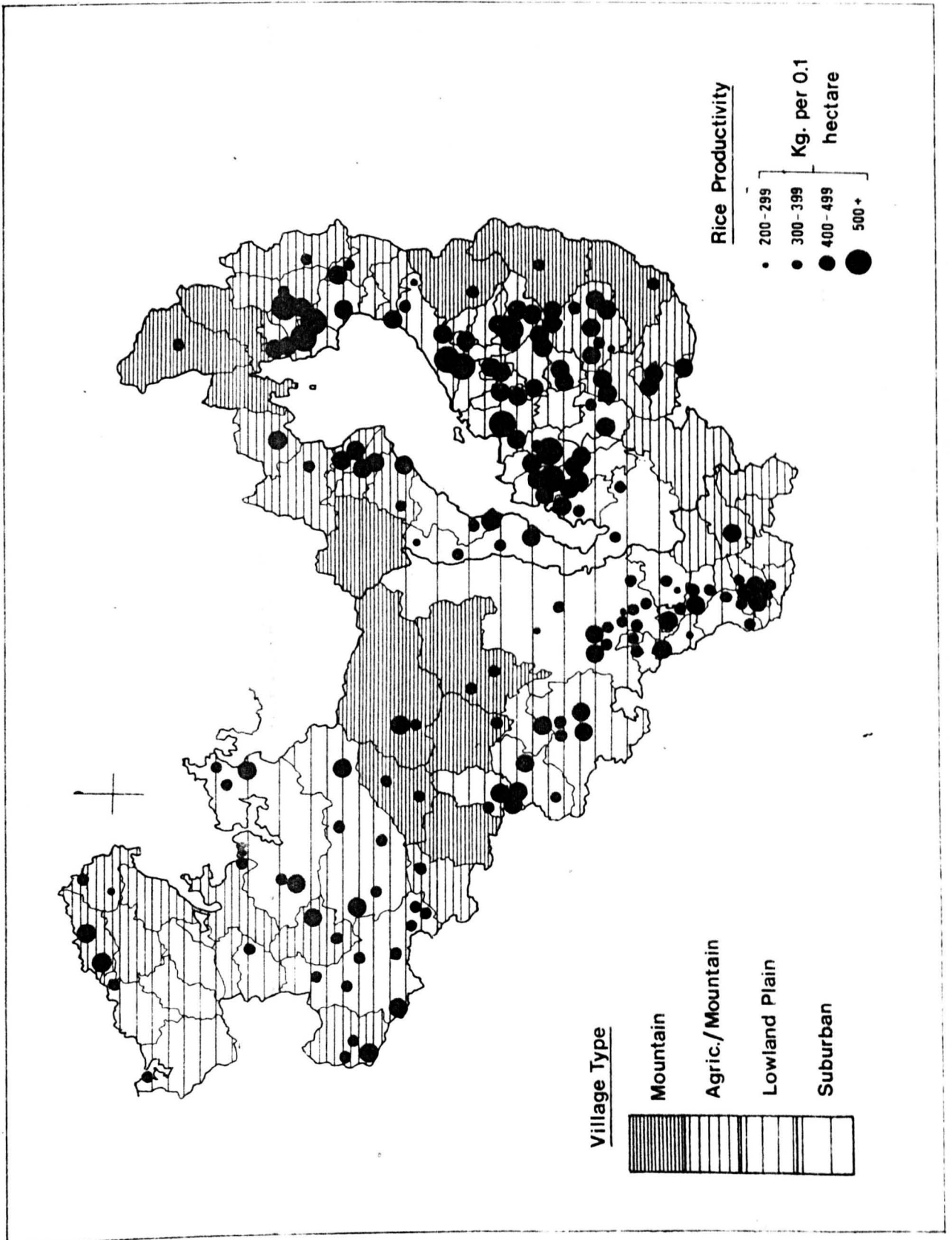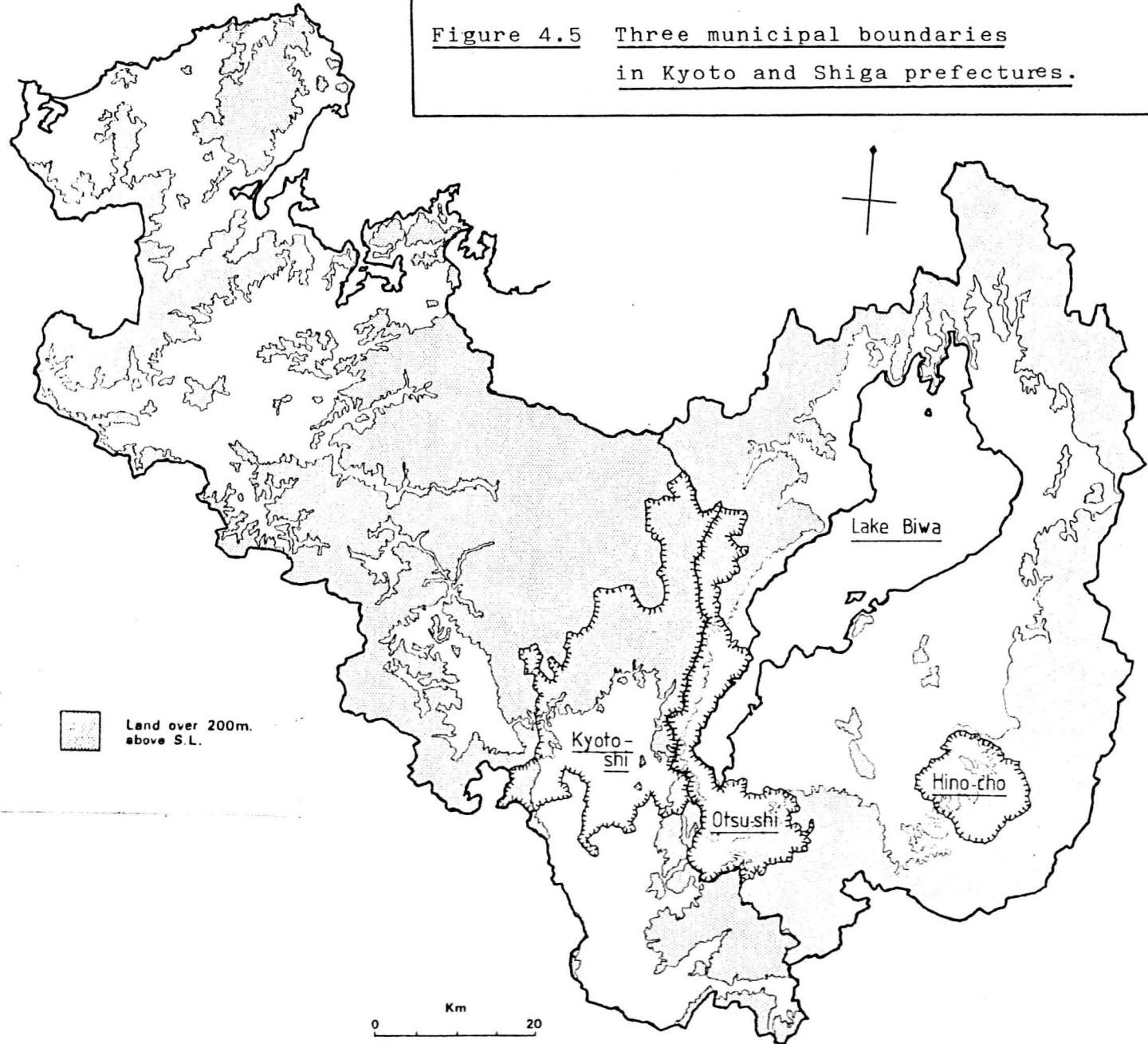
Figure 4.4   Municipalities in Kyoto and Shiga prefectures
              by 'village type', and sample settlements by
              agricultural productivity rates.

Figure 4.5   Three municipal boundaries
in Kyoto and Shiga prefectures.

Lake Biwa

Land over 200m.
above S.L.

Kyoto-shi

Hino-cho

Otsu-shi

Km
0   20

and lowland areas (Figure 4.5). Most sanson municipalities, for instance, incorporate land which is almost entirely 200 metres or more above sea level and, as a result, productivity levels are uniformly low. Conversely, most heichi nōson municipalities are exclusively lowland areas, and productivity levels are uniformly high. However, all land which is below 200 metres is not exclusive to 'lowland plain' areas, nor is all land above 200 metres exclusive to 'mountain' areas. Figure 4.5, for example, clearly illustrates how 'suburban' municipalities such as Kyoto-shi and Otsu-shi, and also 'agricultural-mountain' municipalities such as Hino-chō, as the term implies, incorporate large tracts of upland as well as lowland area. As a result, productivity levels vary considerably in these municiaplities, between settlements located in the upland districts and those in the lowland areas.

It may be surmised that this kind of intra-municipal spatial variation will be apparent for other socio-economic characteristics which are also strongly related to landform, such as accessibility.

Having established that considerable differences exist within municipal boundaries with respect to both population change rates and to certain socio-economic factors, it now seems completely inappropriate to attempt to explain variations in rural out-migration rates at the municipal level. Not only do aggregate figures for municipalities obscure the wide variations which exist between agricultural settlements in the same municipality, but it also seems likely that a significant proportion of rural-urban migration is not accounted for at this level.

It therefore seems that, despite the data limitations, a full understanding of the reasons for spatial variations in rural out-

migration rates can only be achieved from a study based at the agri-
cultural settlement level: "the fundamental territorial unit of
agricultural society" (Nōgyō Shūraku Kenkyūkai, 1977; 3).

4.4 THE STUDY AREA: KYOTO AND SHIGA PREFECTURES

There are clearly too many agricultural settlements in Japan
for a detailed survey to be made of all of them, so a sample must
be taken. The sample must be sufficient in number to include all
types of rural environment, and settlements of all different sizes,
but it must not be so large that it becomes unworkable. Ideally, a
sample of about 150 settlements would seem most appropriate, in view
of the constraints on time available for study in Japan.

Such a sample could be organized in one of two ways. Firstly,
the sample could be taken from the total of 143,000 settlements
scattered throughout Japan, to ensure that it is fully representative
of the country as a whole. The problems with this method, however,
are that it is difficult to visit each individual sample settlement,
because they will be so widely distributed. Also, detailed analysis
of variations between settlements is likely to be made quite complex
by the fact that settlements from different regions have diverse
economic, historical, and cultural backgrounds. These factors
would all have to be taken into account before it is possible to
concentrate on more specific variations in productivity levels,
accessibility measures, and so on. The alternative method, and the
most practicable one, is to restrict the sample to a single region.
A suitable study area should have examples of many different types of
rural environment, including mountain and lowland agricultural settle-
ments, which reflect the overall balance of rural activities found
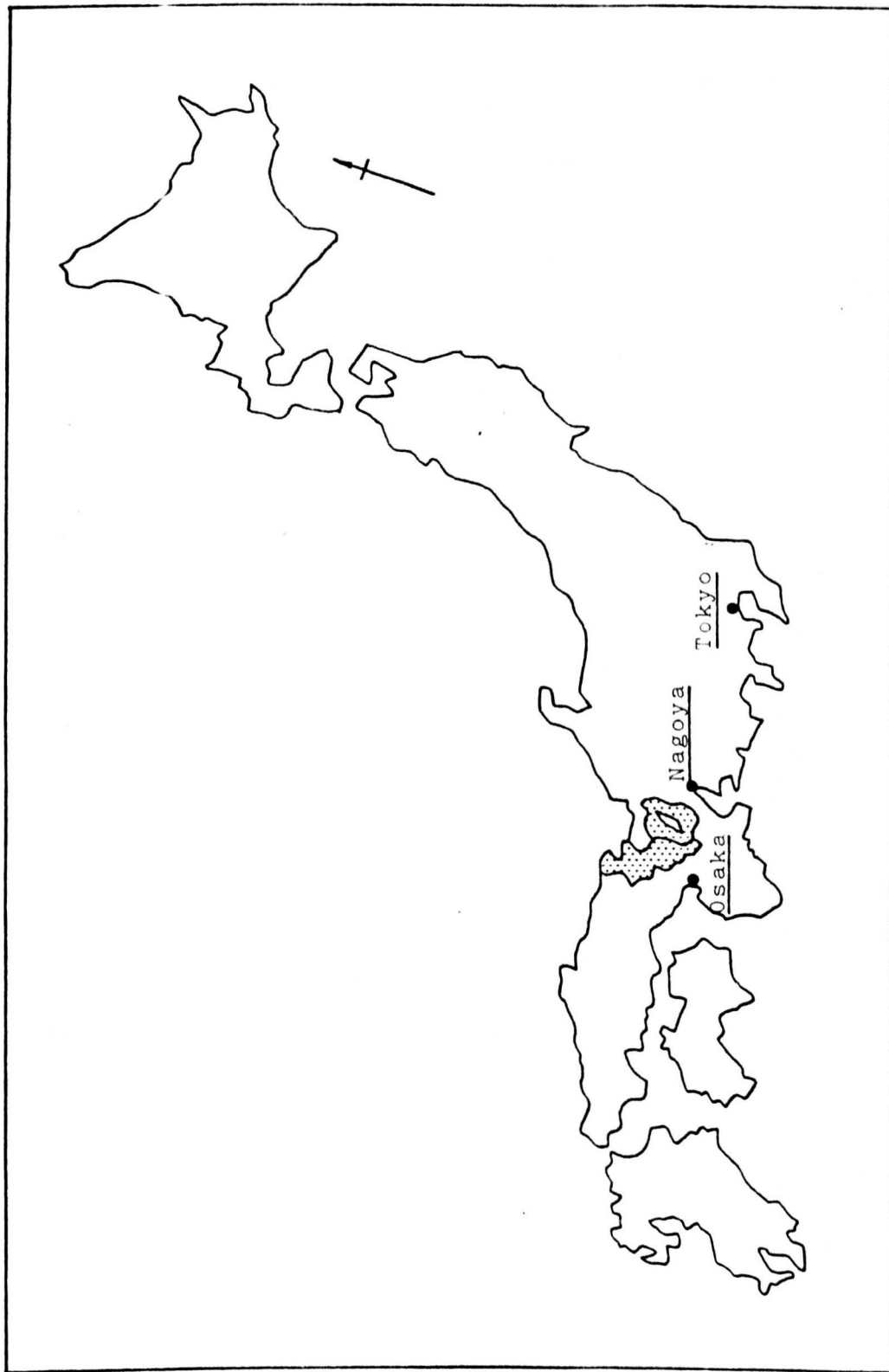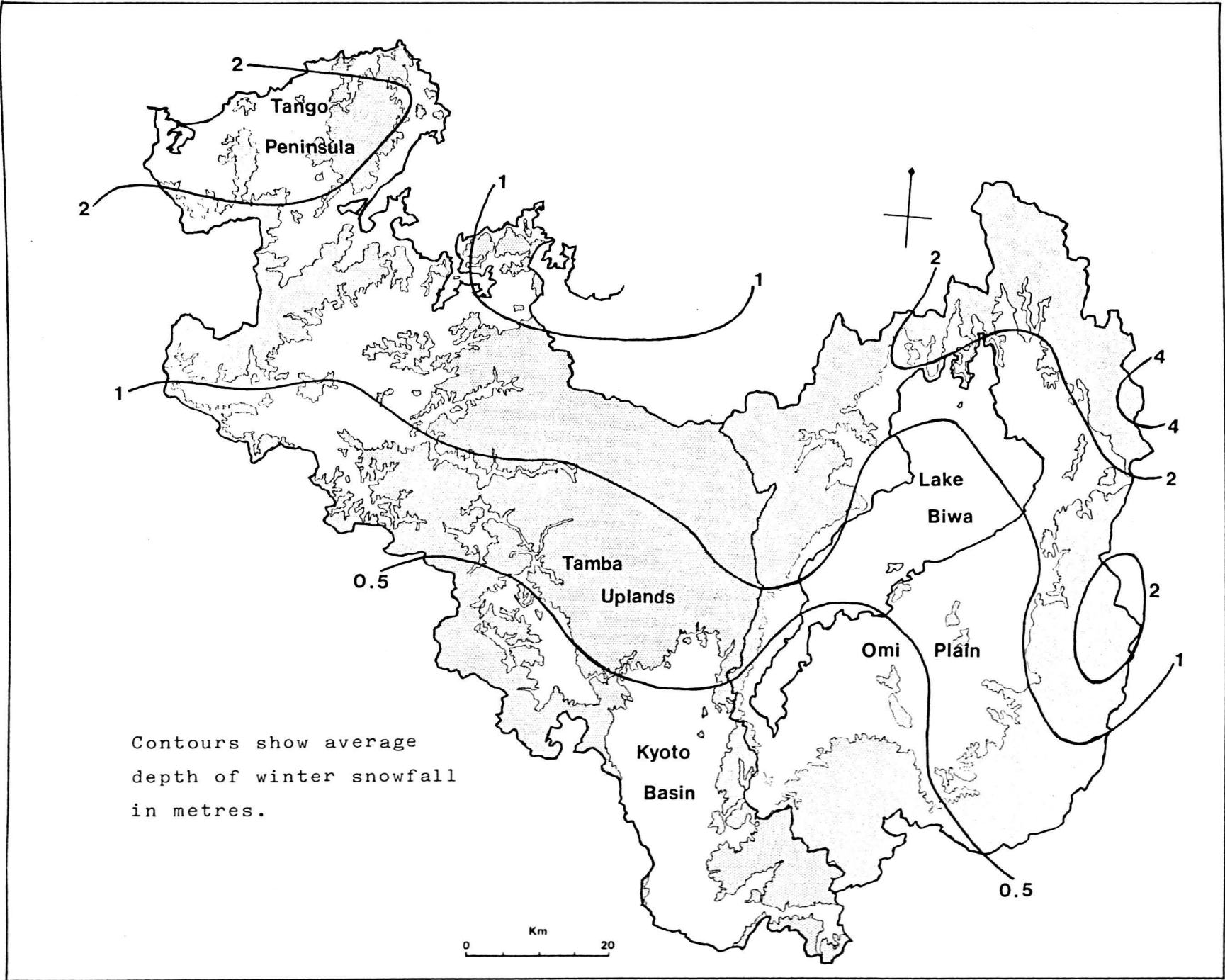in the country as a whole. Although it may be unwise to attempt to

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Figure 4.6   Map showing the location of Kyoto and Shiga prefectures.

Figure 4.7 Major regions in Kyoto and Shiga prefectures, and average depths of winter snowfall.

Tango Peninsula

Lake Biwa

Tamba Uplands

Omi Plain

Kyoto Basin

Contours show average depth of winter snowfall in metres.

Km
0   20

129

identify a region which is considered truly 'representative' of Japan, the study area should not be so small that it is regarded as definitely untypical. Conversely, it should not be so large that the sample framework becomes inoperable.

A 'region' which meets these criteria comprises two prefectures in central Honshu, namely Kyoto and Shiga. Although they do not constitute one of the nine geographical regions into which Japan is normally divided for administrative purposes, they are nevertheless large enough to be considered a suitable microcosm of Japanese society for the purposes of this research. At the same time, they form a sufficiently compact area for the same economic, historical, and cultural backgrounds to be shared. Situated centrally on the Japanese mainland (Fig. 4.6) Kyoto and Shiga are not specifically associated with either the 'economically backward' prefectures of north-east Japan, or the 'commercially oriented' prefectures of south-west Japan, identified by Imai (1968). It can be argued, however, that both these types of socio-economic characteristics are to be found in different areas within this region. Also, the latitudinal spread of these prefectures is such that both the Japan Sea and Pacific coastal environments are experienced. This means that the region includes areas which suffer deep winter snowfall, as well as areas which remain virtually snow-free in the winter months (Fig. 4.7).

The physical structure of the region is varied, and it incorporates all major settlement types. In the north, Kyoto prefecture forms part of the Japan Sea coastline, in the area of the Tango pen.insula and Wakasa Bay. Because of faulting and tectonic uplift the coast here is deeply indented with many rias, and these provide sheltered harbours for numerous small fishing communities. There is relatively little land suitable for agriculture, however, since the land rises steeply from the sea, particularly on the eastern side of the Tango pen insula where it reaches a height of more than 500 metres (Plate 4.1). Inland
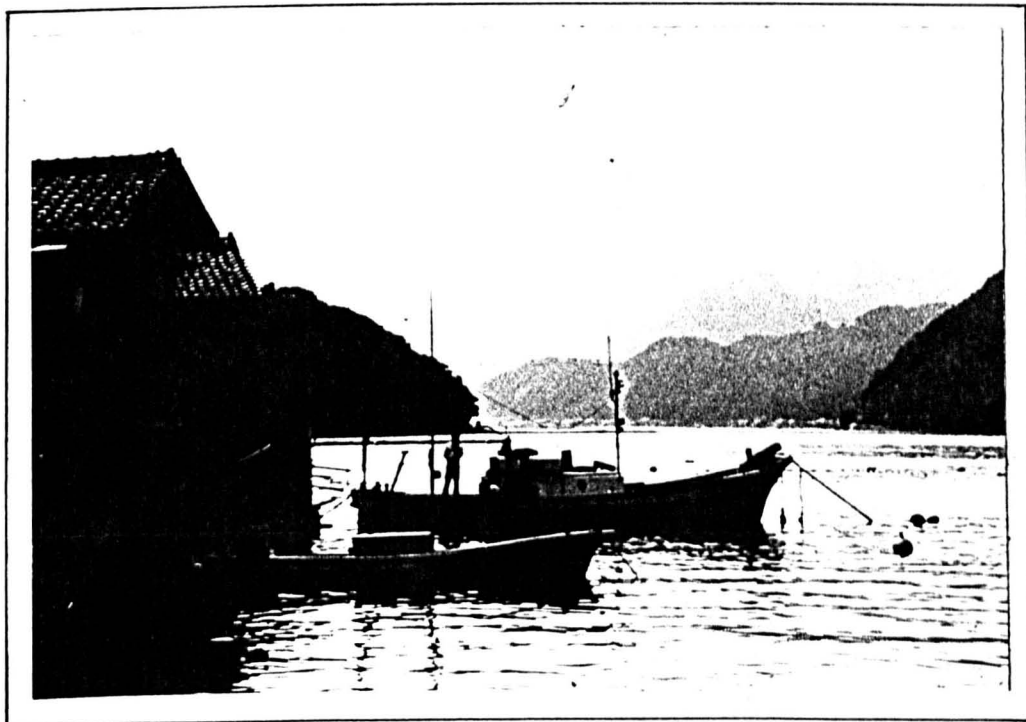
Plate 4.1 A fishing village in Miyazu-shi, on the eastern shores of the Tango peninsula.

villages in this area depend mainly on forestry and subsistence
farming, therefore, although the manufacture of 'Tango chirimen'
(silk crape), centred in Mineyama-chō, has traditionally provided an
additional source of income for some farm households (Nihon Jishi
Kenkyūjo, 1977 (14).) The difficult terrain and poor accessibility
of many villages, combined with the problem of deep winter snowfall,
have contributed to a massive outflow of population from this area
in post war years. Between 1960 and 1968, a total of 28 villages in
the Tango peninsula became completely abandoned as a result of this
(Ibid., 209). The main urban centre in the area is Maizuru, situated
at the mouth of the Ikizu River. Formerly a major fortified naval
base, it is still an important port for trade with Korea and the
USSR, and a popular ferry terminal for passengers travelling to Hokkaido.
With a population of just under 96,000 in 1970, it is the third largest
city (shi), in Kyoto prefecture (Kyoto-fu, 1978).

Stretching across the centre of Kyoto prefecture, and along the
northern and eastern fringes of Shiga prefecture, is a wide belt of
mountain terrain known as the Tamba Upland. This is made up of young
sedimentary rocks which are heavily dissected by many small, steep
sided river valleys (Fig. 4.8). These flow into a number of fault
basins, the greatest of which contains Lake Biwa, the most extensive
freshwater lake in Japan. Smaller basins (bonchi), such as Fukuchiyama,
Sonobe, Kameoka, have relatively flat floors covered with fertile
alluvial deposits which are highly suitable for rice cultivation.
These areas contain the greatest concentrations of both rural and
urban settlement in the district. Elsewhere, settlement is confined to
the sinuous valley floors, where subsistence agriculture is combined

Figure 4.8   River valleys and lowland plains in
             the Tamba uplands.
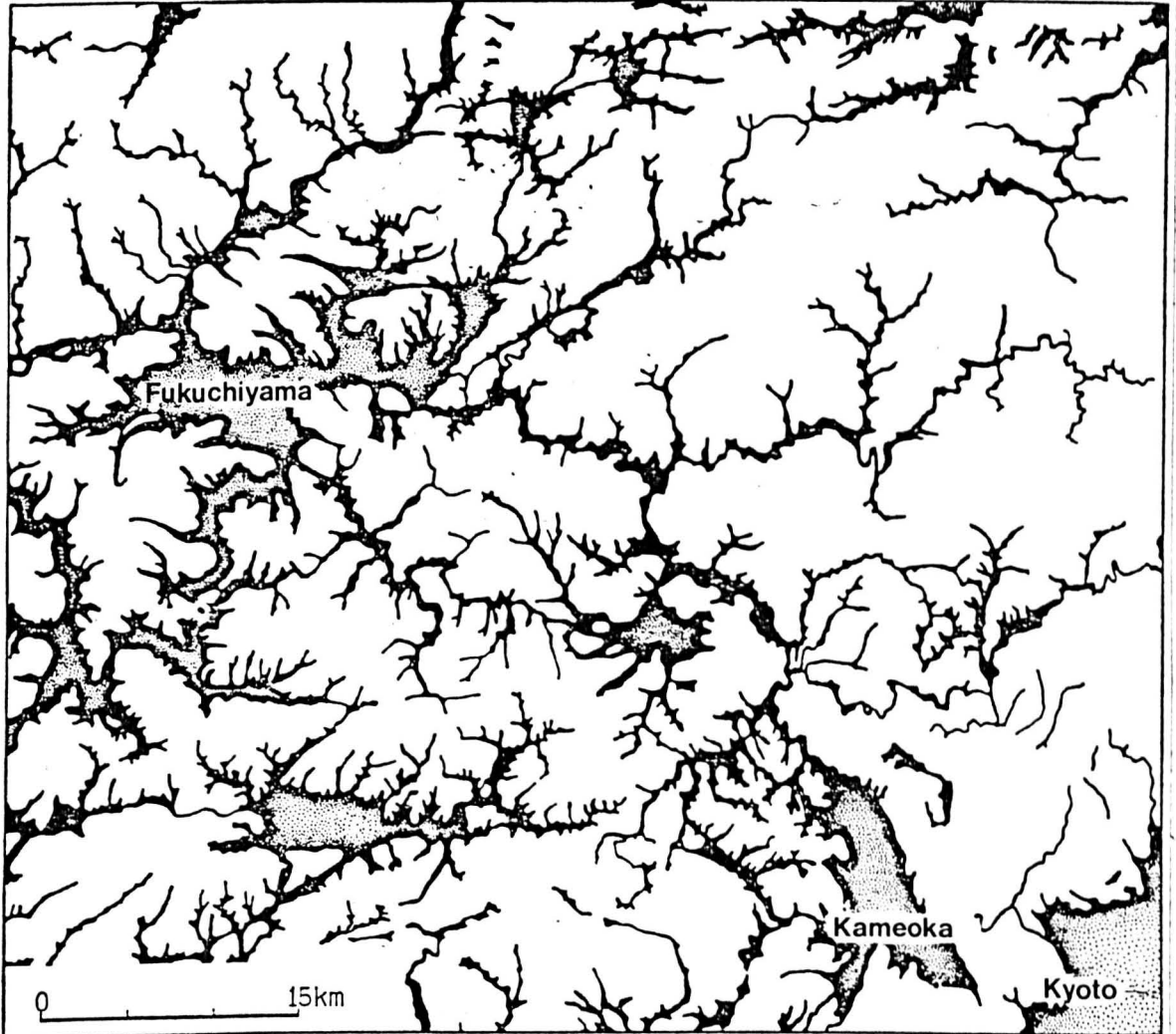
(After : Nihon Jishi Kenkyūjo, 1977 (14); 17.)

with forestry to make a living.

More than three-quarters of the Tamba upland is covered by forest, of which 74% is privately owned in holdings mostly less than 3 ha. in size (Nihon Jishi Kenkyūjo, 1977 (14), 187). In the past, charcoal production was the main activity for forest households in the Tamba district, but this industry virtually disappeared following the energy revolution of the early 1960s. The only areas where forestry continues to provide an adequate livelihood are Kitayama, just to the north of Kyoto-city, and Asai-chō, on the north-eastern edge of Shiga prefecture. Kitayama is well-known in Japan for the production of high quality, polished cedar logs which are used in decorative building. Intensive silviculture is practised to ensure the logs have straight, knotless stems with little taper. They should also have a white skin with a permanent lustre, and should not crack easily if they are to fetch the highest prices (Okazaki, 1963). When they finally reach the market, these logs fetch several more times the price of ordinary timber, since the steady demand for Kitayama forest products continues to outstrip supply. It is interesting to note in this respect that production of Kitayama logs is restricted to the southern edge of the Tamba upland, where snowfall is only fairly light in the winter months. Heavy snow would damage the young seedlings and severely reduce the quality of the timber.

In Asai-chō, in Shiga prefecture, a rather different type of timber is produced, although forest management techniques are just as intensive as in Kitayama. This area is well-known for so-called Tane forestry, named after a village in the area, which is character- ized by selective cutting of very big trees (Okazaki, 1963; 37).

In the past, Tane timber was utilized for making barrels for rice wine, but in recent years the trend has been for timber for building purposes. As in Kitayama, forestry is still largely organized on a private basis, and individual holdings are restricted to just a few hectares (Ibid.).

In contrast to the mountainous uplands of north and central Kyoto, and around the fringe of Shiga prefecture, there are two relatively large expanses of lowland plain in the region. These are the Kyoto basin, which contains Kyoto-city itself, and the Omi plain, which stretches along the southern shore of Lake Biwa in Shiga prefecture. The Kyoto basin forms an area of approximately 300 square kilometres, and incorporates the confluence of four rivers. These join to become the Yodo River, which flows southwards out of the basin and eventually through Osaka-city where it enters the Inland Sea. As a navigable water-course, it has for centuries provided a vital trade route for the inhabitants of Kyoto. Until 1939, the centre of the Kyoto basin was covered by a shallow lake, but subsequent drainage projects have reclaimed this land for paddy fields. The area is still subject to flooding, however, and rice productivity levels are not as high as in the Omi plain (see Fig. 4.4). Nevertheless, agriculture in this area frequently produces high cash returns for farmers, principally as a result of market gardening activities for the large concentrations of urban population in nearby Kyoto and Osaka cities. This in turn means that the proportion of full time farmers in the Kyoto basin tends to be much higher than elsewhere in the region (Kyoto-fu, 1978; 64). In Yawata-chō and Kumiyama-chō, for instance, the ratio of full-time farm households to total farm households was more than 25%, compared to an average figure of 9% in the rest of the prefecture.

In addition to market gardening the area is notable for two
other products, grown on the sloping terraces overlooking the Kyoto
basin. On the eastern margin, around Uji-shi, some of the best
quality tea in Japan is cultivated whilst on the western side of the
basin, the area around Nagaoka-shi specializes in bamboo shoots.
Both of these districts have achieved national fame for the high quality
of their products (Nihon Jishi Kenkyūjo, 1977 (14).)

Set against the rather diverse nature of agricultural production
in the Kyoto basin the Omi plain is characterized by an almost total
reliance on rice cultivation. The area has been described as one of
the most representative paddy areas in the region (Trewartha, 1965; 506),
and the proportion of agricultural land given over to rice production
here represents one of the highest rates anywhere in the country (Nihon
Jishi Kenkyūjo, 1977 (13); 425). The Omi plain certainly forms one
of the most extensive areas of lowland plain in the region, and is one
of the earliest areas to be intensively cultivated. Evidence for this
is provided by examples of <u>jōri</u> field divisions on some of the diluvial
terraces overlooking the plain, characterized by highly nucleated
settlements and a rectangular field pattern (Trewartha, 1965). This
system was laid out more than a thousand years ago, although similar
patterns of nucleated settlement are also found in the <u>shinden</u>
(literally meaning 'new rice-field') areas, on the reclaimed alluvial
marshlands adjacent to the shores of Lake Biwa. Photographs of paddy
fields in the Omi plain and the Tamba uplands highlight the considerable
differences in landscape of the two regions, and the effects this has
on relative levels of rice productivity (Plates 4.2 and 4.3). In the
Omi plain the abundance of water and the flat terrain mean that
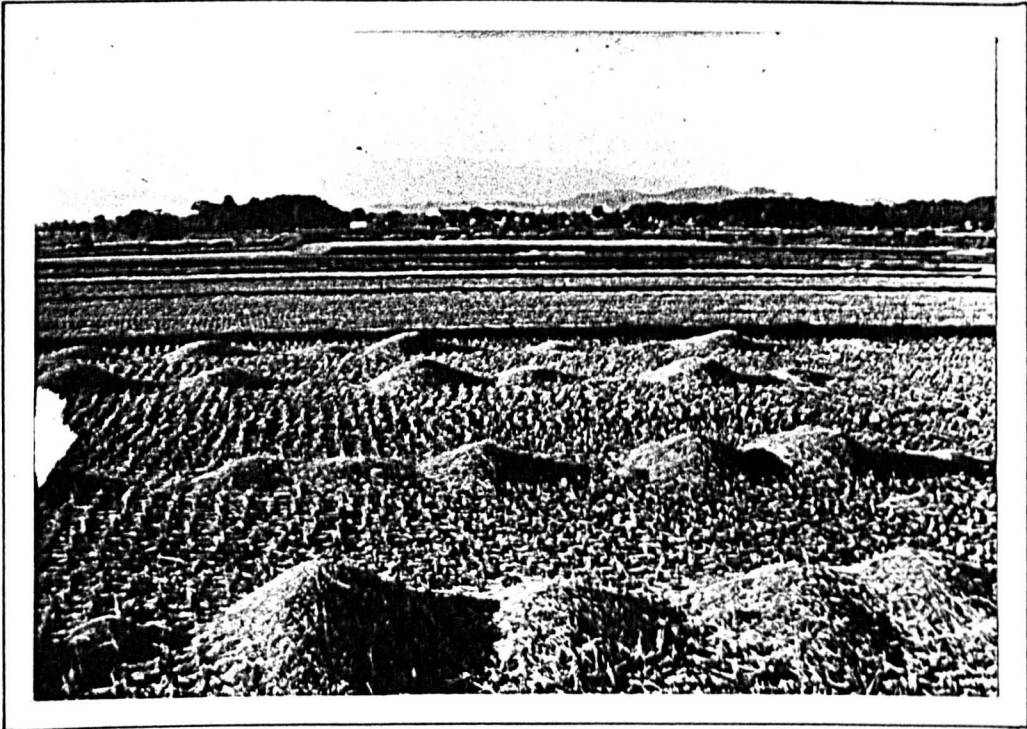
Plate 4.2   Rice farming on the Omi plain, Shiga
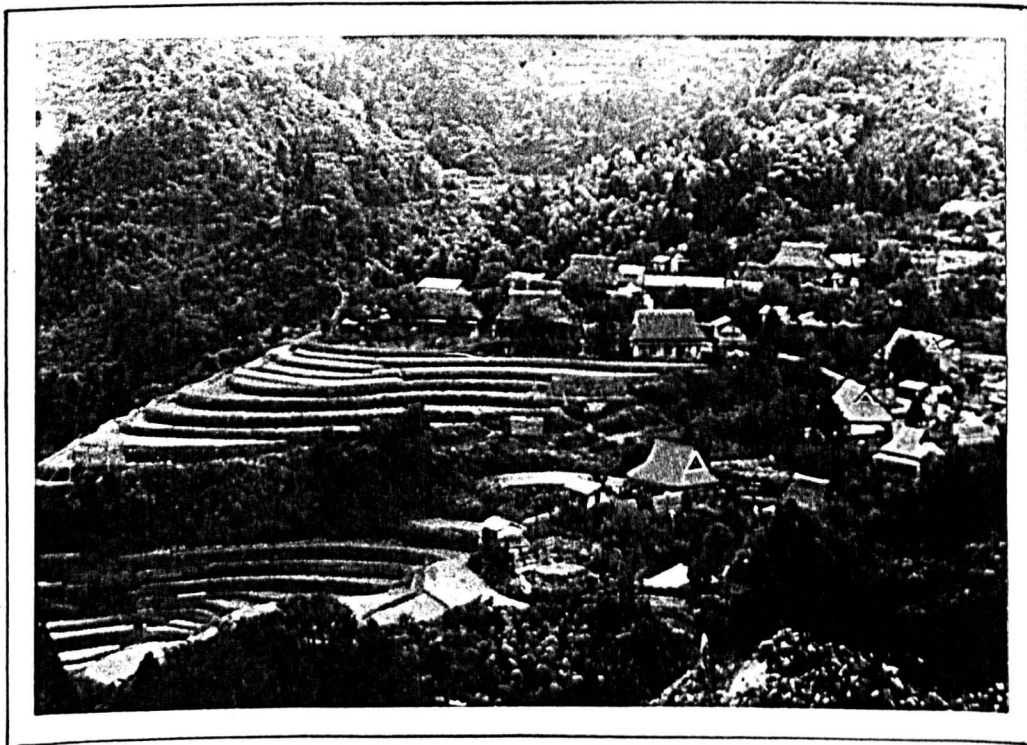   prefecture.

Plate 4.3   Rice farming in the Tamba uplands,
            Kyoto prefecture.

irrigation is much less of a problem than in steeply sloping upland districts; the land is much more suitable for widespread use of farm machinery; and the opportunities for field consolidation and enlargement are much greater. As a result, rice productivity is often more than twice the level it is in upland districts (Nōrinshō, 1970).

In addition to a high concentration of rural population, the Kyoto basin and Omi plain also contain the greatest urban and industrial centres in the region (see Fig. 4.2). Predominant among these is Kyoto-shi, the eighth largest city in Japan, and the largest inland metropolis in the country, with a population of 1.4 million in 1970 (Bureau of Statistics, 1970). Until the Restoration of the Emperor Meiji in 1868 Kyoto had been, for more than a thousand years, the Imperial capital of Japan. Apart from the Imperial castle, Kyoto still has many hundreds of historic buildings, including temples, shrines, and royal villas. Tourism is one of the major industries of the city, therefore, and in 1969 Kyoto attracted more than 19 million visitors of whom just under a quarter stayed at least one night (Kyoto-shi, 1970). Although a number of modern manufacturing plants have been established in post-war years on the southern edge of the city, careful attempts have been made to ensure that these do not disfigure the old-world charm of the city. Kyoto prefers to promote its image as a political, religious, educational, and cultural centre rather than as a centre of commerce and industry (Trewartha, 1965; 502). Nevertheless, just under 30% of the population aged more than 15 years in Kyoto city were employed in manufacturing industry in 1975 (Kyoto-fu, 1978). For the greater part these people worked in the light industry sector, in small traditional workshops in the centre of the city,

producing textiles, ceramics, and various handicraft items such as dolls and paper fans (Nihon Jishi Kenkyūjo, 1977 (14); 105). In 1968 the average number of people employed in each manufacturing establishment in Kyoto was 11, compared to a national average of 18 (Ibid). The small scale of these concerns and their continued emphasis on traditional styles of operation tend to enhance the attraction of Kyoto to visitors, and tourism is undoubtedly the source of much of their sales revenue.

Of all the goods produced in Kyoto, textiles account for the greatest share of the workforce, and of output by value (Kyoto-fu, 1978). The industry is structured according to the type of fabric which is made, the most famous of which is Nishijin woven silk for Kimono and other high quality traditional garments. In 1965, 15,000 weavers were employed in this sector, 80% of whom worked on hand looms (Trewartha, 1965; 505). Although the industry is centred on the Nishijin district of Kyoto-city, much of the work is put-out to weavers who live outside the city limits. The pay is relatively poor, but for people living in farm households in remote mountain villages, such as Nukui, in Otsu-shi, it does offer a useful additional source of income.

Whilst Kyoto-city is regarded as the national centre for high quality silk fabrics and other textiles, different areas in Kyoto and Shiga prefectures also boast a long tradition of textile manufacture. Famous names include Tango (Kyoto) and Nagahama (Shiga) for silk crapes, although for centuries many less well-known areas have produced cheaper cotton and linen fabrics on a domestic basis, combining spinning and weaving with agriculture. The availability of cheap, skilled female labour attracted a number of textile mills to be established in the

region in the 1920s, when Japan began to compete with Great Britain

for a share of the world market for cheap cotton material. The Omi

plain was a particularly favoured site, because of the abundant water

supply and ease of communications, and towns like Otsu, Notogawa,

Hikone, and Nagahama developed rapidly as a result (Nihon Jishi

Kenkyūjo, 1977 (13); 432).

After the Second World War, a number of other industries established

large plants in the Omi plain, and the relative importance of textile

manufacture declined. Among the firms to locate here were Tore

Engineering, N.E.C., Sanyo Electrics, Matsushita Electrics, I.B.M.

(Japan), Toyo Rayon, Max Factor, and Bridgestone Tyres, with domestic

electrical products and heavy chemicals dominating the new industrial

structure in this area (Plate 4.4). Between 1956 and 1969 a total of

766 firms moved into the Omi plain, notably the district comprising

Otsu-shi, Kusatsu-shi, Ritto-chō, Moriyama-shi, Ishiyama-chō, and

Kosei-chō, to the extent that by 1970 this area came to have the

greatest inland concentration of industry in the whole of western Japan

(Nihon Jishi Kenkyūjo, 1977 (13); 434).

The reasons why this part of Shiga prefecture attracted so much

industrial development are threefold. First, many industrial sites

in the nearby Keihanshin (Kyoto, Osaka, Kobe) metropolis became

unsuitable in the 1960s because of rising land prices and labour shortage,

and firms moved to the Omi plain, being the nearest alternative site,

to overcome these problems. Second, Shiga prefectural government

offered financial assistance after 1958 to firms willing to relocate

there. Third, and possibly most important, the Omi plain lies at the

junction of a number of natural lines of communication, including

the main overland route from Osaka to Tokyo, and from Osaka to the

Hokuriku region. This is illustrated in Figure 4.9, which shows the

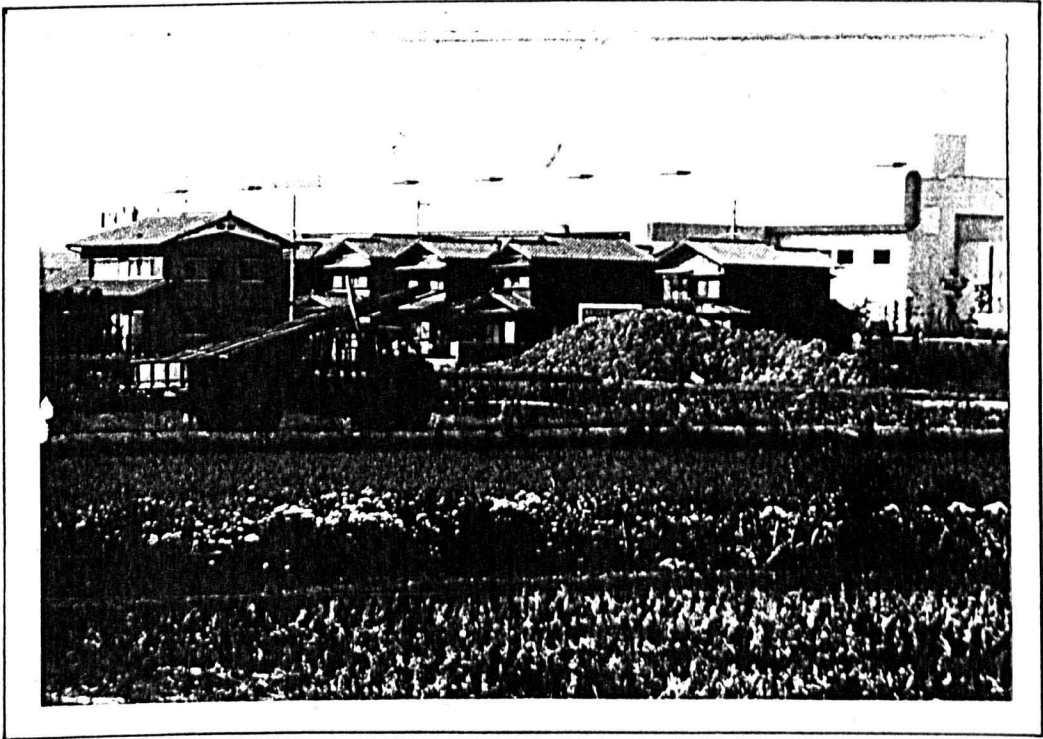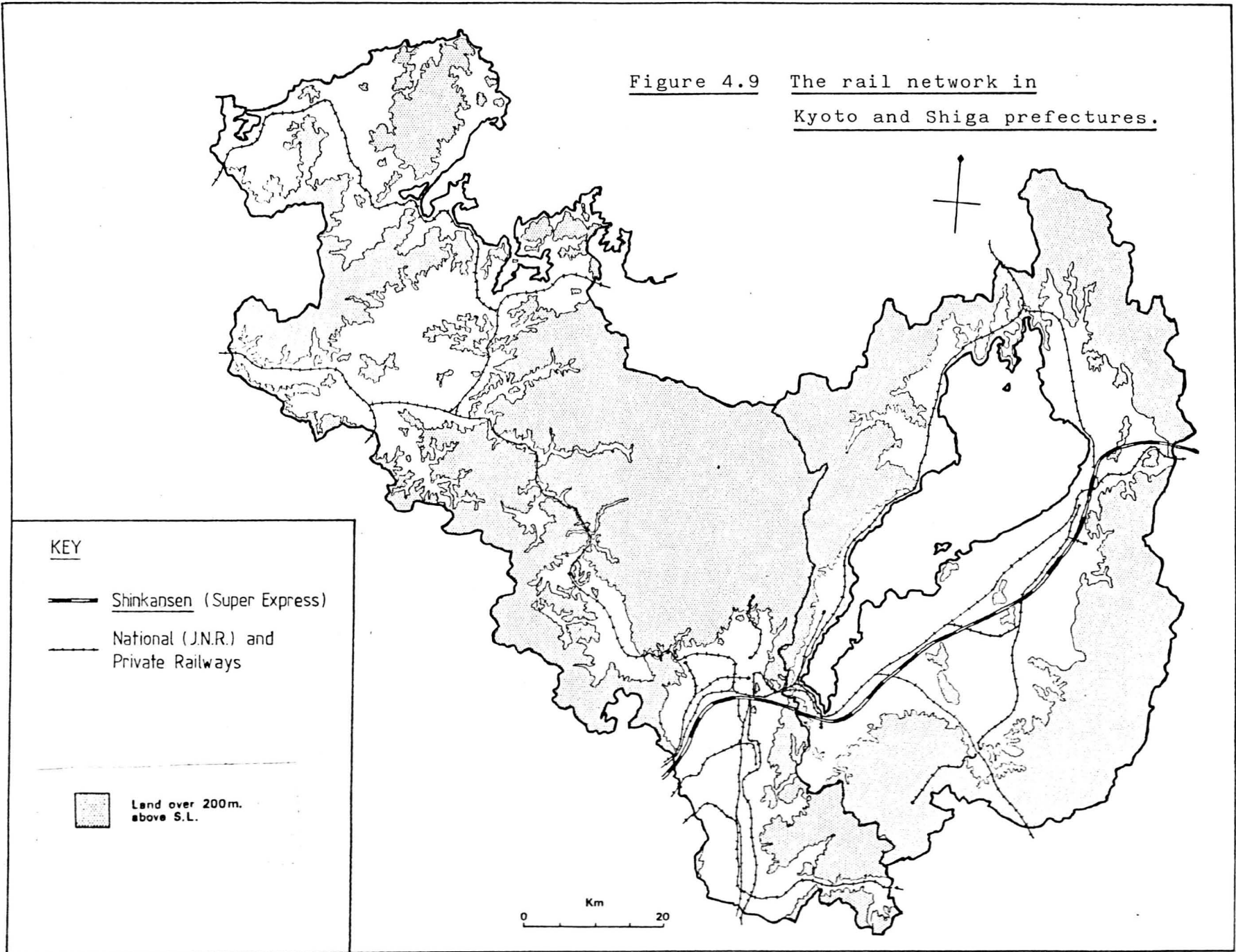Plate 4.4   The I.B.M. plant in Yasu-cho, Shiga
            prefecture.

Figure 4.9   The rail network in
Kyoto and Shiga prefectures.

KEY

Shinkansen (Super Express)

National (J.N.R.) and
Private Railways

Land over 200m.
above S.L.

Km
0   20

142

distribution of the rail network in Kyoto and Shiga prefectures.

Figure 4.9 also provides an indication of the degree of interaction, particularly in terms of daily movement of labour, between the urban and industrial centres of Kyoto and Shiga prefectures and the surrounding rural areas. Rural settlements in the Kyoto basin, for instance, generally have very good access to rail routes, and the population living in this area can commute to non-agricultural jobs in Kyoto, Osaka, or Nara with relative ease. Similarly, the Omi plain is well served with a number of inter-connecting rail routes, and frequent express services on the main Kyoto-Maibara route (Tokaido-sen) mean that most rural settlements in this area have good, rapid access to the industrial concentration around Kusatsu-shi, and to the urban centres of Kyoto or Osaka. In addition, the super-express (Shinkansen) route from Osaka to Tokyo passes through this area, with stations at Kyoto, Otsu, and Maibara. This effectively extends the commuter catchment area of Kyoto and Osaka to the lowland area in the north-east of Shiga prefecture, around Maibara and Nagahama.

In complete contrast, the whole of the area in north and central Kyoto prefecture is served by a solitary, single track railway passing through Kameoka, Sonobe, and Fukuchiyama. The journey to Kyoto is usually long and tortuous, and few people living north of Sonobe are in a position to make a daily return trip to the prefectural capital for work. Furthermore, commuting to Kyoto by rail is only practicable for people living in or near small urban centres such as Kameoka or Sonobe. The steep and broken landscape of the Tamba uplands means that most villages which are not located in the shallow fault basins are relatively isolated and inaccessible. Roads follow the sinuous valley floors and, whilst the mountains are not particularly

high, contact between villages and towns in this area usually involves
long journeys around, rather than over, the dividing interfluves
(Fig. 4.8). Thus, while the straight-line distance from settlements in
the Tamba uplands to Kyoto is not necessarily very great, the actual
distances which have to be travelled are generally too far to allow
daily commuting to non-agricultural employment there.

From this brief description of Kyoto and Shiga prefectures it is
clear that many different types of rural environment are found in the
proposed study area. The region incorporates a major metropolitan and
industrial centre with rural settlements on the urban fringe, as well
as many remote, mountainous areas where rural depopulation has been
so severe that complete village abandonment has occurred. There are
settlements where agricultural productivity is extremely low, as well
as settlements where rice productivity levels are amongst the highest
anywhere in Japan. There are many settlements dependent on forestry
for their livelihoods, large numbers of which have experienced a
decline in this industry in the post war period, though in some the
forest economy continues to flourish. Similarly, rural settlements
in this region are strongly associated with a wide range of traditional
craft industries, many of which have now virtually disappeared from
the rural area whilst others, notably textile manufacture, continue to
provide an alternative source of income in certain districts. There
is considerable climatic variation across the region, most notably with
respect to the amount of winter snowfall received in different areas.
Finally, there is wide variation throughout Kyoto and Shiga prefectures
with regard to the distribution of non-agricultural employment opportun-
ities and, more significantly, with regard to the ease with which
people in rural communities can commute to jobs off the farms.

Before proceeding with the selection of a suitable sample of settlements for detailed analysis, it is useful to compare the overall distribution of rural settlement types in this region with that of the country as a whole. It can be seen from Table 4.2 that

Table 4.2:   Distribution of Rural Settlement Types

Rural Settlement Type	No. of Municipalities (%)	
	Kyoto and Shiga	Japan
Mountain (Sanson)	12 (12.8)	603 (19.8)
Agric/Mountain (Nōsanson)	25 (26.6)	897 (33.4)
Lowland Plain (Heichinōson)	37 (39.4)	1073 (28.0)
Suburban (Toshi kinkō)	20 (21.2)	635 (18.8)
	94 (100.0)	3208 (100.0)

a number of discrepancies do exist, with rather fewer mountain villages in Kyoto and Shiga prefectures than the national average, also fewer agricultural/mountain villages , but a considerably higher proportion of lowland plain villages. Part of the reason for this is that relatively few regions in Japan are favoured with such extensive areas of lowland as the Omi plain. Thus, if any other region were selected for study, the tendency may be to have a higher than average proportion of mountain and agricultural/mountain settlements, and a lower than average proportion of lowland plain settlements. It is also worth stressing that these distributions are based on municipal rather than agricultural settlement territories. In the case of Kyoto prefecture, it can be seen that a number of municipalities in the Tamba upland are designated 'lowland plain' settlements, including Kameoka-shi, Yagi-chō, Sonobe-chō, Tamba-chō, Ayabe-shi, and Fukuchiyama-shi (Fig. 4.4), although it is apparent from Figure 4.8 that this

description is quite unsuitable for many of the villages located within these districts. The problem is that no accurate settlement type classification exists for individual villages and so, in the strictest sense, any attempt to compare settlement types in this manner is really of only limited value. It is therefore reasonable to conclude that Kyoto and Shiga prefectures incorporate a suitable balance of rural settlement types, which does not seem in any way unrepresentative of the country as a whole.

The final stage now is to select a sample of agricultural settlements in Kyoto and Shiga prefectures for further detailed analysis of environmental characteristics and net migration rates. Normally, a stratified random sample based on agricultural settlement type would seem to best way to achieve this. Such a method would ensure that a correct balance of rural settlement types is produced, whether it was based on regional or on national distributions of village types. However, since there are no suitable classifications of individual settlement type, the simplest and most practicable solution is to take a random sample of all agricultural settlements in the region.

In total, there are 3360 agricultural settlements in Kyoto and Shiga prefectures, according to the 1970 Census of Agriculture and Forestry. A 5 % sample, therefore, would mean that 168 settlements are selected for study. This is sufficient to ensure there is no bias due to having too small a sample, and the number of settlements seems appropriate in view of the length of time available for research in Japan. The names and distribution of the settlements thus selected are presented in Appendix 1.

CHAPTER FIVE

THEORETICAL FRAMEWORK

5.1 INTRODUCTION

Having established a spatial framework whereby differences in
rural out-migration rates may be clearly recognised and measured
with a reasonable degree of accuracy the purpose of the present
chapter is to describe a formal relationship between migration and an
appropriate set of causal factors. In simplest terms this relationship
can be represented as:

$$Y = f(X_1, X_2, \ldots, X_n)$$

where Y is the net out-migration rate between 1965 and 1975 in each
of a sample of agricultural settlements in Kyoto and Shiga prefectures,
and $X_1 \ldots X_n$ are the determinants of Y. The task of identifying
suitable X parameters is by no means an easy one however. The
problem is not simply a matter of finding and being able to measure
the whole range of relevant causal factors, but also to determine
the exact nature of the relationship each factor holds with migration.
$X_1 \ldots X_n$ may represent, for instance, a series of single explanatory
variables such as measures of income levels, or agricultural
productivity, or it may incorporate a number of composite indices like,
for instance, a measure of socio-cultural development. Furthermore,
consideration has to be given to whether or not each parameter has
any form of weighting attached, and to whether the relationship
with migration is best described by a linear or curvilinear function.

Over the years a vast amount of literature has built up concerning
the determinants of migration, ranging from the international to the
inter-county and inter-village scales, in developed countries as well
as developing or under developed nations. Clearly the actual range and

and choice of possible determinants varies according to the particular scale of study and to the local conditions specific to the area or country in question. The main relevance of these studies to the present research lies, therefore, in the evolution of methodological approach to the problem. At one level it is possible to observe a shift of emphasis over time from 'normative' explanations largely based on considerations of economic inequalities within regions to 'behavioural' explanations where much attention is placed on life cycle theory and on the migrants subjective perception of his environment (Wolpert, 1965; Brown and Longbrake, 1970; Hannan, 1970). Whilst the range of potential causal factors has remained similar, the analytical treatment and presentation of variables clearly differs with respect to the kind of approach which is adopted. On a slightly different level it is also possible to observe how, over time, explanations of migration rates have become increasingly complex as the level of understanding of the nature of the relationships between various causal and dependent factors has improved. The trend is toward the evolution of a 'systems theory' approach where emphasis is directed to the understanding of various feedback mechanisms, including adjustments to information flow, the effects of migration at place of origin and destination, and the influence of counter migration streams, and also to the evaluation and potential significance of time lags (Mabogunje, 1970; Willis, 1975).

Not all of these theoretical developments are strictly relevant to the particular location, and spatial and temporal scale adopted for the present research, and it is unnecessary to attempt a detailed review of them here. It is necessary, however, to appreciate and

understand some of the pitfalls and interpretational difficulties which have, as a result of previous empirical research, come to be associated with the simpler models of migration seeking normative explanations of variations in migration rates. It is also necessary to consider if, and how, alternative approaches may increase the potential level of explanation of variations in rural net out-migration rate between agricultural settlements in post war Japan. Subsequent discussion in this chapter reveals how certain behavioural aspects of the decision to migrate are likely to have a considerable influence on variations in migration rate at this level, and a model is proposed whereby these can be duly accounted for.

5.2 THE NORMATIVE APPROACH: MULTIPLE REGRESSION MODELS

The relationship between migration and the set of causal factors which is described in the multiple regression equation is

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \ldots \beta_n X_n \pm e$$

where α is the intercept value (the value of Y when all X values equal zero), and β, the beta coefficient, indicates the slope of the relationship between each variable (X) with the dependent variable (Y) when all other variables are held constant. The error term is represented by e. Also of interest is R^2, the coefficient of determination, which indicates the percentage of the total variance of Y which is explained by the independent variables incorporated in the equation. It is to be hoped, when seeking to explain Y in terms of $X_1 \ldots X_n$, that the R^2 value is as high as possible. Of particular interest in terms of seeking explanations for variation in migration rates are the relative values of the beta,

or partial regression, coefficients. Clearly, the higher the value, the greater the degree of slope expressed in the relationship with Y (migration rates) indicating increased importance as an explanatory factor. In order to facilitate direct comparison of partial regression coefficients, however, it is necessary that their values are standardized. This is achieved first of all by converting all the initial data set to standardized (Z) scores where each value is expressed in terms of its unit variation from the standardized mean score zero, and secondly by weighting each partial regression coefficient by the ratio of the variance (or standard deviation) of the relevant variable with that of all the other independent variables (Johnston, 1978; 72, and see Chapter Six for a fuller explanation of this procedure).

The problems which are associated with the use of multiple regression analysis to explain variations in migration rates may be divided into two groups. The first relate strictly to the operational procedures of the model, and incorporate problems associated with the various assumptions and requirements concerning the form and character of the original data sets before they may be included in the model. The second group is rather more conceptual in nature and relates specifically to problems of interpretation of results. The first point requiring emphasis is that use of the multiple regression model must follow a clearly stated hypothesis in which the theoretical justification for inclusion of each independent variable is formally presented. Otherwise, there is considerable risk of discovering completely spurious relationships which are not truly indicative of cause and effect (Smith, 1975; 278). Once the

variable list is established it is important that each variable meets certain important prerequisite assumptions. First, since regression fits a straight line trend the variables should be linear. Second, the conditional distributions of the residuals should be normal, and third, they should have equal variance, that is, homoscedascity (Johnston, 1978; 39-43). If any of these conditions are not evident the original data sets should be adjusted by means of transformation (e.g. logarithmic.) If this is not done the regression coefficients are liable to unequal bias from just one or two 'extreme' observations and, given the degree of importance attached to the relative values of these coefficients in the final interpretation of results this could have serious implications on the validity of the research conclusions. Any research findings which do not produce evidence of testing these assumptions must therefore be viewed with some degree of scepticism.

Whilst it is a relatively straight forward task to produce the required conditions of linearity, normality, and homoscedascity in data sets, there is a further assumption which is considerably more difficult to overcome. This is the problem of collinearity between variables when the multiple regression requires that all independent variables (or, strictly speaking, the residuals from each partial regression equation) should be uncorrelated. In practice, and particularly in the case of socio-economic and demographic analyses, this ideal state is rarely achieved. The effect of collinearity between variables on the regression analysis results can be considerable, however, creating difficulties for the interpretation of the coefficients of partial regression and correlation, and the coefficient of determination. With specific regard to the use of multiple regression models in migration analysis,

the problem of interpreting both partial and multiple correlation coefficients has been highlighted in a study on county net migration rates in the United States during the period 1950 to 1960 (Tarver and Gurley, 1965). This attempted to explain migration in terms of seven variables, at least two of which - the average number of years of school education received and the percentage of population who had completed four years of high school education - were highly correlated ($r = 0.91$). As Hamilton points out in his subsequent discussion of the paper, two highly intercorrelated variables tend to eliminate each other and even produce a decline in the value of the coefficient of determination (Hamilton, 1965). This can be avoided by using stepwise rather than least-squares multiple regression procedures, but this in turn may result in a very low, often insignificant, beta value for one of the two variables leading to difficulties in the interpretation of results. A further problem of collinearity highlighted in Tarver and Gurley's study is the effect of shared variance (expressed as the difference between the simple and the partial correlation coefficients). Where this exists it is impossible to allocate all the explained variance in the dependent variable to individual independent variables, a certain proportion being the result of the combined effect of two or more variables. When large numbers of explanatory variables are fitted in the equation, this clearly produces great difficulties of interpretation.

More serious, however, is the fact that multicollinearity can also effect the relative values of the partial regression coefficients (Riddell, 1970; Willis, 1975; Johnston, 1978). Johnston provides an example, for instance, where two highly correlated independent

variables each have a strong positive relation to the dependent variable when they are regressed separately in a bivariate equation, yet one of them shows a negative relationship in the multivariate regression (Johnston, 1978; 75). Generally, the anticipated effect of collinearity between variables is to lower the value of the beta coefficients, thus reducing the relative level of importance attached to each variable as a determinant of, for instance, migration rates. The existence of collinearity may therefore make any attempt to interpret the results of multiple regression meaningless. Yet despite this, numerous studies on migration have utilized multiple regression techniques without paying any regard at all to the possible extistence of collinearity between variables, nor to the distorting influence it may have on the final results (e.g. Kono and Shio, 1965).

Unfortunately, there is no simple data transformation technique to overcome the problem of colinearity. Instead, rather more complex procedures have to be adopted, which tend, by virtue of their very complexity, to make interpretation difficult anyway. Of course, the law of parsimony could be applied and variables which merely perform a 'double counting' function be discarded from analysis. The difficulty is, however, to distinguish the primary variables from those which are double counting, and also to define some sort of cut-off point below which the correlation effect is deemed minimal or at least non-disruptive. Clearly such methods may achieve only partial success, since some degree of collinearity is likely to remain.

The commonly accepted method of removing the collinearity effect is to internalize all the shared variance between explanatory variables into just one composite variable, usually by means of

factor, or principal components analysis (Johnston, 1978). If more than one component is produced, they will necessarily be orthogonal and thus, by definition, uncorrelated. The problem with this technique is that the combination of variables within individual factors or components is undertaken by completely artificial processes and may lead to problems of component identification or interpretability (Riddell, 1970). To overcome this it is useful to relate component scores back to the original data set, and this can be done by weighting the independent variables by their respective component loadings. This should enable the relative strengths of the original variables in explaining the migration process to be evaluated without the distorting influence of collinearity since, of course,the weightings are derived from orthogonal indices. In his examination of migration rates in Sierra Leone, Riddell showed by this process just how great the distortion effect of collinearity may be, for the relative order of variables ranked according to the size of their beta coefficients in the 'reconstituted' equation was quite markedly different from that in the original equation. One variable - distance to the Sierra Leone diamond fields - dropped from first to only tenth in importance out of a total set of just fifteen variables (Riddell, 1970 ; 409).

The transformations, amalgamations, and weighting of variables which are required to meet the assumptions of multiple regression analysis may easily be incorporated into the original model where $Y = f(X_1, X_2, \ldots X_n)$. The normative approach holds that a finite number of explanatory factors $(X_1, X_2, \ldots X_n)$, which express spatial variation in a range of socio-economic and environmental character-

istics, should account for the size and direction of migration streams within a pre-defined spatial framework. Multiple regression procedures enable the model to be applied to real world situations and provide precise, mathematical descriptions of the type and relative strengths of the relationships between migration and each of the set of independent variables. The assumptions required for this type of analysis merely provide the format in which the independent variables are presented. That is they should be linear, normally distributed, and either in the form of composite indices or weighted by some measure of the degree of inter-dependence they share.

The validity of such models have been criticised on two grounds, however. Supporters of the systems theory approach to migration (Mabogunje, 1970; Willis, 1975) argue that the relationship between migration and the set of environmental factors is not simply one of cause and effect, but is circular in nature. That is, whilst relative volumes of migration between places may indeed be affected, and to a large extent determined, by various socio-economic, cultural, demographic and environmental stimuli, migration may by itself determine the value of these very same factors. It has been shown, for example, how migration is both induced by differential rates of employment opportunity, but also gives rise to increases in employment levels in areas of strong in-migration (Muth, 1971). Clearly, potential employers are attracted to those areas known to have large supplies of cheap, immigrant labour. This kind of argument has led Willis to conclude that "any firm, definite, statement on migration conclusions from regression is questionable" (Willis, 1975; 42). In purely practical terms, the simultaneous equation

bias resulting from the circular nature of the relationship between variables each side of the original model makes any form of regression technique meaningless. Quite aside from this, proponents of the systems approach also place considerable emphasis on information flows, particularly those working through migration feedback channels. Perfect knowledge about all possible residential locations in a spatial framework, which is assumed to exist in a normative framework, rarely exists in reality. Potential movers are usually exposed to just a limited number of information channels, and even when knowledge of better opportunities does exist, a time lag is often evident since instantaneous response in the form of migration is not always possible. Regression is of course based on 'simultaneous response' assumptions, or at least a relatively short time lag which is equal in length for all migrants. The feedback of information by migrants to friends and relatives at their point of origin can disrupt this however (Sternstein,1975). Consequent 'chain migration' may mean that potential migrants are moving much sooner than they otherwise might have done, if indeed they had originally planned to move at all. From this one could suggest that migration multipliers should be incorporated into a systems model, a notion which received support from Roseman's argument that people who have moved at least once before have greater propensity to migrate than those who have never changed their place of residence (Roseman, 1971).

Information flows, information gathering systems, and time lags are also emphasised by those whose prime concern is the behavioural approach to the decision to migrate (Wolpert, 1965; Brown and Long- brake, 1970). In complete contrast to the normative viewpoint which

considers migrant populations as homogeneous aggregations of 'homo
economicus', who not only have perfect information but are able to
respond to it with totally rational, optimizing behaviour, the
behavioural approach recognises that these qualities do not exist
in all individuals, and that individuals are likely to respond in
different ways to the same stimuli. It therefore concentrates on
the mechanisms by which individual decisions to migrate are made.
In the first place information flows, which provide the knowledge of
alternative opportunities and are a crucial prerequisite of the
migration decision, may vary according to one's location in space
(e.g. core or periphery) and to the state of development of the
national economy and society (Lewis and Maund, 1976). The ability
of the individual to retrieve information also varies, however,
according to a range of economic, cultural, and social constraints.
Age, sex, and occupation for instance, will determine each individual's
activity space, which in turn controls the amount of knowledge he
is able to gather (Wolpert, 1965; 302). Whilst information about
alternative locations is constantly assimilated, its relevance to the
migration decision is further determined by the particular needs and
ambitions of the individual. In turn, the strength of these desires
tends to vary according to the particular stage reached in the
individual's life-cycle. Leaving school, marriage, creating a family,
and retirement all mark stages in the life cycle when an individual's
(or family) needs and ambitions are reassessed and when migration
offers the possibility of meeting these new desires (Leslie and
Richardson, 1961). It is perhaps debatable whether a comparison
with alternative locations, and an appraisal of satisfaction with
one's present home, takes place constantly through adult life, or just

at times of change in the life cycle. Empirical evidence from
most developed countries clearly shows that most moves occur at one
or more of these critical stages (Rossi, 1955; Speare, 1970). If
moves do not occur on the other hand, this is because needs and
ambitions of the individual are already met despite any changes
resulting from a move along the life cycle, or because a move, which
may after all be considered beneficial, is delayed due to forces of
inertia. Such a time lag may even last indefinitely (Wolpert, 1965;
304).

Within the determinants of activity space and life cycles,
the crux of the behavioural approach lies in the notion of place
utility - "the net composite of utilities which are derived from the
individual's integration at some point in space" (Wolpert, 1965;
301). It embodies the level of satisfaction or dissatisfaction an
individual holds with his immediate environment, and the anticipated
reward which may be achieved by living in an alternative location. Thus
it represents "a measure of attractiveness or unattractiveness of an
area, relative to alternative locations, as perceived by the individual
decision maker" (Simmons, 1968). The decision to migrate is taken
therefore, in order to increase an individual's experienced place
utility.

The most relevant aspect of all this to the present discussion
is that the range of variables which make up place utility, (i.e. the
range of utilities), is likely to be infinite since it is based on
each individual's own perception of the environment. This, it may
be noted, contrasts with the finite number of variables used in
normative models. Furthermore, the list of variables is likely to

vary from one individual to another, and each individual will attach
a different degree of importance to the variables which are under
common consideration. To make matters more complex, as individuals
move through the various stages in the life cycle, new variables
may be added to those already under consideration, old variables may
be discarded, whilst the relative weights attached to each one
change constantly (White and Woods, 1980; 10). Attempts to fit this
kind of process into a multiple regression analysis will clearly meet
with enormous difficulties. As the original model stands, migration
(Y) is measured for populations (albeit relatively small) aggregated
at the agricultural settlement level. This necessitates the use of
ecological rather than individual correlation procedures, with
data expressed in terms of averages or percentages in the explanatory
variables. However, inferences on individual actions or preferences
cannot be drawn from the results of this kind of correlation (Robinson,
1950). Thus, individual priority assessments of the various
environmental stimuli which contribute to the decision to migrate
will be obscured in the model as it presently stands.

5.3 TOWARDS AN ALTERNATIVE APPROACH

The systems and behavioural arguments clearly question the
validity of the original model and the use of multiple regression
techniques to explain variations in migration rates. Porter sums
up these problems when he states that "any attempt to explain the
[migration] phenomenon in a rational way will lead to a formulation
of unusual complexity, or be foredoomed to failure" (Porter, 1956;
317). Although the difference between success and failure may be
hard to define exactly, the often rather poor values obtained for the
coefficient of determination in regression analysis of migration

may indeed be said to be indicative of a general lack of success. The problem is to find an alternative methodology, or perhaps to modify the present model in some way, so that the problems of circular relationships and individual priority preferences can be overcome. In doing this it is essential that the aims of the present study are constantly borne in mind, and especially that the nature of the data available for study is compatible with the proposed type of model formulation.

Consideration turns first of all to the problem of circular relationships, where migration may itself affect the relative values of supposed 'explanatory factors'. It has, in fact, already been noted (Chapter 3) how this process does occur even at the local settlement level in Japan. Poor accessibility to schools is cited as one reason for high rural out-migration rates, which in turn leads to a reduction in the number of children who attend these schools. As a result schools become inefficient and local authorities are forced to shut them down, thus further reducing the level of accessibility and so encouraging further out-migration (Plate 5.1). Local fire-fighting facilities offer another example. When a fire breaks out, many villages are initially dependent on their own resources to control the blaze and, in particular, on the availability of a group of able-bodied men to carry water to the site of the fire. Plate 5.2 shows the effect of a fire which two months previously had burned down three houses in the village of Nakamura in Taga-cho, Shiga prefecture. The inhabitants of all three households subsequently left the village to live elsewhere. The villagers who remain, argue that had migration not been so severe in the past more young men would have been available to control
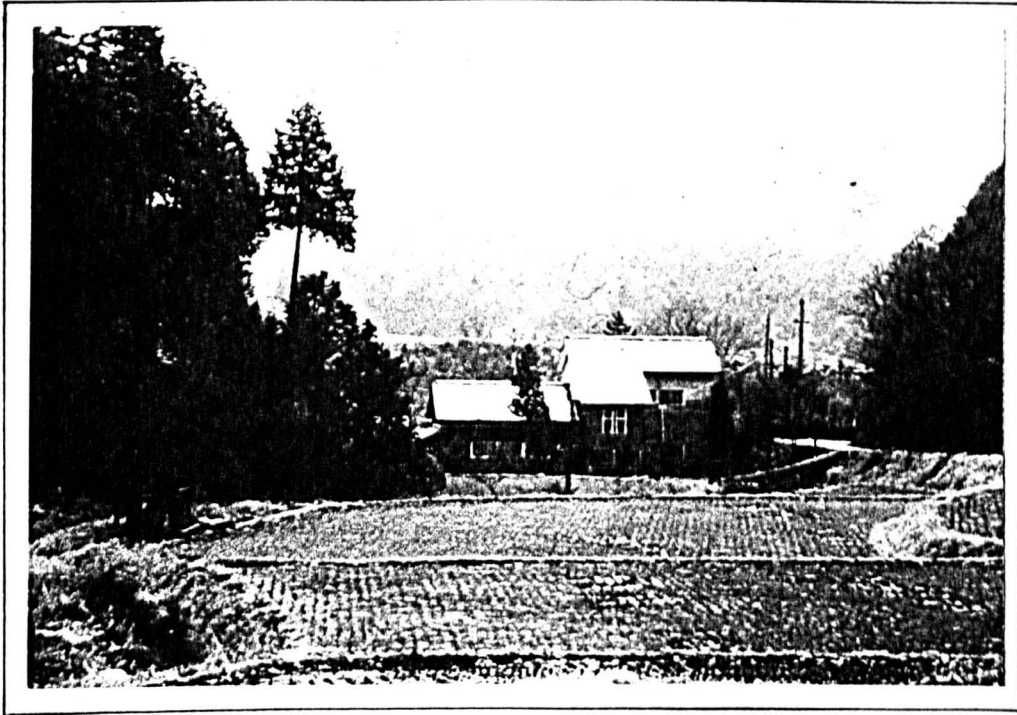
Plate 5.1   A school in the Tamba uplands, closed
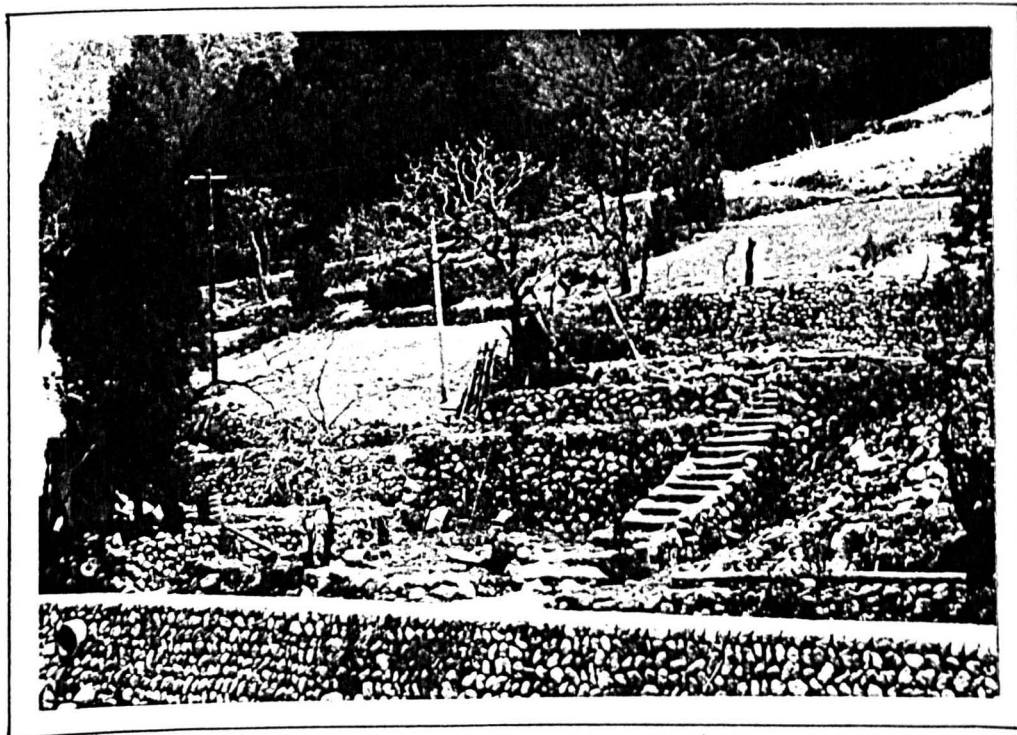in 1977 due to falling numbers of
children.

Plate 5.2   A fire destroyed these farmhouses in
Taga-cho, Shiga prefecture, in 1976.
The inhabitants subsequently left the
village for good.

the fire (which broke out during the night), and prevented it from spreading from more than just the one house. The subsequent out-migration of two households may thus have been avoided.

Whilst these examples clearly lend weight to the argument against the potential effectiveness of multiple regression techniques they must, nevertheless, be placed in the context of migration which is measured over a relatively limited ten year period. Is such a period long enough for cause to be related to effect, and then back again to cause? Whilst it may be so in the case of dramatic instances such as a fire, it is less likely to be the case when bureaucratic decisions have to be made concerning, for instance, the closure of a school. Is ten years a long enough period to measure the initial effect of poor accessibility on subsequent out-migration rates, leading first of all to recognition of the fact certain closures may be necessitated, then eventual enactment of the closures, and then the subsequent effects this in turn has on out-migration rates? Clearly, a more detailed knowledge of the precise sequence of events, and especially the time difference separating each event is required before the inclusion of such processes into a model can be fully justified.

It may be argued from the systems theory viewpoint that information feed-back processes will affect the relative length of time lags, as well as having a possible impact on the structure of the local rural economies and society (Mabogunje, 1970). The crucial point here is whether or not chain migration is likely to result in differences in the relative volume of migration flows. Whereas this may be the case in less economically developed countries, in Japan in 1965 the level of economic and social development was

extremely high, with the inevitable consequence that the structure and organization of the communications network was similarly highly developed. It may be recalled, for instance, that T.V. ownership in 1968 was higher in farm than in non-farm households, with a national average of about 80% of all households owning a television. Similarly, rates of newspaper circulation are very high in Japan, and once again rural areas tend to have higher proportions of readers than in the urban districts (Asahi Shinbunsha , 1977). It may be argued, therefore, that chain migration processes are unlikely to have a significant effect on the decision whether or not to migrate, or even when to migrate. Existing information channels may play a much more important role in this respect.

Any attempt to incorporate an alternative model based on a systems approach into the present research would in any case require a complete change of spatial framework. Clearly any systems model must include the whole migration system rather than just one corner of it. Since the area presently under consideration is subject to substantial rural-urban migration, as well as rural-rural migration, it would be impossible to adopt a systems model without incorporating large urban concentrations in addition to the relatively small number of agricultural settlements, which are the present focus of attention.

Despite this, the systems approach and its emphasis on migration processes can offer a useful contribution to the better understanding of differential rates of migration in rural Japan. In particular it emphasises the need for extremely careful appraisal of techniques describing simple, linear cause and effect relationships. If these techniques are to be employed, great care must be

taken with respect to the choice of explanatory variables, to ensure that they measure events prior to migration occurring, and to seek for and recognise the possible influence migration itself has on their relative value.

Turning to the problems raised by the behaviourist approach to migration, it might at first appear that emphasis on the individual decision making process is irreconcilable with normative explanations which are necessarily based, by the very nature of data availability, on aggregate populations. Although information on individual migrations is available in Japan, it was clearly argued in the previous chapter that problems of data collection at this level preclude systematic analyses based on sufficiently large numbers of people. On the other hand, Wolpert himself argues that

> although the action space is unique for each
> individual, still there is likely to be a good
> deal of convergence into a limited number of broad
> classes. The congruity and interdependence of the
> effects of race, family income, education, and
> occupation are likely to result in subgroups
> of individuals with rather homogeneous action
> spaces (Wolpert, 1965; 303).

The implication is clearly that certain groups of individuals, with shared basic personal characteristics, will have similar perceptions of comparative place utilities. That is, they consider roughly the same range of variable inputs and assign similar weightings to each of the inputs. Furthermore, the logical conclusions to this are that migration decisions within these groups are based on the

same set of premises and so are likely to result in similar migration

patterns, whilst migration patterns between groups will vary, since

'average perceived place utility' will also differ.

These notions find considerable support in migration literature.

Differential migration rates and migration patterns have been

observed between negroes and whites in America (Bogue, 1977; Rose,

1970), highly educated and less educated school leavers in Ireland

(Hannan, 1970) and in Holland (Lijfering, 1974), and different

family income and occupational status households, also in America

(Rossi, 1955). The most commonly recognised of the selective processes,

however, is that of age differentials (White and Woods, 1980).

In nearly all studies, migrants are generally found to be young,

in the age range 15-35, with an occasional secondary peak after

the age of 60 (e.g. White, 1982). Japan is no exception to this

rule. Clearly these age peaks relate to stages in the life cycle,

with the periods of school leaving and career formation, family

formation, and finally retirement standing prominent. Equally clear

is the probability that the perceived place utilities of a school

leaver seeking to establish a career for himself are likely to vary

markedly from the retired person whose prime concerns may be to

seek a peaceful, warm and sunny environment, or perhaps to be close

to family and friends. It is important then, in studies of variations

in migration rates, that migration flows should be disaggregated, if

possible, into these broad groupings of population.

In the present study it is anticipated to be only possible to

disaggregate estimated net migration rates by age and sex. Racial,

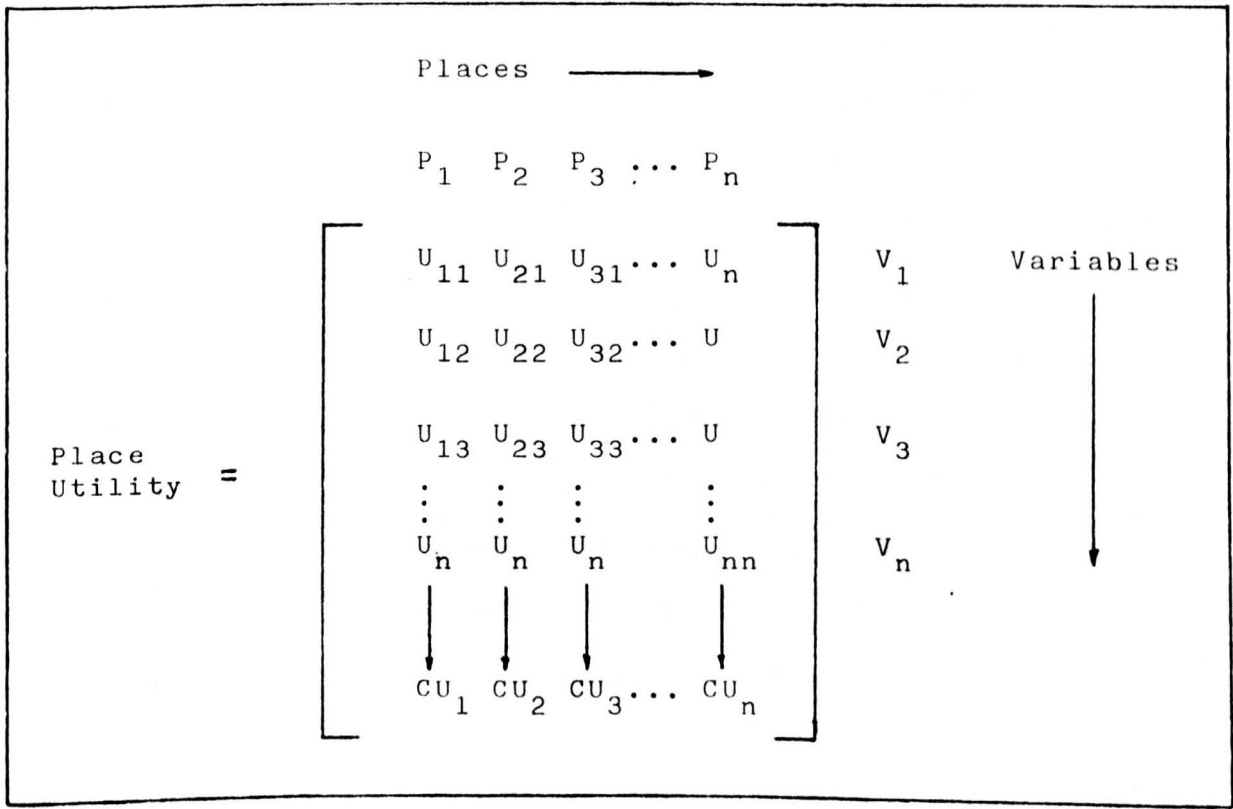social status, income, and occupational groupings exist within all

age ranges, and for both sexes however, and ideally much smaller population sub-groups based on four or five shared characteristics rather than simply age and sex would be preferred. As it is, in rural Japan, different racial groups are rarely identified and social status is, in theory, equal, following post-war Land Reform and democratization. (A racially indistinct group known as Burakumin are still the subject of fairly rigourous discrimination, but Burakumin cannot be identified and isolated using official documentary sources alone.) Since aggregate populations are based on the agricultural settlement level and are thus fairly small anyway, it is probable that age (or life cycle stage) and sex are after all the major determinants of sub group formation, with the possible addition of occupational status expressed in terms of the farming-nonfarming differential (Beardsley, Hall and Ward, 1959; Ch. 10). The important thing is that broad similarities of place utility perception are likely to exist between individuals in the same age range, whilst marked differences will be evident between individuals of different age groups. For a fuller understanding of spatial variations in migration rate therefore, migration rates should be disaggregated by age group, and each rate compared to the respective estimations of place utility which are relevant to the specific age groups.

Before this can be attempted it is necessary to fit the notion of comparative place utility into an operational context, and most important, to devise a method by which place utilities can be reasonably measured. First of all, the original model needs to be rewritten:

$$Y = f(U_0, U_1, U_2 \ldots U_n)$$

where Y represents the decision of an individual whether or not to migrate, or the propensity to migrate of a population sub group with certain shared personal characteristics (i.e. the same age). U_0 represents the collective utility of the area associated with the present home of the potential migrant or migrants, and $U_1 \ldots U_n$ the anticipated utilities of an unlimited series of alternative locations. The whole expression can also be shortened to the single term 'place utility', or the level of satisfaction or dissatisfaction with respect to a place. Migrations occur when the expected place utility of an alternative location is higher than the place utility presently experienced at the home location. The concept is best envisaged in terms of a matrix (Figure 5.1).

Figure 5.1   Place Utility Matrix

$$
\begin{array}{ccccc}
& P_1 & P_2 & P_3 & \cdots & P_n \\
\text{Place Utility} = &
\begin{bmatrix}
U_{11} & U_{21} & U_{31} & \cdots & U_n \\
U_{12} & U_{22} & U_{32} & \cdots & U \\
U_{13} & U_{23} & U_{33} & \cdots & U \\
\vdots & \vdots & \vdots & & \vdots \\
U_n & U_n & U_n & & U_{nn}
\end{bmatrix}
&
\begin{matrix}
V_1 \\ V_2 \\ V_3 \\ \\ V_n
\end{matrix}
& \text{Variables} \\
& CU_1 & CU_2 & CU_3 & \cdots & CU_n
\end{array}
$$

(After White and Woods, 1980.)

The term CU, or composite utility, is the sum of utilities based on a range of weighted variables ($V_1 \ldots V_n$) for each of a range of alternative locations ($P_i \ldots P_n$), and the home location (P_o). Place utility is thus an expression of the relationship between CU_o and $CU_1 \ldots CU_n$.

The nature of this relationship hinges on the central concept of a 'threshold reference point' (Wolpert, 1965; 300; Brown and Longbrake, 1970; 370). In effect, this marks the dividing line between satisfaction and dissatisfaction with ones present environment, expressions which may only be felt if one has knowledge of better or worse locations elsewhere. If ones' experience utility of an area is low compared to the anticipated utility of other locations the threshold reference point will be low, levels of satisfaction will be low, and overall place utility will be low. Conversely, place utility and levels of satisfaction will be high when most other locations are expected to have low levels of composite utility in comparison to the experienced utility of the present location. Since the threshold reference point is self anchoring the place utility for various locations may be represented on a continuous scale ranging from low to high values. A graphical representation of the relationship between place utility and migration may therefore be hypothesised (Figure 5.2).

The assumptions of such a model are a closed system with a finite number of locations, each of which every individual has at least a partial knowledge. If place utilities are represented on a continuous scale then it is possible to envisage a mean value of place utility, above which individuals are generally satisfied with their present environment, and below which the feeling is one of general

Figure 5.2   Hypothetical Relationship between place Utility
               and Migration.
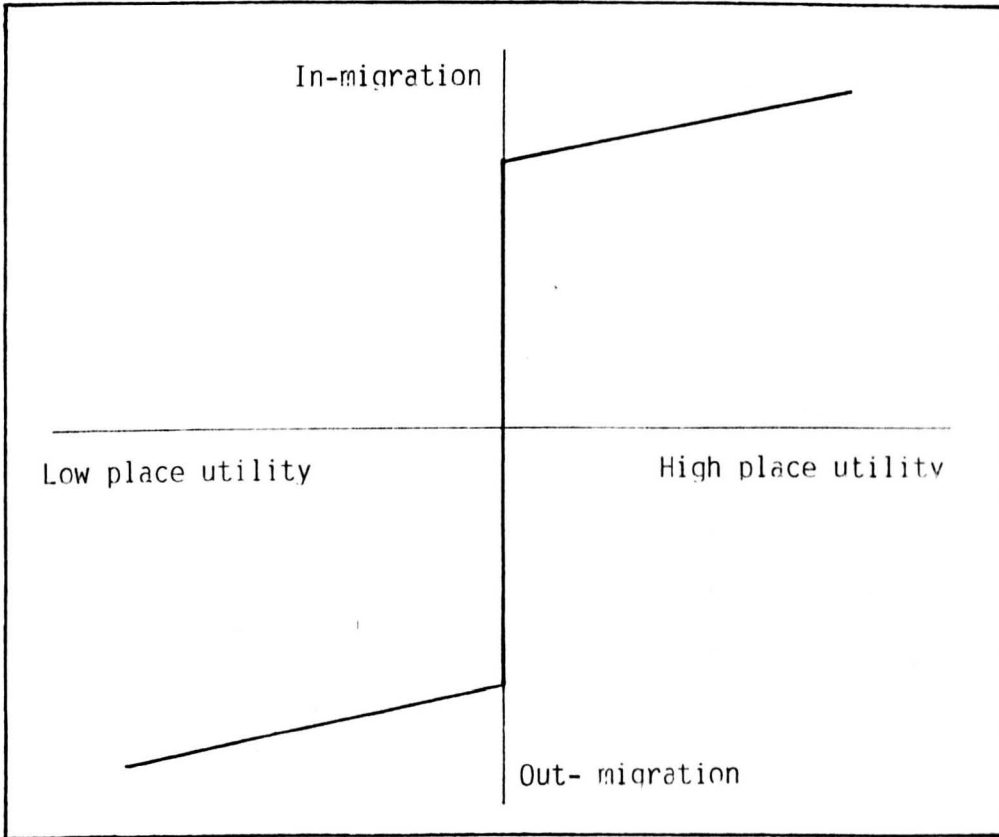
dissatisfaction. Clearly migration should not occur between places

where place utilities are low, when a move simply results in a new

place of residence where there is still an overall feeling of

dissatisfaction. Moves occur instead between places with below the

mean place utility and places with above average place utility.

In a real world situation it could perhaps be argued that average

place utility lies on the boundary between rural and urban places

and that migration is almost exclusively between these two regions.

    Empirical evidence suggests, however, that considerable

movement exists both within the rural area and within the urban area,

and although there are difficulties of precise definition of rural

and urban places there seems to be no really strong support for such

a large 'step' in the relationship (Jinko Mondai Hangikai, 1974).
It is in fact unlikely that free market mechanisms would allow the
status quo to continue long enough for such a pattern to emerge. High
in-migration concentrated in the settlements at the top half of the
scale would bring pressures of over-crowding, lack of housing, and
high prices so that place utilities begin to fall. Furthermore,
ever since Ravenstein's laws of migration were published in 1885,
migration has been seen to occur in stages rather than in one
final move. As Ravenstein states, 'currents of migration exist

> setting in the direction of the great centres of
>
> commerce and industry which absorb the migrants ...
>
> the inhabitants of the country immediately surrounding
>
> a town of rapid growth flock into it; the gaps thus
>
> left in the rural population are filled up by
>
> migrants from more remote districts, until the
>
> attractive force of one of our rapidly growing
>
> cities makes its influence felt, step by step, to
>
> the most remote corners of the Kingdom (Ravenstein,
>
> 1885; 198-199).

Whether or not this is the case in post war Japan is difficult to
say without making detailed longitudinal surveys of individual
migration histories. Aggregate data showing net migration flows
cannot, unfortunately reveal the existence of such patterns. The
fact that rates of intra-municipality migration are so high, in
rural as well as urban districts, does indicate however, that such
patterns may well exist. This leads one to suppose that a more
accurate representation of the likely relationship between place
utilities and migration would indicate a linear path (Figure 5.3).

Figure 5.3   Alternative Relationship between Place Utility
and Migration.

In-migration

Low place utility

High place utility

Out- migration
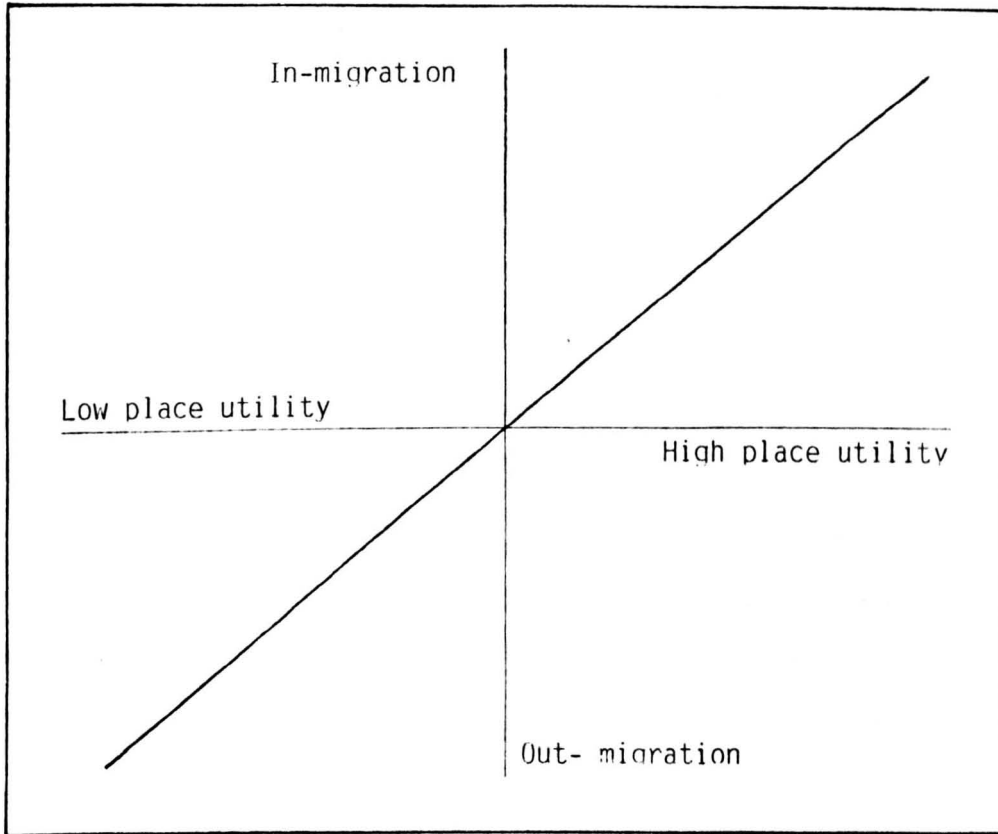
Theoretical justification for such a path can be made in
terms of comparative place utilities. The most obvious argument,
particularly applicable to Ravenstein's observations, is that limited
fields of information preclude knowledge of far away places. Villagers
in remote districts may thus be unable to consider the potential
composite utilities of urban districts higher up the scale and
movement is limited to nearby rural areas, or market towns,which
nevertheless do offer a higher place utility. Once movement has
occurred in this fashion, the migrants activity space may broaden
so that information concerning a wider range of localities becomes
available, including places even higher up the scale, leading to
a possible reassessment of comparative place utilities and subsequent
further migration.

It has been argued, on the other hand, that information channels
in post war Japan are already highly developed and even in the most

remote villages considerable levels of knowledge exist concerning
other parts of the rural area and, especially, urban districts.
There are however, other forces in operation which may produce
migration flows in short stages. An obvious example is the desire,
initially, not to move very far away from the home locality. The
wish to remain close to relatives, or to the ancestral grave, or
simply to continue farming the family land from an alternative place
of residence are all possible factors giving rise to such moves
(Oshima, 1972; Sakaguchi, 1974). Subsequent moves, possibly delayed
until the next generation, may be made when the strength of these
bonds gradually diminish over time. In terms of place utilities,
it may simply be postulated that considerations of distance from the
home locality form a major constituent of comparative utility
assessments, receiving a far higher weighting than any other single
variable. If this is the case, however, the validity of the
relationship expressed in Figure 5.3 needs to be re-examined carefully.

Clearly individual rankings of comparative place utility
vary from person to person, depending not only on each set of personal
characteristics, but also on each individual's particular location
in the spatial framework. Over time, individual rankings may change,
not only because of movement through stages in the life cycle, but
also as a result of previous moves made between different localities.
For the relationship between migration and place utility to have any
clear meaning, therefore, the place utility function in Figure 5.3
is not representative of individual perceptions of comparative
utilities, rather it is the average ordering for the population
as a whole, or at least, a sub-group of that population, irrespective

of any particular location in the spatial framework. In other words, emphasis is laid on the anticipated utility of locations, rather than the experienced utility felt by people already living in a particular place. This 'aggregate place utility function' (henceforth A.P.U. function) may still be represented on a continuous linear scale, the right hand end representing places which most people in the system at any given time feel offers the best place utility, and the left hand end places which are generally felt to be the least desirable in the system.

Since individuals perhaps do have limited access to information, and of course maintain their own perceptions of comparative place utility irrespective of the general concensus of opinion which is represented by the APU function, all migrations will not necessarily be directed to the place with the highest ranking on the APU scale. Instead it is hypothesised that places with the lowest APU function will experience out-migration, but no in-migration, higher up the scale places will have slightly lower rates of out-migration and some in-migration, half way along the scale rates of in and out migration will be equal, then in-migration will begin to exceed rates of out-migration, until the place with the highest APU function where there are high rates of in-migration and no out-migration.

In order to test this hypothesis it should be apparent that a sample of places in the system is sufficient for analysis, although it is necessary that the APU function is still based on the attitudes of all people living in that system. Provided the APU function can be measured in some way the spatial framework determined in the previous chapter is suitable for such analysis. It is necessary to point

out though, that the five percent sample of agricultural settle-
ments is not representative of all localities in the system (i.e.
Kyoto and Shiga prefectures). Not included are any strictly urban
districts. On the basis of strong empirical evidence it is assumed
that such urban places are generally regarded to have high place
utilities, and would thus normally occupy the right hand end
of the APU function (Jinko Mondai Hangikai, 1974). It is of course
recognised that some urban districts may be regarded as unfavourable
locations by some people, due to various negative aspects such as,
congestion high costs of living and so on. Nevertheless, the
effect of excluding urban districts on the hypothesised relationship
between APU and migration is to shift the mean APU score to the left,
effectively altering the position of the Y axis. The revised
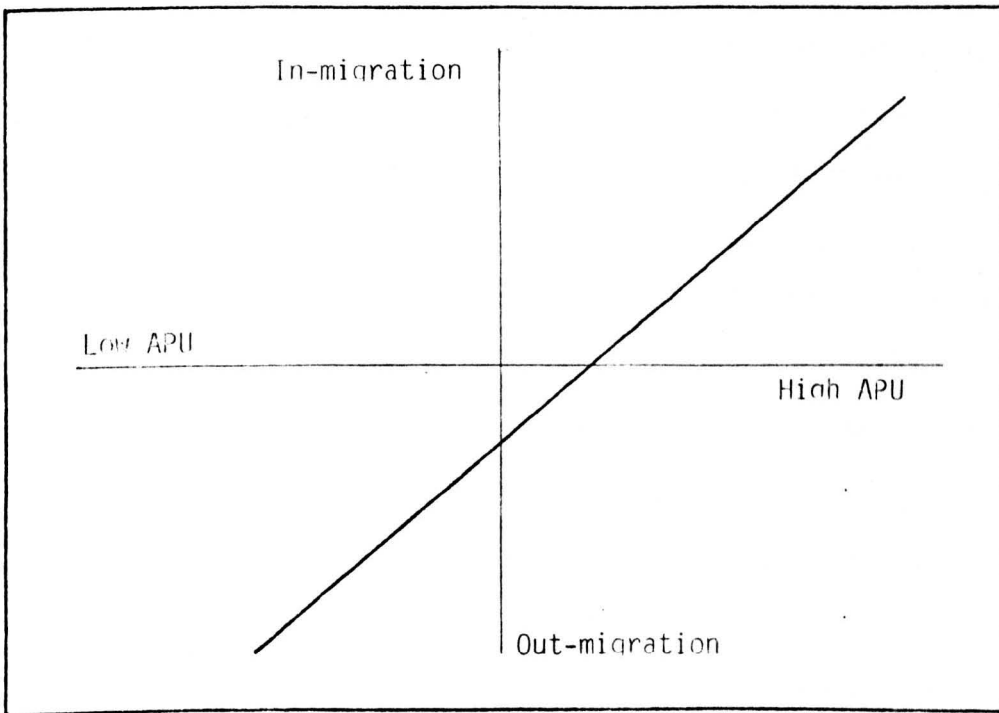relationship is represented diagramatically in Figure 5.4.

Figure 5.4.   Hypothetical Relationship between the
APU function and migration for sample
settlements.

The problems of measuring the APU function are clearly going to be enormous. Following the theoretical procedures already outlined individual place utilities would first of all have to be estimated by constructing a huge series of matrices incorporating all localities in the chosen system and all the possible variables likely to be relevant to daily utility. Not only do all the variables have to be identified somehow, but weightings also need to be assigned to each one. Even if this could be done further analytical procedures would need to be evolved in order to estimate the average place utility function. Despite these difficulties, there has been at least one serious attempt to identify the variables relevant to place utility estimations (Lieber,1978). Lieber argues that most scholars are simply prepared to name the decision making variables without consultation with the potential migrants themselves, but simply on the basis of ad hoc hypotheses concerning the factors supposed to influence migration. This "is tantamount to presuming that the researchers are better informed about the individuals and individual decision making processes than the individuals themselves." (Lieber, 1978; 16). By the use of questionnaires based on personal construct theory Lieber is eventually able to isolate just three variables which the respondents consider particularly relevant to place utility estimations. The procedure is an extremely lengthy one, however, even though it is based on just 420 usable responses. Furthermore, Lieber restricts his study to just a narrow population sub-group of highly educated college students in their final year, all living in the same location. Any attempt to extend this technique to all individuals, living at each locality in a large system is clearly impossible.

The only realistic solution to this problem is to devise a surrogate measure for the APU function. Brown and Longbrake attempt this kind of procedure, but in the final analysis merely draw up a list of 48 socio-economic variables, and subject them to principle components analysis to remove the effects of collinearity (Brown and Longbrake, 1970). The model they produce:

$$Y = f(C_I, C_{II}, C_{III}, C_{IV}, C_V)$$

is no different from the original model initially proposed in this chapter. The problems associated with ecological correlation procedures and their relevance to the individual decision making process are not successfully accounted for by this method. Ben-chieh Liu (1975) proposes an alternative surrogate. Although not explicitly stated as a measure of place utility, the rationale in his choice of indicator holds remarkable similarity to Wolpert's earlier description of the migrant decision making process. Liu states:

> a household head's rational decision about
> where he will locate is to follow a form of
> optimization behaviour. He attempts to optimize
> his overall quality of life in terms of expected
> social, economic, political and environmental
> conditions. The probability of moving is
> determined primarily by the probability of
> getting and being able to enjoy a better quality
> of life (Ben-chieh Liu, 1970; 331).

The use of the term 'quality of life' is not merely meant as an alternative expression of place utility, but used to describe a means

of representing the general level of well-being of people.
Quality of life, and the interchangeable term 'levels of living'
are quantitative, composite indices based on a range of variable
inputs commonly referred to as 'social indicators'. These can be
loosely defined as

> aggregate or composite measures of well-being, or of
>
> some element of it, and are generally designed to
>
> facilitate concise and comprehensive judgements
>
> about levels of social welfare (Knox, 1975; 8)

Use of these indicators was initially developed by rural sociologists
in America during the 1930s and 1940s in an effort to move away from
existing standard classifications of farm families based on economic
criteria alone, but to incorporate measures of people's

> functional dependence on material possessions on the
>
> one hand, and the role-status positions of individuals
>
> and their value-attitude systems on the other. (Ad Hoc
>
> Subcommittee on Rural Levels and Standards of Living,
>
> 1956; 183).

The same committee provided an operational definition for levels
and standards of living as

> an inventory of the physical acoutrements constituting
>
> the material and cultural possessions of the
>
> people in question by the values and norms of
>
> behaviour which they share; by the forms of social
>
> organization which they practice; by the geographic
>
> factors that make up the environment in which the
>
> people live; and by the effectiveness with which

the people in question satisfy the basic needs

of food, health, shelter, education, protection

for the individual, conditions of work, clothing,

etc. (Ibid., 184)

Interest in social indicators seems to have waned after 1956, until

the mid-1960s when a considerable volume of literature on the subject

began to reappear - this time on both sides of the Atlantic.

This revival of interest seems to have arisen in response to

increased demands for public policy makers to take more account

of environmental quality and individual equality, rather than

concentrate all resources on technological advancement and growth

in material wealth (Ben-chieh Liu, 1975; 329). America first declared

an official interest in national social indicators in 1969 with the

creation of the National Goals Research Staff with the specific

responsibility of developing social indicators for the monitoring

of the quality of American life (Knox, 1975; 9). France followed

suit in 1974 with the appointment of her first Minister for the

Quality of Life, whose portfolio included the reduction of the

great disparities in quality of life which were evident there at

that time (Knox and Scarth, 1977; 9). The principal aims of the

social indicators movement during this period are summed up by

Moser (1970). He states that

existing statistics tend to produce information

about the 'average' person, thus concealing

the wide range of individual situations, when

what is needed is an understanding of the variety

of people and households that make up the social

scene - taking account of their educational

background, housing conditions, income groups,

age, and so on. (Moser, 1970; 1042)

More recent research, meanwhile, has concentrated on moving emphasis
away from the measurement of social indicators at the national level,
to the creation of 'territorial social indicators' which can
disaggregate information by geographical areas within a region
(Smith, 1973, 1977; Knox, 1975; Coates, Johnston, and Knox, 1977;
Knox and Maclaran, 1978).

The parallel between levels of living (Quality of Life) and
place utility is clear. Levels of living are expressions of the
overall state of well-being of individuals, which itself is taken to
refer to the degree of satisfaction of the needs and wants of the
population (Knox, 1975; 6). These are precisely the terms applied
to the definition of the average place utility function. Moreover,
levels of living, as defined by the Ad Hoc Subcommittee on Rural
Levels and Standards of Living (1956), take account of the value-
attitude systems of individuals and, as Moser (1970) emphasises,
attempt to break down the barriers imposed by ecological correlation
procedures. Level of living appears, therefore, to be an ideal
surrogate for the measurement of the APU function.

Attempts have been made to distinguish the terms 'level of
living' and 'quality of life', or at least to formulate precise
definitions of each term. No consensus of opinion regarding the
distinction appears to have been reached, however, and one is
generally left with the impression that the terms are inter-
changeable. The definition of level of living proposed by Knox

(1975; 23) suggesting that it is "the actual degree of satisfaction of the needs and wants of a person or group of persons" is preferred here. This fits closely with the concept of place utility and level of living is the term used henceforth in this research. The original model can now be restated in its final form

$$Y = f(LOL)$$

where Y is the net migration rate for each of a set of agricultural settlements in Kyoto and Shiga prefectures, over the period 1965-1975, and LOL is the measured level of living in each of these settlements. It is realised that, over time, the relationship between these two variables is likely to be circular in nature, so strong efforts are made to ensure that measures of levels of living represent conditions immediately prior to the period of migration. Simple regression, and correlation procedures may be used to evaluate the strength and precise nature of the proposed relationship, thus avoiding problems of collinearity associated with multivariate analysis.

5.4 MEASURING LEVELS OF LIVING

Although work on social indicators has progressed rapidly since the mid 1960s there is still "no generally accepted social theory setting out the precise conditions unambiguously defining human well-being, along with their relative weights" (Smith,D., 1977; 31). The main reason for this is simply that basic needs and wants, value systems, and community preferences vary from country to country, region to region, and even from place to place within the same region. Furthermore, the same indicators have varying degrees of significance

with respect to the level of geographic disaggregation (Kamrany and Christakis, 1970; 210). To measure levels of living for agricultural settlements in Japan it is therefore necessary to consider the conditions relevant specifically to Japanese life styles at this particular scale of measurement. Whilst the list of variable indicators and their respective weightings may be unique to the population in this part of the world, however, methods by which levels of living may be conceptualised, and objectively measured have been evolved which are applicable to all areas and all scales of geographic disaggregation.

Level of living is not by itself a directly measurable phenomenon. It is a composite term representing a combination of objectively measured, then weighted variables. Attempts have been made to measure levels of living by simply selecting a group of variables which seem relevant to the general concept and aggregating them in some fashion. Jones (1980), for instance, selects eight variables (unweighted) to measure the quality of life in American urban areas, and Cebula and Vedder (1973) also select eight variables to measure the same phenomenon in a different set of 39 metropolitan areas. Interestingly only 3 variables (income, unemployment, and crime rates) were common to both studies, indicating that neither developed a full set of relevant items. In fact, Jones admits to using a quality of life measure simply to overcome the problems of collinearity associated with multiple regression (Jones, 1980; 99). A more serious attempt to measure variations in quality of life was undertaken by Knox and Scarth (1977), using French data. Although the same basic technique was

adopted, this time a much larger list of 41 variables was incorporated in the analysis. Nevertheless, one is still left to wonder if all the variables relevant to the quality of life are being measured.

Clearly some general framework is required to help clarify the scope and content of human well-being (Coates, Johnston, and Knox, 1977; 10). This is provided by an intermediate list of criteria which incorporate all the general features considered important in the composition of well-being, quality of life,or levels of living. These criteria (alternatively described as constituents, dimensions, domains, components, goal areas, or social concerns) are, like level of living itself, not directly measureable but, having a more restricted scope, they do make measurement feasible. To achieve this 'indicators' are selected which do have numerical expression and which serve as the basis for computing a numerical value for each general criterion (Drewnowski, 1974; 19). It is also argued below, that the selection of general criteria (henceforth the term 'domain' is preferred) is essential if weightings based on any form of attitudinal survey are to be incorporated in the analysis. It is the purpose of the remainder of this chapter to first of all identify the domain items relevant to the measurement of levels of living in rural Japan, and secondly to determine how the weighting of the variable components of level of living scores may be achieved.

A useful starting point to the determination of relevant level of living domains is to consider the list of eight 'social concerns' described by the Organization for Economic Co-operation and Development (1973). The social concerns, defined as 'identifiable

and definable aspirations or concerns of fundamental and direct
importance to human well-being' are:

    A.   Health

    B.   Individual Development through Learning (Education)

    C.   Employment and Quality of Working Life

    D.   Time and Leisure

    E.   Command over Goods and Services (Income)

    F.   Physical Environment

    G.   Personal Safety and the Administration of Justice

    H.   Man's Place in Society (Social Participation)

        (OECD, 1973; 8)

In Japan, the Social Indicator Research Group of the Council for
National Living (1974) accepted the OECD list of social concerns
as relevant to the measurement of quality of life in that country,
with just two additions. First, 'the family' is included since
it is viewed as a 'fundamental unit of human life' and has a
close bearing on the welfare of individuals. This area of social
concern is seen as particularly relevant in Japan today, where the
traditional family system is undergoing rapid disintegration. The
second addition is 'social classes and class mobility'. The Research
Group feels that although the structure of social classes in Japan
differs markedly from that in Europe and America, and is possibly
not so clearly defined, the difference between Japanese social
classes nevertheless needs to be clarified and illuminated in terms
of social indicators. Finally, the research group felt that although
'crime', and 'personal safety' did not reach the same level of social
'concern' as in Western nations, it should be nevertheless included
because 'security was such a basic desire of human beings that it
is necessary to keep a check on the trends of this particular area'

(Research Committee, the Council of National Living, Japan, 1974; 8).

Whilst this revised list of ten social concerns may be applicable to the measurement of levels of living at the national level in Japan, not all these items can be expected to be relevant at lower orders of geographic disaggregation such as the agricultural settlement. That is, items which are characterized by only a very small degree of internal variation within the national boundary or, more specifically, within the rural area, should be dropped from consideration. Notably, it is presumed that crime rates and the administration of justice, housing quality, the physical environment (i.e. pollution levels), social and political participation levels, and social class distinctions may well display significant variation between rural and urban districts, and even between different geographic regions in Japan, but variations are unlikely to be great between agricultural settlements in the same geographic region. Support for such a notion is based largely on extensive field experience and on readings from the numerous social and anthropological texts on village life in Japan (e.g. Beardsley, Hall and Ward, 1959; Dore, 1978; Embree, 1939; Smith, 1978).

Conversely, it has already been emphasised how certain features may show considerable variation between small areal units, but will be obscured at the national level. Accessibility is a clear example of such a feature, and its importance in the determination of local levels of human well-being has been stressed. Similarly, the influence of climatic and other natural environmental factors in the determination of local levels of living has been clearly observed. Unfortunately, no government or independent research organization in Japan has attempted to produce a definitive list of the areas of social concern

directly applicable to levels of living measured at this particular scale. Indeed, very few studies anywhere have attempted measures of levels of living at such a small scale as this. In order to achieve a fully comprehensive set of domain items therefore, it is necessary to consider the specific needs and wants of individuals living in Japanese rural settlements. This can be undertaken by a combination of two processes. Firstly, it is possible to consider the governments response to the need for rural area improvement with particular attention paid to the specific target areas to which financial resources are allocated. Secondly, the social and economic target areas identified by the rural inhabitants themselves can be determined from the results of attitudinal and questionnaire surveys.

The 1975 White Paper on Severely Depopulating Rural Districts provides details on actual expenditure which was allocated to improve the rural social infrastructure in kaso districts between 1970 and 1974, as well as details of estimated expenditure over the subsequent five year period. The specific targets for which these financial resources were directed were fixed after consultation with an assembly of the governors of each prefecture which incorporates a kaso district. These target areas, which reflect the immediate needs of rural inhabitants in these areas, may not be representative of the areas of 'social concern' felt by inhabitants of the whole rural area in Japan but they do at least provide some indication of the type of factors which constitute levels of living at this scale. In total, 97.5% of actual and proposed expenditure was directed to four target areas:

i)   the consolidation of the transport and communications network;

ii) the consolidation of education and cultural facility provision;

iii) the consolidation of social environment and social welfare
     provision, and to guarantee medical provision;

iv) the promotion of agriculture, forestry and fishing, and other
     industrial developments. (Kaso Hakusho, 1975).

Clearly a number of the OECD 'social concerns' can be identified
here, notably health, education, employment, and income. Additions
to the list are transport and communications, and aspects relating
to the social environment and social welfare. By looking at
the list of individual expenditure items it can be seen that these
latter two 'targets' are not in fact, directly related to specific
health aspects. Included in this category are the provision of water
and sewage, waste disposal, fire services, and local authority housing.
Meanwhile, two specific points of emphasis are evident in the
transport and communications target area. Here, improvements are
planned for both the local transport networks and systems, as well
as for the major lines of transport and communication which connect
remote areas with the regional and national population centres.

The results of questionnaire and attitudinal surveys seeking
to elicit the particular problems individuals associate with life
in rural areas (kaso and non-kaso districts) have produced a similar
ordering of items of 'social concern' (Ikegami, 1975; Kokudocho Chiho
Shinkokyoku 1975). Already noted in Chapter 3 is the prominence
of items relating to accessibility, including not only access to
schools and hospitals, but also to workplace, shops, leisure
facilities and to local government and agricultural co-operative

offices. The generally poor state of roads is emphasised, including agricultural and forest roads as well as those connecting villages with other centres of population. Other items such as fire fighting, waste disposal, and problems created by heavy snow in winter also receive frequent mention. Clearly each individual item of concern relates to overall levels of living, or well-being, but does not by itself necessarily constitute a separate domain area. They do however, provide the basis from which a comprehensive list of relevant domain items can be formulated. The following are there-fore proposed as domains which characterise the aspects of levels of living in post war agricultural settlements in Japan:

1. Health, and the provision of medical facilities.

2. Education

3. The provision and availability of leisure facilities.

Each of these items appear as 'social concerns' proposed by the OECD, and the considered relevant to the well-being of Japanese individuals by the Council for National Living. Considerable variation in the availability of these services is known to exist between agricultural settlements, principally due to differences in levels of accessibility brought about by the varied nature of the natural terrain in Japan.

4. Access to local service functions.

5. Access to urban areas.

In the post war market economy in Japan access to the service facilities provided by both rural townships and the larger cities are clearly important aspects of the well-being of individuals in small rural settlements. Frequent reference to fire service provision, daily shopping requirements, waste disposal, and the state of roads, both local and those linked to the national transport network,

is indicative of this.

6.   The state of agriculture, forestry, and fishing.

7.   Opportunities for non-agricultural employment.

Both income levels, and the availability and quality of employ-
ment are featured as social concerns by the OECD. Clearly in rural
Japan, the primary industries offer a crucial source of employment and
regular income. Considerable variations in the agricultural and
forestry potential of settlements have been observed and must be
included as a major domain item in the assessment of relative levels
of living. Increasingly, since the mid 1950s, people have sought
an alternative form of employment to agriculture, either in
manufacturing or service industries where it is generally possible
to obtain higher income levels than from agriculture alone. The
rapid introduction of labour saving devices and the general reluctance
of farm families to give up their small plots of land have meant that
considerably increased significance is attached to local opportunities
for alternative part-time or full-time employment and it is therefore
included as a separate domain item.

8.   The natural environment.

Although variations in the form of natural environment surrounding
agricultural settlements may be accounted for by differences in
the state of agriculture, and by different levels of accessibility
to various service functions, climatic variations, particularly the
amount of winter snowfall, are considered especially relevant
to relative levels of well-being and the item is therefore considered
as a separate domain.

9.   Population structure.

The Council for National Living emphasised the family as a relevant topic of social concern in Japan, alongside aspects of community involvement, and social participation. Major variations in family structure, as well as aspects of community organization are more likely to be evident between rural and urban places in Japan than between individual agricultural settlements. However, variations, where they do exist, are considered important in the construction of levels of living at this level. It is felt that at this scale these variations are likely to arise as a function of the population structure of villages, whereby ageing populations will give rise to the breakdown of traditional community and family structures. Other factors, such as the weakening of the traditional links with agriculture and forestry may also be relevant in this respect (Smith, 1978; Dore, 1978), but these fall into the aspects covered by the 'state of agriculture' domain. Of course, it will be recognized that changes in population structure are to a large extent determined by migration, the very thing levels of living attempt to explain. The considered importance of village population structures to individual well-being requires that this be included as a domain item, however, and it is stressed again, that only population structures preceding rather than post-dating the measured period of migration are taken into consideration in the formulation of the level of living index.

Having established nine domain items for the measurement of relative levels of living attention must now turn to the problem of assigning weightings to the various components of the level of living index. Harvey's assertion that 'people value different things in different ways' (1973; 79), seems, on the whole, to be respected

by researchers attempting to formulate level of living, or quality of life indices and a number of efforts have been made to identify relevant weightings (Smith, 1977; Drewnowski, 1974; Knox, 1974; Knox and MacLaran, 1978). The majority of studies on the other hand, take the easier option of assuming equal weightings of the variable inputs. Clearly the immense conceptual and operational difficulties associated with the establishment of suitable weightings is one of the major reasons behind this assumption. Furthermore, where attempts have been made to determine relative weightings, results have shown little or no significant difference to indices derived from equal, or unweighted variables (Smith, 1977; Knox and MacLaran, 1978). Possible explanations why this should be so are that the preferences of different individuals tend to cancel each other out, and that in any case, people are not well enough informed about the various aspects which constitute their overall state of well-being to make meaningful and informed judgements on them (Tinbergen, 1956; 14). Intuitively, the application of equal weightings appears to be a poor representation of reality, however. As Craig and Driver (1972) graphically argue: 'a man with toothache is not comforted by being told he has a good wife and a high income, so an area deprived on only a few items may perhaps register a higher score than a simple arithmetic mean of the indicators would suggest.' Furthermore, the notion of equal weights merely transfers the weighting procedure to the choice of indicators (Craig and Driver, 1972; 31).

At least four possible methods exist for the derivation of weightings:

i) the measurement of demand for goods and services under the premise that demand gives an accurate reflection of the relative

needs and wants of individuals;

ii) the analysis of official policy statements which reflect the allocation of financial resources to meet the demand for goods and services by individuals;

iii) interviews with knowledgeable people who assign weightings on the basis of their own experience and researches, and

iv) by means of attitudinal surveys conducted amongst the people whose well-being it is that is under consideration.

Hoinville supports the first method, arguing that attitudinal surveys are limited by the fact that respondents 'are not forced - as they are in a behavioural situation - to trade off some of their preferences against others' (Hoinville, 1971; 38). He does, however, recognise certain limitations associated with analysis of patterns of demand, including the ubiquitous 'lack of information concerning all the options', the difference in availability of goods and services, and the distorting influence of individual habits and loyalties to certain goods. These problems are largely overcome by the second method, the analysis of official policy statements. Of the four methods, this is undoubtedly the easiest to put into operation and obvious use could be made of the White Paper on Severely Depopulating Districts which specifies the precise amounts allocated to pre-defined goal areas in rural Japan. The method requires that these goal areas correspond exactly with the specified domain items, or other variable inputs, that they are 'stated explicitly in quantifiable terms and not omitted altogether, or stated only in very vague terms' (Drewnoski, 1974; 30). In fact, the White Paper makes no mention of the natural environment or population

structures, and in any case, the indivisibility of resource allocation means that true weightings may not be accurately represented by this method. Furthermore, government strategies (as well as individual patterns of demand) tend to be strongly influenced by the existing distribution of resources and may not be truly indicative of actual priority preferences.

The third method was one apparently favoured by American rural sociologists in the 1930s (Ad Hoc Subcommittee on Rural levels and Standards of Living, 1956). Clark (1930) for instance, evaluates farm households on the basis of the farm equipment they possess. Items of machinery and other implements were weighted on the basis of their potential usefulness, by a panel of 70 'competent judges'. This method has the advantage that expert opinion overcomes the problem of lack of knowledge by individuals, but is strongly criticised on the grounds that experts may comprise an elite who form a distinct social group from the populace at large and thus offer unrepresentative opinions. Thus 'even a broad ranking of priorities based on what people actually feel (or say they feel) is more acceptable than an unqualified ordering made by someone 'who knows best' (or thinks he does)' (Knox and MacLaran, 1978, 205).

In the context of the present research aims, the major criticism to be levelled against all of these techniques is that none are suitably equipped to disaggregate population priority preferences by small population sub-groups with the same age, occupation, sex, etc. In the evaluation of the average place utility function, and its surrogate measure 'levels of living', it was argued that the estimation of weightings based on the perceptions of comparatively small groups of individuals was vital if a reasonably accurate

index is to be obtained. Correctly speaking, weightings should be based on individual value systems if migration data could possibly be disaggregated to this level. The estimation of weightings based on the attitudes of whole populations does therefore appear somewhat removed from these original intentions, if not even totally meaningless. Researchers who are solely concerned with measuring levels of living as an end in itself do not appear to be concerned with this aspect, however, and it would be a mistake to be misled into thinking that weightings obtained by one of the three aforementioned procedures would be suitable for incorporation into the present analysis. This is despite the apparent advantages these methods hold over the fourth method - attitudinal surveys. As it is, attitudinal surveys, which can easily be broken down into the responses of individuals, or any specified group of individuals, are the only means by which the required information for this analysis can be obtained.

In view of the precise nature of the aims of this research, and the likely content of an attitudinal survey, it is unlikely that potential respondents experience anything less than full knowledge of the various criteria which constitute their everyday living environment. Arguments favouring surveys of 'expert opinion' may therefore be considered irrelevant. On the other hand, a number of serious criticisms are levelled against the use of attitudinal surveys to derive weightings and these do require serious consideration. The first encompasses the danger of 'a posteriori' rationalizations of people's circumstances producing low levels of verbalized importance for domains of life in which they have been

relatively unsuccessful, and vice versa' (Knox and MacLaran, 1978; 220). As a simple example, people who reach only low levels of achievement in the education system may feel that as far as their own lives are concerned education has little overall benefit and will award it a low priority accordingly. A second problem is that the earliest date it is possible to conduct an attitudinal survey which asks respondents to assess the relative importance of the nine specified domain items is April, 1978. This means that first of all, individuals will be asked to express their preferences on variables which are measured for a period over ten years before the time the responses are elicited. Secondly, the population sub-groups identified on the basis of the survey responses will not necessarily correspond to those groups for which migration rates are measured. The potential seriousness of these problems is highlighted by Koelle, who reports that 'value preferences will change with time due to historical events and learning processes which each person is going through' (Koelle, 1974; 3). It should be noted, however, that Koelle's observations were based on a study in which two different sets of respondents were asked to assign preferences on a set of variables, one group a a few years before the other.

Unfortunately, there is no simple device which can be utilized for the elimination of these problems, although it is at least possible to incorporate further questions into a survey which may help determine the possible extent of the distortions which are produced as a result of these problems. By asking individuals to record significant changes or events relating to the specified

domain items over the previous fifteen year period it may be possible to assess the likely direction of any subsequent change in priority preferences. A second question may also be incorporated to elicit each individual's own subjective assessment of his or her present state of well-being, scored on the basis of each specified domain item. These 'soft' indicators are used by MacLaran (1981) to evaluate the appropriateness of theoretically derived objective indicators. In much the same way, they could be utilized here to evaluate possible changes in overall levels of living which have occurred between 1965 and 1978. Also, it would be possible to compare these scores with the scores which assess the relative importance of each domain and which ultimately form the basis for the derivation of weightings. By this method it would be possible to assess the relationship between 'levels of achievement' and priority preferences. A strong positive correlation would indeed indicate that priority preferences are influenced by degrees of individual success or failure on each domain item, and would perhaps lead to a reassessment of the suitability of weightings derived in this manner.

Finally, it should be stated that priority preferences may only be reasonably evaluated for domain items rather than for each indicator variable. Although it is probable that individuals do regard certain indicator variables as more influential than others in determining overall levels of living, it would be impossible, in operational terms, to expect people to evaluate the relative importance of each item in a long list of variables. The nine domain items already specified provide a much more reasonable list from which specific preferences can be deduced.

5.5 SUMMARY

Normative explanatory procedures, relying on multiple regression techniques for the analysis of variations in rural out-migration rates, are shown to be beset with many difficulties, both operational and conceptual. Operational difficulties primarily concern problems of collinearity, or double-counting, between different explanatory variables, whilst conceptual problems arise from the over-simplistic nature of cause and effect explanations, and the unrealistic assumption that individuals can be aggregated into homogenous groups. Both these sets of problems have been at least partially overcome by combining aspects of behavioural theory with the normative approach. Taking a single explanatory variable, equivalent to 'average place utility', or 'level of living' effectively removes the problem of collinearity from the regression equation. The level of living index is constructed so that it takes account of variations between settlements within the rural environment in Japan, but equally important, it also reflects inter-group variations within individual settlements by incorporating a weighting procedure.

Having now established a formal methodological framework, where variations in rural out-migration rates are seen as dependent on variations in levels of living in sample settlements, consideration turns, in the next chapter, to fitting actual data to the explanatory variable.