Barriers Broken. Production Relations and Agrarian Change in South India

Athreya, Venkatesh B.; Djurfeldt, Göran; Lindberg, Staffan

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LUND UNIVERSITY

PO Box 117
221 00 Lund
+46 46-222 00 00

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Barriers Broken

Production Relations and Agrarian Change in Tamil Nadu

VENKATESH B. ATHREYA
GÖRAN DJURFELDT
STAFFAN LINDBERG

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Preface

The fieldwork for this book was carried out in 1979/80 in Kulithalei and Manaparei Panchayat Unions of Tiruchy District in Tamil Nadu, India. The team consisted of the authors plus Gustav Böklin, agronomist, who unfortunately never got the financial and other means to contribute to the writing of this book, but whose contribution, especially to the analysis made in chapter 3, cannot be over-emphasized.

We had a dedicated field staff without whose hard work and enthusiasm we would not have managed to collect the wealth of data we have used. The staff included R. Vidyasagar who worked as a senior research assistant and A. Rajagopal, both of whom are at present completing their doctorates, the former at the Madras Institute of Development Studies and the latter at the Centre for Development Studies, Trivandrum. Other members of the staff were S. Gurusamy and P. Boraian who have since completed the M. Phil programme at Panjab University and at Gandhigram Rural University respectively. Other members of the staff were: S.T. Arasu, K.P. Ayyavoo, A. Chellaiyah, G. Jothi, V.V. Krishnamoorthy, S. Mariasusai, K.S. Natarajan, V.R.J. Prabalen, S. Sampath, and Mrs. R. Brindhuvahini. Dr. K. Gopal Iyer of Panjab University also participated in parts of the fieldwork as did Mr. V. Bhaskar, then of Jawaharlal Nehru University. To all of them our warmest thanks!

The project was affiliated to the Madras Institute of Development Studies, and we are grateful to its Director, Professor C.T. Kurien and his faculty, for intellectual and other support. Financial support was extended by the Copenhagen and Lund universities, by the Scandinavian Institute of Asian Studies, and by the Swedish Agency for Research Cooperation with Developing Countries (SAREC). SAREC funded the fieldwork in 1979/80 and also a part of the costs of data analysis. We are grateful to Dr Carl-Gustaf Thornstrom at SAREC for his support of the project.

One is often led to doubt the relevance of academic research to real-life problems, but somehow we retain the belief that this work can be of some indirect use also to the workers and farmers who put in a lot of effort and time in answering our often peculiar questions.

Lund and Tiruchy
December 1989

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Introduction

The two key words to the contents of this book are: *relations of production and agrarian change*.[1] The latter key word indicates a practical starting point. We are interested in agrarian change, and the factors which explain such change and makes it potentially manipulable. This is one of the fateful issues of the twentieth century, both globally, in a world incapable of feeding its whole population, and in the Indian context where the question of poverty, to a large extent, centres upon the same incapacity of the country to feed its citizens.

The other key word signals a theoretical starting point. The social relations which men enter into in the course of producing the material wealth of a society are fundamental, both in determining the structure of society and its development. As the voluminous debate testifies, the concept is by no means unanimously defined or uncontroversial (see, for example, Hindess and Hirst, 1975 and Cohen, 1978). However, no marxist would deny that relations of exploitation or, to be more precise, the relations of surplus appropriation, are central to the relations of production. We define these as the relations through which the immediate producers are alienated from the control of the surplus of their labour. In this sense, the present book is squarely within the marxist tradition; it tries to understand agrarian change by focusing on agrarian relations of production.

The concept of *forces of production* is often regarded as a twin to relations of production. This concept includes the important

[1] We have used these terms in the title of an article. See Athreya et al., 1986b.

relations between producers and the material conditions of production, which we study under the heading of *ecology*.[2]

However, it would not be an adequate description of this book to say that it replaces forces of production with ecology and tries to understand agrarian change as determined by ecology, and relations of production. A major result of this study is that relations in themselves do not explain agrarian change. Several *State interventions* have proved strategic in inducing the processes that we document. Thus, the *State* enters as a third key word in this study, and this signals an extension of the conceptual universe beyond the dichotomy between relations and forces (ecology). It has often been alleged that marxism has no theory of politics and only a rudimentary theory of the State. This allegation has become untrue, not only by being repeated but by the work that marxists have put into the analysis of politics and the State. We do not attempt to document all forms and details of the State intervention in agriculture. Instead, we try to document the strategic role of the Indian State in conserving and transforming the relations of production.

The above are the rough coordinates for the analysis attempted in this book. In the following pages we will try to specify those coordinates further, in order to prepare the reader for the detailed analysis.

The problematique

In the midst of the fieldwork, in December 1979, we formulated the aims of the project as follows:

1. To make a systematic comparison of different agrarian ecotypes (tank-irrigation, canal-irrigation, well-irrigation, and dry-farming) seen as infrastructures for different relations of production or agrarian regimes.
2. To study the variety of relations of production, especially the interrelation between different forms of surplus appropriation: landed property and land rent, usurious and merchant's

[2] This is not the place to go into a detailed terminological discussion, but it should be noted that forces of production are not synonymous with ecology. As usually defined, the former include some relations that we deal with in chapter 5 under the heading 'labour relations'. Likewise, ecological analysis involves matters which would hardly qualify as parts of the forces of production.

capital, and different forms of profit. For this we need to study an area where merchant's capital and usurious capital are dominant or important modes of surplus appropriation with cash crop producing poor or middle peasants (and, of course, the agricultural wage labourers hired in by them) as the producers of surplus value.

3. To explore how the pattern and tempo of agrarian change is related to the above-mentioned factors.
4. To investigate how these variations in relations of production impinge on the other levels of social formation, especially on the ideological and political levels. (Athreya et al., 1979, p. 2)

As often happens during the course of a research project, the original problematique changes. This may be a result of both the research work itself and of developments in the academic debate, and in the general intellectual climate. Many changes have occurred in the latter two since the late 70s, when this project was launched. The intellectual reorientation which swept through the social sciences from the late 60s has reached a kind of maturity. The wild forest of ideas has been cleared and a few plants have been selected for intensive cultivation, as it were. The authors of this book have participated in this process, and their perspectives have changed with it. Still, the 1979 formulation quoted above has stood the test of time. Except for the point regarding politics and ideology, which we were forced to leave out for practical reasons, the other aims quite adequately describe the focal points in this project, and the principal contents of this book.

An important source of inspiration for this study was the debate on the mode of production in Indian agriculture. In this debate,[3] the issue was: has capitalism already installed itself, is it underway, or does Indian agriculture remain precapitalist? We wanted to make an empirical intervention into the debate by going into the variations in the relations of production. It is obvious that the relations vary greatly both between regions and also within them. As was pointed out, it is also true that many participants were quite myopic: for them the issue was implicitly 'the mode of production in Indian agriculture, as it appears from my *taluk*,'[4] and

[3] For an overview of the debate, see Harriss (1980) and Thorner (1982).

[4] *Taluk* denotes an administrative subdivision of a district. See also Appendix 1.

their awareness of the diversity of the relations of production was also quite low.[5]

The notion of diversity leads to two concerns:

1. Is the variation in relations of production ecologically grounded and, if so, what is the role of ecology as a determinant of the relations of production? These are the questions raised in chapters 3 to 5. In chapter 3 we analyse the two agrarian ecotypes that we find in our field area, and in the latter two chapters we show that the relations of production differ between the two ecotypes.
2. Other questions naturally follow: what are the modes of surplus appropriation and the class structures associated with these ecotypes? Does the importance of landlordism, merchant's capital, and usury, which have been the foci of controversy in the Indian debate, vary between the different settings? We address these questions in chapters 6 and 7. In the former, we attempt an analysis of the agrarian class structures in the two ecotypes. Our conclusion is not surprising: the class structures differ, but the difference is more dramatic than one might have expected. If we define landlordism as prevailing when a major share of the surplus takes the form of rent, then landlordism is predominant in the wet area and virtually absent in the dry one (see chapter 6). This leads to questions about the roles of merchant's and usurious capital raised in chapter 7.

Finally, the issue of the tempo and pattern of agrarian change recurs throughout, i.e., both in chapter 3 where we discuss ecological degradation and the consequences of the new seed technology, and in the following chapters where we deal with changes in the relations of production due to land reforms; patterns of generational mobility (chapter 4); the so-called land rent barrier to capitalist development (chapter 6); the impact and spread of the new seed technology and its consequences for productivity (chapter 8); and the consequences of the expansion of credit capital for usury (chapter 7).

[5] This can be read as a self-criticism of Djurfeldt and Lindberg's 'Behind Poverty' (1975a).

The reader might suspect that, in leaving out the question on politics and ideology, the present study is doomed to become as economistic as the debate on the mode of production tends to be. It is true that the subject matter of this book is primarily economic, but this does not mean that it is necessarily economistic. It is also true that the original debate tended to be economistic in ascribing a purely economic dynamism to the different modes of production and to the process of capitalist development. As the reader will find, the analysis will repeatedly point to the fundamental role of politics for economic change. Although we were forced to cancel our plans to study local political structures in detail, the socio-economic analysis repeatedly turns political. State intervention and political movements have played a crucial role in the dynamic processes that we will deal with.

This perspective could have given another subtitle to the book: 'Ecology, Class, and State in South Indian Agriculture'—'Ecology', because the contrast between the two ecotypes, wet and dry, recurs throughout the book; 'Class', because the analysis of the relations of production which is central to the book ends with an investigation of the agrarian class structure. Thus, 'class' together with 'ecology' become the two recurrent themes of the analysis. 'State', finally, signals the fundamental importance of this institution to the processes of change that we will be analysing.

The choice of study area

After this introduction to the problematique, let us now describe the area chosen for the study, and some of its prominent characteristics. As part of the preparations for the project we toured the Tamil Nadu countryside in 1978 looking for an area with the following specifications:

1. The field area should be ecologically diverse, covering all the common systems of irrigation.
2. The area should have a diversified cropping pattern with a sizeable area under cash crops, including industrial ones.
3. The area should have a sizeable middle peasantry engaged in commodity production.

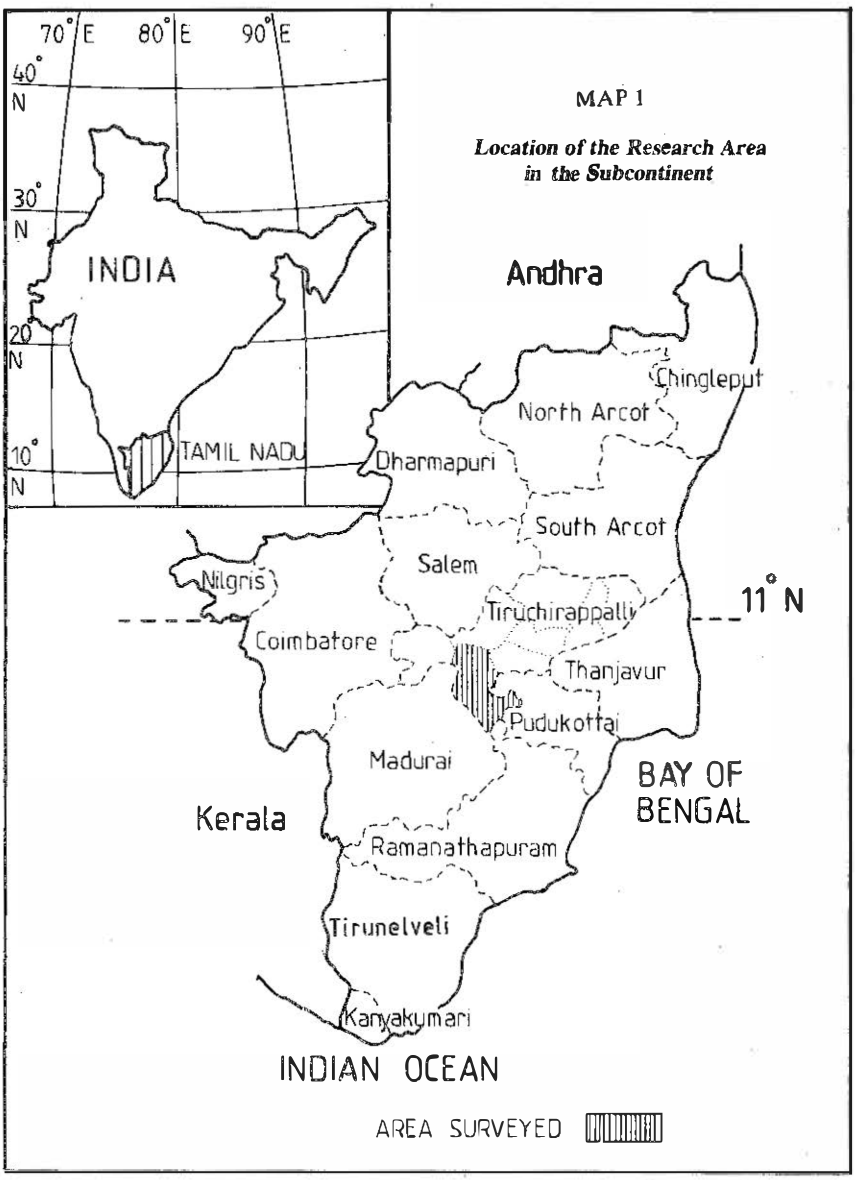
While the first point obviously follows from the problematique described above, the last two specifications are not self-evident.

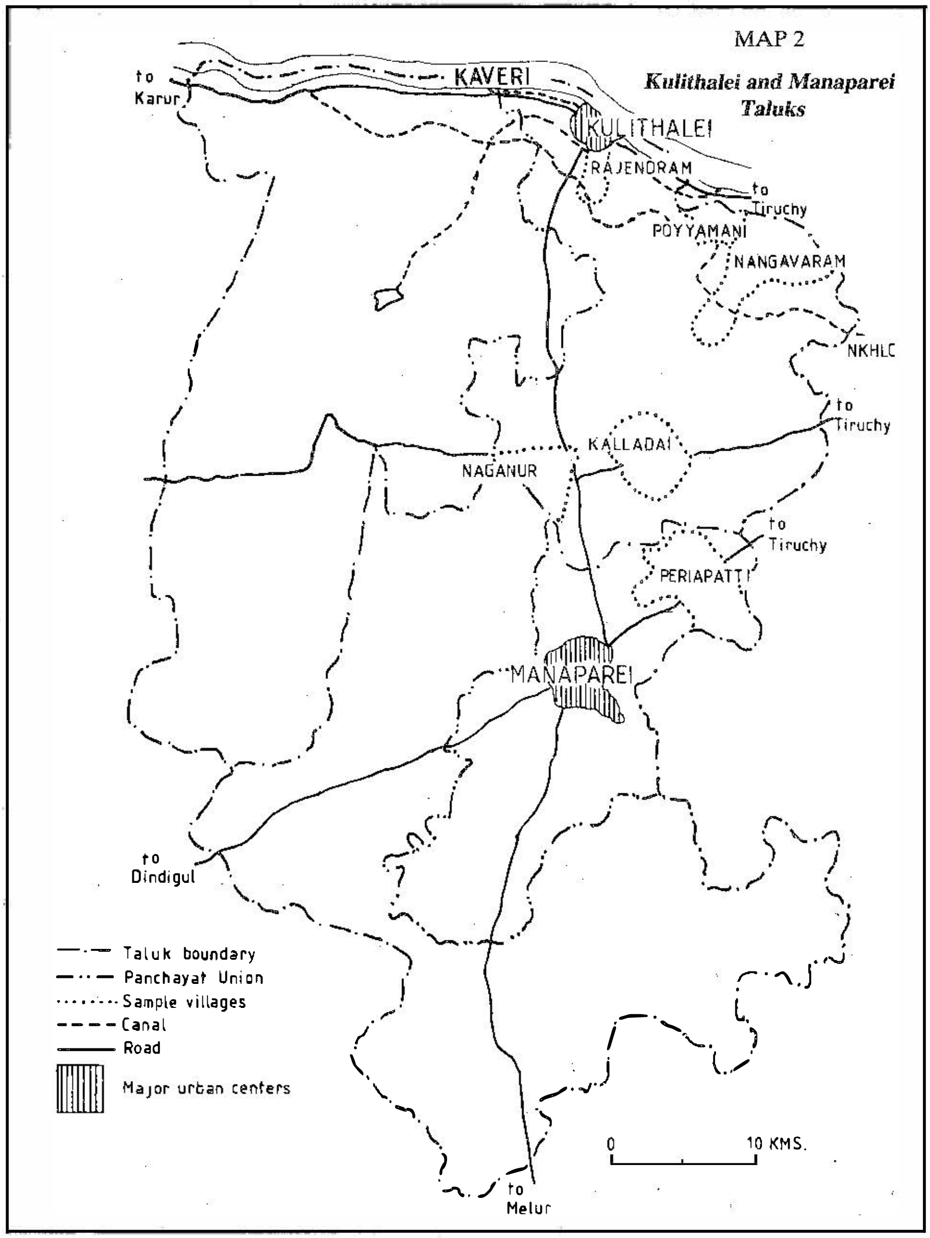
These relate to issues raised by the debate on the mode of production. The second specification implies that we wanted a fairly advanced area, where capitalist development had made some headway. We also wanted an area where industrial capital was at least indirectly involved (in the sense that we would find some cultivation of industrial crops). The third point relates to a model for capitalist development in agriculture proposed by Banaji (1977). According to this model, a real subordination of peasant producers to capitalism can be brought about with merchant's/ usurious capital as an intermediary. Banaji's model reminds one of those formulated for African agriculture by, for example, Bernstein (1982). Djurfeldt and Lindberg (1978) have seen it as antithetical to the model formulated by Patnaik (e.g., 1982). In the Patnaik model, land rent is seen as a barrier to capitalist development. By looking for an area where the conditions for finding an example of a Banaji-type of transition were favourable, we hoped to shed light on the realism of this model.

Tiruchy District and the two Panchayat Unions of Kulithalei and Manaparei fulfil the conditions outlined above (compare Maps 1 and 2). In the river-irrigated belt along the river Kaveri we have an agriculturally advanced area with much land under cash crops, including the industrial crop of sugarcane. The dry hinterlands, away from the river towards Manaparei, likewise have old traditions in cash crop production. Today groundnut is the main industrial crop and it has been so since the 1920s. In these dry tracts the middle peasants predominate numerically. On the other hand, the river-irrigated belt has a tradition of landlord-dominance which would make it ideal for illuminating the theory of the land-rent barrier.

We sampled six villages from these two Panchayat Unions utilizing methods described in chapter 2. The three villages of Rajendram, Poyyamani, and North Nangavaram represent the wet ecotype, while Naganur, Kalladai, and K. Periapatti lie in the dry area. These villages are representative of the two ecotypes in the whole study area. This is not a village study in the ordinary sense of the word, since the villages were sampled. Therefore we will not describe the villages as such, but will give some details of the areas which they represent: the wet and the dry ecotypes in the two Panchayat Unions.

In the strict sense, of course, the field area is representative only


70° E
80° E
90° E
40° N
30° N
20° N
10° N
INDIA
TAMIL NADU
MAP 1
Location of the Research Area
in the Subcontinent
Andhra
Chingleput
North Arcot
Dharmapuri
South Arcot
Salem
Nilgris
Tiruchirappalli
11° N
Coimbatore
Thanjavur
Pudukottai
Madurai
BAY OF
BENGAL
Kerala
Ramanathapuram
Tirunelveli
Kanyakumari
INDIAN OCEAN
AREA SURVEYED


MAP 2
Kulithalei and Manaparei Taluks
KAVERI
to Karur
KULITHALEI
RAJENDRAM
to Tiruchy
POYYAMANI
NANGAVARAM
NKHLC
to Tiruchy
KALLADAI
NAGANUR
to Tiruchy
PERIAPATTI
MANAPAREI
to Dindigul
to Melur
Taluk boundary
Panchayat Union
Sample villages
Canal
Road
Major urban centers
0
10 KMS.

of itself. However, it is worth noting that its two parts exemplify an important division in the agrarian ecology of Tamil Nadu as a whole. That is, our two ecotypes, the wet and the dry one, can also be found elsewhere. In an important work, Baker (1984) talks of a division between the *valleys* and the *plains*. Valleys are river-irrigated areas around the major rivers. The latter, on the other hand, are the higher-lying areas between the rivers where agriculture is rainfed, or irrigated by tanks or wells. Baker lets this plain-valley dichotomy structure his whole history of rural Tamil Nadu, and thus demonstrates how fundamental this division is.[6] One can even talk of a similar division on an all-India level, between river-irrigated valleys and rainfed plains or plateaus. However, it is not possible to generalize our findings, but the results may generate some hypotheses which could potentially apply to other regions as well.

There are many indicators that, in the State of Tamil Nadu as a whole, agricultural production has been nearly stagnant during the last ten years or so (cf. *Tamilnadu Economy*, 1988, pp. 129–30). In this respect our field area is not typical. The wet area, especially, represents rather those smaller parts of the State that, contrary to the general trend, have experienced considerable growth in agricultural production.

The history of valleys and plains

The reader may suspect that our stress on the ecological dichotomy lays the ground for an ecological determinism. We should, therefore, quickly point out that the relation between ecology and social structure is complex. *Historical mediation* belongs to this complexity. The reader will find this book full of small historical excursions. They reflect our conviction that structuralist analysis (in the sense of looking for synchronic interconnections between the parts of a social system) has definite limits. These limits also apply to ecology: it has an essential but restricted role to play in the analysis of a social system. But it is worth emphasizing that if we leave the narrowly structuralist, synchronic perspective and look historically at an agrarian system, its ecology is certainly relevant to the

[6] Before Baker, Ludden (1978a, b, and 1979) built his work on the same dichotomy.

explanation of its present structure. This is what we mean when we say that the ecological influence on social structures is historically mediated.

With the help of historical research[7] we can sketch different, although interrelated histories for valleys and plains. These different histories in part explain the contrasting social set-ups in the two ecotypes.

The wet area

The history of Tamil civilization usually starts in the Sangam period of the early Christian era. The oldest epigraphic sources, and the oldest of the Tamil classical literary works are from this period. For us it is enough to start in the Chola period (c. 900–1200 AD). At that time the Chola kings ruled over an empire which had its heartland in the Kaveri delta. Our wet area obviously belonged to Chola Nadu, the land of the Cholas. It was an outpost bordering on the unsettled plains which separated Chola Nadu from Kongu Nadu in the high-lying plateau around the present city of Coimbatore.

During the Chola period, and even earlier, the *Brahmin* castes strengthened their dominance both over the agrarian economy and over many other sectors of the imperial society. They were especially dominant, of course, in the temples. These had a pivotal role in the social organization (Stein, 1980; chapters 6 and 7). Many villages in the irrigated heartland of the empire were *brahmadeya*. This meant that the villages had been donated by a king to a community of *Brahmins*. Other villages were dominated by non-*Brahmins* like the *Vellalu*, who formally belonged to the *Sudra varna*.[8] In both types of villages the dominant caste occupied the position of what was later, with a Persian word, to be called

[7] The works of Baker (1984), Karashima (1984), Ludden (1978a, b and 1979), Murton (1973a, b and 1976), Rajayyan (1974), Stein (1980), and others.

[8] As is well-known, the *varna* order groups the castes into four estate-like aggregates: *Brahman* (priests, intellectuals), *Kshatriya* (warriors, noblemen), *Vaisya* (merchants, burghers), and *Sudra* to which the majority of the toiling people belong. It is significant to note that the *varna* order has a definite Sanskrit and North Indian bias; there are hardly any *Kshatriya* or *Vaisya* castes in South India. So, for example, the *Vellalas*, whose position in the caste hierarchy in many ways reminds one of the *Kshatriya* in North India, are formally placed in the *Sudra varna*.

mirasidar. They were the holders of proprietary rights or shares in the village land and other resources. The *mirasidars* were an aristocratic group. They did not till the land, but merely collected the rents from it. As landlords they depended upon a network of intermediaries to organize production and rent collection, and to control the tillers of the soils. The latter belonged to low-ranking castes like the *Pallan*, an untouchable caste which constitutes a significant proportion of the population in the wet villages.

Centuries of historical turbulence, invasions from the North during the eighteenth century, British colonialism during the nineteenth and the twentieth centuries, and four decades of independent rule, with all the social and geographical mobility that these processes initiated, left the caste structure largely intact (see below), and only partially undid the pattern of land control (cf. chapter 4).

As can be seen from Table 1.1,[9] all our three wet sample villages have a small but significant *Brahmin* population. The big temples in these villages are symbolic of their *brahmadeya* nature. Especially in Nangavaram, the *brahmadeya* past is very much alive. The *Brahmin* quarter is big and clearly demarcated from the rest of the village. Many people still know the share of the village that they own, and the council of shareholders (*grama sabha*) continued to exist, though tenuously, at the time of our fieldwork.

Besides the *Brahmins*, *Harijans* are characteristic of the wet villages. *Harijans* is the commonly used denominator for caste groups which were, and still are, to a large extent, considered to be untouchables by the higher castes. The single most important group in our area is the *Pallan Moopan*, or if we were to use the respectful form, the *Pallar Moopar*. However, the latter form is hardly ever used when talking about or to members of this group. Other important castes are the *Paraiyan* and the *Valluva Paraiyan* (in the wet area the latter is most numerous). These two castes have given us the word *pariah*; in the old society they were as downtrodden as their name indicates. The *Valluva* is an endogamous group (i.e., a *jati*) in its own right. They are a kind of proto-*Brahmins* ranking higher than the ordinary *Paraiyan*, performing those priestly services which pure *Brahmins* refuse to deliver to the

[9] This section on caste builds on Thurston (1975) and the District Census Handbook (Census of India, 1965). For an overview of the concept of caste and of the literature, see Djurfeldt and Lindberg 1975a, pp. 34–46.

TABLE 1.1

Caste Structure by Ecotype

Caste	*Per cent of agrarian population*
Wet villages	
Brahmin	3
Muthuraja	29
Soliya Vellala	8
Padayachi	6
Pallan Moopan	30
Paraiyan Valluva	5
Other castes	19
Total	100
Dry villages	
Udaiyar	26
Urali Kavundan	26
Muthuraja	12
Paraiyan	8
Paraiyan Valluva	5
Pallan Moopan	7
Chakkiliyan	3
Other castes	13
Total	100

Source: Own survey data. See chapter 2 for details.

untouchables. Other *Harijan* castes are *Devendra Pallan* and *Chakkiliyan* (they are included among the other castes in Table 1.1). Altogether, *Harijans* constitute 41 per cent of the agrarian population in the wet ecotype. The reason for their numerical dominance is simple: they constituted the rural proletariat of the old society, and they performed, and still perform, most of the manual labour in agriculture. *Pallans* were often small tenant cultivators on the big estates while the *Paraiyan* often had a more degraded status.

Vellalas are generally known as an aristocratic group; they are dominant in many non-*brahmadeya* Tamil villages. They have many features in common with the *Brahmins*: they wear the sacred thread; they are vegetarians; and they refuse to touch the plough. But *Brahmins* classify them as *Sudra*, i.e., as belonging to the lowly *varna* of servant castes which ranks immediately above the untouchables. According to their name, *Soliya Vellala* are the *Vellala* of the Chola (*Sola*) country. But the *Soliya Vellala* of our villages have only the name in common with the aristocratic *Vellala*. They have a more modest economic position as small or middle tenants, or landowners, and, although they may wear the sacred thread, they are non-vegetarians and do not taboo the touching of the plough.

Padayachi are often referred to as an agricultural caste. They constitute 6 per cent of the population. In the old society they may have had a similar economic position as the *Pallan*, but, although they rank low in the caste hierarchy, they are not untouchables. They claim to have been soldiers of the Pallava dynasty (c. 575–900 AD) and to have been settled on land in those days.

The *Muthuraja* is an interesting group which constitutes nearly 30 per cent of the population in the wet villages. Their presence in the caste hierarchy is reminiscent of the turbulent centuries of Tamil history after the fall of the Chola empire—the Vijayanagar kings in Mysore had only a weak hold over the Tamil country and, as a result, local warlords (*poligars*, or *palaiyakaran*) gained considerable influence. The poligars asserted themselves as armed guardians (*kavalkaran*) of the wet valleys, and extracted tribute in return for their services (Rajayyan, 1974). The *Muthurajas* are descendants of the soldiers which the *poligars* recruited in their homeland, the Telugu-speaking areas of contemporary Andhra Pradesh, north of Tamil Nadu. Like other castes originating from Andhra, they are bilingual, often speaking Telugu in family circles and Tamil outside the house.

The establishment of Pax Britannica in the Tamil areas in the early nineteenth century included several armed expeditions against the *poligars*. When the *poligars* and their soldiers were disarmed, many of them were forced to take to agriculture. Thus, the *Muthuraja* and other *palaiyakaran* became peasants. In the wet villages most *Muthurajas* are landless or small peasants. But having maintained a warrior tradition, they are often good at fighting. That is one reason why many of them still work as *kavalkaran*. But the meaning of this old word has changed; in current usage it means a watchman. Modern *kavalkaran* work on the big *Brahmin* estates, or for groups of farmers hiring them to watch their crops.

The category of 'other castes' in Table 1.1 includes a number of groups, among others the specialist artisan or service castes like carpenters and blacksmiths (*Asari*), barbers (*Pandithan*), salt-workers (*Uppiliya Naickan*), weavers (locally called *Mudaliar*[10]), and shepherds (*Yadava Konan*). 'Other castes' also includes *Kattu Naickan*, a Telugu-speaking group, constituting 3 per cent of the population. Its origin is probably similar to that of the *Muthuraja*. Other castes includes many immigrants as well, for example, *Kongu Kavundan* from the Coimbatore area, often skilled agriculturalists who have sold their lands in their native place and acquired lands in the Kaveri valley to take up agriculture. There are also some Christian castes which include among them some of the wealthiest households of the area.

The dry area

During the time of the Cholas, the dry plains were largely covered by sparse forests of shrubs and bushes, and occasional trees. These forests were sparsely inhabited by hunting and gathering tribes. The plains were colonized by warlords enjoying the protection of the Vijayanagar empire, and commanding the labour of kinsmen and followers, thanks partly to the military power. The subjugation of the hunting tribes, the clearing of the lands, and the building and maintenance of the irrigation tanks were only possible, thanks to the forced labour which these warlords commanded.

Already in those early days, the dry village economy was built on the combination of trades which is still its characteristic. In other words, the dry villages are not entirely agrarian, but combine an agriculture, which can barely feed the population, with other resources of the plains, such as, game, timber, green manure, and substantial areas for grazing of livestock.

Again, the caste structure bears witness to the past. While the *Brahmin-Pallan* dyad, with the *Muthuraja* in an uncomfortable middle position, characterizes the caste structure of the wet area, that of the dry area has quite a different structure. Like the *Muthurajas* who are also fairly numerous in the dry areas, many of the settlers who colonized the plains were soldiers recruited in the Telugu-speaking areas—for example, several groups of *Naickan*

[10] *Mudaliar* is a respectful title used for many castes, rather than a caste name.

belong here. Other settlers were recruited from different parts of Tamil Nadu, like the *Udaiyar* who make up 26 per cent of the population in the dry villages. According to Thurston's classical account, the *Udaiyar*s 'probably are descendants of the Vedar soldiers of the Kongu country' (i.e., west of the Chola country), but also claim to hail from North Arcot District west of Madras (Thurston 1975, Vol. VII, pp. 208, 211).

The other big caste group of the dry areas, the *Urali Kavundan*, have a more unclear origin: are they also settlers, or do they belong to an aboriginal population of hunters? We do not know; but their addiction to hunting could be an indication of the latter. The *Urali* do not aspire to an aristocratic position as the *Udaiyar*; they eat meat and drink alcohol, and have a number of customs which the *Vellalas* and *Brahmins* would scorn.

The *Harijans* are not as numerous in the dry area as in the wet, and the composition of the *Harijan* castes is different. The *Paraiyan* here outnumber the *Pallan*, and, among the former, ordinary *Paraiyan* outnumber the *Valluvan*. There are also quite a few *Chakkiliyan* in the dry area, a Telugu-speaking untouchable caste whose specialty is leather-work. They are skilled in manufacturing leather buckets which are used for lifting water from the irrigation wells.

The lower proportion of untouchables may be associated with the fact that the land-controlling groups in the dry area, i.e., *Udaiyan*, *Urali*, and others did not scorn manual labour as did the *mirasidar* of the wet area. Instead, they worked on the land, and used the untouchables as a supplement to their own labour, and for specialist tasks like taking care of dead carcasses. This again may be grounded in the ecology of the dry ecotype: dry cultivation is not as labour intensive as wet cultivation. Thus, the landless proletariat of untouchables, characteristic of the wet ecotype, has no real counterpart in the dry one. In recent decades, with the emergence of motorized well-irrigation, a more numerous agricultural proletariat has become a requirement, although for historical reasons this has largely been recruited from among the 'cultivating castes'.

Plan of the book

The analysis of the problematique is structured as follows. Chapter 2 describes the fieldwork and the methods used for data collection and analysis. In chapter 3 we explore the ecological dimension and describe the two ecotypes, the wet and the dry area. Production relations is the theme of the next three chapters. In chapter 4 we depict land relations—ownership and tenancy. We also analyse processes of mobility in the ownership structure. In chapter 5 we deal with labour relations, both family labour and the various types of hired labour prevalent in agriculture. The various loose ends of this analysis of relations of production are collected in chapter 6. In the latter we analyse the class structures in the two ecotypes. Chapter 7 deals with usury and credit, and traces the influence of the latter on the process of change in agriculture. Agrarian production is the topic of chapter 8, where we follow up the class analysis by an investigation of class as a determinant of productivity. Finally, chapter 9 concludes the three themes of the book: ecology, class, and State, and their influence on agrarian change.

2

Methods

Intensive fieldwork for this study took place between August 1979 and June 1980. We first sampled six villages for intensive study (see section below). Then, with an impressive force of researchers and research assistants,[1] we established our headquarters in Royar Pannai, a somewhat dilapidated old manor house in Marudur village, bordering on the river Kaveri and about five kilometres east of Kulithalei town. Situated along a major road we could easily reach our three 'wet' villages along the Kaveri, and access our three villages in the dry hinterlands by bus. While doing intensive interviewing in the different villages, we rented rooms in each of them (in schools, panchayat offices, or private houses). Cycling or walking we reached our respondents and informants.

The six villages became our loci of study during most of the fieldwork. Our first task was to conduct intensive pilot studies in each of them, covering physical lay-out, population. caste-composition, a tentative overview of the class structure, forces of production (irrigation, crop pattern, pump-sets, tractors, etc.), forms of tenancy and their relative importance, and the size and composition of the non-agricultural population. Information was collected from official statistics, from interviews with local officials, and from informants in various hamlets or parts of the villages. In

[1] Besides the four senior researchers there were ten qualified research assistants-cum-interviewers employed by the project. All of them had training in the social sciences plus experience of rural life. Some of them had also participated in earlier research work of this kind, and one of them, Mr. R. Vidyasagar, had conducted independent studies of his own. Two qualified secretaries worked in coordinating fieldwork, typing field notes and keeping our collected interviews and records properly. In addition, some very qualified persons worked in the project for shorter time periods helping with special tasks of various sorts. All these persons are mentioned in the Preface to this book.

addition, historical records, such as, maps and settlement registers, yearwise statistical materials on population and agricultural production, etc., were collected from various government offices.

Living for a year in the midst of a local world of events, sleeping overnight on the verandas of our respondents—rich or poor—in remote villages, visiting homes and cafes, participating in political meetings and religious festivals, merely taking a rest under a palm tree or at a tea stall while on a cycle tour, going to the cinema with villagers in the middle of the night, watching local sport events, such as, Volleyball or *Kabadi* (an Indian national sport), and taking part in or witnessing other daily activities also provided us with first hand 'knowledge' of the local social and cultural world—its everyday practices and codes of meaning.

The following pages enumerate a more detailed account of the methods used in this study. We start with the most troublesome question confronting a project of this kind: to lay bare the local distribution of landownership. We proceed by discussing other methods of data collection, and then move on to a discussion of the statistical procedures in sampling and in the computation of estimates.

Measuring landownership—the best guarded secret?

> The numerical strength of the various social groups in the village and the area of land each commands, may well be said to be among the best guarded secrets of the South Asian economies. (Myrdal, 1968, p. 1056)

One of the major and most challenging problems of our research work was to find a way of disclosing the landownership pattern in the field area. The task was complicated by the very different ecological and social structures in the two areas under study.

Officially, the distribution of landholdings is not supposed to be secret, since the land is surveyed, holdings are registered, and their owners should be noted in the registers maintained by the village accountants (*karnam*). Based on these registers a wealth of official statistics is also produced. So, for example, India participated in the World Agricultural Census 1970–71, organized by the FAO, with data compiled from these sources.

Unfortunately, village land registers leave much to be desired.

Basically, their unit is the holding not the landholder, which means that even if they were adequately maintained, these registers would be a poor starting point for research on the distribution of landownership. Moreover, the land registers are not, in general, adequately maintained. First of all, the general state of maintenance of the registers varies with the competence of the individual accountant; but, more importantly, there is a systematic discrepancy between official and real ownership. There are two reasons for this:

1. Changes in ownership of individual holdings are not always and promptly registered. When a holding is divided among heirs, for example, the division is often not registered, with the result that many holdings are registered in the names of former owners who may even be dead.
2. *Benami ownership*: in order to avoid the land ceiling legislation, many big landowners have registered their holdings in the names of various fictitious individuals.

If one wants to disclose the best guarded secret, then, one does not get far with the help of the land registers. In our own approach, we utilized the registers, but only as a starting point for the enquiry into the distribution of real ownership. We culled the data on the sampled households from the registers, and interviewed the accountants on their 'extra-mural' knowledge of these households. More importantly, we located a number of knowledgeable informants in the villages with whose help we could go through the list of sampled households, their official landholdings, and their real ownership to the extent of the informants' knowledge.

While the secret is well guarded from strangers, it is impossible for a household to keep its landholdings unknown to other villagers. True, the land ownership of an individual household may not be known to each and everybody; however, there are well-informed persons who are able to furnish information, maybe not about the whole village but at least for parts of it. If these persons are convinced of the legitimacy of the enquiries undertaken by the researchers, they can be persuaded to participate with their knowledge.

Needless to say, the preliminary work of locating these informants and of going through the sample lists with them, collecting several independent estimates to enable cross-checking, etc., involved a lot of work, and was time-consuming. But in our view, such thorough investigations are seminal for a serious enquiry into the numerical strength of the various groups in the village.

This means that when we contacted the households which were sampled for our survey, we already knew of their landownership and of their leased holdings. One of the first tasks of the interviewers was to extract the same information from the respondents without disclosing that we already knew the answers. This task called for careful preparations by convincing the respondents of the legitimacy of our enquiries, and by persuading them to participate by disclosing 'confidential' information to us. It was also a test of the skill of the interviewers, since they were instructed not to continue with other parts of the interview until they had established a satisfactory account of the lands held by the household. We learnt that it is indeed possible to overcome the renowned suspicion towards outsiders, provided the interviewers are skilled enough.The interviewers were carefully selected on the basis of their experience of rural life and agriculture so that they could easily associate with the ordinary people as well as share our own enthusiasm for the challenging task of laying bare the ownership and class structures of these villages.

As the distribution of landownership is skewed, it ideally calls for a stratified sampling, since in an ordinary simple random sample the tail-enders, that is, the big landowners do not get adequately represented. Thus, the skewness is likely to be underestimated in such a sample. Stratified sampling, however, requires population statistics for the variable to be studied, or for some other closely correlated variable. If such statistics had been available, landownership would not have been 'the best guarded secret!'

We devised a way of overcoming this hurdle by collecting information from the above-mentioned informants and from our sampled households, on the richest 1 per cent or so of the households in the village. After some fieldwork we had carefully collected and cross-checked a list of the wealthiest Upper Percentile (the UPC households). We made a census of these households, and conducted a complete *farm and household economic interview* with each one of them. Thus, we have a pseudo-stratified sample, consisting of a simple random sample of around 99 per cent of the population plus a census of the UPC (if a UPC household happened to be drawn in the simple random sample, it was replaced).

The farm and household economic survey

The study of landownership (and land tenure) was part of the much larger and very elaborate farm and household economic survey carried out in 367 households in the six villages. The result of this survey forms the backbone of this book. With a detailed questionnaire we covered most of the aspects of the farm and household economy of the respondents for an entire crop-year—the year ending in the season the interview was conducted. Data collection lasted from November 1979 to May 1980, so the reference year is not identical for all households.

The interview started with some demographic characteristics of the household and then moved on to a family-history, which helped in establishing the rapport necessary for the tricky stage already mentioned: to get the respondent to truthfully tell about his land tenure. Having achieved this, the interviewer moved on to collecting some information about each plot of land owned or tilled by the respondent, and about the use to which it had been put during the reference year, thus collecting data needed for land use and crop pattern statistics. Then came the farm operations form, which recorded in detail every separate operation performed in the cultivation of a particular crop on a particular piece of land. From these data a three-fold account can be built, covering (a) inputs and outputs in material terms; (b) labour and labour time used specified by type (family, exchange, hired); and (c) cash flows (costs of inputs, income from marketing, etc.). By reflecting the most basic level of agricultural operations, these data provide a more reliable basis for aggregate figures on inputs and outputs than merely collecting aggregate figures for the cultivation of each crop. It is probably the most reliable method that can be applied in interviews of this kind, where the respondents are asked to recall their operations up to one year prior to the time of the interview. The resulting structure of the material enabled us to work, not only with a conventional farm account (primarily in money terms), but also with other types of accounting, that is, counting in labour days, or in terms of kind (e.g., kgs. of paddy).

Let us give a more detailed list of the contents of the seven parts of the questionnaire:

A. *Characteristics of the household*: Demographic composition; family-history; landownership and land tenure; farm servants employed; ownership of cattle and other animals, instruments of production (from tractors to ploughs), houses and house-plots, consumer durables, and financial assets; employment and income from agricultural wage labour; income from employment or self-employment outside agriculture; consumption of foodgrains; membership in cooperative societies and farmers' associations, etc.

From these data 243 variables were later coded via pre-printed code-cards, punched on cards, transmitted into raw data files on magnetic tapes, checked for errors, and finally arranged into SPSS-files for statistical analysis.[2]

B. For each *plot of land* connected to the household by ownership or leasing (or mortgage) arrangement: Soil type(s); source of irrigation; market value; tenure; etc. (A total of fifty-seven variables were coded from this material.)
C. For each *irrigation well* operated by the household: Type of well; equipment (pump-set, etc.); area irrigated in different seasons; year and cost of construction; ownership relation; etc. (Eighteen variables were coded from this material.)
D. For each *crop* cultivated during the reference year in a separate plot: Type of crop and variety; month of sowing; size of parcel; gross yield; harvest wages; kind and cash inputs; hired and family labour inputs (time and cash costs); etc. (Fifty-two variables were coded from this material.)
E. For a selection of crops cultivated by the farm all operations were taken down, with details on inputs used, labour expended, and cash spent (*farm operations form*). (Thirty-nine variables were coded from this material.)
F. For each *type of crop* cultivated during the reference year we collected material on how the household disposed of the produce, what was consumed by the household, paid as land lease, etc., sold in the market and prices if sold. (Thirty-six variables were coded from this material.)

[2] This, in fact, proved to be a very cumbersome part of our research project. Financial cut backs in the middle of the project caused great problems in the handling of enormous data material generated, organising raw data files, checking for errors in interviewing, coding and punching, and finally in the arranging of the SPSS-files. The work took us well over two years on a part-time basis.

G. ***Borrowings & lendings*** of the household: For each debt and/or loan we recorded principal amount, year when taken/given, purpose, security, interest in cash or kind, etc. (Twenty-four variables were coded from this material.)[3]

Looking back at the survey, we admit that sometimes we never thought we would ever get through it. An interview with a landless agricultural labourer might not have lasted for more than a couple of hours, but locating his or her house, finding the respondent, fixing a suitable time for the interview, and finally conducting the interview sometimes proved quite time-consuming and trying to the patience of both the interviewer and the respondent. Moving up the ladder of the agrarian class structure, the time involved and the obstacles met with in interviewing became almost insurmountable. A middle peasant in the dry area normally cultivates a multitude of crops in a variety of fields. An interview with him might stretch over several days. Interviewing the richer households, finally, involved problems we shall never forget. It was almost like a detective story each time such an interview was conducted. Not only was it difficult to meet the big landlords, often they were simply not available in the village, and, when they were, they often initially refused to receive us. Getting them to disclose anything important about their farm business was even more difficult. Thus, much of the material collected on them had to be pieced together from a variety of informants, such as, foremen, employees, neighbours, and local villagers. In fact, thanks only to the admirable perseverance of our research assistants was it possible to complete the number of interviews stipulated by our sample procedure.

OTHER DATA COLLECTED

As an important complement to the economic survey, we carried out both quantitative and qualitative studies on a number of aspects of agrarian relations of production and other relevant socio-economic conditions in the area. We conducted *case-studies and*

[3] A considerable part of the subsequent work on the computer consisted of the transformation of local weights and measurements into the metric system, and of aggregation of the B, C, D, E, F, and G-files to the household unit level, that is, the A-file.

unstructured interviews with informants on, for example, the breaking up of feudal estates, the management of temple lands, changes in frequency and forms of tenancy, bonded labour, permanently employed farm servants, gang labour, middlemen and specialists in the agrarian division of labour, rural credit institutions, such as, credit cooperatives and local branches of banks, merchants and moneylenders, farmers' associations, labour unions, the history of agrarian struggles (mainly tenancy struggles), etc. We also collected weekly farm prices and retail prices on essential foods, such as, rice, millets, oil, sugar, etc. This was done in the villages and in Kulithalei and Manaparei town markets.

A number of special studies were also undertaken with various methods. Most notably an *agronomical study* of the ecological and technical conditions of agriculture was undertaken by the agronomist of our team, Mr. Gustav Böklin. Information was collected from various sources, including case-studies of 'typical' farms in the 'wet' and 'dry' villages; interviews with officials; and collection of public statistics and earlier publications pertaining to this area. After the fieldwork proper, a *survey of traders and merchants* dealing in agricultural inputs and produce was conducted in Tiruchirapalli, Kulithalei, and Manaparei towns. The survey dealt with details on purchasing and sales practices, prices, etc. Finally, a collection of historical data pertaining to the agrarian history of our field area was made by two of our research assistants, Mr. A. Rajagopal and Mr. R. Vidyasagar, in the Tamil Nadu Archives in Madras. Though financial resources were not made available for a study of politics and ideology, we nevertheless made some efforts to cover caste relations in the past and at present, and the local political power structure (including the local elections in December–January 1979–80).

The scheme of sampling

The two Panchayat Unions of Kulithalei and Manaparei were selected on theoretical grounds as the population frame for this study. In this section we will describe the procedure for selecting villages and households from this population frame.

According to the 1971 Census, the two Unions had a total of 169,302 inhabitants living in sixty-five administratively defined 'villages' which in reality consist of several hamlets of varying sizes. The first step in sampling was the selection of villages. We had decided in advance that six villages was the maximum that we would be able to handle, so that, in addition to survey methods, we would be able to work with more qualitative methods in each village. From some preliminary calculations we had also gathered that six villages, which from a sampling point of view is a fairly low number, would probably give us an acceptable level of precision.

From textbooks on sampling (we used Cochran, 1977), the so-called PPS-sampling seemed to be a suitable scheme. PPS, or *sampling with probability proportional to size*, gives unbiased estimates, both of the means and the variance, and has the additional advantage of making computation easier.

As a measure of size, we used the 1971 population in each village. Although these figures were somewhat dated in 1979, they should give an acceptable level of precision in the measure of size. We then prepared a list of the type indicated in the table.

TABLE 2.1
Model for the Selection of Villages

Village no.	*1971 pop.*	*Cumulated pop.*	*Intervals*
1	M_1	M_1	1 to M_1
2	M_2	$M_1 + M_2$	$(M_1 + 1)$ to $(M_1 + M_2)$
...	...	...	...
65	M_{65}	M_o	$(M_{64} + 1)$ to M_o

Six villages were selected in the following way. Six intervals in the fourth column of Table 2.1 were selected by means of six random numbers (that is, each random number was located in a particular population interval referring to a particular village). We selected the villages *without replacement*. However, in the following pages we will make the common assumption that replacement was actually used, which facilitates computation and which has little practical importance when the sampling fraction is small (Moser and Kalton, 1979, pp. 202 ff.). Of the six villages sampled, three were located within what we call the *wet area* and three within the *dry area*.

Then followed the second stage of sampling, which was sampling within these villages. At this stage two further considerations were examined:

1. We were only interested in the *agrarian population*, defined as the population in some way related to agriculture—as

owners, cultivators, or labourers. This population could not be delineated on the basis of official statistics but only after a preliminary interview. To screen out the non-agrarian households we selected a sample from each village, plus a reserve sample. If a sampled household proved to have no relation at all to agriculture, the interview was discontinued, and the household was replaced by one from the reserve sample.

As Jon Stene has pointed out,[4] this contradicts the logic of PPS-sampling, since, in fact, it amounts to a redefinition of the sample frame from the population of the two Unions to their agrarian populations. Since the villages were selected on the basis of the size of their total population and since non-agrarian households were excluded from the sample, an unknown bias is introduced into the estimation procedures worked out below. We have not attempted to correct this bias, and we will only point it out to the critical reader.

2. Since many of the key variables that we want to study are skewly distributed, e.g., income or landownership, simple random sampling within villages would be biased, and underestimate the inequality in the distribution of these variables. Thus, as mentioned above, some sort of stratification within the primary sampling units, i.e., the villages, was called for. Working with models of the population based on previous studies, we concluded that (a) the uppermost stratum, consisting of about 1 per cent of the population, commanding a significant proportion of the total land, income, and assets, would need to be studied in its entirety if we wanted an adequate picture of the distribution of the variables under study; (b) on the other hand, stratification of the remaining 99 per cent of the population would not add appreciably to the precision of the sample. Thus, we decided to take a simple random sample of 99 per cent of the population, and to make a census of the upper percentile, those that we call the UPC households.

One problem here, of course, is to compile the list of UPC

[4] Personal communication with Göran Djurfeldt.

households. Here we worked mainly with qualitative methods, asking respondents and informants to prepare lists of the wealthiest households in their villages. There soon proved to be a consensus on a core of households which would belong to the UPC. In principle, there is obviously no necessary identity between the households considered by others to be the wealthiest in a village and those which in reality are the wealthiest. We cannot rule out the possibility that some really wealthy households have escaped attention because their wealth is hidden 'behind mud walls' (to use the title of a classical study by the Wisers). But on the whole, our impression is that it is hardly possible to hide such an amount of wealth from fellow villagers. It is certainly possible to hide it from casual visitors and outsiders, but not from the keen observers found in each village.

As the reader would have noted, there is a shift in the ultimate *unit of sampling* from the first stage to the second stage of sampling. In the first stage, the measure of size was based on the number of *individuals* in the two Panchayat Unions in 1971. This choice of unit is due to the simple fact that no readily available official statistics exist on the number of *households* in each village. The latter, however, is our unit of interest. Thus, we shifted the sampling unit at the second stage when we used the village *Voters' List* updated to 1979. In these lists the voters are grouped householdwise, but the definition of household is not identical to our own.[5]

Of course, we could have collected the voters' lists for the sixty-five villages in order to avoid this shift of sampling unit between the two stages, and in order to compute a more adequate measure of size for each village. But, due to a number of practical constraints, we did not collect all the lists. Provided a random variation in household size between villages, this would not introduce any bias. From our survey data, however, it appears that on the average households are bigger in the dry villages. Thus there is a bias, thereby increasing the probability for a dry village to be selected at the first stage of sampling while decreasing that of a wet village. Since we rarely compute estimates for the sample frame as

[5] We define household in the classical way as a domestic unit sharing the same kitchen, while the voters' lists define household as a residential unit. The discrepancy between the two is so small, however, that it can be neglected. In cases of discrepancy we randomly selected one of the households in the residential unit.

a whole, but separate estimates for the dry and wet areas, this source of bias should generally be kept under control.

To summarize, our sample consists of 6 × 40 households plus the UPC households. The latter have not been sampled, but covered completely in the way already explained. 12 × 20 households would have given a considerably higher level of precision, but the less precise scheme was chosen in order to keep the number of villages manageable to other methods of fieldwork.

Before we proceed to discuss the procedures used for computing estimates from this sample (see related section below), we will discuss the relation between quantitative and qualitative methods in this study.

Quantity or quality in data collection?

The main method in this study is quantitative, and consists of a comprehensive socioeconomic survey. But qualitative methods have also been used: unstructured interviews and participant observations were also resorted to in the fieldwork, as were the analysis of official statistical data and the collection of archival data of different kinds.

But it is obvious that in this study there is, if anything, an overweight of the quantitative methods. This leads us to a discussion of the general issue of quantitative versus qualitative data. The background is, of course, one of widespread questioning of quantitative methods, and especially of survey-based investigations, which has dominated the discussion in recent years. A recent example of this type of criticism can be found in Chambers (1983):

> Unless careful appraisal precedes drawing up a questionnaire, the survey will embody the concepts and categories of outsiders, rather than those of rural people, and thus impose meanings on social reality. The misfit between the concepts of urban professionals and those of poor rural people is likely to be substantial, and the questions asked may construct artificial chunks of 'knowledge' which distort or mutilate the reality that poor people experience . . . Their penetration is usually shallow, concentrating on what is measurable, answerable, and acceptable as a question, rather than probing less tangible, and more qualitative aspects of society. For many reasons—fear, prudence,

> ignorance, exhaustion, hostility, hope, or benefit—poor people give information which is slanted or false. (p. 51)

Often huge resources of manpower, time, and money are spent in data collection ('survey slavery'), only to produce shallow reports in which only a fraction of the data collected is utilized. For planning practical action or for evaluating development programmes, the survey is often of very limited use (Chambers, pp. 51–55). By the same measure, Chambers is also very critical of what he calls the 'total immersion' or the social anthropological approach to fieldwork, in which the researcher during year-long stays collects his material through participant observation and questioning. Besides being time-consuming this method seldom relates to the practical interest in rural development and rural change that practitioners demand.

Chambers also shows how, by knowing a local community more intimately from the inside, 'ethnography' or more careful resurveys often have demonstrated how shallow, artificial, and false 'chunks of knowledge' have been produced by survey research. Striking examples abound (pp. 55–58)[6], and they lead Chambers to call for a more 'naturalistic' or qualitative methodological approach in social studies (pp. 59–61). Thus, participant observation and unstructured interviews are seen as remedies and have been increasingly favoured by, for example, sociologists at the expense of quantitative studies (cf. Hammersley and Atkinson, 1983).

The recent emphasis on qualitative methods in socioeconomic studies may also be grounded in the need for expedience in data collection and analysis. It is quite true that unstructured interviews with informants, made over a rather short time span, may efficiently uncover basic features of a local community and thus be sufficient for a number of purposes (Chambers, 1983, pp. 64–74).

In relation to our study it may, therefore, be tempting to ask if the same results could not have been achieved with a more 'simple' approach relying mainly on qualitative, or what one could also call, ethnographic methods of study? Our answer is no; we could not have managed with qualitative methods alone. The reason is

[6] In a previous study Djurfeldt and Lindberg made a detailed demonstration of the weaknesses of survey methods when it comes to studying and analysing, for example, ideologies and world-views. See Djurfeldt and Lindberg, 1975a, chapter 8. See also Djurfeldt and Lindberg, 1971, chapter 2.

simple; our problematique demands estimates of a number of quantitative parameters, and qualitative methods are not precise enough to yield reliable estimates of such parameters. Since we have worked with a combination of both types of methods we have material to discuss this issue with some empirical illustration. Let us take two examples.

In our pilot survey of the six sample villages we tried, among other things, to devise a simple but efficient qualitative enquiry into the local class structure, based on a theoretical model of economic classes in agriculture, and on the idea that if the universe is reduced in size, informants can be used for building up quantitative estimates. That is, using the subdivisions of the villages into hamlets or parts of hamlets, we located informants whom we asked to help us judge the class structure of the micro-universe which they knew best.

After establishing a *rapport* with the local informants from each major caste in each hamlet of a particular village, we asked them to inform us on the following, for each caste in the micro-universe:

> How many households are there in the following categories?
> 1. *Landless agricultural labourers*: Daily *coolies* and *pannaiyals*, bonded labourers, gang labourers, etc.
> 2. *Poor peasants*: Those who cannot feed their families with the produce from their own or rented land, and who need subsidiary sources of income (usually *coolie*-work).
> 3. *Middle peasants*: Those who can feed their families with the produce of own or rented land, who need not go for *coolie*-work, and who do not appropriate any sizeable surplus.
> 4. *Rich peasants*: Those who can earn a surplus from their cultivation which they can invest in pump-sets, tractors, sprayers, etc., commerce, money-lending, etc.
> 5. *Landlords*: Those who live from renting out land. (Quoted from the interview guide.)

When coaching the interviewers we also told them that the middle peasants might go for work outside the farm, but that their main work would be on their own or rented land.

By comparing the estimates of several informants and by pursuing the interviews until a consistent picture emerged, we collected the data that we deemed necessary to arrive at a well-grounded picture of the local class structure. Adding up for each hamlet and then for each village, we thus got an estimate of the size of each major agrarian class. Halfway through the fieldwork we wrote a mid-term report in which we presented the results (Athreya et al., 1979, pp. 28-29).

Since we later put in much effort in laying bare the class structure based on the same concept of class, but operationalized by means of survey data, the estimates may now be compared. We can ask whether this was an appropriate method or a shortcut, a kind of 'litmus indicator' for class? By comparing the results with our final classification (for further details see chapter 6), we get the answer represented in Table 2.2.

TABLE 2.2

Estimated Agrarian Class Structure of Wet and Dry Villages According to Pilot Survey and According to Survey Data (Percentages of Agrarian Population)

Class	*Pilot study*	*Survey*
Wet area		
Agricultural labourers	55	30
Poor peasants	33	19
Middle peasants	8	21
Rich peasants & landlords	4	14
Others	—	16
Total	100	100
Dry area		
Agricultural labourers	9	16
Poor peasants	47	28
Middle peasants	33	46
Rich peasants & landlords	11	4
Others	—	6
Total	100	100

As can be seen from the Table, the pilot survey fails to give even rough proportions of the various classes, especially if one compares the two areas. According to the pilot survey the class of rich peasants and landlords is almost three times as big in the dry area as in the wet, while according to the final classification it is the other way round. Likewise, there is a gross overestimation of the size of the rural proletariat, that is, of landless labourers and poor peasants in the wet area, and a corresponding underestimation of the middle peasantry and the rich peasant & landlord class. In the dry area, proportions are better in this respect, but the pilot survey still conveys a false picture, especially when it comes to the differences between the two ecotypes.

Thus, we must conclude that qualitative methods cannot be a substitute for quantitative ones, if one wants a well-grounded picture of the agrarian class structure. Since official statistics do not provide the necessary data, surveys are the only available means. In a similar way, we can, in retrospect, see that the qualitative methods of the pilot survey would, used in isolation, have misled us on a number of important points.

The study of usurious capital as an important relation of production in agriculture was part of our initial theoretical design and directed us when we were looking for a suitable field area (cf. chapters 1 and 7). During the early phases of our fieldwork we also made a number of qualitative interviews with farmers, traders, and informed persons about the practices of usurious money-lending and its relation to merchant activities. Halfway through the fieldwork we had formed a picture of its structure and prevalence, which was presented in the *Mid-Term Report* (Athreya et al., 1979, pp. 45–47):

> One of the interesting features that emerges from our fieldwork is that merchant capital has a strong presence in the wet villages. In all the three wet villages, the major crops of banana, sugarcane, and paddy are all marketed on a large scale. Loans for sugarcane cultivation are provided to cultivators by the sugar company in Pettavaithalei in return for commitments to sell all produce to the factory. In the case of banana cultivation, the loans come primarily from private merchants who obtain a prior commitment from the cultivator that he would sell the entire produce to them. The loans may take the form of cash meant for purchases of fertilizers, bamboo and other material, or be kind loans of these items with a specified cash value. There is usually no explicit rate of interest, but the price at which the banana crop is purchased includes an interest element.

In the dry area, as would be expected, one finds merchant capital very much in evidence. Manaparei town is an important commercial centre, but there also seems to be smaller commercial centres spread out in the *taluk*. In Manaparei there are about 30 commission *mandis*, and we can safely assert that they dominate the town. There are also a few fertilizer dealers. According to one very knowledgeable informant, a fertilizer dealer, the commission *mandis* operate with a working capital of rupees 50 - 100,000. Twenty per cent of this capital may be used in financing cash crops. A farmer can borrow about 50 per cent of the value of the crop, on the condition that he sells to the creditor. For the merchant this is the way to secure supply, and only some of them are charging interest at the rate of 3 per cent per month . . . the merchants store the crops for the farmers who need not sell it immediately. The ruling market rate minus 6 per cent commission is paid to the farmer. This means that both rich farmers and merchants can earn speculative profits by hoarding. In the season, some 10–15 lorries a day will leave Manaparei to proceed to bigger specialized markets for cotton, groundnut, etc. Every Wednesday there is a big market with retail sales to which farmers of the surrounding villages come. If this information is correct, the area would be ideal for the study of the operations of merchant capital.

Money-lending capital of the 'old' type, i.e., usurious capital, is of course very much in evidence in all the villages. Rates of interest are, as is to be expected, quite high. A rate of Rs. 10/- per Rs. 100/- per month is not unheard of, while rates of Rs. 3 to Rs. 5 per Rs. 100 per month are commonly encountered. Often the money-lender is also the owner of considerable landed property, although outsiders not having any connection with the village or with agriculture are also found among the big money-lenders. Detailed information on usurious money-lending has, of course, proved rather difficult to obtain, in view of the reluctance of the lenders to respond in this regard.

As the quotation makes clear, the issues are such that they would demand attention in much development research and also in more action-oriented research. However, a mere qualitative picture of the kind sketched above does not enable us to answer the issues posed with any degree of precision, and may in fact be misleading. For instance, an impression may be gained that usury is a dominant relation or that crop-tying is a common phenomenon—both of which were found to be incorrect on the basis of the quantitative evidence collected in the survey.

This result is reminiscent of the one derived when we tried to use the official data on landholdings to establish the skewness of the distribution amongst the landowners. Official data are based on individual holdings, of which an individual, not to speak of a family, may hold several. According to these data, land is more unevenly distributed in the dry area than in the wet which, as our survey shows, is quite misleading. It is rather the other way round (cf. chapter 4, and Athreya et al., 1985c). These results could not have been reached with qualitative methods, and they relate to the fundamental processes of change in an agrarian society.

Thus, it is pertinent to turn the question around and ask if qualitative methods, or 'rapid rural appraisals' of the kinds favoured, for example, by consultants evaluating aid projects, have any scientific validity at all? The answer, of course, is that it depends, among other things, on the questions asked. In cases like ours, where information is sought about basic socioeconomic features of a society about which no reliable official statistics exist, there seem to be no shortcuts.

On the other hand, with reliable background information, and an adequate stock of statistical information, researchers can sometimes work more with interviewing informants, but that again wholly depends on the questions being asked, and it would be dangerous to present it as a generally valid method of study.

In our own study we also had the advantage of previous experience. Besides being a Tamilian, and born in the countryside, Athreya had previous field experience from Cumbum valley, and Djurfeldt and Lindberg had considerable experience from a previous village study plus good grounding in studies of Tamil society. Without these qualifications both the qualitative and the quantitative methods may have turned out seriously misleading results.

The experience needed to make 'rapid rural appraisals' must, therefore, also be stressed. Otherwise, such quick, almost tourist approaches risk turning out as shallow and misleading results as those of a bad survey.

Procedures for estimation

As we saw in the preceding section, our method of sampling, influenced by a number of practical considerations and constraints, does not conform to any of the methods described in the text-books. There are two reasons for this: (a) we drew our PPS-sample of villages based on the population size in 1971 (moreover, population measured in individuals rather than in households which is our survey unit); (b) we drew our sample of the agricultural population from lists of the whole population, as they were found in the 1979 voters' lists.

Despite these impurities in design we have chosen to regard our sample as PPS rather than 'PPZ' (i.e., a sample where units (villages) are drawn with probability proportional to *a measure of size*). The latter method does not require knowledge of total population (M_0), but it is more awkward since it requires a weighting of the village characteristics (which is not necessary with PPS-sampling).

Formulae for the PPS-sample[7]

The overall mean in a PPS-sample is computed by means of formula [1]:

$$\hat{\bar{Y}} = \frac{1}{n} \Sigma \hat{\bar{y}}_i \qquad [1]$$

where n is the number of villages and y_i the village means. That is, the overall mean is a simple average of the village means. The same holds for proportions:

$$\hat{P} = \frac{1}{n} \Sigma \hat{p}_i \qquad [2]$$

In formula [2] $\hat{p}_i$ is the village proportions and P the simple average of these.

[7] Dr. Jon Stene of the Department of Statistics, Copenhagen University has kindly assisted in working out the formulae in this section. He has also helped in evaluating the sampling scheme.

We start with these two formulae, because we will be mostly interested in these kinds of estimates: means and proportions, although not in general for the population as a whole, but separately for the ecotypes and for subpopulations within these.

The variance estimator for the overall mean is as follows:

$$v(\hat{\bar{Y}}) = \frac{1}{n(n-1)} \Sigma (\bar{y}_i - \frac{1}{n} \bar{y}_i)^2 \qquad [3]$$

That is, the variance of the overall mean is simply the variance of the village means divided by the number of villages (n). If we replace the village means (y_i) by the village proportions (p_i), the variance of an overall proportion can be calculated by the same formula. For differences between the means and proportions, the variance is, as always, equal to the sum of the respective means or proportions:

$$v(\bar{y}_1 - \bar{y}_2) = v(\bar{y}_2) + v(\bar{y}_2) \qquad [4]$$

The proportion of agricultural households

As explained above, we are mainly interested in the agricultural population, although we sampled from the population as a whole. Based on the number of non-agricultural households in the original sample, we can estimate the proportion of agrarian population in each sample village:

TABLE 2.3

Proportion of Agricultural Households in Sample Villages

Village	*Proportion*
Rajendram	0.78
Poyyamani	0.98
Nangavaram North	1.00
Kalladai	0.95
Naganur	0.95
K. Periapatti	0.98

Using formula [2] we get our estimate of the overall proportion as the simple mean of these figures: P = 0.94. And the confidence interval around this proportion could easily be calculated by means of formula [3], provided we make the conventional assumption that for large n's the sampling distribution is approximately normal.

Estimates for villages

In order to apply the formulae given above, we need estimates for the six villages and procedures for working them out. As we saw above, we used a kind of pseudo-stratification at the second stage of sampling, where we took a census of the UPC, and sampled the rest of the population by means of ordinary SRS methods.

The mean for a given village, then, is the weighted average of the means in the strata: the main sample (MS) and the upper percentile (UPC). Since a census of the UPCs had been gathered, only the main sample contributed to the variance of the estimated mean. Thus, if y_i is the mean in village i, it can be computed with [5]:

$$\bar{y}_i = \frac{1}{M_i} \left(\Sigma\, w_i {y_i}_{ms} + \Sigma\, {y_i}_{upc} \right) \qquad [5]$$

That is, in order to estimate a village mean for a variable, the observations for the main sample households must be weighted with a village-specific weight (w_i), and the sum of these weighted observations must be added to the sum of observations for the UPC households. Finally, the sum of the sums should be divided with the village population (M_i).

The village-specific weights (w_i) can be calculated by means of [6]:

$$w_i = \frac{M_i - M_{upc}}{m_i} \qquad [6]$$

where M_i is the estimated agrarian population of village i, M_{upc} is the number of UPC households in village i, and m_i is the sample size of village i. Note that M_i is an estimate based upon the data in Table 2.3, and that this is the point where, as we found in the preceding section, we violate the logic of PPS-sampling: we sample on the basis of the size of the total population, and compute estimates on the basis of the estimated agrarian population.

An example: mean operated area per household

We can illustrate how we use these procedures by computing the mean operated area per household. The raw data, then, are the observations on area operated in each sample household. To arrive at the village estimates, we weigh and add these data according to formulae [5] and [6]. Computing the simple average of these means according to formula [1], we get the estimated mean area operated per agrarian household as equal to 2.59 acres. The variance of this estimate is given by formula [3], and a confidence interval can be computed by means of [7] (given the assumption of a normal sampling distribution):

$$P(\bar{\bar{Y}} < \hat{\bar{Y}} \pm 1.96\, v(\hat{\bar{Y}})) = 0.95 \qquad [7]$$

In our example we get a confidence interval of 2.59 ± 0.95. This is a fairly wide interval and, as we will see, this is due to the difference between the dry and the wet ecotypes.

If we calculate separate estimates of the mean area operated for the two sub-populations, the wet and dry villages respectively, we get 95 per cent confidence intervals as follows:

$$Y_{wet} = 1.61 \pm 0.56 \text{ and } Y_{dry} = 3.58 \pm 1.35$$

We see that the means differ considerably; also, we get a narrower interval for a lower mean in the wet area and a broader one for the higher mean in the dry ecotype. If we make a statistical test of the difference between these means, it comes out as significant at 0.1 per cent level. Thus, it seems the wide variance which cannot be avoided in estimates for the whole population does not preclude fairly precise estimates for the sub-populations. But this conclusion is obviously only warranted if we are prepared to regard the sample as PPS, despite the shortcomings pointed out above.

The design effect

As Kish (1957) has pointed out, one of the cardinal sins in survey analysis is that scholars often use SRS testing methods on samples which are not SRS. Moser and Kalton (1979) use what they call the design effect to show how such a procedure underestimates the sampling error in complex sample designs and leads to errors: one may accept a statistic as significant although in fact it is not.

Moser and Kalton define the design effect as the loss in precision due to the choice of a more convenient but less efficient method of sampling (in our case the choice of a PPS instead of a simple random sample (SRS)). The design effect (deff) can be approximately defined as (*a*) the standard error of the actual sample divided by (*b*) the standard error calculated for the same data but under the assumption that they were drawn from a simple random sample (SRS). Symbolically:

$$\text{deff} = SE_{pps}/SE_{srs} \qquad [8]$$

If we take the same variable as discussed above, the operated area, the design effect can be calculated as shown in the Table.

TABLE 2.4

Design Effect by Ecotype for Operated Area

Variable	*Wet area*	*Dry area*	*Total*
SE_{srs}	0.23	0.34	0.17
SE_{pps}	0.29	0.45	0.53
deff	1.25	1.30	3.21

As can be seen from the Table, the loss in efficiency, as measured by the design effect seems to lie around 25 to 30 per cent as long as we keep within the ecotypes. This is fully in line with the findings from other studies (cf. Kish, 1957) and must be judged as an acceptable level of precision. But for the pooled estimate for the total area, the design effect is intolerably high. This is due to the high variance between ecotypes, and it makes pooled estimates for the whole sample very imprecise. Fortunately, we seldom need such estimates since we are mainly interested in the two ecotypes and the differences between them.

Other types of statistical testing

The main drawback with the sampling procedure we have chosen is that statistical tests are only available for the simple kind of statistics that we have discussed above. Ordinary SRS methods make it possible to use a sophisticated battery of tests which are not available in our case, since statisticians have not worked out standard testing procedures for such more complex sample designs.

Unfortunately, we will not always be able to keep within these narrow frames, when, for example, in chapter 8 we have to take recourse to regression analysis in our attempts to understand the determinants of productivity. In an earlier publication (Athreya et al., 1986a), we have used the crude assumption that the design effect of the sample is 30 per cent, and adjusted the critical values accordingly. This may have been too facile an assumption, as is shown by the tabulation of the design effect for a number of key variables (see Table 2.5).

TABLE 2.5

Design Effects for Key Variables by Ecotype

Variable	*Ecotype*					
	Wet villages			*Dry villages*		
	Standard error		*Design*	*Standard error*		*Design*
	(pps)	*(srs)*	*effect*	*(pps)*	*(srs)*	*effect*
Input of family labour	8.48	7.59	1.12	31.02	17.42	1.78
Input of hired labour	47.06	24.99	1.88	21.20	17.73	1.20
No. of consumption units	0.21	0.29	0.74	0.10	0.25	0.39
Income from marketing	950.91	668.11	1.42	92.61	230.54	0.40
Income from hiring out	56.23	92.97	0.60	48.12	38.76	1.24
Cost of production	253.76	397.29	0.63	312.31	214.09	1.46
Non-agricultural income	323.58	178.98	1.81	91.97	138.10	0.67
No. of draught animals	0.06	0.07	0.75	0.11	0.13	0.89

The Table makes it evident that the design effect varies a great deal between different variables. In some cases it unexpectedly comes out as less than one, as in the case of the demographic variable number of consumption units. The underlying cause of this is that the variance is mainly within villages (so, for example, household size varies a lot between households, but the average household size does not vary much between villages), so the between-village variance is low.

In a few cases we get a low design effect in one of the ecotypes and a higher one in the other. So, for example, the income from hiring-out agricultural labour varies a great deal between the dry villages, with a design effect of 1.24 as a result; but the same variable varies little between the wet villages so that in this ecotype we do not seem to lose in precision due to PPS-sampling.

Three deff's seem uncomfortably high: (*a*) the input of family labour for dry villages; (*b*) the input of hired labour for wet villages; and (*c*) income from non-agriculture for wet villages. The underlying differences between the village means can be tested by means of variance analysis, but we will perform a simpler test and see if the villages with extreme mean values differ significantly from each other.

TABLE 2.6

Statistics for Three Variables with High Design Effects

Variable	*Village*	*Mean*	*Variance*	*n*
Input of family labour	Naganur:	74	8 750	39
	Periapatti:	45	3 937	40
Input of hired labour	Rajendram:	174	47 788	37
	Poyyamani:	106	19 323	36
Non-agric. income	Rajendram:	491	1171 338	40
	Nangavaram:	1609	5976 533	36

In all three cases we get the result that the variances differ significantly between the two villages with extreme averages. But when it comes to the means, we get diverse results: for the first two variables there is no statistically significant difference between the village means. In other words, the high design effect seems to be due to differences in the intra-village variances. Only in the case of the third variable do we get a significant difference between the village means. The result is not surprising, since, as we saw above, there is a bias in the sample when it comes to the proportion of non-agrarian households in the villages. Rajendram has a high proportion of its population in non-agrarian occupations, and this seems to be reflected in a low mean income from non-agriculture for the agrarian population.

To conclude, it is easy to perform statistical analysis on our data, although the sample design is complex; but the analysis should as far as possible be restricted to means and proportions, and the difference between such statistics. Analysis of other types of statistics must be made with care.

3

Ecology

This chapter will deal with the agrarian ecosystems that we find in our field area. Our attention will be focused on the contrasts between the two ecosystems, which we call the wet and the dry ecotype.

The wet area refers to the narrow belt of canal-irrigated lands along the river Kaveri where an eminent system of irrigation gives a cropping year of more than 300 days, supporting an intensive agriculture and a dense population. Away from and above the river we find the dry area where much of the cultivation is rainfed, where the cropping year is shorter, agriculture more extensive, and the population more sparse.

The systematic description of these two ecotypes will start with their natural preconditions (climate, soils, etc.), and continue with their respective systems of irrigation. These determine their land use and cropping patterns which we will then describe. We will also devote a section to livestock before focusing on technology. We will describe the traditional farming techniques, and the new technology manifested in new seeds, chemical fertilizers, and an important measure of mechanization.

By way of conclusion we will summarize the characteristics of the ecotypes and discuss the critical question of the state of these two ecotypes: whether they can be said to be in a state of crisis, and, if so, how does the crisis manifest itself, and how could it be resolved?

Natural preconditions

Tiruchy District lies at the centre of the long undulating plains south of the fifteenth degree latitude, between the range of mountains called the Western Ghats and the Bay of Bengal. Scattered over the plains, as if some giant had been playing marbles here millions of years ago, lie rocky hillocks of the type geologists aptly call 'Inselberge,' (from the German *Insel* = island, *Berg* = mountain). The plains lie 150–350 metres above sea level on a hard-rock underground. They are crosscut by river basins running from west to east, and leading into the deltaic and coastal plains near the sea. Here rich soils have been formed by alluvium sedimented from the rivers.

The region is dominated by a hot, semi-arid climate. The temperature is above 20 degrees throughout the year, so it is not a limiting factor for the agrarian ecosystem, but it makes for phenomenal rates of evaporation and transpiration, and, therefore, water economy becomes crucial.

Rains occur during two seasons: the south-west monsoon from early June to the end of September may bring some light showers, if it does not exhaust itself on the West coast and in the Western Ghats. The main precipitation comes with the north-east monsoon from early October to late December. A long dry spell follows the monsoon, and the hot season reaches a climax during the 'dog days' in May.

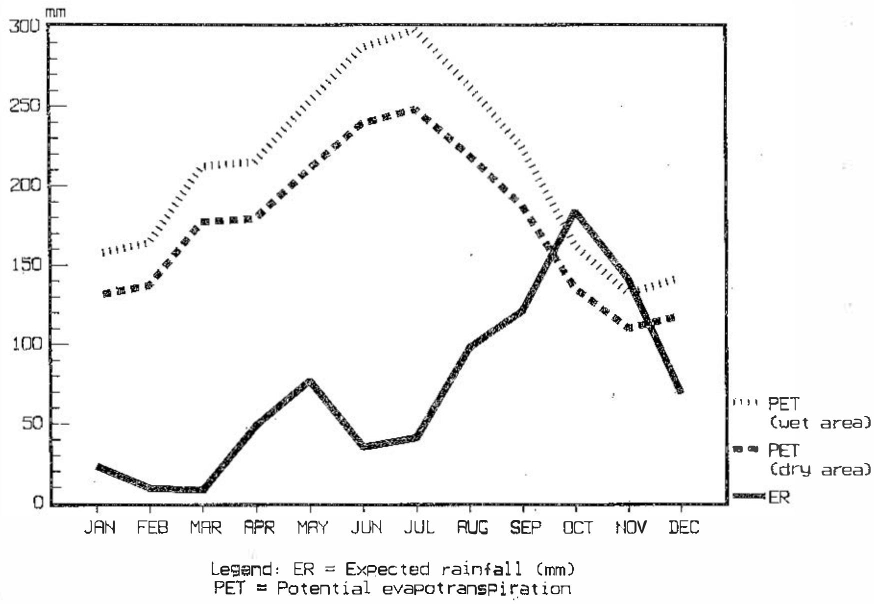
But the monsoon is fitful; it may begin up to four weeks before or after schedule, and the rainfall is extremely variable. The average for the last fifty years is 800–900 mm of rain, spread over an average of forty-five rainy days. But many rainy days bring only light showers, and most of the precipitation is concentrated in a few days of torrential rains. The soil cannot absorb all this water; the run-off floods the landscape, fills brooks and streams which lie dry for most of the year, erodes the unprotected soil, brings the silt into lower-lying areas, and sediments it in fields, tanks, and canals.

The sun blazes from a nude sky for over 300 days a year. Standing and running water quickly evaporates, and the water courses soon go dry again. The rate of *evapotranspiration*, which includes the transpiration of the plants, is among the highest in Tamil Nadu.[1] Böklin's (1985) estimates have been plotted against the rainfall data in Figure 3.1.

[1] The actual rates have been estimated by Böklin (1985), on the basis of works by Rao et al. (1971), Ragavendra (1971), and Tomar et al. (1979). Since the water standing in the paddy fields evaporates quickly, the rates are judged to be higher in the wet ecotype where much land is under paddy.

FIGURE 3.1

Rainfall and Estimated Evapotranspiration by Ecotype



Source: Böklin (1985).

In this Figure, the curve which almost touches zero in the months of February and March portrays the rainfall probability to be close to nil in these months. The other two curves indicate the estimated evapotranspiration for the dry area (the middle curve), and for the wet one (the uppermost curve).

As the Figure indicates, rainfall exceeds evapotranspiration only for a short period of the year, in the peak period of the north-east monsoon. For the rest of the year more water goes out of the system than what comes into it in the form of rain—there is a water deficit for nine months of the year. This is the basic ecological dilemma confronting agriculturalists in this region. It gives them two alternatives, the first of which is to adjust to the 'natural' season of cultivation, so clearly brought out in the figure, by adapting the crops and their dates of sowing to water availability.

The second alternative is to extend the possible season of cultivation by obtaining water from other sources than rain, by storing it, or by importing it from outside the area. The former is the solution adopted in dry cropping and the latter is the basis of the various systems of wet farming, as we shall see below.

Water scarcity constrains the type of vegetation found in forest and grazing lands: the region is too dry to allow any rain forest. The conditions remind one more of those giving rise to permanent grasslands in other continents (like the African savannah), but such grasslands are not naturally present in the Indian peninsula. The natural vegetation which would prevail in the absence of human intervention would rather be one of shrub-woodland, but this natural vegetation is hardly found anywhere; man's intervention is visible everywhere. Due to the felling of timber and the cutting of firewood, the shrub-woodland has been replaced by close thorny thickets, consisting of water-tolerant species better adapted to the hotter and drier conditions brought about in the same process.

Wood cutting and grazing further transforms the landscape; we get scattered thorny thickets interspersed with almost denuded soil, thinly covered by grass after the monsoon. Here and there some scattered trees emerge from the layer of thick bushes, under which both animals and humans move in search of fodder and firewood.[2]

Occasionally, one sees signs of drastic overgrazing: only sporadic bushes remain and little grass survives in the arid, denuded soil. Erosion accelerates on the slopes where the rock is stripped nude, and only a thin layer of the soil remains in the crevices.

Some attempts have been made to counteract the environmental degradation due to deforestation and overgrazing. *Casuarina* may be planted as a source of firewood, and it grows well in dry, sandy soils. *Cashew* trees thrive under similar conditions, and yield a valuable cash crop. *Acacia* trees, indigenous to North India, have been successfully planted, for example, on the tank embankments, and they give both firewood and material for carpentry. *Prosopis juliflora* is also an imported species, but eminently suited to withstand drought and grazing. Its sweet pods are very attractive to cattle. Commercial forestry has also made an inroad: *casuarina* is

[2] This section on natural vegetation draws heavily on Gaussen et al., 1962.

often grown as a cash crop, and along the banks of the Kaveri there are *eucalyptus* plantations for the paper mills.

Soils and salinization

In the valley bottoms soils tend to be alluvial and of various types. Three-fourths of the soils in our three wet villages are estimated to be of this type.[3] These soils are immensely rich, partly because they are so flat, and only slightly sloping. This makes for easy irrigation and little erosion. They also permit intensive cultivation, provided they are heavily fertilized. Farmyard manure is preferable, since it improves the structure of the alluvial soils.

But alluvial soils are sensitive to flooding and waterlogging, which may increase their content of soluble salts or sodium ions. Such a process of salinization may affect yields. It may be a natural process, but it is more frequently the result of deficient water management and poor drainage.

Based on the classification of the soils tilled by our sample respondents, as *uppuman* (saline soil), *sukkuman* (alkaline), or *vellaiman* (white soil, a combination of both), we estimate the area affected by salinization as 21 per cent of the cultivated area in the wet ecotype. This figure should be taken only as a rough approximation, since there may be an element of respondent bias present in it. Anyhow, it indicates that salinization is a real problem in the area. Most of it, it seems, is due to poor drainage. As we saw above, a formidable problem of drainage is created by the enormous amounts of rain brought by the monsoon, and salinization is one indication that this problem is not adequately tackled. Flooding is another sign of this. Even in 1979, a year of normal rainfall, large areas were flooded in Kulithalei *taluk*; villages were standing under water and low-lying fields were submerged for days on end. The cause of the flood was also apparent: a small river draining the dry hinterland flows into the Kaveri a few miles east of Kulithalei town. This river is supposed to be tamed by the huge Panchapatti tank, located in a dry village about twenty kilometres from the river. But the tank is severely silted, causing the river to overflow downstream.

In the dry area, soils are red on the higher-level lands (they get

[3] Source: Our own survey data.

their colour from free iron oxides) and they are black in the valley bottoms. Three-quarters of the area cultivated in the dry villages have red soils, compared to only one-quarter in the wet area.

Red soils are poor soils. They have only one advantage, namely, their capacity to absorb water quickly and transport it through the profile. Locally, they are called 'early soils' because the light pre-monsoon rains are enough to prepare them for ploughing, which makes for an early start of the season. But this advantage can be quickly turned into its opposite, because red soils dry quickly: if there is a longer dry spell after the first rains, the newly sown seed may not germinate. But if these early rains are intermittent, the early red soils sown with millets or sorghum make for an excellent adaptation to the natural preconditions. If they are sown before the monsoon, their heavy growth stage can be timed with the rains, i.e., with the short season when there is a natural water surplus. Once established, these crops are also drought-resistant, so moderate delays and irregularities in the monsoon need not be disastrous for the yield.

The content of organic matter in the red soils is low and so is their capacity to retain added nutrients. Neither are they ideal for irrigation, since they do not retain moisture very well. If they are to be continuously cultivated, without long periods of fallowing, they need green manure and a rotation with nitrogen-fixing legumes (Young, 1976, p. 147). The dry farmers have adopted both these practices: they manure their soils with leaves and twigs from the over-exploited forests described above, and they 'fix their nitrogen' by growing millets inter-cropped with various grams.

The black soils in the valley bottoms of the dry area have been formed by erosion from the red soils on higher-level lands. They are excellently suited for irrigation, since they retain moisture, but like the alluvial soils of the wet area they are sensitive to water-logging and to salinization. The latter problem seems to be even more acute in the dry area than in the wet one. According to our respondents, almost 50 per cent of the black soils which they are tilling are saline or alkaline. Again, this may be an exaggeration due to respondent bias, but it indicates that the problem is prevalent. Poor water management may be one reason, especially since much land has recently been brought under irrigation from wells by cultivators who may not have fully mastered the art. But poor drainage is definitely also a reason, due to the decline of the tank-irrigation system, which we will discuss below.

Irrigation

As we saw when discussing climate, there is natural water surplus in the field area for only a short time of the year. The basic rationale for irrigation is, therefore, to extend the period of surplus, and the period when cultivated plants can grow. This requires the storage of water or its import from other areas.

In tank- and well-irrigation, storage is the basic principle while in river-irrigation water is 'imported' from areas which are favoured in terms of rainfall.

River-irrigation

The river Kaveri rises in the Western Ghats, in areas of these mountains which are favoured by both the monsoons and which 'export' their surplus to the benefit of the whole Thanjavur delta.

The alluvial lands of the delta have been irrigated for at least 2000 years. The Chola kings (c. 900-1200 AD) greatly expanded the irrigated area and gave priority to the building of dams and canals. Their ancient system was expanded and improved upon during the colonial era, especially with the construction, upstream from our area, of the Mettur dam, which extended the irrigated area. The system has been further improved upon after Independence.

Our wet area is at the head of the Thanjavur delta. The lands close to the river are irrigated by means of a canal diverted from the river, west of Kulithalei town. Such was already the practice when the British took over early in the nineteenth century. The irrigated area was greatly expanded in the 1920s when the Kattalai High-Level Canal began to be built, south of the ancient canal farther away from the river. A new chunk of irrigable land was added after Independence when, in the 60s, further south, the New Kattalai High-Level Canal was constructed.

In this process, previously rainfed land was brought under irrigation, and the water-year was extended so that large areas now got water for ten to eleven months a year. In our wet villages, over 90 per cent of the cultivated area is irrigated from canals, and of these 84 per cent get water for ten or more months.[4]

[4] See Fig. 3.2 and 3.3.

The wet area is favoured by being at the head of the system, and irrigation can hardly be made more intensive than what it is here. As always, the privilege of the head-enders is paid for, as it were, by the tail-enders: further downstream water is not so abundant. The tail-enders would have an obvious interest in limiting the conspicuous water consumption of the head-enders. As we saw above, salinization and flooding are two obvious symptoms of poor water management.

Soil erosion in the feeding areas contributes to the rich content of silt in the Kaveri water. Silt is both a boon and a curse: it makes the water a natural fertilizer, but it also contributes to the silting of feeding and drainage canals. In fact, surplus of water in one part of the system and shortage in another, are both partly due to silt. This indicates that the public maintenance of the system leaves much to be desired.

The giant network of canals and sluices is administrated by the Public Works Department and a hierarchy of officials, from the man handling a five-mile section of canals up to the high-level officials in Madras. Rampant corruption is, according to Wade (1982), characteristic of irrigation administration in Tamil Nadu. Our field experience gives us reasons to suspect that Wade's picture is exaggerated.[5]

Our general impression is that people are very fond of circulating rumours and of narrating experiences with corrupt officials. We have collected a host of such stories, but among these few deal with corruption in the administration of irrigation. This should, obviously, not be taken to mean that there is no such corruption, but it certainly casts doubts upon Wade's findings.

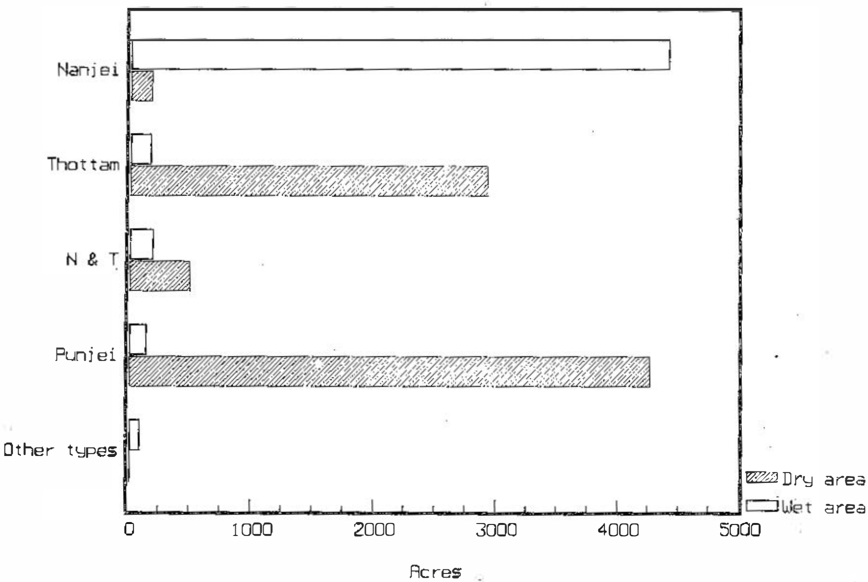
The fact that malfunctioning of the canal system hits a collective of farmers could also make corruption in the ordinary sense an inefficient means of action. Our experiences from Nangavaram could illustrate this point. In this village there is a 'Tail-End Association' formed by farmers receiving water from the nineteenth branch of the Kattalai High-Level Canal, which feeds over 1500 acres in Nangavaram and neighbouring villages, and half of which are classified as tail-end. The latter have been starved of water for a number of years due to silt in the nineteenth branch. If

[5] It is also noteworthy that Wade's article is based upon one interview conducted in one afternoon!

corruption had been as rampant as Wade has it, the tail-enders could have solved their problem by collecting a suitable bribe for the concerned officials. Instead, they have chosen to act politically and cooperatively. They have written petitions and sent delegations to high-level officials, and in 1980 they were backed by the Farmers' Agitation, which was very active in those days. By such political means they have managed to get some of their demands met. But they have also acted cooperatively by organizing their own desilting of the canal by means of contributions in cash or in labour from the members.

FIGURE 3.2

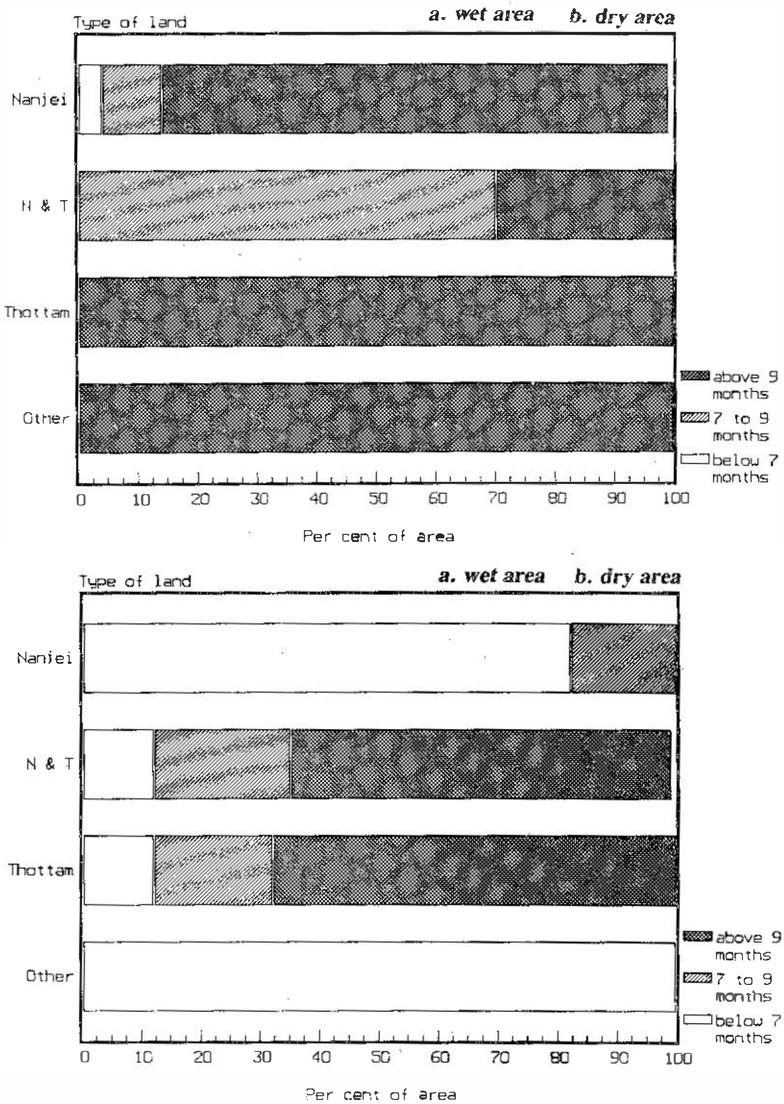
Types of Cultivated Land by Ecotype



Note: This figure is based on survey data. The percentage of missing cases is 1.5 per cent.
Nanjei is Tamil for wet land, *thottam* means land irrigated from wells, *punjei* means dry, rainfed land, and N & T is a combination of *nanjei* and *thottam*.

FIGURE 3.3

Water Availability (Months) by Type of Irrigated Land and by Ecotype



Note: This figure is based on data from 150 sample households. The percentage of missing cases is 4.6 per cent.
Nanjei is Tamil for wet land, *thottam* means land irrigated from wells, *punjei* means dry, rainfed land, and N & T is a combination of *nanjei* and *thottam*.

Since Wittfogel, it is a commonplace assertion that administration of irrigation is a political problem, but it implies that, since malfunctioning of the system usually affects groups of farmers rather than isolated individuals, the idiom of political action is that of agitation rather than corruption. Wade's picture is, as far as we can see, grossly exaggerated. This does not mean that the system of canal-irrigation in our area is in perfect shape. Far from it. There are problems with drainage and silt, and it seems that the Public Works Department has to be pressed into properly attending to them.

Tank-irrigation

Tank-irrigation is a means of storing the surplus rain water by collecting in a depression the surface run-off from a high-lying area, which is naturally or artificially dammed. The water thus stored is let out through sluices into a feeding area (*ayacut*) below the tank. Tank systems differ in scale, from small ones collecting the water from a small catchment area to big, inter-connected tanks, which, like in other parts of Tamil Nadu, may also be linked to canal and river systems of irrigation.

The tank system gives rise to a three-fold pattern of land use: that is, besides the land used for the tanks itself and the area irrigated, there is the feeding area. The latter can be forest or grazing land, but it should preferably not be cultivated, since the water is made better use of in the *ayacut* (Krishnaswamy, 1947, pp. 438 ff.).

Like the canal system, administration of a tank is a political problem. The administration must ensure that the storage capacity of the tank is unimpaired, which means that the *bund* must be protected from erosion. The tank must also be periodically desilted, and an even and equitable flow of water must be ensured. These and other features of the tank system obviously require a political instance above the level of the individual cultivator which can administer the system, organize maintenance, and solve conflicts over the distribution of water.

The history of the tank system is closely tied to the history of the dry plains. These were colonized during the Vijayanagar empire (c. 1300–1500 AD); before that they were mainly inhabited by hunters and gatherers with a tribal organization. The colonization was carried out under military-political hegemony; local or invading chieftains, backed by higher-level political forces, organized the clearing of the lands and the building of irrigation works. In those days the villages got their present caste structure, with colonies of tribal groups, mixed with villages with a multi-caste structure, where castes with a martial tradition, like *Urali Kavundar* or *Udaiyar* dominated over the lower castes, among them shepherd castes like *Yadava Konan* and the untouchable *Chakkiliyan*, whose speciality was the manufacture of the leather buckets used for lifting water from the wells.

Routine maintenance of the tanks was probably, and still is to a large extent, organized by intra-village forms of cooperation. The dominant caste of the multi-caste villages had a governing body (the *jati panchayat*), which in effect was also the governing body of the village (the *ur panchayat*), and which organized the maintenance and administration of the tank. In cases where these intra-village forms of organization did not suffice, higher-level political institutions could intervene, for example, in order to construct new tanks. But maintenance was and is a demanding and delicate task, so tanks often fell into disrepair, as they still often do. In 1837, for example, the Collector of Trichinopoly District pointed out that wet cultivation had gone down in the district because many tanks were not functioning.[6]

During the days of the British, the State took over ownership of all communal lands, including tanks. Thereby it also took over the ultimate responsibility for their administration and maintenance through its Public Works Department (PWD). But the PWD is far from efficient in maintaining the tanks, so in practice much of the responsibility still lies with the villagers. In Paranthadi hamlet in Naganur, for example, the *ur panchayat* organizes desilting by collecting money from each cultivator, and by hiring coolies for the work. Smaller tanks entirely depend upon such forms of organization, except in the few cases where they are privately owned. For the bigger tanks the PWD plays a more important role.

In Therkucheripatti, in Periapatti, we have one such big tank. Here it seems the village officers, employed by the government, the *munsiff* and *karnam*, have taken over the function of routine

[6] Source: Archival material from Tamil Nadu Archives, Madras. We have lost the exact reference.

administration. But due to a conflict between head- and tail-enders over maintenance, the tank has fallen into disrepair. The tail-enders are eager to get the tank repaired, since they are the ones who are affected by its lessened capacity, while the head-enders are indifferent. They still get water, and, moreover, many of them have sunk wells in their lands so that they are virtually unaffected by the malfunctioning of the tank. The head-enders also tend to belong to the leading families of the village, so they cannot easily be forced into a joint effort at desilting. Thus, everybody has to sit down and wait for the PWD to do the desilting. In the meantime, the tank further deteriorates.

Distribution of water is generally organized by the village, and handled by one or more watermen employed by the *ur panchayat*. He can be an untouchable *Pallan* or *Paraiyan*, paid in the same way as other village servants, i.e., through the *sudanthiram* system. In this system the village servants get customary payments in kind at harvest time from each cultivator. In Therkucheripatti the waterman, besides operating the sluices, does minor repairs of feeding canals. He gets one sheaf of paddy from each farmer. Where these collective systems cease functioning, tanks dilapidate quickly as in Chokkampatti, a hamlet in Periapatti, where silt in a PWD tank has caused a number of drinking water wells to dry.

The overall result of the nationalization of the tanks seems to have caused a further deterioration of the system. The reasons, among others, are that the authorities have concentrated their efforts on large-scale irrigation works to the detriment of the small-scale tanks. The village communities have not been able to make up for what the State has neglected. Instead, individual landowners have tried to solve their irrigation problem on their own, i.e., by sinking wells.

The above conclusion is corroborated by official statistics. According to various census rounds, the gross area irrigated by tank in Tiruchy District fell from nearly 200,000 acres in 1890/91 to slightly more than 100,000 acres in 1940/41. Later census figures are not strictly comparable, since they are in terms of net area irrigated; but in 1970/71 the net area irrigated by tanks and other minor works were slightly above 60,000 acres in the district. Since only a minor share of the area is likely to be double-cropped, this indicates that the area has further decreased since Independence. In the same period the area under canal- and well-irrigation has steadily increased. Between 1890 and 1940 the area under canal-irrigation increased two-and-a-half times while the area under wells tripled. This trend also continued after Independence.

The overall result of these processes is that tank-irrigation, which accounted for two-thirds of the gross irrigated area around the turn of the century, today accounts for a mere 15 per cent of the net irrigated area. Although the former figure is in terms of gross and the latter in terms of net area irrigated, the difference in the intensity of irrigation cannot explain more than a small part of the difference: it is mainly due to the expansion of canals and wells, and the deterioration of the tanks.[7]

From a narrowly economic point of view, the expansion of well- and canal-irrigation may seem positive, since these techniques of irrigation are more efficient. Wells are also much cheaper to build than tanks (Rao and Chandrakant, 1984). But from an ecological point of view, this economic perspective stands out as too narrow. As we have pointed out above, tanks cannot be seen merely as means of irrigation; they are also a means of drainage, and as such they are important in preventing soil erosion and flooding. They are also important for the stability of the system of well-irrigation, since they add to the recharge of the groundwater and help in maintaining the groundwater level. From an ecological perspective, then, the decline of the tank system is a threat to the stability of the entire ecosystem.

Well-irrigation

As we saw above, tanks are a means of storing water for use outside the short season of water surplus. To the extent that tanks draw upon rechargeable reservoirs, this also holds true for wells. Besides filling tanks and rivers, the monsoon rains are also absorbed by the soil. Some of this water seeps down and recharges the groundwater reservoirs. Compared to the open-air reservoirs, an obvious advantage of underground storage is the low rate of evaporation, which permits storage for longer periods, and makes cultivation possible when tanks dry up or when the rains have failed altogether. Thus, wells are a natural complement to rainfed and tankfed agriculture and they have functioned as such for ages.

[7] The 1890 to 1940 figures have been compiled from the Statistical Atlases from various years. The 1970/71 figure is from the 1971 Census.

Expansion of well-irrigation was earlier hampered by the costs in terms of the labour of lifting the water from the wells. But throughout this century, well-irrigation has steadily expanded, stimulated by new methods for lifting water. In our dry villages the process was initially hampered by the rocky underground, which makes well-digging a costly procedure, despite a high water table.

Figure 3.2 shows the importance of well-irrigation in the dry ecotype: of the 46 per cent of the cultivated area which is irrigated, 81 per cent is wellfed. Of the 19 per cent which is tankfed, a major share, or 73 per cent, has supplementary irrigation from wells. The latter type of lands, the *nanjei-thottam*,[8] are the most valuable lands found in the dry villages; these are often controlled by the village elite. The soil is likely to be good black soil, and, since water normally is available both from the tank and from the well, the land can often be cultivated throughout the year.

The quality of wells sunk in rainfed land (*punjei*) varies greatly, depending upon their location and depth. On the average, the '*punjei*-wells' are not as good as the '*nanjei*-wells': their rate of recharge is slower; the soils which they irrigate are not as good; and they may also be much costlier to sink.

The stability of the well-irrigation system obviously requires that wells draw upon rechargeable water resources; drawing upon non-renewable resources is possible only in the short-term. There are some indications that too much water is drawn in our area. So, for example, one official survey of groundwater resources, (Government of Tamil Nadu, 1975), indicates that in the Manaparei Panchayat Union the extraction of groundwater is twice as high as the annual recharge, making for a substantial overdraft. This could be true for our villages too, but so far we have seen no signs of acute crisis. When we revisited these villages in 1985, the farmers did not complain of water scarcity. However, they did complain of a sinking water table, consequently drying many shallow wells. But, this need not be an indication of overdraft; it can just as well be the result of a fuller utilization of rechargeable resources.

In other words, there are no signs of an acute crisis as yet, but we may soon run into one if the expansion continues as hitherto, i.e., on the initiative of individual farmers, without any overall plan for the utilization of groundwater resources.

[8] *Nanjei* is Tamil for wet lands, and *Thottam* means land irrigated from wells.

The utilization of land resources

The preceding sections have already indicated the divergent pattern of land use in the two ecotypes. The alluvial lands in the wet area could, in principle, be used almost 100 per cent for cultivation, but such an intensive use of the land is not at all feasible in the dry area where water is a more severe constraint, restricting both the area where it is possible to till and, still more, where it is possible to irrigate.

Including the orchards, it is evident that more than 80 per cent of the area is used for agriculture in the wet villages, while in the dry ecotype only about half the area is so used. The land is also more intensively used in the wet area, in the sense that more of it is irrigated (95 and 46 per cent respectively). The intensity is also higher in the wet area, in that water is available for a longer period of the year (see Fig. 3.3).

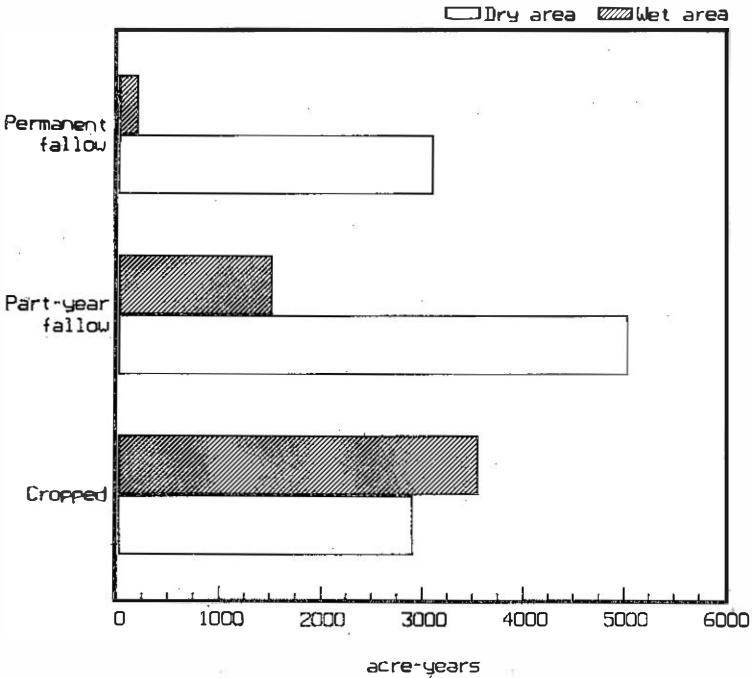
To get a truly comparative picture of the pattern and intensity of land use in the two ecotypes, one can take the cue from Agarwal (1984), and make an account in terms of acre-years. In such an account a four-month crop of paddy sown in one acre will be counted as one-third acre-year. If the land lies fallow for the rest of the year we get two-third acre-years as partial fallow. Such an account is made in Figure 3.4.

As can be seen, we have to add some partial fallowing to the small area of permanent fallows in the wet ecotype, or 29 per cent of the total acre-years, which is not or cannot be utilized for more than parts of the year. Parts of this are tail-end lands starved of water, parts of it are high-level lands not benefited by canals but used either as *thottam* or *punjei*, and parts of it are wet paddy lands sown with two paddy crops a year and left fallow for the third season when other farmers grow gingelly or blackgram. But all in all, we can say that 67 per cent of the agricultural land resources are utilized in the wet area, and this is an impressively high figure. Agriculture in the wet area reaches an intensity which is very close to what is possible under field conditions.

Intensity is much lower in the dry area: there is considerable area under permanent fallow (28 per cent). Almost the whole area fallowed is rainfed. With the spread of motorized irrigation, intensive cultivation on *thottam* lands has become far more worthwhile. This is why, unlike in the 1920s when significant expansion

FIGURE 3.4

The Use of Potential Land Resources by Ecotype



Note: The detailed procedure for calculating acre-years is described in footnote 9. The percentage of missing cases is 1.9.

[9] The cropped area in terms of acre-years have been calculated by taking the duration of different crops to be: paddy, high-yielding 110 days; paddy, traditional and improved varieties 130; bananas and sugarcane 365; gingelly (sesame) 80; *solam* 125–130; *cumbu* 90; groundnut 105; chilli 210; other millets 100; various crops 100; inter-cropping 125–130 days. These figures are not indisputable, since different varieties of the same crop have different durations. Therefore, the resulting estimate of the net cropped area is only an approximate one. The estimate is calculated as follows:

$$Y = \sum d_i \div 365 \times x_i \qquad (1 \leqslant i \leqslant n),$$

where Y = net cropped area, d_i = duration of crop i in days, n = number of crops, and x_i = area sown with crop i.

occurred in dry cultivation, we now see intensive rather than extensive cultivation. This can also be seen in the changing cropping pattern; paddy has become more important while cotton and groundnut seem to have reached a plateau (cf. Baker, 1984, pp. 214 ff.).

Since the intensity of cultivation and of irrigation is lower in the dry area than in the wet, we would expect a greater share of the total area to be partially fallowed. Indeed, 46 per cent of the acre-years are partially fallowed (Fig. 3.4). Adding the two types of fallow we get the result that three-fourths of the potential land resources are not utilized in the dry villages. The ecological constraints are, of course, heavy—the area has a water deficit for most of the year. However, the low utilization of potential land resources is not only the result of adverse conditions for agriculture. The area under dry cultivation could be expanded, but farmers seem to give priority to wet farming. Thus, the pattern of land use can also be seen as the result of a concentration of resources—water, labour, and finance—to the small parts of the area which are irrigated.

Crop pattern

The cultivator cannot choose to grow any crop on any type of land. Take dry cultivation as an example. The cultivator can choose between sorghum, various types of millets, and legumes. But when the characteristics of a specific field is taken into account, the choice may be quite narrow: the poorest dry land would support only very coarse varieties of millet, like *samai* (*Panicum miliare*) or *tenai* (*Setaria italica*), where the cultivator can be sure to get at least some straw for fodder if the land is too dry to yield grains. On the best type of canal-irrigated land, to take another extreme example, the choice would be between paddy, banana, cane, and a variety of other high-valued crops. Here economic and other factors are important in the selection of crops. Thus, there are two sets of determinants of the crop pattern; one relating to the environmental constraints discussed above, i.e., water availability, soil type, drainage, etc., and the other set relating to economic, social, and cultural factors. This latter set operates within the limits defined by the environment.

Crop pattern in wet villages

In the wet villages, paddy, banana, and sugarcane are the predominant crops. We will deal with them in turn.

Paddy

In the wet villages, over 60 per cent of the gross cultivated area is covered with paddy (see Fig. 3.5). There is an enormous number of paddy varieties; we have counted forty-two different varieties sown by the 153 cultivating households in our sample. These varieties fall into three big groups: (*a*) locally bred; (*b*) improved; and (*c*) high-yielding varieties. Unfortunately, it is difficult to distinguish between all the varieties in the first two groups solely on the basis of their names, so we have to treat the ***local and improved varieties*** as one group, which, for short, we call LIV paddy. This group is to be compared with the ***high-yielding*** (HYV) varieties.

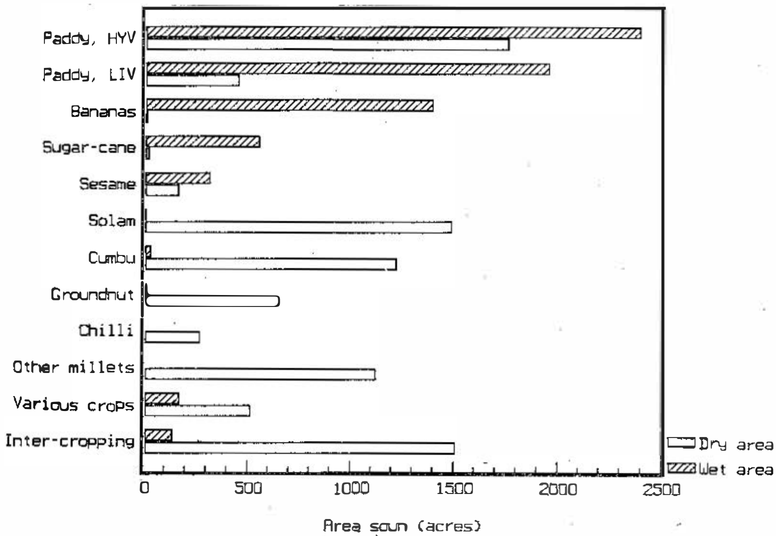
Some of the LIV varieties are purely local; peasant-based breeds, but most of them are scientifically bred, through the efforts which started early this century, with a base in the Agricultural University at Coimbatore. The HYV varieties, on the other hand, are hybrids derived from the breeding carried out at the International Rice Research Institute (IRRI) in the Philippines. These IRRI strains have been further developed locally, through crossbreeding with indigenous varieties.

The two groups of varieties have different genetic potentials, and different demands of soil, water, and other inputs. Generally, one can say that the LIV varieties are adapted to a range of conditions where the HYVs are not fit to be grown. But the LIVs may also be preferred for other reasons. Some of the finer varieties of ***Samba*** paddy are grown for reasons of taste, and because they fetch good prices in the market. At the other extreme we have varieties like ***Rubber Samba***, which has a texture indicated by its name, and which is not grown for reasons of taste, but for its sturdy nature and its low demands in terms of water control.

The most important advantage of the HYVs is not, as would be expected from the name, their higher yields, which after all are fairly modest under field conditions (see Table 3.2), but their shorter duration. This can be either an adaptation to water shortage, as in the tail-end of the canals, or a way of getting time for a

FIGURE 3.5a

Gross Cultivated Area Broken Down by Crop and Ecotype



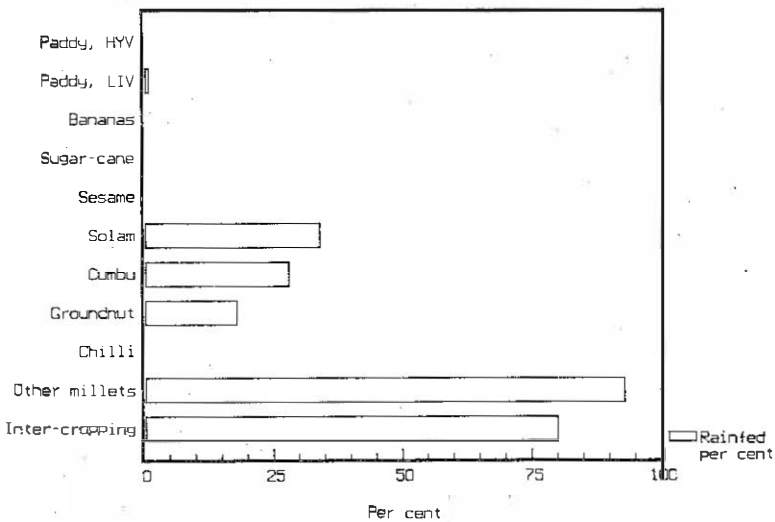


FIGURE 3.5b

Per cent Rainfed Area by Crop (Dry Ecotype)

TABLE 3.1

Gross Cultivated Area Broken Down by Crop and Ecotype
(and for the dry ecotype: per cent of area under crop which is rainfed)

Crop	*Ecotype*						
	Wet villages			*Dry villages*			
	No. of cases	*Area sown*	*Per cent*	*No. of cases*	*Area sown*	*Per cent*	*Rainfed per cent*
Paddy, HYV	49	2397	34	61	1761	19	0
Paddy, LIV	27	1959	28	29	455	5	1
Bananas	29	1398	20	1	14	0	0
Sugarcane	18	556	8	0 &	23	0	0
Sesame	14	318	5	9	166	2	0
Solam	0 &	11	0	54	1490	16	34
Cumbu	2	33	[illegible]	60	1223	13	28
Groundnut	1	12	0	32	654	7	18
Chilli	0	—	—	19	270	3	0
Other millets	0	—	—	52	1123	12	93
Various crops	10	172	2	28	514	6	?
Inter-cropping	3	138	2	43	1508	16	80
Total		6994	99		9201	99	38

Notes: The table is based on data for all crops cultivated by the respondent households. The percentage of missing cases is 1.7. (&) Estimate based on UPC cases only.

third crop of sesame or blackgram. It may also be a way of making room for cane and bananas, which are generally rotated with paddy.

In the wet villages the paddy area is about equally divided between LIV and HYV varieties. As the above argument indicates, this is not because the farmers have been slow in adopting the new HYV varieties. The reason is rather that the new varieties have been poorly adapted to local conditions, so that the LIV varieties continue to be important alternatives under a range of conditioins, especially when soil and drainage are far from optimal. LIVs are on the whole also less sensitive to pest attacks, which, by the end of the main paddy season (*Samba*), tend to increase to alarming proportions causing severe damage to the paddy crops.

Bananas

Commercial banana cultivation has been a characteristic of the Kulithalei area since the turn of the century (Jacob, 1952, p. 4; Baker, 1984, pp. 192 f.). Today, banana is, next to paddy, the most important crop in the wet area. It covers 20 per cent of the gross cultivated area. But this figure, in a sense, underestimates its importance. If we take its percentage of the cropped acre-years in the same manner as we did when discussing the use of the potential land resources, it covers 39 per cent of the cropped acre-years. The difference, of course, is due to the different weights that crops of different duration carry in the computation of the indexes—gross cultivated area on the one hand, and number of acre-years on the other. In the former index an acre of paddy weighs as much as an acre of banana and if the acre under paddy is double cropped it counts as two acres. But in the other index, two crops of paddy may count as half an acre-year while an acre of banana is counted as a full acre-year. Therefore, the latter index is a better indicator of the amount of land, which at any time of the year is under banana.

Large-scale cultivation of banana demands good access to water and good drainage, and, therefore, not all lands in the wet area are fit for banana. For the same reason, bananas are only grown on a small-scale in the dry area, in the backyards, or around the irrigation wells.

Bananas are grown in a two-and-a-half year cycle, with two

TABLE 3.2

Mean Yields per Acre by Crop and Ecotype

Crop	*Unit*	*Ecotype*			
		No. of cases	*Wet (mean yield)*	*No. of cases*	*Dry (mean yield)*
Paddy, HYV	kg	51	1065	60	907
Paddy, LIV	kg	26	873	28	756
Sugarcane	tonnes	17	45	—	—
Bananas, Rasthali	bunches	15	710	—	—
Bananas, other	bunches	11	740	—	—
Solam, irrigated	kg	—	—	19	578
Solam, rainfed	kg	—	—	30	152
Cumbu, hybrid, irrigated	kg	—	—	42	549
Cumbu, rainfed	kg	—	—	15	171
Groundnut	kg	—	—	30	310
Chilli	kg	—	—	19	436

Note: Percentage of missing cases is 3.3.

crops taken from the same mother plant. Thereafter, the plants must be uprooted and rotated with paddy before the land can be planted with banana or cane again. Rotation obviously is another constraint on the area under banana, and it can very well be that the present area under banana cultivation is close to the possible maximum.

We have enumerated six different varieties of banana grown by our sample respondents; most common among these are *Poovan* and *Rasthali*, botanically known as *Poovaniana* and *Champa*, respectively. *Poovan* covers abut 65 per cent of the area under banana, and *Rasthali* some 25 per cent. *Rasthali* need not be propped up with bamboo poles to support the stem and the bunch during the windy season from August onwards. It is, therefore, cheaper to cultivate, which is why it is often preferred by smaller cultivators.

The time of planting is adjusted to water availability, but farmers also plan the planting so that they can cut the crop during the periods of peak demand. These are during the marriage season in August and the harvest festival season in January. On these festive occasions Tamilians consume lots of bananas, and there is a chance of entering a seller's market. In the reference year, bananas fetched very good prices and were probably unusually lucrative. Otherwise, prices may fluctuate greatly, so that after a period of low prices commercially oriented farmers may switch over to sugarcane, if the prospects seem brighter for this crop.

Sugarcane

Since sugarcane, like banana, demands assured irrigation throughout the year, it is of low importance in the dry area, but it covers 8 per cent of the gross cultivated area in the wet ecotype. Taken as a proportion of the cropped acre-years, sugarcane accounts for 16 per cent. This means that 55 per cent of the land resources in the wet ecotype are devoted to cane and banana together.

Sugarcane has a long history in the area. It was introduced by the British during the nineteenth century, and its importance has been steadily growing since the first sugar refineries were built in the 1930s. (Adiceam, 1967; Baker, 1984, pp. 374 ff.) There is a state-owned sugar factory in Pettavaithalei, quite close to all our sample villages; almost all of the cane is grown on contract for the factory.

Seen globally, most cane is grown on big plantations. The reason is simple: the capital investments in refineries demand a planned and steady supply of cane to become profitable. It is difficult to manage such a planned production with small-scale cultivation. But Indian cane is one of the notable exceptions on this account: Indian sugar production is entirely dependent on deliveries from many relatively small producers (Amin, 1979). Production planning is achieved through a system of contracts with individual farmers. The system requires that the time of planting and of cutting is set by the factory, and planned so as to give a steady supply of cane throughout the crushing season. Individual farmers often complain that they are forced to cut the cane at sub-optimal dates; they say that it requires influence and good relations with the factory personnel to get maximum profit out of cane cultivation. In the reference year, the area under cane cultivation was lower than in previous years due to poor prices for a number of seasons. Many farmers slashed the area under cane, and increased that under banana.

The above are the most important crops in the canal-irrigated lands of the wet villages. But a number of other crops are worth mentioning: Sesame or gingelly (*Sesamum indicus*) is an oil seed, and the oil is one of the favourites in South Indian cooking. It is grown as a dry cash crop after the second crop of HYV paddy.

Turmeric and betel-vine are two very valuable crops grown in the wet lands. Both require special skills on the part of the cultivator, and access to very good land. Betel-vine is, moreover, very labour-intensive and requires skill and motivation on the part of the labourers. That may be one reason why it is mainly grown by middle and rich peasants depending mainly upon their own family labour. A betel vineyard is like a natural greenhouse where the creeping vines are inter-cropped with a number of other plants and vegetables, together forming a multilayered vegetation, reminding one of the natural layers in a tropical rain forest.

Coconut orchards also occupy a considerable area in the wet villages, although coconut does not turn out as a big crop in our sample. One reason for this could be that such plantations to a large extent are owned by absentee landowners who do not belong to our sample frame. Such orchards require little labour and supervision on the part of the owner; he needs a watchman who can also maintain the orchard and harvest the nuts. This can be arranged on a lease basis, with the tenant receiving a share of the produce.

A small share of the land in the wet villages are well- and rainfed, and thus belong to the dry ecotype. They are cultivated with the crops characteristic of this ecotype, which we will now describe.

Crop pattern in dry villages

As is evident from Figure 3.5, the balance between HYV and LIV paddy is quite different between the wet and the dry areas. The two types of paddy varieties are about equally important in the wet area, while in the dry one HYV have, to a much larger extent, replaced LIV varieties. The reason is simple: water is more scarce and often also more expensive in the dry villages. Thanks to their shorter duration, HYVs demand less water and thus have an extra advantage in the dry villages.

In tank-irrigation, the length of the season is limited by the capacity of the tank. Irrigation and evaporation quickly empty the tank, and the tail-enders are the first to feel the pinch of water shortage. Under such circumstances, the shortening of the season brought about by the HYVs—a decrease of twenty or more days—is an unquestionable advantage. These varieties also enable the cultivator to plant a second crop earlier and, thereby, perhaps avoid the extreme water stress of the 'dog days' in April and May. For head-enders at good tanks, it may be possible to grow a second crop of paddy, but for most cultivators less thirsty crops are the only feasible ones in the second season. Such crops are *solam* (*Sorghum vulgare*) and *cumbu* (*Pennisetum typhoide*). Hybrid varieties are available for both these crops, and especially hybrid *cumbu*, which has been adopted locally. Both *cumbu* and *solam* are often inter-cropped with pulses of various sorts, most frequently blackgram (*Phaseolus mungo*). The black soils of the tankfed lands retain moisture, and *solam* and *cumbu* make good use of it. Inter-cropped with pulses they are more resistant to water stress, and the total yields may also be higher.

The crop pattern is much the same in well-irrigated *thottam* lands. Despite the high cost of water, much thirsty paddy is grown on such lands, and again the advantages of HYVs are obvious. *Solam* and *cumbu*, especially the hybrid varieties, also give good yields when irrigated by a well, but inter-cropping is less common than in tankfed lands. The reason seems to be that one can quite accurately predict the water availability from a well, but not from a tank. Thus inter-cropping, as a form of insurance against water shortage, is less called for in the former case.

In wellfed lands we also find a number of crops not found in *nanjei*: groundnuts, chillies, and cotton, to name a few in their order of importance. All of them are pure cash crops; they are economical in the use of water, but respond well to good water management.

Lands which are favoured by access to both water from a tank and from a well (*nanjei-thottam*) have a pattern of cropping similar to that described for *thottam*. But the cheaper and more secure access to water enables the farmers to grow more LIV paddy on these lands. We even find some of the extremely water-demanding crops like banana and cane in such lands. On the other hand, we hardly find any inter-cropping, which underlines the importance of inter-cropping as an insurance against drought.

On dry lands the crop pattern is quite a different one. Paddy is hardly grown at all; although there are paddy varieties adapted to dry cultivation, these are not common in our area. Instead, inter-cropped *sorghum* is the dominant crop, and, as we have already pointed out, it makes for an ingenious adaptation to local agronomic conditions. Once established, *sorghum* is quite tolerant to drought; it regulates transpiration and remains dormant if the rains fail, and starts growing if and when they arrive. The heavy growth stage comes with the monsoon (Mudaliar, 1956).

A number of other millets are also grown on rainfed lands: *ragi* (*Eleusine coracana*), *tenai* (*Setaria italica*), *varagu* (*Paspalum scrobicutalum), and samai* (*Panicum miliare*). They are more resistant to drought, and they are grown on the very driest sandy soils, located on hill-tops and -sides. The farmer who sows these coarse millets often does not aspire to get much grain, and will be content if he can graze his cattle on the straw.

Livestock

In both the wet and the dry agro-ecosystem animal husbandry is primarily a complement to agriculture, and it must be analysed and understood as such. Cattle fulfil two vital functions for agriculture: they provide the traction power without which it would be impossible to till the alluvial and black soils, and draw large quantities of water from the irrigation wells. Cattle are also important for dry cultivation, since they supply manure, which is important both as a source of nutrients and as a means of increasing the capacity of the soil to retain moisture. When green manure becomes scarce as a result of deforestation, the importance of cattle increases.

Milk and meat are secondary considerations. There is some milk production in the area among the wealthy families for self-consumption and also for sale in a mainly urban market. Beef is also a source of protein for the Harijan population, although a marginal one. The main function of the cow is, instead, reproductive; she is not primarily a milch or meat animal. River buffaloes (*Bubalus bubalis*) are kept mainly for milking, but are also used for ploughing to some extent. Sheep and goats are kept as meat animals.

Animal husbandry is one of the traditional sources of livelihood for the dry villages. One can even talk of a division of labour between the ecotypes in this respect: much of the cattle needed for ploughing and milking in the wet ecotype is bred in the dry areas. Likewise, goat and sheep rearing have for a long time been specialities of the dry area (Baker, 1984, pp. 89–90).

Breeding is mainly random, but for centuries the local stock has been complemented by the import of sturdy draught-animals from areas specialized in breeding. As a result of extension work, such import has increased after Independence. Some efforts at improving the local stock through crossbreeding have also been made, but the impact has been uneven.

There is an enormous variation in the quality of the stock: from the beautiful animals of Indian Zebu or hybrid breed kept by wealthy farmers, to the small degenerated stock kept by the poorest households. The quality of the stock is related to the available fodder. In the wet area there is little land available for grazing, except seasonal fallows where the cattle can be fed on stubble, so that the field is manured in the process. To a large extent, however, the animals must be kept in sheds and farmyards, and be fed on crop by-products and harvest residues, such as, straw, husk, cane leaves, etc.

In the dry area there are more grazing lands, and the cattle move in a cycle following the agricultural year. Before the start of the monsoon cattle are grazed on the arable lands, thus manuring them before cultivation starts. Then they are driven over to the fallow lands surrounding the village. In the dry season when there is little fodder available in the fields, the cattle are taken further away from the village into the large communal bush fallows where they graze on scanty grass and the leaves and pods of the Prosopis bush. Later in the dry season they are again concentrated on the arable lands, and allowed to feed on millet straw and stubble.

The quality of this forage is low[10], and it is further impaired by the HYVs so far adopted. The straw of the HYVs has a digestibility of less than 40 per cent, which is considerably lower than the LIV straw. In fact, the spreading of the HYVs brings with it the risk that the livestock will further deteriorate.

Let us now compare the size of the cattle herd with the cultivated area. Baker cites a quite explicit traditional norm about the area per plough:

> A traditional unit of land measurement in the plains [i.e., our dry ecotype], was the *kota*, which represented the area which

[10] According to de Boer (1979), the digestibility of most tropical forages is around 55 per cent, which is much less than what is required for realizing the maximum genetic potential of the animals.

> could be cultivated with a single team of bullocks. The unit varied from place to place according to the demand of the land—roughly speaking it was around five to six acres where there was a well or a water-course, and ten to twelve acres where there was none. (1984, p. 141)

If we use this estimate to calculate the number of animals needed for ploughing the roughly 4000 acres of *punjei*, and about an equal area of irrigated lands in the dry villages, we get 2000–2400 animals as the requirement, which happens to be close to the bullock population of 2300 animals.

Using the same method in the wet villages at first gives the impression that the ratio is higher than in the dry villages. But we must adjust for the large area under cane and banana, since such lands are not ploughed but prepared by hand-digging. If we do, we get 5.2 acres per plough, which again is quite close to the traditional requirement!

If we were to go by the traditional requirements of draught power, as expressed in the notion of *kota*, there seems to be an optimum population of cattle in these villages. But even if this were the case, there can still be too many cattle for the given fodder basis. This seems to be the case, at least in the dry area, where there is evidence of overgrazing. Deforestation is also partly a result of this. Moreover, the fodder basis is quite poor from a nutritional point of view, which makes for small and weak cattle.

With a better feed and breed of cattle, the animal population could be reduced to maybe half of the present one. This would reduce the pressure on the fodder and forest resources. But it is difficult to achieve under the present circumstances, since it would require the cultivation of fodder, and a new pattern of land use.

Technology: Old and New

Pre-industrial technology is still in use by the farmers in our sample areas. Let us describe some of the tools and implements used here.

The sluice stands for water control and thus symbolizes the main predicament of South Indian agriculture, which, as we have seen, is to control water to extend the season of cultivation. As Nakamura (1982) has pointed out, this is symbolized in South

Indian temple architecture. The typical temple tower, the *gopuram* shaped as a cut-off triangle, is a symbol for the sluice. In the ancient South Indian civilizations, the surplus which made it possible to build and maintain these magnificent temples came from irrigated paddy cultivation (see, for example, Stein, 1980).

As we have seen above, the operation of the sluice requires a social division of labour with water-men as operators, and an administrative structure for deciding on the distribution of water, repair and maintenance, etc. In minor tank-irrigation this division of labour is internal to a village or, at most, to some neighbouring villages. But in the case of major tanks, systems of interconnected tanks, and river-irrigation, the technology calls for a division of labour and administration which transcends the single village to involve the State.

Another means of water control is the *kavalai*, which is the Tamil term for the device used for lifting water from the irrigation wells. One pair of bullocks and one man are needed to lift the self-emptying bucket, which is tied to the yoke of the bullocks by means of ropes. Such a team can lift water from a depth of 4 to 6 metres, and can irrigate at the most 2 acres, if they work for a full day. The labour intensity of the technique thus sets natural limits for its expansion. The *kavalai* also implies a social division of labour, but structured in quite another way than that described for the sluice. In the case of the sluice, the cultivator is one in a collective, confronted with a system of administration represented by water-men and other officials of the local community or of the State. But in the case of the *kavalai*, the individual cultivator is involved in a dyadic relation with one or two artisans, on whom he has to depend for the manufacture and maintenance of the *kavalai*. The wooden frame, the block, and the pulley are made by the village carpenter, and the bucket by the leather-worker, belonging in our area to the untouchable caste of the *Chakkiliyan*, a Telegu-speaking community.

The plough is also important, both materially and symbolically. It is an ard, which, despite its simplicity, works excellently under local agronomic conditions. In dry lands, the ard is a multi-purpose implement used for opening the soil, covering manure and seeds, row weeding and thinning, inter-cultivation between the rows of wide-spaced crops, etc. It functions well in dry lands since it does not penetrate too deep into the soil, which would increase evaporation and oxidation of organic matter and contribute to soil erosion. However, the advantages of the ard are not limited to dry cultivation alone. It is also used in wet cultivation for producing the slurry in which paddy thrives.

The plough is made by the local carpenter, but sometimes it is fitted with an iron tip, which brings in another specialist, the blacksmith. He also makes the short-handled spade which is a most important tool in digging field channels, making *bunds* for irrigated fields, and in preparing wet lands for cane and banana. He also makes the sickles used for cutting the sheaves of paddy, *sorghum*, and millets. These minor tools are possessed by almost everybody, in contrast to the major implements like ploughs, *kavalai*, and carts which are not everyman's property.

The pre-industrial technology which we have now described is characterized, first of all, by its simplicity, and, second, by being tied to a mainly local division of labour in which artisans are involved as suppliers of the means of production. Traditionally, a system of redistribution of the farm produce, locally called *sudanthiram*, was associated with this division of labour. The artisans and other specialists were remunerated with a customary share in the harvest. The system still functions in the dry area, while it is falling into disuse in the wet ecotype. In the former, most farmers pay *sudanthiram* to the carpenter, the blacksmith, the leather-worker, and also to the barber, the washerman, and the priest. But a cash component has entered into the system: *sudanthiram* at harvest is nowadays often complemented with a down payment in cash on delivery of goods or services from a local artisan.

Moreover, industrial technology has also entered the scene. Improved ploughs, for example, or metal buckets for the *kavalai* are industrial versions of old technology. Modern building technology, especially the technique of building in concrete, has vastly improved the traditional methods of irrigation: sluices are now built in concrete, and so are dams. Irrigation wells and tank-*bunds* are also reinforced with concrete.

But industrialization has also brought with it entirely new forms of technology. Well-irrigation has been mechanized. It is the first area in which human and animal labour power has been replaced by mechanical power on a large scale. The process started early in this century when the first diesel pump-sets were introduced in the area. But the scale was modest before electrification made an inroad from the late 60s onwards. Electricity has brought about a real revolution in the technology of lifting water. The new pumps are immensely effective and more so than the *kavalai*, so that larger areas can now be irrigated, and water can be lifted from greater depths with only a fraction of the labour that is needed in the *kavalai* irrigation system.

In 1979/80 slightly more than half of the well-irrigated area had been mechanized. In other words, while *kavalai* continues to be important, especially to the smaller cultivators who find difficulties in financing the investment in a pump-set, mechanized irrigation has continuously expanded.

With electrification, the farmer has been drawn into a national division of labour. The market is also an important mechanism incorporating the farmer into the new division of labour. It deserves to be stressed, however, that the division is not established by means of an automatic expansion of the market. The State has been actively pulling the farmer into the wider system. State agencies supply the electric current, and they sell it at strongly subsidized rates: farmers pay only 25–30 per cent of what it costs the Electricity Board to deliver the current (Guhan and Mencher, 1983, p. 1022n). Moreover, the State has given subsidized loans to farmers wishing to dig or deepen wells and to purchase pump-sets. Thus subsidies have been used as a means of spreading the new technology of well-irrigation, and, in the expectation of great profits, the farmers in our area have eagerly swallowed the bait.

Mechanization in agriculture is often made more or less synonymous to tractorization. But tractors are not very important in this area. There are ten tractors in the wet villages and five in the dry; these are mainly used for transport and not for ploughing. They are used to some extent in the last stage of threshing: instead of letting cattle trample the last stubborn grains out of the husks, farmers sometime hire a tractor to drive in circles on the straw. Tractors can be used for preparing dry land, but they are not very useful in wet lands because they are too heavy for the soft soil. Mechanical ploughing of wet lands can be made with a power-tiller or hand-tractor, as it is called locally; there are thirty to forty such machines in the wet villages.

Whether large or small, tractors replace bullocks as draught power, but compared to pump-sets they have so far had a limited impact in agriculture, and they are mainly important in the transport sector. Material which we collected from tractor owners indicates that tractors are not very lucrative as forms of investment. One reason for this is that, although State agencies give loans for the purchase of tractors, the rates of subsidy seem to be lower for tractors than for pump-sets and wells. There may have been some restraint in pushing for the mechanization of traction, since the labour displacing effects of this technology are of frightening proportions.

The new seed technology

Ordinarily, the new technology in Indian farming is associated with the so-called green revolution, i.e., with the new seed technology, and with the parallel adoption of chemical fertilizers and pesticides.

We have already quoted some figures on the spread of the new seeds: roughly 50 and 75 per cent respectively of the paddy area in the wet and dry ecotypes are under high-yielding varieties (HYVs). Of the remaining area, much is covered by improved varieties. Likewise, 90 per cent of the sugarcane area is covered with varieties developed in Coimbatore at the Agricultural University. Hybrid *cumbu* covers a substantial part of the irrigated area under this crop. The same can be said for chilli and groundnut.

For various reasons we have not been able to retrieve our data on the usage of fertilizers and pesticides, so we can only give some crude indications of the spread of these inputs. Our data indicate that chemical fertilizers are used for most crops by most farmers with one major exception: rainfed crops are usually only manured. Quantities vary a lot, from meagre amounts spread by poor peasants to the massive dosages used by commercially oriented farmers.

The list of pesticides used is impressive but somewhat frightening. Mentioned in their order of importance, we recorded the use of BHC 10 per cent, Ecalax, Dimacron, Dithane, Thiodan, Furadan, Endrine, Sevin, Rogor, Malathion, Folidal, Parathion, Agrosam, Hinoson, and others. Only DDT is missing, since it has been blacklisted, but, ironically, its more persistent relative, Endrine, and the much more acutely toxic Parathion are used.

As elsewhere, a considerable 'genetic erosion' has been the effect of the green revolution. Local varieties of crops have disappeared, and the genetic material in the cultured strain has become more uniform (see Mooney, 1983 and Arora, 1985). However, as we noted above, there is still a considerable variation in the genetic material, and purely traditional varieties are still used for most crops, although, undoubtedly, many of the traditional varieties have fallen into disuse.

Poisoning of the environment and of human beings is, of course, a potential danger with the spread of pesticides, especially if they are ignorantly and carelessly used, as they often are. Parathion, for example, although less persistent than DDT, is many times more toxic and may kill all the insects, mites, birds, and mammals in a field (Esbjerg, 1988, pp. 7–8). Of course, all substances used are not that dangerous. Malathion, for example, is a fairly harmless pesticide; it is not so toxic and it disintegrates quickly. We cannot document any toxic effects in our area, but we can refer to reports from other parts of India. So, for example, a large percentage of common food items sampled in one study contained toxic substances above tolerable levels (Venkateshwarlu, 1985, p. 102). Blood samples of Indians also show extremely high rates of DDT in the blood (Indian Council of Agricultural Research, 1977). Another well-known adverse effect of the usage of pesticides is the development of immune strains in pests, which, consequently, force a steady escalation of dosages and the constant introduction of new products.[11]

So far, the environmental effects of fertilizers are probably less. Elderly farmers complain that the fertilizers destroy the soil structure; there may be something to that, at least to the extent that fertilizers are allowed to substitute for manure, in which case the beneficial effects of the latter for soil structure and moisture retention are lost. On the other hand, there seems to be less risk of leakage of nitrates into the groundwater and of surface run-off because, as yet, the quantities of fertilizers used are modest. If there is a leakage from a paddy field, for example, it will merely benefit the downstream neighbours.

One could easily imagine the risk of nitrate poisoning in the groundwater in the dry areas and this could come to affect the drinking-water wells too. This risk of leakage into the groundwater seems, however, to be of a lesser degree given the high rates of evaporation. So far we have seen no reports to that effect, neither have we made field observations which point in that direction.

Another aspect of the seed revolution is that the hybrids cannot

[11] Peter Esbjerg has kindly commented on this section on pesticides.

be indefinitely reproduced by the farmers; they are not genetically stable and degenerate after a few generations. When the local varieties have disappeared, the farmers are irretrievably drawn into the market. They can no longer retreat into a subsistence economy, since the new farm system is dependent for its reproduction upon deliveries from the State and from industry. This, of course, is one of the most obvious social effects of the new biochemical technology: the farmer is irretrievably drawn into the international division of labour. Pesticides, for example, is a highly monopolized industry to a large extent controlled by a handful of multinationals of American and German origin (George, 1976, pp. 312 ff.). The same is true for fertilizers where multinational oil companies have great influence (see George, 1976). While both these inputs are largely manufactured in India, the technology is controlled by foreign companies. The same can be said for seeds, although the interests of private agribusiness have so far been less prominent in this sphere. One should not forget, however, the backing and support which the new seed technology has received from agribusiness: it has an obvious interest in the propagation of these seeds, since they require an increased use of its products. The new technology comes in a package, wrapped up as it were in fertilizers and pesticides.

Again, the State has not been inactive. The seeds have been developed in the Agricultural Universities and in the State Farms, and they have been multiplied by seed farmers growing on contract for the State. The spread of the new technology has also been encouraged by subsidization, both of prices and of credit.

Population and production

Before concluding this chapter let us compare the production of foodgrains in the two ecotypes with their population. This, of course, raises the question of the maintenance of the present population, and the possibility of any surplus grain production which can be 'exported' from these villages and thereby contribute to supplying the urban and industrial population.

From the figures on yields in Table 3.2 and on area under crop in Table 3.1, we can estimate the total production of foodgrains in the two ecotypes (see Table 3.3). The wet villages produce nearly 3000 tonnes of rice, while the dry villages produce less than half of that. But the latter villages produce more coarse grain than paddy, so that the total foodgrain produced in the two ecotypes is about the same, or slightly above 3000 tonnes.

As the reader might remember from the previous chapter, population is less in the dry villages or around 12,500 compared to the more than 17,000 in the wet villages (this includes the non-agrarian population). This means, then, that the per caput production is higher in the dry area than in the wet. This apparently contradicts our above image of the wet area as a highly productive one. What shall we make of the figures which say that the per caput production is 245 kg. in the dry ecotype, while it is only 173 in the wet area? Expressed, instead, in production per consumption unit (c.u.), the wet area appears to be deficit in foodgrains: it produces some 180 kg per c.u. while the subsistence norm that we will define in chapter 5 is 220 kgs. per c.u. Can we take those figures at face value?[12]

The heavy concentration on cash crops is the most important reason for the low per caput production of paddy in the wet area. As we have seen above, 55 per cent of the available land resources are devoted to the production of bananas and sugarcane. So if we continue by calculating the potential paddy production in the wet area, as what could be produced if the area at present under cane and banana were double-cropped with paddy, we get a potential production of 337 kg per c.u., which is nearly double compared to what is actually produced.[13]

Thus, there is considerable surplus production in the wet area. It is not in the form of paddy, but in the form of bananas and sugarcane. Expressed in rice equivalents, the surplus is about 50 per cent of the subsistence requirements of the local population. In

[12] Consumption units are calculated as follows:

— Children aged 0–3 are counted as 0.25 c.u.s.;
— children aged 4–7 as 0.50 c.u.s.;
— children aged 8–15 as 0.75 c.u.s.;
— adults aged 16–59 as 1 c.u.; and
— adults 60 and above as 0.75 c.u.s.

[13] This means a less intensive use of the land: two crops of paddy do not cover the land throughout the year as bananas and cane do. We also assume the same yield, although the very best land is devoted to banana and cane, which is why the estimate is conservative.

other words, these villages can certainly feed their population, including the non-agrarian part of it.

But it may still seem strange that in such a productive area as the wet one the actual foodgrain production, in contrast to the potential one, should be below the requirements, so that the wet villages should be forced to 'import' foodgrains from outside the ecotype in order to feed their population. However, we don't think the wet villages actually import foodgrains because the actual deficit is within the margin of error in the data. As can be seen in Table 3.3, the 95 per cent confidence interval includes subsistence requirements.[14] The production in the reference year may also be somewhat lower than normal, since there were some harvest failures due to the flooding caused by the 1979 monsoon. Neither can we rule out a certain respondent bias in the data: we have eliminated all cases of apparent under-reporting, but we have no means of sorting out slight under-statements. So, mean yields are probably somewhat higher than our estimates. Local paddy production in the wet ecotype is probably enough for local needs, but there may not be much of a 'net export' of paddy from our sample area. And, to repeat, the main reason for this is the heavy concentration on cash crop production.

In the dry area, on the other hand, there is apparently a surplus of some 60 kg. of grain per consumption unit, but the subsistence norm of 220 kg. is within the confidence interval so the difference is not statistically significant. Again there is a certain respondent bias so, all in all, we would think that there is a slight surplus in the dry villages too. Here the production of cash crops other than grain is fairly marginal; it would add only a few per cent to the surplus of grains if the area under chilli and groundnut were converted to coarse grains.

It might seem surprising that the surplus production in the dry villages should be so modest, especially in view of the massive investments in well-irrigation. But as we shall see later in this book, those investments have not been very profitable, and the cultivators find it difficult even to pay back the heavily subsidized loans and the electricity bills. Most of them would not have managed to finance the investment on commercial terms.

[14] The interval is quite broad due to a high inter-village variance: one of the three sample villages has quite a high production per c.u. (198 kg.), while the other two are very low (111 and 107 kg, respectively).

TABLE 3.3

Total Production of Foodgrains per Caput and per Consumption Unit, by Ecotype*

Actual production	*Ecotype*	
	Wet villages	*Dry villages*
(1) Rice, total production, kg.	2,948,108	1,358,845
(2) Coarse grains, total prod., kg.	54,991	1,726,224
(3) Total foodgrain prod., kg.	3,003,099	3,085,069
(4) Total population	17,395	12,575
(5) Production per caput, kg.	173	245
(6) Total no. of consumption units	16,780	11,062
(7) Production per c.u.	179	279
(8) 95% confidence interval around (7)	83	61
Potential production		
(9) Present paddy area, acres	4,356	
(10) Potential paddy area	8,264	
(11) (10) divided by (9)	1.9	
(12) Potential foodgrain prod. (calculated from (11) and (1) and (2))	5,656,396	
(13) Potential prod. per caput	325	
(14) Potential prod. per c.u.	337	

* Row (1): Paddy has been converted to rice by the factor 0.7.
Row (2): The husk content of the coarse grains has not been deducted here.
Row (4): This is both agrarian and non-agrarian population.
Row (6): When calculating the number of consumption units, the age composition of the population has been taken into account, on the rough assumption that the mean number of consumption units per household is the same for the non-agrarian population as that for the agrarian one.
Row (10): The present paddy area plus the area at present covered with banana and sugarcane double-cropped with paddy.

Despite the investments, the dry area remains dependent upon non-agricultural trades to supplement its meagre agriculture. Since their colonization, the plains have depended upon animal husbandry, lumbering, quarrying, and cottage industries, and this dependence has not decreased noticeably by the expansion of well-irrigation. This is probably due to a lack of incentives: the farmers complain and agitate about unremunerative prices. One manifestation of this lack of incentives is the small area under non-foodgrains, and the large fallowed areas (areas which were drawn into cash crop production earlier, for example, during the groundnut boom in the

30s). Another way of putting this point is that, if the investments in well-irrigation should be worthwhile, the untapped potentials in terms of yields must be tapped. As the low per acre yields in the dry area indicate, there are considerable such potentials.

Summary and conclusion

The two ecotypes, the wet and the dry, are examples of two different adaptations to the basically limiting factor in this region, namely the disproportion between rainfall and evapotranspiration, which makes for a water surplus only during a small part of the year. There is a deficit for the rest of the year so that intensive agriculture comes to depend upon storage of water, either in open-air reservoirs or underground.

Agriculture in the dry ecotype is of two types. First, we have extensive dry cultivation which is an adaptation to the rainfall regime by means of drought-resistant crops capable of economizing on water (like *sorghum*, various types of millets, and pulses). But these crops yield very little per unit of land, and they only complement the second type of agriculture, which is the intensive cultivation of lands irrigated by tanks, or wells, or both.

In irrigated lands the crop-mix is partly the same, although they yield more than when they are rainfed. But the farmers also grow more demanding crops, especially wet paddy. The dry area is crucially dependent upon these systems of water management to maintain its population. We have found, however, that both systems show symptoms of crisis: the tank system due to deficient management, the well system due to a possible over-exploitation of groundwater resources.

The wet ecotype depends upon the 'import' of water from areas which are more favoured in terms of rainfall. Being located at the head-end of the Kaveri system of irrigation, our wet villages are extremely privileged: almost all lands are irrigated from canals, and most receive water for ten to eleven months a year. This extends the crop-year, from the two to three months dictated by the local climate, to almost a full year. The crop-mix is dominated by extremely 'thirsty' crops like paddy, banana, and sugarcane. The latter are also long duration crops well suited to the long crop-year of the wet area.

The most acute problem affecting these agrarian ecosystems is the deficient water management. The problem is especially severe in the dry area, but it affects the wet ecotype as well. It has a series of consequences for the ecosystems, which we will try to summarize. Since such a large part of the area is used, either for cultivation or for grazing, the land is deprived of the protection of a multilayered vegetation which is characteristic of the natural ecosystem. Thus, the capacity of the vegetation and the soil to absorb moisture decreases; the surface run-off increases, and so does the rate of soil erosion.

Another aspect of this problem is the dilapidation of tanks, because these are strategic for the management of water. When the run-off increases in the feeding areas, tanks get more prone to siltation and to overflowing, which increases the downstream run-off. Also, the tendency towards over-exploitation of groundwater is related to the decay of the tanks, since the insecure and limited supply of tank-water increases the pressure on groundwater resources. Moreover, soil erosion and water run-off imply a lower degree of recharge of the groundwater.

Salinization of flooded lands, which is a widespread problem in the wet area, is also a consequence of poor drainage. These problems are, of course, closely related to the pressure on the land, which leads to the expansion of agricultural and grazing lands. And deforestation is the other side of the coin. This does not mean that the absolute pressure on resources is too high, at least not in our view. But it does mean that the systems of soil conservation and water management are not tallied to this pressure. In order to prevent erosion and flooding, both of agricultural lands and of sites of habitation, the system of drainage must be adapted to the increased run-off. The drainage system is not capable of 'swallowing' the enormous concentration of rainfall in a few days of heavy downpour. Its capacity is further impaired by siltation, erosion of *bunds*, embankments, etc.

The green revolution has had far-reaching impact on agriculture in terms of the introduction of new varieties, and a consequent reduction in the total number of varieties grown—a phenomenon which has been termed 'genetic erosion'. It has also led to a dramatic increase in the use of industrial inputs: fertilizers and pesticides. The former have not so far led to any visible deterioration in the environment, but the profuse spraying of pesticides by farmers who are not well-informed about the risks is likely to lead to damages on the ecosystem and on human beings.

4

Changing Land Relations

In the preceding chapter we defined two different ecotypes: the wet and the dry. They represent different strategies for adapting to the basic ecological constraint of the area, water scarcity. Rainfall exceeds evaporation and transpiration for only about two months of the year. Intensive agriculture requires an extension of the cultivation season beyond the period of natural water surplus. This can be achieved by storage of water, either in open-air reservoirs, or by letting it percolate into the groundwater. The dry ecotype depends upon these strategies: about half the gross cultivated area has been brought under irrigation, mainly from wells but also from tanks. The remaining area is rainfed. In the wet area, on the other hand, almost all of the land is irrigated, but this intensity has been achieved by another method than that used in the dry area, namely, river-irrigation. This is a different strategy for overcoming local water scarcity—i.e., importing water from areas with more abundant rainfall. As we have seen, this basic diversity makes the two ecotypes different on almost every account. When we move over to the analysis of the relations of production we will see that this ecological diversity recurs here as well.

Despite their disparity, the two ecotypes have been affected by the green revolution: in both of them the new high-yielding varieties, mainly of paddy, are extensively cultivated, and with them the whole package of fertilizers, pesticides, and improved methods of irrigation are in use. The spread and mechanization of well-irrigation in the dry area is another facet of this revolution. This leads to another question which we will answer: has the changing technology affected the relations of production, and has it had a different impact in the two ecotypes?

Chapter 4 is the first of the three chapters dealing with the relations of production. Here we will analyse land relations, i.e., the systems of landownership and tenancy. We will begin by bringing out the different distributions of landownership in the two ecotypes, and we will continue by analysing the lease markets in the wet area and the changes brought about by tenancy reform and a tenants' movement which has been active since the late 40s. In the final section we will go deeper into the changes in the distribution of land tenure by analysing data on intra-generational mobility in landholding. During the course of the analysis we will examine two propositions frequently encountered in the literature: (*a*) that Indian land reforms have had negligible effects on the distribution of ownership and on tenancy relations; and (*b*) the belief that the new technology, i.e., the green revolution, will increase the rates of proletarianization and polarization of ownership structures.

Landownership

Private ownership of land in contemporary India gives the owner of a piece of land the rights to use and abuse it as he pleases, and the right to mortgage and sell it. Ownership rights are only to a very small extent circumscribed by the superior rights of the state, for example, to expropriate the land. One limitation, however, is the land reform legislation, the local effects of which will be studied below. Its stipulation of a maximum ceiling of landownership by a family limits the rights to accumulate land, and likewise the tenancy legislation limits the rates of rent which are permitted by law. We will return to the question of the impact of this legislation on land relations in our area.

Private property rights have a colonial and even precolonial history. It has been argued, for example, by Kumar (1985) that the concept of landed property in the medieval Chola kingdom fulfilled all criteria of private property, and that the frequent sales, purchases, and donations of land met with in the epigraphic sources is but one indication of this. It should be pointed out, however, that these transactions seem to have been, not in land as such, but in shares (*pangu*) of the land jointly held by the *mirasidars* of a village community. Such village communities were prevalent in one of our ecotypes, namely, in the wet valley areas.[1] Thus, even

[1] Bandopadhyay (1978) gives a useful description of forms of landownership and their regional distribution in Tamil Nadu.

though private property has a long history in the valleys, private property in *land*, as opposed to *land shares* is on the whole a colonial creation.

There is an obvious contradiction between, on the one hand, private ownership of land shares and the superior rights of the village community, for example, its rights to periodically redistribute the land between shareholders. This contradiction obviously predates colonialism, but under the British administration it was made acute by the colonial policy which was hostile to the communal forms of ownership. So, for example, shareholders in *mirasidari* villages who refused to participate in land redistribution were supported by the colonial courts, which, then, contributed to the transformation of the object of landownership from land shares to land as such. Today, there are few traces of these old forms of communal tenure but in one of our wet villages, the village council (*sabha*) still exists, and people still know the number of shares that they hold in the communal land, although that land has not been redistributed for generations. A similar evolution occurred in the dry plains where a system of lineage and clan control of land was gradually eroded and was replaced by private property (Baker, 1984, pp. 40–84). As in the wet villages here too there are a few traces of the earlier system today.

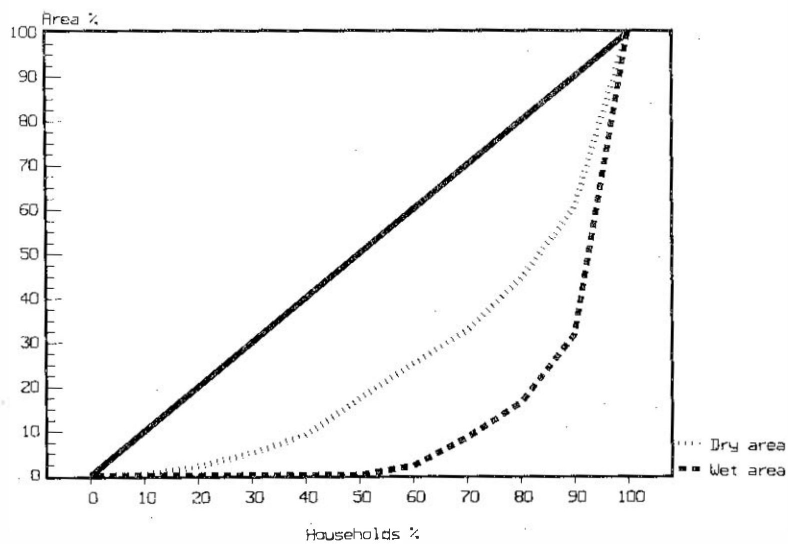
Legally, private property in land is mainly individual: in the official land registers almost all land is entered in the names of individual owners. The law recognizes joint and corporate ownership, but very little land is registered as such, although there is at least one important form of corporate tenure: temples and other religious institutions own a great deal of land. In our area, the temples own mainly dry land. Among our sample households, most of the leased-in dry land is owned by temples. Since such lands yield very little surplus, the rents are not very high.

In reality, as opposed to the law, ownership rests with the family-household and not with individuals, which means that there is an important discrepancy between official and real ownership. For this reason, the official land registers and the statistics based upon these are not very useful in studying the distribution of landownership. As we have shown elsewhere, they give a misleading picture of the real distribution and of the differences between the ecotypes (cf. Athreya et al., 1985c and chapter 3).

If one wants to picture the distribution of landownership one is constrained to proceed, as we have done, by trying to extract information from each household in a given population or sample. We have described our methods in an earlier chapter; let us now study the results. In Table 4.1 we have given the distribution among five size-classes in the two ecotypes, and in Figure 4.1 we have drawn a Lorenz-curve based on these data.

FIGURE 4.1

Distribution of Own Land Among Landowners by Ecotype



As the reader will recall from chapter 2, our sample frame is the agricultural population defined as those households who are in some way involved in agriculture, either as landowners, as cultivators, or as labourers. The first thing to note about this population is that, according to our sample data, 52 per cent of the households in the wet area and 4 per cent of those in the dry area do not own any land at all. This is the first indication we get that the diversity of the two ecotypes is reflected in the relations of production. As we shall see, the fantastic rate of landlessness in the wet area is

TABLE 4.1

Distribution of Own Land Among Households by Ecotype

Size-group (acres)	*Ecotype*							
	Wet villages				*Dry villages*			
	Households		*Area (acres)*		*Households*		*Area (acres)*	
	N	%	*N*	%	*N*	%	*N*	%
0	1748	52	0	0	91	4	0	0
0.01– 2.49	1209	36	1318	25	726	34	884	9
2.50– 4.99	391	12	1378	26	544	25	2091	18
5.00– 9.99	2	0	17	0	478	22	2961	26
10.00–24.99	12	0	202	4	257	12	3686	32
25.00+	15	0	2335	45	42	2	1768	16
Total	3377	100	5250	100	2138	99	11390	101

Information missing: Ten sample cases or 3 per cent.

combined with frequent share-cropping, but also with a high level of proletarianization. In the dry area, on the other hand, the low level of landlessness signals quite a different class structure.

Historically, the background of landlessness in the wet area is, of course, the *mirasidari* system where *mirasi* rights were a privilege of the *Brahmins* and other high castes, and where the lower castes and especially the untouchables were denied the privilege of landownership. In the dry area, on the other hand, land did not even command a price as late as the nineteenth century (Baker, 1984, p. 139), and it is still fairly cheap.

The relative distribution of land among landowning households also differs considerably between the two areas (cf. Fig. 4.1). In the wet area the distribution is extremely skewed: in addition to the landless one-half of the population, a third are small landowners in the size-class below 2.50 acres. The landless and the small landowners make up nearly 90 per cent of the agrarian population, but together they control only 25 per cent of the land. Among the remaining 12 per cent of the households, the distribution is also very unequal: almost all of these households are middle-sized landowners with between 2.50 and 5.00 acres; they are relatively privileged in controlling 26 per cent of the land. There is very little land and few households in the next two size-classes of 5 to 25 acres. The stark inequality lies in the range of above 25 acres, where a miniscule number of very big landowners (not even 1 per cent of the households) control 45 per cent of the area.

Now it should be kept in mind that ours is a survey, not of the land but of the agrarian population in our sample villages. One important category of landowners do not belong to the sample frame, namely, those residing outside the sample villages. The important category here is the absentee landowners in the proper sense of the word, i.e., those residing in far away places who do not cultivate their land themselves and have to rely either on agents or on tenants. As we shall see below, absentee landlordism is quite frequent in the wet area.

As far as the *resident agrarian population* is concerned, the picture is clearly one of extreme polarization in the ownership structure: half the area is concentrated in a small number of very big holdings, while the other half is fragmented into small ones. In addition to this polarization, there is a high rate of landlessness.

Many of the big landholdings in the wet area are above the maximum size permitted by the land ceiling legislation,[2] but the law is evaded by registering the land in the name of several individuals. Thus, the effects of the ceiling legislation are not visible in the distribution of land, and only small areas have been taken over. But as we will see below, the ceiling legislation has in fact had an impact on the land distribution, although it is not visible in the data so far presented.

The picture is different in the dry area. The low rate of landlessness goes together with a less unequal distribution of land. The distribution is far from perfectly equal, but compared to the wet area it is striking that the concentration to the biggest size-group (above 25 acres) is moderate (16 per cent of the area). Most of the land (76 per cent) belongs to middle-sized owners (2.5 to 25 acres). The land ceiling legislation is hardly relevant in the dry area.

Tenancy

Private landownership also gives the right to the landowner to decide on the cultivation of a piece of land. But as we shall see below, this right has been limited by tenancy legislation. In contrast to the land ceiling legislation, which also is a restriction of private landownership, tenancy reform has had an immediately visible effect on the status of the tenants in the wet area.

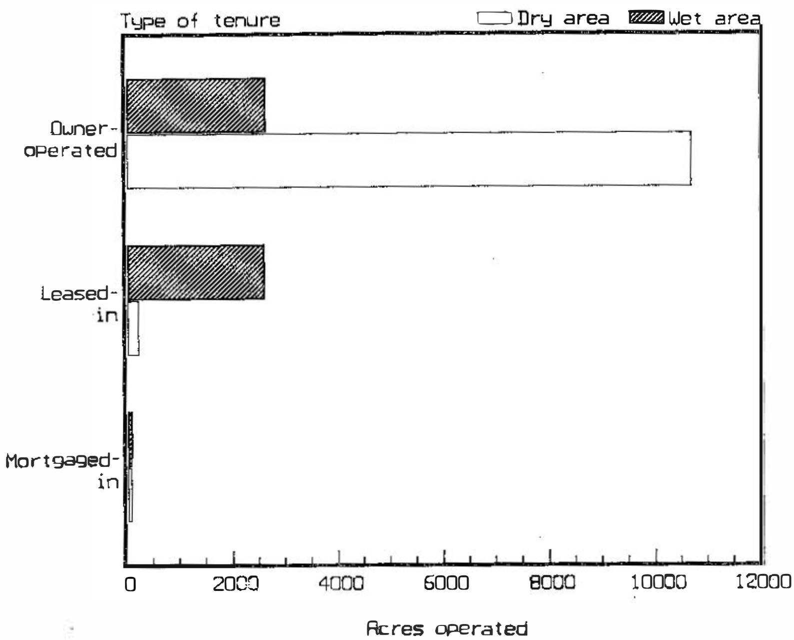
Leaving aside the option of fallowing, a landowner may choose to cultivate a piece of land himself, or he may lease or mortgage out the rights of cultivation. Statistically, these alternatives are best studied by shifting the focus from the distribution of owned land to that of area operated. If we tabulate this area by type of tenure, we again get a contrasting picture between the two ecotypes (see Fig. 4.2).

In the dry area almost all land is owner-cultivated; tenancy is rare, almost as infrequent as mortgaging. These facts, taken together with the comparatively less skewed distribution of landownership and the low rate of landlessness, begin to make the dry area look like one of predominant peasant cultivation. We will see below if this impression stands to test. In the wet area, on the other hand,

[2] The land ceiling in Tamil Nadu is 12 'standard acres', which in our wet area would correspond to the same amount of canal-irrigated *nanjei* land.

FIGURE 4.2

Area Operated by Type of Tenure and Ecotype



Information missing: Twenty sample cases or 6 per cent.

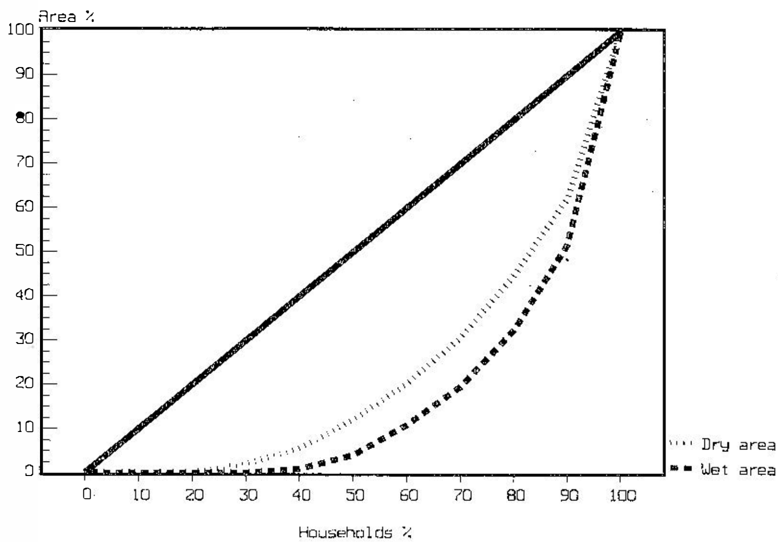
the unequal ownership structure goes together with a high rate of tenancy: roughly half of the operated area is cultivated by tenants. They lease-in land from big landowners, and this makes the distribution of the operated area less unequal than that of owned area. The Lorenz curves for the ecotypes now lie closer together (see Fig. 4.3).

But, between the stark inequality of the ownership structure and the less unequal distribution of the operated area lies, as it were, a production relation through which much of the surplus is redistributed from tenants to landowners. What does this relation look like?

Historically, the *mirasidars* of the wet area were never peasants, since they never worked on the land. On the contrary, there was

FIGURE 4.3

Distribution of Operated Area by Ecotype



and is an aristocratic streak to this class symbolized by the taboo for the most important among them, the *Brahmins*, on touching a plough. The *mirasidars* were thus dependent on a hierarchy of subordinates to till the land they owned. We need not go into details on the precolonial arrangements but merely note that under British rule there evolved a structure of share-cropping in which the intermediate functionaries lost their positions, like the numerous *kavalkaran* who in our area usually were of the *Muthuraja* caste.

Since Independence, Tamil Nadu has enacted a tenancy reform which aims at protecting the tenant, and at reducing and freezing the rent. Unlike other areas of the State or, for that matter, in South Asia as a whole (Herring, 1983, ch. 2), this reform has to a certain extent been enforced in our wet area. From the 40s to the 60s, the lively tenants' movement was politically supported by the

Communist Party and the emerging Tamil nationalist party, the *Dravida Munnetra Kazhagam* (DMK). One member of the Legislative Assembly for the DMK was elected from Kulithalei constituency, backed by the tenants' movement. Thanks to the backing of the DMK, many tenants managed to get their lease-holds registered and their rents regulated. Though it is still active, the movement has since then weakened; one reason, of course, being that while many tenants have already received protection, others have been evicted, and yet others have acquired their own lands. The movement has also lost its political support from above, so that tenancy cases today move much more slowly in the courts. Still, the achievements have been substantial: we estimate that 46 per cent of the leased-in area is under registered leaseholds.

Two preconditions for this relative success are apparent, namely, the mobilization of the tenants, and the support offered to their movement by important political forces. The absence of mobilization and support from above may explain the failure of the reform elsewhere. These factors are perhaps more important than others often referred to, like the traditionalist orientation of the tenants, and the sabotage of the reform by the bureaucracy.[3]

Traditionally, we can speak of two forms of tenancy: *varam*, where both inputs and outputs are shared between the landlord and the tenant and *kuthagai*, where the rent is fixed. In the former case, rent is naturally in kind, but modern landlords now and then permit tenants to pay a cash equivalent of the rent. Likewise, *kuthagai* is often paid in kind rather than in cash. Interestingly, *kuthagai* completely dominates today: according to our estimate, 97 per cent of the area leased-in is under *kuthagai* contracts. The 3 per cent under *varam* is leased-in by poor tenants. We found some cases of rack-renting among these share-croppers, including cases of the notorious *al-varam* where the landlord supplies all the means of production and the tenant contributes only his family labour, and where the crop is shared in proportions of one-twelfth to the tenant with the rest going to the landlord. Yet, our data seem to indicate that the most exploitative forms of tenancy have largely disappeared. This is a significant achievement on the part of the tenants' movement.

[3] This argument is supported by the elaborate analysis of land reforms in South Asia made by Herring (1983).

One might perhaps have expected that cash payments of rent would have gone hand in hand with the predominance of fixed rent, but that is not the case. Cash lease is only slightly more frequent than kind lease.

Not unexpectedly, many landlords are absentees: 39 per cent of the leased-in area is owned by landlords living in towns and cities, mainly in Tiruchy District, but often also in places farther away. Many of the landlords are of course *Brahmins*: they own about two-thirds of the area leased-in. Other high castes are also important, like *Chettiar* and *Pillai*. But the second most important caste is the previously mentioned *Muthuraja*, in the middle of the caste hierarchy, a caste that counts many poor peasants and agricultural labourers among their ranks.

Let us go a little more into detail on the effects of the tenancy reform. As we have seen, the effect of tenancy reform has been a partitioning of the lease-market into a 'white' and a 'black' one. The former is characterized by lowered and regulated rents, and by security of tenure. Indeed, the 'white' tenants are so secure in their position that one meets with cases of usufructuary mortgaging of leased land. This indicates that the creditors regard such land as equally good a collateral as owned land.

One interesting question concerns the relation between the two lease-markets: has the unregulated 'black' lease market been influenced by the regulated one, so that rents have come down there too? Our data indicate that this could be the case (see Fig. 4.4).

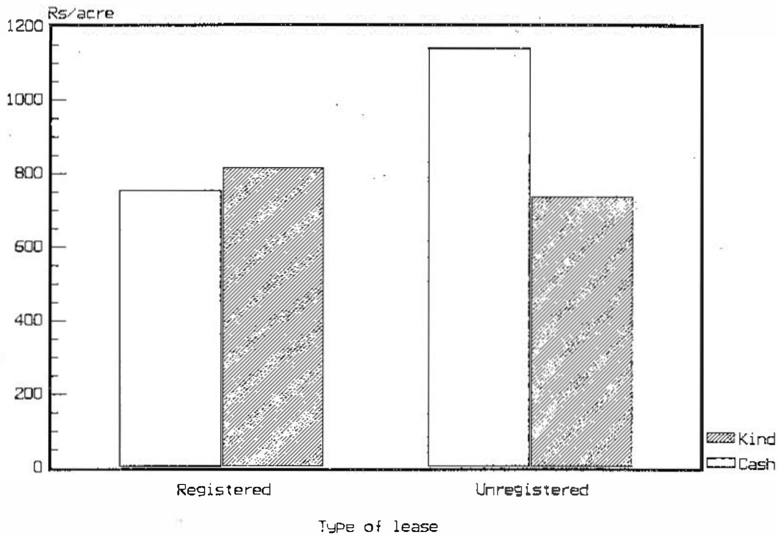
As can be seen from the figure, the average rate of rent computed on the plot level data is somewhat less than 800 rupees per acre. In three of the four bars of Figure 4.4, the average rates are close to the overall mean, and only one cell deviates: in the unregulated lease market the cash rent seems to be higher than the average. This result is not unexpected because capitalist farmers cultivating banana and sugarcane are active in this part of the lease market. Their high profits enable them to pay higher rents than those paid by ordinary poor or middle peasants cultivating paddy.[4]

How do these rates of rent compare to yields? Referring back to

[4] The difference, however, is not statistically significant. Does that contradict our statement that capitalist tenants are active in the unregulated lease market? Obviously not, but it would mean that their presence has not left a statistically significant impact on our estimate of the mean rate of *kuthagai* in this market.

FIGURE 4.4

Cash Value of Annual* Kuthagai *Payable per Acre of Leased-in Irrigated Land (Wet Area)



Note: The number of missing cases is twenty-two, or 20 per cent. The difference between the rates of cash *kuthagai* paid in the registered and unregistered lease-markets is not statistically significant.

the average yields quoted in chapter 3, we note that the average paddy yields in the wet area are some 900 to 1100 kgs. per acre, and if we count with a farm price of Rs. 2.00, we get rent rates around 40 per cent of the gross value of production. However, since most land is double-cropped, the annual rates would be lower. More precise data are given in Table 4.2.

The total value of farm production used for calculating the rates of rent in Table 4.2 is defined so as to also include income from, for example, animal husbandry. Therefore, the rates of rent in the Table underestimate the rate of land rent. But animal husbandry is not important enough to negate the conclusion that can be drawn from the Table, namely, that rates of rent seem to be lower than the infamous 50 per cent traditionally paid by share-croppers. Moreover, this result seems to hold not only for registered leaseholds, but also for unregistered ones.

TABLE 4.2

Proportion of Rent Paid to Total Value of Farm Production by Tenurial Status (Wet Area)

Tenurial status	*Proportion of rent paid to total value of farm production*
Pure tenants	0.32
Owner-cum-tenants	0.20
Overall mean	0.26

Note: The table builds on forty-eight sample households (twenty pure tenants). Four cases, or 8 per cent are missing. A 95 per cent confidence interval around the mean for pure tenants comes to 0.32 +/− 0.09.

We have already attributed this result to the tenants' movement, and its success in the struggle against the landlords. The differences between our three wet sample villages reinforces this interpretation. The percentage of area under registered leaseholds varies from a maximum of 83 per cent in one village to a minimum of 13 per cent in another. In the latter, the landlords put up vigorous resistance against the tenants: they evicted all recalcitrant tenants, and sold much of their leased-out lands. Many tenants had to pay a heavy price even though they might not have been supporters of the movement; they were evicted from lands that they, in many cases, had cultivated for decades. Data which we discuss later indicate that nearly 60 per cent of the households who are or have been tenants have lost on the average nearly an acre of leased-in land in this generation. This, in a way, is the price paid for the rent reduction achieved by the tenants' movement.

Two more questions could be raised about the tenants' movement: was it targetted more against absentee landlords than against resident ones? and, did it aim more against *Brahmin* landlords than others? These questions are relevant, since it is often claimed that, first, the absentees would not be able to muster the same forces of extra-legal pressure against the tenants as the landlords residing in the village. Second, since the tenants' movement was backed by the Dravidian Nationalist Party, which is often said to have been anti-*Brahmin* rather than anti-landlord, it could be expected that it would have been easier for a tenant with a *Brahmin* landlord to achieve registration of his lease.

Only the first of the above hypotheses is borne out by our data: 60 per cent of the area under registered leaseholds is owned by absentee landlords. Of the unregistered area, on the other hand, only 21 per cent is owned by the absentees.[5] This would support the view that the absentees found it more difficult to counteract the force of the tenants' movement. On the other hand, the percentage of *Brahmin* landlords does not differ between the two lease-markets. But from this one cannot conclude that *Brahmin* landlords fared as poorly or well as those of other castes, because the situation *ex ante* is not known.

To summarize, our analysis of the lease markets in the wet area has shown that about half the area is under registered leaseholds. Moreover, there seems to have been a general reduction of rents also in the unregistered lease-market so that rack-renting today is relatively infrequent.

Changes in the distribution of land tenure

We started this chapter by giving a snapshot, as it were, of the distribution of landownership in the two ecotypes. We continued by giving a more dynamic analysis of the systems of tenancy and their transformation as a result of land reform and the tenants' movement. In this section we will proceed in this dynamic vein by analysing the changes in the distribution of land tenure over the last generation.

In our survey we collected data on the land tenure of our sample households. We also made a retrospective enquiry asking about the land tenure of the fathers and grandfathers of our respondents. Unfortunately, the coverage of the data on ancestors was too poor, but other data have proved useful, namely, those on the amount of land inherited by our respondents from their fathers, and the data on what they have acquired or lost since they established their own households.

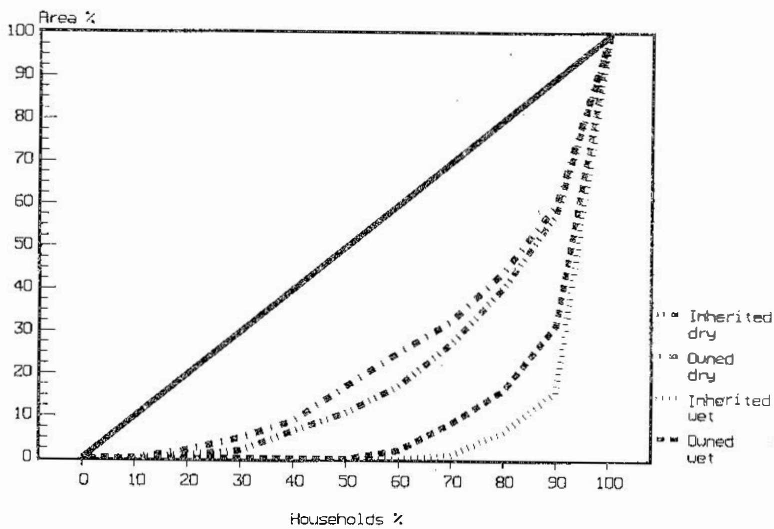
[5] These statistics are based on data for 110 plots of land owned by our sample households. Information is missing for 16 per cent of these plots. The difference is statistically significant at 1 per cent level (one-tailed test).

Comparing own and inherited area

Let us begin simply by comparing the relative distribution of inherited land with that of owned. Area inherited is a retrospective datum, and it does not refer to a fixed but to a varying point in the past. Depending upon the age of the household, it may vary from a recent past to a maximum of, say, fifty years. We have not recorded the date when ancestral holdings were partitioned, so we have to make do with this rather crude variable.

Figure 4.5

Relative Distribution of Owned and Inherited Area by Ecotype



The relevant data are given in Figure 4.5. Studying the Lorenz curve for the dry area we note that the distribution of owned and inherited area are remarkably similar. There is, however, a slight tendency towards ***deconcentration of holdings***,[6] brought about by a

[6] This tendency can be tested with data from Table 4.3. See below.

centripetal tendency at both ends of the distribution. While in the lower end 14 per cent of our respondents started out as landless, only 4 per cent are landless today. Many of these small landowners do not cultivate their land due to lack of other means of production and of financial resources. With access only to the synchronic data, one could have been tempted to interpret this fact—that many small landowners cannot cultivate their land due to poverty—as evidence of an ongoing process of proletarianization, but with access to the diachronic data—that is, when we know that most of these landowners started out as landless and have recently acquired land—we are driven towards another interpretation. Instead of proletarianization we seem to have a case of 'peasantization'.[7] As a part of this process, many landless people seem to realize their ambitions of getting land on their own. Of course, many questions arise, such as: Where do they get the money to buy land with; and where does the land come from? The only plausible answer to the first question is that money must have been saved from non-agrarian sources of income. As we have noted elsewhere, the dry ecotype is not specialized in agriculture; other trades are important complements to farming. These other trades could have provided opportunities for many of our respondents to save enough to buy some land. Another savings opportunity is migration, which has been quite heavy in Tiruchy District, particularly from the dry areas. Some migrants return or transfer their savings to their families and relatives who may buy land in the name of their relatives. As we will see, they have mainly bought dry land, which seems to have become less attractive as a result of the development of irrigation.[8]

As is evident from the figure, the big landowners have lost some land. One possibility is that the big landowners have sold out dry land to landless households. If that is the case, the deconcentration would amount to very little in terms of real assets. If the big landowners have developed their irrigated holdings in the same process as they have disposed of parts of their dry land, an increased concentration of real assets may go hand in hand with a deconcentration in landownership.

We will go deeper into this tendency below, but already at this

[7] But not 'peasantization' in any straightforward sense of the word, as the ensuing analysis will show.

[8] The substantial fallowing of dry land brought out in chapter 3 would seem to indicate that dry land is less attractive today.

point we could formulate the hypothesis that the recent development of productive forces in the dry area (the expansion of well-irrigation, etc., described in chapter 3), has not (yet?) had any noticeable impact on the overall distribution of land. While this is not necessarily inconsistent with increased differentiation of the peasantry, it does suggest that proletarianization need not be an automatic consequence. In fact, our data would seem to indicate low rates of proletarianization and polarization in the recent past. Would this contrary hypothesis stand a more detailed analysis of our diachronic data? Before proceeding to answer this question let us have a look at the comparable data in the wet ecotype.

In the wet area, the difference in the distribution of owned and inherited land moves in the same direction as in the other ecotype, but the difference is much more dramatic. At first instance one might expect the same processes to lie under the redistribution of land. This, partly, is also the case. So, for example, there is evidence of a process of 'peasantization': the percentage of landless households has decreased from 64 to 55 per cent. But, keeping in mind the high rate of tenancy in the wet area, this may also be the result of landless tenants buying their rented land from landlords frightened by the land reform.

At the other end of the scale, the very big holdings (above 25 acres) have decreased their share from about 50 per cent of the total area to about one-third. It is reasonable to interpret this pronounced deconcentration in the wet area as the result of the land reforms that we described in the previous section. Landlords have sold out large amounts of land under the threat of land reform. If the data in Figure 4.5 are valid, it would seem that these estate lands have been acquired, not only by the capitalist farmers who are so prominent in the wet area, but also by small landowners and poor tenants.

Now, it must be emphasized that these interpretations of the data in Figure 4.5 are merely hypotheses. Alternative interpretations are certainly possible. Moreover, we have not carried out any statistical tests on the data in Figure 4.5. This as well as the more detailed analysis will be performed in the following sections, where we will try to substantiate the sketchy analysis made so far.

Gross mobility in the ownership structure

The above data pertain to net mobility, i.e., they are the net result of many counteracting processes of upward and downward mobility.

A study of *gross mobility* may shed further light on changes in the ownership structure.

In Table 4.3 (and Fig. 4.6 which summarizes this Table), we have worked with area gained/lost, a variable defined as equal to the area inherited minus the area presently owned. This allows us to classify households as *upwardly mobile*, if they own more land than they have inherited, or as *downwardly mobile*, if they own less than inherited, or as *stable*, if area owned equals area inherited. We have also broken down the area gained/lost by size-class of inherited area so that we can study the amounts of land involved in these processes of mobility.

Studying Table 4.3 we see that gross mobility has been higher in the dry area than in the wet: in the former, two-thirds of the households have been mobile. Thus a high rate of mobility goes together with only a slight tendency to deconcentration, as noted above. That is, upward and downward mobility have to a large extent netted each other out. The reverse seems to hold true for the wet area where a lower rate of mobility has had a marked effect on the relative distribution of holding.[9]

Looking first at the rate of mobility, defined as the percentage of households who have been mobile (either upwards or downwards), it seems to be positively correlated with area inherited. That is, the percentage of mobile households seems to increase when size of inherited area increases, but the correlation is far from perfect and there are some exceptions to the general tendency: the correlation is statistically significant for the wet villages, but it is not significant for the dry ecotype.[10]

The most immobile households appear to be those in the wet area which started out as landless: seventy-eight per cent of these remain landless today. This contrasts with the dry area, where the landless are one of the exceptions to the general tendency. Here

[9] The difference between the proportion of stable households in the two ecotypes is significant at 0.1 per cent level.

[10] The correlation between size of inherited area and rate of mobility cannot be tested with the methods developed in chapter 2. But in that chapter we also developed an approximate method for testing other statistics than means and proportions. This method increases the critical value of a test variable by taking into account the design effect of the sample. With this method we can approximately test the correlations (Kendall's tau(c)) between rates of mobility and size-class of inherited area. The results are as follows:

nearly 70 per cent of those who started out as landless have moved upwards in the ownership structure.

In the dry area the least mobile group is apparently not the landless but those who started with very small holdings (0.01–2.49 acres). In the wet area, the corresponding group does not, however, stand out as very immobile.[11] But it is noteworthy that what little mobility there is among the very small holdings is predominantly upwards. In the dry area the members of the next size-group (2.50–4.99 acres) also tend to move upwards. But five acres constitutes a breaking point in the dry area; above this size mobility tends to be downward. In the wet area, the corresponding breaking point is 2.50 acres above which limit mobility tends to be downward. The centripetal tendency around these breaking points is statistically significant.[12] Thus there is a clear tendency in both ecotypes: above a certain breaking point mobility tends to be downwards.

Switching now to the last two columns of Table 4.3 we can study the amounts of land involved in these transactions. We see that in the wet area the mean area owned is 0.11 acres more than the area inherited and that totally the households in our three villages have

Ecotype	*Variable*	*tau (c)*	*Significance*
Wet	Rate of mobility	0.44	0.1%
Wet	Rate of upward mobility	−0.52	0.1%
Dry	Rate of mobility	0.19	5%
Dry	Rate of upward mobility	−0.51	0.1%
Dry	Rate of mobility (irrigated land)	0.28	1%
Dry	Rate of upward mobility (irrigated land)	−0.39	1%

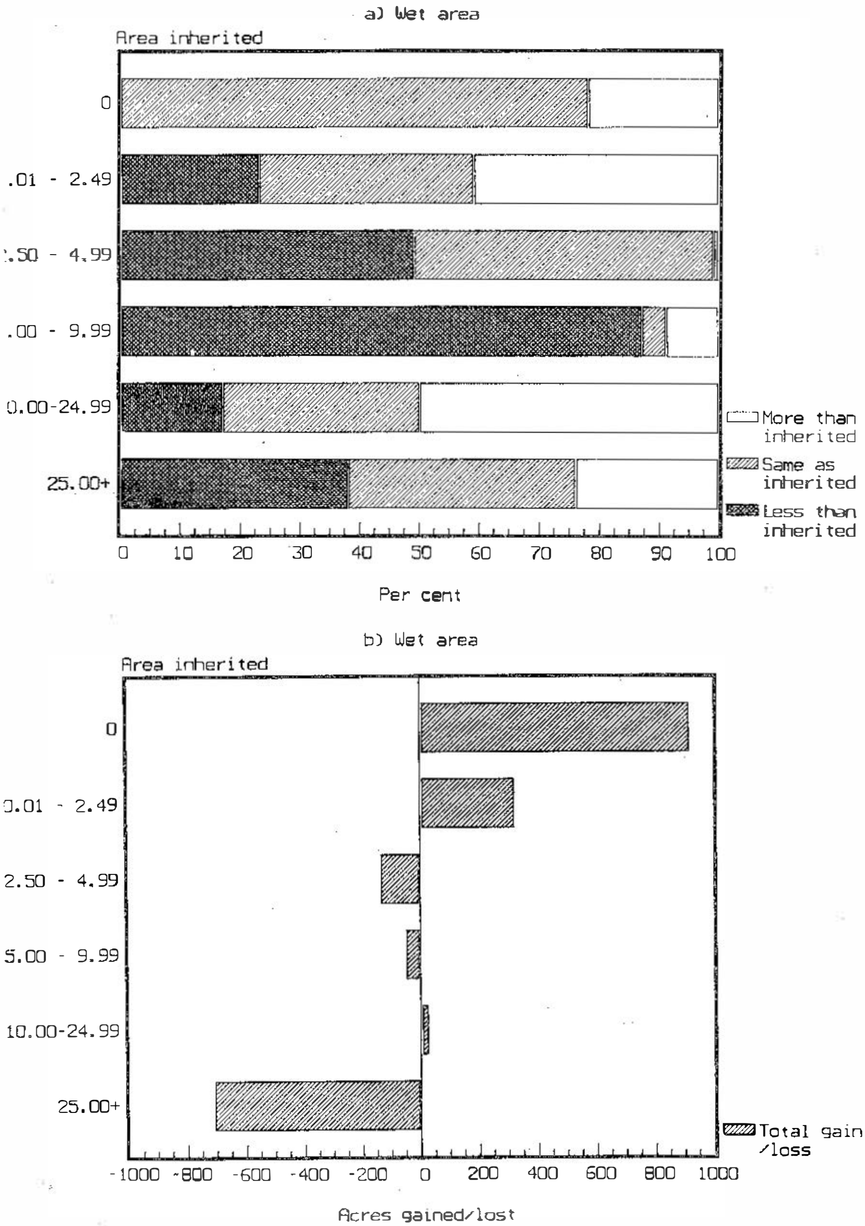
The most significant result of this exercise is that the rate of upward mobility is negatively correlated with the size-class of inherited area. This also holds for irrigated land in the dry area. This can be taken as a test of the centripetal tendency in land redistribution.

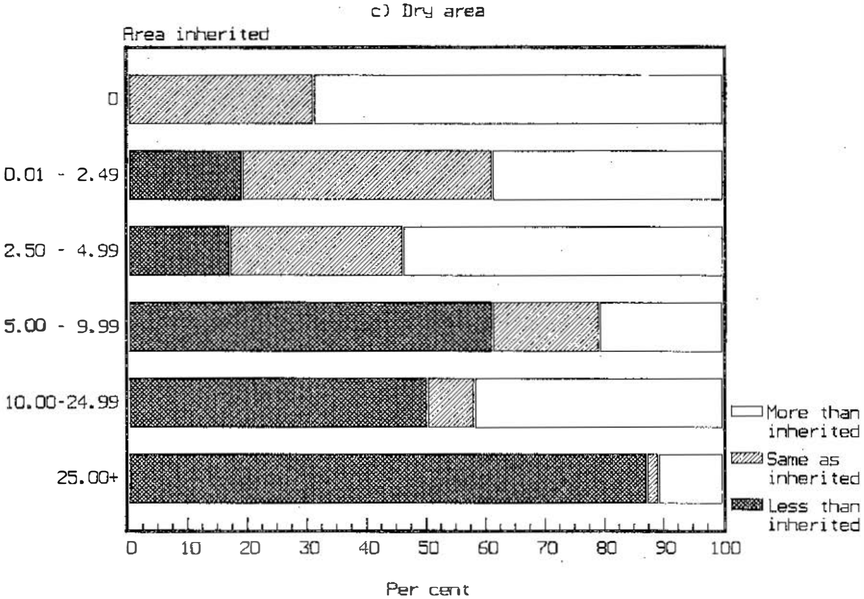
11 As Khan (1987) has pointed out, poor households are demographically more fluctuating, and can therefore be expected to be younger. The impression of stability among these households can therefore be exaggerated.

12 The mean area gained is 0.40 in the size-group 0–2.49 acres in the wet villages, and −2.72 in the size-group above 2.50 acres. Both means differ significantly from zero (1 per cent level). This can be taken as a test of the centripetal tendency in land redistribution. The corresponding values for the dry area is 2.21 and −0.93, respectively. These results are also statistically significant.

FIGURE 4.6

Size of Own Area Compared with Size of Inherited Area by Size-Class of Inherited Area and Ecotype, Wet Area




c) Dry area
Area inherited
0
0.01 - 2.49
2.50 - 4.99
5.00 - 9.99
10.00-24.99
25.00+
More than inherited
Same as inherited
Less than inherited
0
10
20
30
40
50
60
70
80
90
100
Per cent

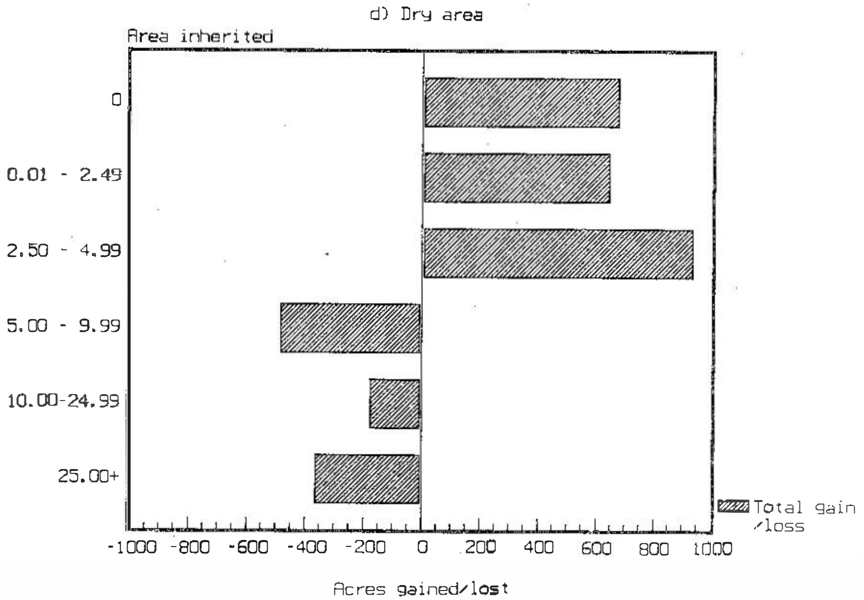

d) Dry area
Area inherited
0
0.01 - 2.49
2.50 - 4.99
5.00 - 9.99
10.00-24.99
25.00+
Total gain /loss
-1000
-800
-600
-400
-200
0
200
400
600
800
1000
Acres gained/lost

TABLE 4.3

Size of Own Area Compared with Size of Inherited Area by Size-Class of Inherited Area and Ecotype

Size-class of inherited area (acres)	*No. of sample cases*	*Size of own area compared to area inherited*				*Area gained/lost*	
		Less per cent	*Same per cent*	*More per cent*	*Total per cent*	*Mean acres*	*Total acres*
Wet area							
0	78	—	78	22	100	0.43	915
0.01– 2.49	35	23	36	41	100	0.34	320
2.50– 4.99	12	49	50	1	100	−0.48	−135
5.00– 9.99	4	87	4	9	100	−2.08	−48
10.00–24.99	0	17	33	50	100	4.08	24
25.00+	0	38	38	25	101	−88.50	−708
Total wet area		11	64	25	100	0.11	369
Dry area							
0	16	–	31	69	100	2.32	678
0.01– 2.49	39	19	42	39	100	0.87	646
2.50– 4.99	29	17	29	54	100	2.03	935
5.00– 9.99	25	61	18	21	100	−1.10	−483
10.00–24.99	8	50	8	43	101	−1.12	−176
25.00+	2	87	2	11	100	−8.09	−364
Total dry area		28	30	42	100	0.48	1237

No. of missing cases: Four per cent. Note that in the uppermost two categories in the wet area there are no sample cases, only UPCs.

gained about 370 acres. The difference, however, is not statistically significant.

In the dry area, on the other hand, both the overall mean and the total area gained/lost is positive. On the average, our respondents have gained half an acre in this generation, and these gains add up to more than a 1,000 acres for the three villages together. This is, however, not statistically significant, and thus we are not able to document a tendency which still might be true, namely, the expansion of cultivation at the expense of forest and grazing lands.

One objection which may be raised against these results is that they do not incorporate the effects of migration, on which, unfortunately, we have no data. If the losers of land have migrated on a large scale, the picture would be different. The likelihood that this would have disturbed the results can be investigated by means of a thought experiment. First, regarding households which started as landless: a massive out-migration of landless households cannot reverse the important result that in both ecotypes landless households have gained sizeable areas (over 600 acres in both ecotypes). Had there been no migration, the average area gained by the landless would, of course, have gone down, and the inequality of the distribution of landownership would have been greater than what it currently is. But absence of migration would not, *ceteris paribus*, have reversed the trend that we have observed of a redistribution of landownership in favour of the landless. However, indirect effects are possible. Lower rates of migration could have meant lower wages, and then less chances for a landless to save the money needed to buy land.

A second possibility is out-migration among the small heirs who in both ecotypes have gained land during the present generation. What rate of out-migration would be necessary to reverse the observed result that small heirs have gained land? Take the wet area as an example. To reverse the result of, say, a gain of 320 acres by the small heirs to, its opposite, a loss for the small heirs including out-migrants of 320 acres, would require 512 out-migrants losing, on an average, 1.25 acres. A sample of the population of heirs would in addition to our 114 households have contained 38 out-migrants. In other words, 25 per cent of the heirs would have left the wet villages in the last generation. The corresponding figure for the dry area is over 30 per cent. Such a mass exodus would not have gone unnoticed! Thus it seems unlikely that the effects of migration could substantially reverse the trends that we have observed.

So far we have dealt with mobility in the ownership structure, and we have not distinguished between different types of land. To get a fuller picture of mobility in the two ecotypes we will draw upon further data. But the analysis will be elaborated in two different directions for the two ecotypes. In the wet area, we must study the lease-markets to get a full view of mobility in the last generation. In the dry area, on the other hand, we must bring in land quality, since patterns of mobility in dry and irrigated lands may go in different directions.

Redistribution of leaseholds in the wet area

As we have seen in an earlier section, tenancy is very common in the wet area where the area cultivated by tenants is about equal to that cultivated by owners. Moreover, many tenants have achieved secure leaseholds and regulated rates of rent. But, as we have seen, many tenants had to pay a heavy price for the activities of the tenants' movement—they were evicted from their lands. In some cases the landlords, to use a prevalent legal euphemism, 'resumed the land for own cultivation.' In many cases they sold their lands to other parties, but often apparently also to the tenants themselves. Let us now see how this turbulence in the lease-markets is reflected in our data.

Table 4.4 and the corresponding figure is analogous in form to Table 4.3, but it deals with leased land. Unfortunately, the coverage of these data is very poor. The number of missing cases approaches 50 per cent, a fact which can invalidate any conclusion drawn from the Table. This has to be kept in mind when we attempt to use the data despite their shortcomings. If we are to judge from the Table, mobility has been higher in the lease-market than in the ownership structure. Almost all respondents for whom we have data have been mobile and have either lost or gained in leased area.

Both the overall mean and total area gained/lost is negative. The respondents have lost on the average 0.94 acres of leased land in this generation. Mobility is predominantly upward only in one size-class, namely, among those who started out as 'leaseless', but this is hardly surprising since, by definition, they can only be upwardly mobile. On the other hand, it could be significant that they have managed to lease in so much land, on the average 1.53 acres (but, since coverage is so poor we will not attempt to statistically test the significance of this mean). Otherwise, all size-classes of tenants tend to have lost land, and the tendency is positively correlated with size-class. The first of these findings tallies well with our other data, so we will take its contextual validity to compensate for the shaky statistical foundation. But the other finding, that the big tenants stand out as the big losers in the lease-market, should perhaps be taken with a pinch of salt, since in all likelihood they could very well have bought the land for which they have lost the lease.

Redistribution of irrigated land in the dry villages

Leasing is unimportant in the dry area, but another aspect can be drawn into a deeper analysis of mobility patterns in this ecotype, namely the distinction between dry and irrigated land. If the pattern of mobility for irrigated land is different from the one for dry land, the apparent deconcentration might be misleading.

Table 4.5 and the corresponding Figures are similar in form to the previous Tables. As is evident, Table 4.5 indicates a lower rate of mobility with respect to irrigated land: 43 per cent of the households have been mobile compared to 70 per cent when all kinds of land are considered.[13] As before, there seems to be a positive correlation with size-class of inherited area, so that those who have inherited much land have been more mobile than others.

Moreover, as before, the rate of upward mobility is negatively correlated with size-class of inherited area, so here too there seems to be a centripetal tendency in the distribution. Looking at the amounts of land involved, we see that the overall mean is positive or 0.43 acres. The total area gained is over 900 acres for the three villages. These figures obviously reflect the spread of well-irrigation to previously unirrigated lands.

Thus, when we look separately at irrigated land we do not find evidence of any counterforce to the tendency to deconcentration

[13] The difference between the rates of mobility for irrigated as opposed to land in general is statistically significant at 0.1 per cent level.

FIGURE 4.7

Size of Leased Area Compared to Size of Inherited Leased Area Broken Down by Size-Class of Inherited Leased Area (for Households Who are or have been Tenants), Wet Area

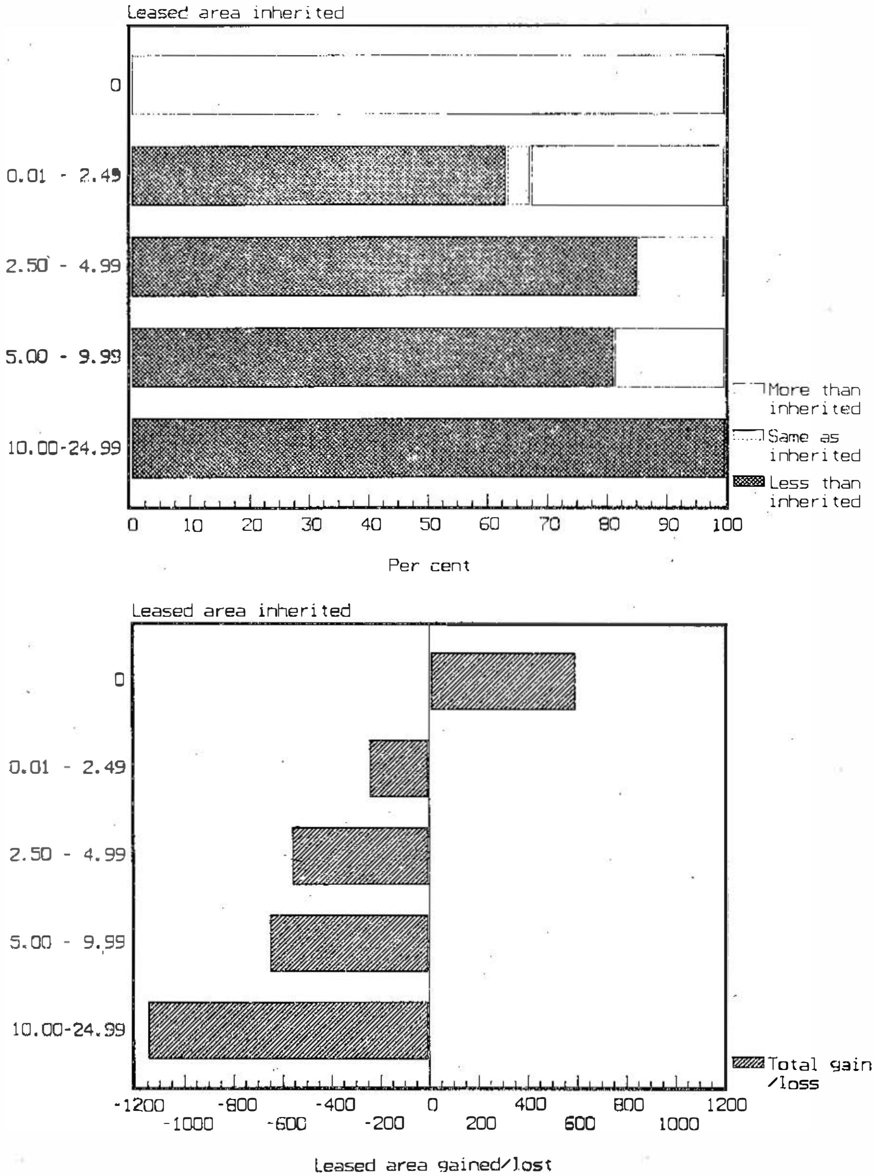


TABLE 4.4

Size of Leased Area Compared to Size of Inherited Leased Area Broken Down by Size-Class of Inherited Leased Area (for Households Who are or have been Tenants), Wet Area

Size-class of inherited leased area (acres)	*No. of sample cases*	*Size of leased area*				*Area gained/lost*	
		Less than inherited per cent	*Same as inherited per cent*	*More than inherited per cent*	*Total per cent*	*Mean acres*	*Total acres*
0	53	–	–	100	100	1.53	590
0.01– 2.49	29	63	4	33	100	–0.31	–244
2.50– 4.99	10	85	0	15	100	–2.33	–560
5.00– 9.99	8	81	0	19	100	–3.51	–651
10.00–24.99	4	100	0	0	100	–11.23	–1145
Total		57	1	42	99	–0.94	–2014

Number of missing cases: Thirty per cent.

in the ownership of land in general. But, since the rate of deconcentration is fairly weak, it might be most appropriate to say that irrigation has spread within a context of overall stability in the relative distribution of irrigated land.

Summary and conclusions

It is evident that the ecological diversity between the wet and dry area is echoed in their land relations, which are radically different. The ownership structure is extremely polarized in the wet area, while there is much less inequality in the other ecotype. Likewise, the rate of landlessness is high in the wet area and low in the dry one. In the latter, owner-cultivation is almost universal while in the former tenancy is frequent.

Both ecotypes have also developed in quite different ways. The wet area has witnessed a partial reform of landlord-tenant relations with lessened rates of rent as a result, both among protected and unprotected tenants. Likewise, the wet area seems to have undergone considerable deconcentration of landownership in the last generation. Thus, inequality was formerly even more pronounced than it presently is. Overall mobility rates have been higher in the dry area than in the wet, and the result has been one of deconcentration here as well. But the net effect on the ownership structure is less pronounced in the dry area than in the wet.

The dynamism of the changing land relations that we have demonstrated in this chapter is noteworthy on two accounts, namely, as far as it concerns our understanding of (*a*) Indian land reforms, and (*b*) the so-called green revolution and their effects on land relations. It has often been pointed out that Indian land reforms in most states have fallen far short of their declared aims, and Tamil Nadu is no exception. Therefore, it is remarkable that the effects of the reforms are so clearly visible in our area: the deconcentration of landownership in the wet area must probably be attributed to the land reform legislation. That is, landowners have sold land to evade the law, and in the process the deconcentration that the law ostensibly aimed at was achieved, but in a round-about way! Similar processes may have also occurred elsewhere than in our area, because there are many indications of old landlords selling out and new dominant landowners entering the agrarian scene in other parts of India as well. This is often taken to

FIGURE 4.8

Size of Irrigated Area Compared to Size of Inherited Irrigated Area Broken Down by Size-Class of Inherited Irrigated Area, Dry Area

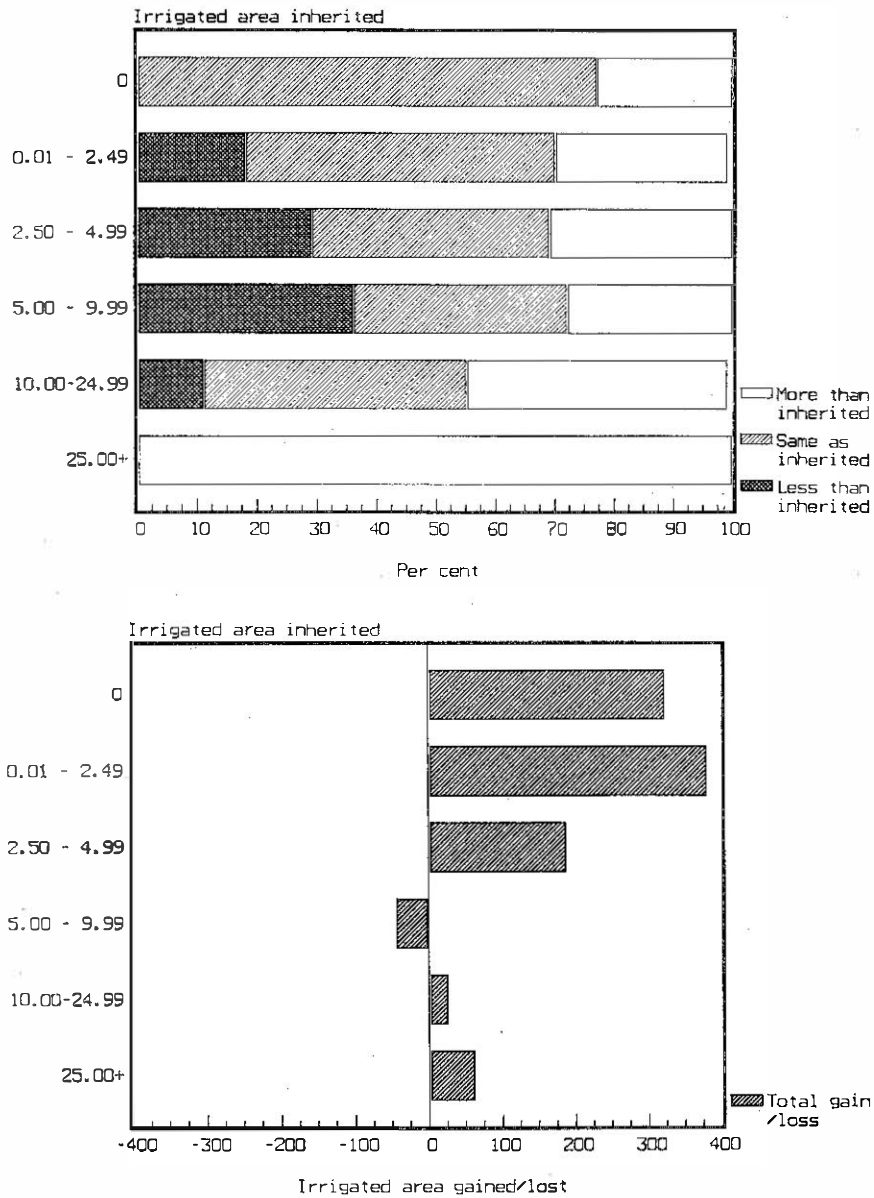


TABLE 4.5

Size of Irrigated Area Compared to Size of Inherited Irrigated Area Broken Down by Size-Class of Inherited Irrigated Area, Dry Area

Size-class of inherited irrigated area (acres)	*No. of sample cases*	*Size of irrigated area*				*Area gained/lost*	
		Less than inherited per cent	*Same as inherited per cent*	*More than inherited per cent*	*Total per cent*	*Mean acres*	*Total acres*
0	37	—	77	23	100	0.51	322
0.01– 2.49	66	18	52	29	99	0.35	379
2.50– 4.99	21	29	40	31	100	0.60	187
5.00– 9.99	9	36	36	29	101	−0.48	−44
10.00–24.99	9	11	44	44	99	2.81	25
25.00+	2	0	0	100	100	30.50	61
Total		15	57	28	100	0.43	929

Number of missing cases: One per cent (including UPCs).

be a factor contributing to the growing caste tensions in the Indian countryside. Our area seems to be more unique when it comes to the tenancy reforms and their effects. As we have seen, the relative success of the tenants' movement was due to some peculiar historical circumstances which only occasionally have been replicated elsewhere (for example, in West Bengal and Kerala).

It has often been alleged that the green revolution would bring about an increasing polarization in landownership. Our study can be regarded as a test case for this thesis, since the new agricultural technology has had considerable impact in both areas. The polarizing effects of the new technology are certainly not visible in our material, and our study could thus be added to those which have shown similar results.

Harriss (1985) has analysed similar data for some villages in North Arcot District in Tamil Nadu, and, although there are some unexplained differences between the different villages, the overall results go in the same direction as ours. The same could be said for other micro-studies in India. With variations, studies by Cain (1981), Attwood (1979), Rao (1972), and Bhalla (1977) point in the same direction as our results: decreasing rather than increasing polarization in the ownership structure, and little evidence of a rapid rate of proletarianization.[14]

Obviously, one should be wary of drawing too far-reaching conclusions from the above results. First of all, a local study such as ours is not immediately generalizable. Moreover, inequality in landownership is only an aspect of general inequality. We cannot take for granted that the distribution of incomes, assets, or 'welfare' has developed in the same way as the distribution of land.

[14] The evidence from Bangladesh is more contradictory. Van Schendel's careful multi-generation study (1981) fails to document any rapid concentration of landownership, while Cain's (1981) and Rahman's (1986) data show evidence of such a process. Bhaduri's et al. (1986) study (discussed by Rahman, 1988) does not contain a full analysis of mobility, and especially lacks the distinction between gross and net mobility which could have clarified some of the apparent contradictions in data.

5

Labour Relations

As we have seen in the preceding chapter, farming is family-based, in the sense that almost all farms are operated by family/household units. This does not imply, however, that all labour is also done by the family. Production may be organized in various ways, and, as we shall see, hired labour is always important to the farmers, in both the dry and the wet ecotype. In principle of course the farmer might do with only the family labour available to him, but we have met with no such case. Moreover, labour is seldom exchanged between farms on reciprocal terms. Although such labour exchange occasionally occurs in the dry area, it is a form which seems on the verge of disappearing. In other words, all farms, including the smallest ones, hire-in some labour to assist or replace family labour. This is one of the most significant characteristics of this farm economy.

So, for the sake of simplicity, we can talk of two forms of labour as predominant: family and hired. Before we go into an analysis of the various forms of such labour,we will refer to a few cases which will give the reader an idea of the labour relations on various farms.

Labour relations on four different farms

We have first selected two households in one of the wet villages.

Kasi a poor peasant of Pallan caste

Kasi cultivates 1.13 acres of leased-in land. He grows two crops of paddy per year, and sows with traditional varieties (*Valan* and *Vellai Thangai Samba*). There are only three members of his household: himself (80 years old), his wife (50) and their daughter (21). Let us see how he grew *Vellai Thangai Samba* paddy on his 1.13 acres in the *Samba* season of 1979.

In the wet area working days are short, only four hours per day. Counted in such days, a total of eighty-four days were spent in cultivating and harvesting the field. Out of these, twenty-eight days, or 33 per cent, of work days were performed by family labour, and fifty-six days by hired labour. Kasi himself ploughed the nursery for one day and his wife carried eight baskets of farm-yard manure to the nursery, where the couple worked together for three days levelling and preparing the seed bed. Then Kasi sowed the nursery with seeds purchased from outside. When the seeds were sprouting in the nursery he applied a small dose of pesticide to protect them. Every now and then he went to the plot to look after the crop, irrigate it, and maintain the *bunds*.

The main field was ploughed by Kasi himself for eight days, but in this more demanding task he did not rely on family labour alone. He was assisted by a hired ploughman for four days. The man brought his own bullocks. They worked for six hours every day, which are fairly long hours in the wet area. His wife and daughter also helped in preparing the soil, and worked for two days assisted by three hired women who were paid Rs. 2 per day. Uprooting and transplanting the paddy seedlings was done in a six-hour day by his wife and daughter plus ten women hired for the purpose (again they were paid Rs. 2 as wages).

After some time Kasi applied half a bag of Urea fertilizer in the field, and he also sprayed the young paddy with ten kg. of powder pesticide to prevent pest attacks. These tasks required only an hour or so each. Then the crop was more or less left to grow on its own. Kasi himself looked after irrigation and *bunds* every day or two. This task too requires just an hour or so each time, and it can be attended to between other jobs. During this period Kasi had no other work. He is quite old and does not go for other employment, nor does his wife. But his daughter regularly works as a coolie in agriculture, earning a supplement to the income of the household.

In the middle of the growth period the women of the household spent a day in weeding the field, again assisted by five hired women (working time: five hours, wage: Rs. 2).

As is usually the case, harvesting was performed by hired labour. However, this time they did not hire casual labourers individually, but contracted a whole gang for the task. The gang consisted of fifteen men and fifteen women who went over the whole field in just eight hours, for which they were collectively paid thirty *marakkal* of paddy. Threshing was finally done by Kasi himself (assisted by two men and two women hired for five *marakkal* altogether). The yield was twenty-two *kalam*, i.e., 264 *marakkal* of paddy (net of harvest wages), and thirty bundles of straw. Kasi also had to pay thirty-three *marakkal* as *sudanthiram* fee to various artisans and village servants. This belongs to his traditional obligations, and is a basic payment for the services received during the year.

We see that, although Kasi is a poor peasant and belongs to the labouring caste of *Pallan*, he does not rely exclusively on family labour for his cultivation. He hires-in a great deal of labour, both casual and on contract. Moreover, he has a standing contract with some artisans and village servants, towards which he also has to pay. In this respect, he does not differ much from a bigger landowner like Lawrence, whom we shall now meet.

Lawrence: capitalist farmer and Christian Vellala

Lawrence cultivates a farm of about 17 acres of wet *nanjei* and *thottam* lands and 5 acres of *thoppu* (well-irrigated garden lands). He is also a big landlord, leasing out about 80 acres to a number of small peasants who are registered tenants. On his own farm he manages an intensive cultivation of banana, sugarcane, and paddy. His family consists of himself aged 34 and his wife aged 28. They have no children, but he manages the leased-out lands on behalf of a bigger family clan. Lawrence employs four permanent farm-servants (*pannaiyals*) as also one tractor-driver, and one power-tiller driver.

In the *Samba* season of 1979 he cultivated 6 acres of *Siraya Samba*, which is a traditional variety of paddy grown for its good taste and high quality. Counted in labour days, he spent about 122 days per acre, which is more than what Kasi would use for an equal measure of land. Lawrence does not physically participate in cultivation, but supervises his workers closely. His wife is not at all involved in cultivation. She is a housewife, born in the city of Madras, and the couple is leading an urban-style life. Thus, one can hardly speak of family labour on this farm, since the only labour put in is supervisory. Instead, Lawrence's permanent labourers perform the tasks which family members under other circumstances would carry out. They labour for about nineteen out of the 122 days spent per acre of paddy, that is, about 16 per cent of all the labour. The drivers plough the nursery and the main field, and transport farmyard manure, seedlings, fertilizers, pesticides, etc. They also transport the paddy and the straw to the farmyard. The *pannaiyal* do the soil work, such as, building *bunds*, levelling, and seed bed preparations. This takes sixteen labour days in all, but just as family labourers often work alongside hired labourers, the *pannaiyal* are assisted by hired coolies who put in eight of these sixteen days. The *pannaiyals* also take care of the daily irrigation works. They watch the crops and they spread chemical fertilizers and pesticides, which Lawrence uses in liberal quantities. The number of days spent in these types of work is estimated at ten to twelve days per acre, but, typically, it is spread over the whole cropping period.

Lawrence employs many female casual workers. They account for sixty-three days, or about half the total labour input. They spread farmyard manure, transplant seedlings, weed, and participate in the harvest. For the latter they work together with men on a contract basis. In threshing, however, manual labour has been replaced by a machine powered by the tractor.

Summing up, we see that Lawrence's permanent labourers, who act as substitutes for family labour, put in a lower share of the total labour than Kasi's family does: 16 per cent compared to 33 per cent. Part of the reason may of course be that Lawrence's 'family labour' looks after a much bigger farm. But mechanization may be another reason. Bullocks have been replaced by machines, primarily in ploughing and in transport. One tractor can plough an acre of paddy in half-a-day, compared to the eight to fifteen labour days it may take with bullocks.

Another interesting fact is that mechanization in Lawrence's case goes together with an intensive use of labour. He has a much higher labour input than Kasi, despite mechanization. Lawrence belongs to a caste that traditionally would not touch the plough or perform other manual labour. Yet, even if he had worked on the land himself it hardly would have changed the picture. His scale of operation is too big to allow for any significant participation of family labour.

Female labour accounts for about half of all the work performed on the land in both of the above cases. Women work with tasks like transplantation and harvesting which require a massive input of labour over short time-periods, but they also work with weeding which can be spread out over time. Female family labourers often work together with hired labour, as in the case of Kasi.

Raju: a middle peasant of Muthuraja *caste*

Let us now shift our attention to one of the dry villages, where we have selected a middle peasant by the pseudonym of Raju. He owns and cultivates about 14 acres of land out of which 6.50 acres are *thottam* (with one electric pump-set irrigating 5 acres of land), and the rest is dry *punjei*. Raju is 29 years old, his wife is 20 and they have one son aged one year. His mother is 45. She mostly tends to livestock. Raju also has two younger brothers who live in the household and work on the fields. None of them go for coolie work outside their own fields. There is no *pannaiyal* on the farm. They have their own livestock for ploughing.

Let us see how they cultivated one acre of *Ponni* paddy—a high-yielding variety—in the *Samba* season of 1979–80. The total labour use was 149 days out of which the family labour accounted for seventy-three days or 49 per cent. Raju and his brother made all the preparations of the nursery and the main field (ploughing, levelling, bunding, and seed bed preparation). Ploughing the main field took twenty labour days and was done by them alone. Female labourers came for the transplantation and worked alongside the women of the family. This required four family days (wife and mother) and thirty female coolie days. Weeding was done in the same way (two and twelve days respectively). Raju himself applied fertilizers of different kinds (Complex, Urea, and Sulphate) at intervals—spending one hour for each operation. During the whole growth cycle he also looked after the irrigation, for an hour or so every day.

Harvesting was finally done by a mixed labour force consisting of Raju, his brother, his mother and wife, plus ten male and twenty-three female coolies. It took one day of work (seven hours), including threshing. Cleaning was done by the women of the house plus one male coolie hired for the day. The total yield was eighteen bags less harvest wages.

Female labour accounted for totally 50 per cent of work days, out of which 87 per cent was hired labour. Of the male labour, only 15 per cent was hired-in. So male family members do most of the men's work on the farm (85 per cent) while female coolies did most of the women's work (87 per cent).

Velan: capitalist farmer of Udaiyar *caste*

Velan owns a farm of 23.50 acres, out of which 1.50 acres are *nanjei*, 6 acres are *thottam*, and 16 acres are *punjei*. Velan is 41 years of age, and he is the head of a family of six members. His wife is 30 years old, and they have two daughters aged 15 and 8 of whom the oldest is studying in a nearby town (and staying in a hostel there). He has one son who is 4 years old. Moreover, his mother aged 60 is also staying with him. He employs two *pannaiyals*, one of whom is of *Muthuraja* caste and the other is a *Harijan*.

No family labour is involved in agricultural operations, except for supervision. Instead, the *pannaiyals* seem to replace family labour. When Velan cultivated *Ponni* paddy in the *Samba* season of 1979/80 he used totally 169 labour days per acre, out of which the *pannaiyals* performed about fifty-nine days or 35 per cent in all.

Preparing and sowing the nursery was done by the *pannaiyals*, aided only by some female coolies for carrying and applying green leaf manure to the nursery. In ploughing the main field, however, the *pannaiyals* were assisted by hired coolies with bullocks (three and ten labour days respectively). Earthwork was done by one of the *pannaiyals* plus ten male coolies for a day. Twenty female coolies did the transplantation work on a contract basis (Rs. 80 paid), assisted by two male coolies to transport the seedlings.

Ten hired women weeded the field in a seven hour day of work at the usual rate of Rs. 2. The *pannaiyals* applied fertilizers (NPK mixture, Sulphate, Complex), and with the help of one coolie also sprayed the field with a pesticide for one day. The *pannaiyals* also handled irrigation throughout the growth period for two hours a day. Harvesting and threshing was finally done by fifty coolies (we estimate about twenty men and thirty women), who were paid one *marakkal* each. The total yield was twenty-five bags. Female work days (coolie only) is here somewhat less than that studied in other cases, or about 40 per cent. The use of *pannaiyals* is 35 per cent, which is less than the use of family labour on a smaller or less intensively cultivated farm (Raju used 49 per cent of mainly male family labour).

The general pattern seems to be that female labour is used in only three operations, but they are very labour intensive ones, i.e., transplantation, weeding, and harvesting. Family labour, or *pannaiyals*, are used for most male labour tasks, both labour demanding ones, such as, ploughing and preparing the soil, and irregular but smaller tasks, such as, irrigation, application of fertilizers, and pesticides, etc. Hired male coolies may help in ploughing and preparing the soil (on bigger farms especially), and in harvesting and threshing.

These four cases raise a number of issues which we will now go into. We will start with a description of the forms of hired labour which we have met with in these case-studies. We will also deal with wages, and the standards of living of the agricultural workers. Before dealing with family labour in detail we will give a short account of the non-farm sector, because the opportunities in this sector is one factor which explains the pattern of labour use.

Hired labour

The forms of wage labour in this economy are multiplex. A labourer may work for the same employer on an annual basis, on a day-today basis, or for different employers employed by the day or even less. Payment may be in cash or kind, or a mixture of both, and, furthermore, it may be individual payment or a collective piecerate. The labourer may also be indebted to his employer and have to work to pay off the debt. Other combinations also appear: one arrangement may be to work half the year as a permanent labourer for a landlord, and the other half as a casual day labourer.

How shall we explain this multitude of employment and wage forms? As we shall see, they are clearly related to the agroecological conditions which we described in chapter 3, but the forms of labour are as clearly related to the land relations studied in chapter 4. We will also try to trace the historical background, without which the ensemble of labour relations cannot be understood. An historical perspective is also necessary to establish trends in terms and conditions of employment. This is of course difficult since our data are basically cross-sectional, but we will still make an attempt to deal with the issue below.

Permanent farm servants

A permanent farm servant is called a *pannaiyal* (from *pannai* = farm or estate, and *al* = man). Let us take one of our cases as an illustration of the conditions of work of a *pannaiyal*. One of our respondents, named Muni, is a *pannaiyal* to one of the big landlords in Rajendram. The relation between Muni and his employer is a multi-stranded one. Muni has to work in the landlord's farm from early morning to six or seven in the night. For this he is paid one bag of paddy per month (i.e., 75 kg of paddy).

Muni is totally bound to his employer in the sense that he cannot seek employment in other farms; even if there is nothing to do on the farm, he will have to spend the day there. Muni has worked for his landlord for the past twenty-nine years, and until three years ago his father also worked on the same farm.

Besides his wage, Muni gets a number of 'fringe benefits'. When he got his children married, the landlord met part of the costs. He also presented the *thali* (the marriage ornament of the bride), and clothes to the bride and the groom. When Muni married off his son seven years ago he borrowed 200 rupees from the landlord, which, although there is no interest to the loan, he has not been able to repay.

From the account so far, Muni seems to be a bonded labourer of a type that is fairly common, especially in the dry area. But we have not yet mentioned one aspect of the multi-stranded relation which makes Muni different: he is also a tenant. Muni is a *kai varamdar*, which means that he has land on lease from his landlord, but under a special form called *kai varam* (from *kai* = hand and *varam* = fixed share lease). Such a lease stipulates that the landlord provides all the inputs, including ploughing, transplantation and harvest labour costs while the tenant is responsible for all other labour, irrigation, and crop watching. Compared to other forms of leasing, where the tenant supplies a larger share of the inputs, *kai varam* means a low output share for the tenant, one-seventh or one-eighth of the net yield, compared to the one-third or half in other cases.

Kai varam is interesting because it is a survival of an old form of organization. The big estates in the wet area used to be run with such a system, i.e., in addition to the ordinary share-croppers the estates had a number of *pannaiyals* who had to work on the lands farmed directly by the estate. They were frequently given lands on *kai varam*. The estates had an elaborate organization with other types of permanent labourers too: these were the *nirpaichi* who were handling irrigation, and the *kavalkaran* who were watchmen, supervisors, and rent collectors.

All these relations were contained within the *jati* system, in the sense that the estates usually belonged to the *Brahmins*, and the tenants to low castes like *Soliya Vellala*, or untouchable castes like *Pallan*. In the preceding chapter we have documented the changes that the tenancy system has undergone: many leases have become registered and rents regulated. It goes without saying that the *kai varamdar* system has suffered a setback as a result. Muni therefore belongs to an exclusive minority.

The landlords of the Kaveri valley used to be notorious for the harsh discipline they maintained on their estates. Corporal punishment and other forms of humiliation were common. One hears fewer such stories today, which probably reflects a certain emancipation of the *pannaiyal*, maybe as a result of the tenants' movement, of the increased importance of casual labour, and of caste emancipation. It is worth remembering that the untouchable castes were once held in a kind of collective bondage by the higher castes. In the precolonial society, the untouchables were prevented from owning land, thus leaving them little choice but to work for the higher castes. Although untouchability remains a reality, there has been a certain amount of emancipation on the sociocultural level as well as economically, which has probably also benefited the *pannaiyal*.

This is not to say that there are no *pannaiyals* on the big estates. There still are, but *kai varam* is not as common as it used to be. Thus, the multi-stranded relation between *pannaiyal* and *pannaiyar* (landlord) lost one of its strands when the tenancy relation went down. However, many *pannaiyals* continue to be bound to their employers by more than an employment contract. They get gifts at festivals and family functions, and assistance in times of crisis. Sometimes they get a house-plot from the landlord, a generosity which, like a loan, is also attached with a string: if the labourer is disobedient he can be evicted. As a result of such 'generosity' on the part of the landlords, the *pannaiyals* make up a loyal core of workers on the estates. In production, the *pannaiyals* fulfil the same functions as family labour on smaller farms; they attend to all the routine jobs on the farm (tending livestock, repairing *bunds*, irrigating fields, and watching crops), and they work alongside the casual workers hired for more labour-consuming tasks like ploughing. Sometimes they also work as supervisors of casual labourers.

Like Muni, the *pannaiyals* are usually not very well paid. Muni could easily earn more as a casual labourer, but then he would have to work harder and also forego the security of his present position. But, of course, there are exceptions. Landlords who go in for capitalist farming are eager to get skilled workers, and they are willing to pay more. Some landlords also have social ambitions like the big Christian landlord who proudly showed us the houses he had built for his *pannaiyals*, who could rightly brag about the wages he was paying them, and who also had a devoted workforce on his estate.

While all *pannaiyals* are men—women are never employed as farm servants, but often as house servants—a significant minority are children. Herdsmen are normally young boys, or sometimes girls, between 10 and 15 years of age. They come from poor peasant or landless labourer households. They are most often in *debt-bondage* to their masters who have given their parents an advance or loan of say Rs. 500, which is a typical sum in the reports. The child is sent to work for the landlord for an indefinite period, or until the loan is repaid. Since bondage is legally banned, the details were not always properly recorded in our interviews, but we know from other enquiries that debt-bondage is quite frequent. These children graze cattle, goats, and sheep, and they often perform all sorts of chores in and around the farm and the house of the landlord. For this they receive meals every day, some, but far from all, get an annual wage varying from Rs. 50 to 500. They are also customarily given a set of clothes at major religious festivals.

In the wet area the adult *pannaiyals* far outnumber the children, while in the dry area the proportion between the categories is fifty-fifty. This is of course a reflection of the greater importance of animal husbandry in the dry area, where the big farmers usually keep big herds of cattle which are grazed in and around the village. In the wet villages, on the other hand, animal husbandry is less important, and, moreover, the livestock is mostly kept in the farmyards so that the demand for herdsmen is less.

Coming now to numbers, we might ask how common is the *pannaiyal* system? The best way to get an idea of numbers and proportions is by anticipating the class analysis to be made in a later chapter. Mainly two classes are important as hirers-out of permanent farm servants, namely the landless labourers and the poor peasants.[1] But, as can be seen from Table 5.1, only a minority of these households have some member working as a *pannaiyal*.

TABLE 5.1

Percentage of Households Hiring-in and Hiring-out Permanent Farm Servants, by Ecotype and Class

	Class	Ecotype	
		Wet	Dry
Households hiring-out			
	Landless labourers	16	13
	Poor peasants	25	6
	All households	10	5
Households hiring-in			
	Middle peasants	8	7
	Surplus appropriators	12	26
	All farming households	9	8

Note: Missing cases is 3.4 and 12 per cent for hiring-in and hiring-out respectively.

The above data are in terms of households. Our survey material is coded in such a way that it would take a lot of work to change statistical unit from household to individual in order to estimate the proportion of the *pannaiyal* wage labour force. Keeping in mind that households who have some *pannaiyal* members usually will also have at least one member who is a casual labourer, we see that the importance of *pannaiyal* in the labour force must be considerably lower than the percentage of hirers-out among all households (10 and 5 per cent respectively in the two ecotypes). While the percentage of households hiring-out *pannaiyal* are about equal for the landless labour households in both ecotypes, the

[1] I.e., by the definition to be used later, those farmers whose land cannot provide their families with even their subsistence needs of grain.

percentage seems considerably higher for the poor peasants in the wet area. But the difference is not statistically significant, so it should not be taken at face value.

Looking finally at the hirers-in, we see from row 6 of Table 5.1 that around 8–9 per cent of all farming households hire in *pannaiyal*. The proportion is about the same in both ecotypes. The percentage is, of course, higher among bigger farmers (called surplus appropriators in the Table), but there is also some hiring-in among middle peasants. In the case of the middle peasants, however, it is mainly a question of child labour (herdsmen).

Casual labour

In our area of study, casual labour is called *atta coolie* (*kuli* = wage or wage labourer, *atta* = casual). Strictly, it is a system of time contract: the labourer is hired for a certain period, usually a day. The system is common for all types of agricultural operations. Defined in other words, an *atta coolie* is a male or female worker who works on a daily basis for any farmer who comes forward and is prepared to pay the current rates. These rates are quite stable over a period of time and only creep downwards in the agricultural off-season. Coolies are not served any meals, and they do not normally get the annual perquisites in the form of customary gifts of clothes which accrues to *pannaiyal* and other permanently employed labourers.

In the dry area there is only one season demanding lots of labour. Since there are very few landless labourers in this area, the *atta* coolies are supplied by the many poor and middle peasant households. There are also some cases of migrant labourers coming in from outside. The latter usually work on a piece-contract basis (see below). The peak demand for labour is reflected in the wage rates. While, normally, male labour is paid at Rs. 4 per day and female labour at Rs. 2 to 2.50, these rates may go up to Rs. 5 and Rs. 3 respectively. The demand for this labour reaches a peak in the beginning and the end of each growth cycle. With the intensification of agricultural production brought about by the new technology, which, as we have seen, has also occurred in the dry area, timing and speed becomes important. Crops are grown simultaneously, making the peaks of labour demand sharper and thinner accordingly (Hart, 1986, p. 693). The availability of hired labour thus becomes crucial. Harvest wages are always in kind and stable over time. Men and women are paid at the same rate of one *marakkal* of grain per day.

Working days in the dry area extend up to seven to eight hours, starting at 7 or 8 am, the only exception being ploughing which takes four to five hours. This is in sharp contrast to conditions in the wet area, where working hours for ordinary jobs seldom exceed four to five hours while at the same time wages are higher.

In the wet area the demand for casual labourers is much more evenly spread out over the whole year. Not only two or three paddy crops have to be planted and harvested, but the vast banana and sugarcane fields also require much labour, often at times when there is little or no work in the paddy fields. This high and stable demand for coolie workers matches well with the class structure: there are many landless and small peasant workers who make their living from hiring-out the year round.

Wages in the wet area are comparatively high, at least if compared with the surrounding dry areas and in view of the short working hours prevalent in the wet area. From 7 or 8 in the morning until noon is counted as a full working day and is paid between Rs. 5 and 7 for male workers and between Rs. 3 and 4 for female workers. Ploughing coolies bringing their own bullocks are paid Rs. 10 to 12 for half-a-day's work; without bullocks they are paid Rs. 7. Additional work in the afternoon is counted as separate coolie work and is paid according to a special rate. Female coolies may, for example, work at carrying bamboos, weeding, removing leaves from sugarcane, etc. The working time is around two hours and the wage between Np. 50 to Rs. 1. For similar minor tasks men are paid Rs. 1 to 1.50.

Both male and female harvest coolies are paid one *marakkal* of paddy. Nowadays, workers are paid with the standard *marakkal* in most wet villages, but they still have vivid memories of the days when they were paid with a *coolie marakkal* which was smaller than the ordinary measure. In the mid-70s workers in Poyyamani publicly smashed the *coolie marakkal*, and thus forced the landlords to start paying wages in standard measures.

In principle, an *atta coolie* would work for any one calling. But in reality the circle of prospective employers is often narrow. Big farmers who regularly employ casual workers often have a 'reserve labour force' to draw upon. Some big estates in the wet area have more or less institutionalized such a system. One big banana grower whom we interviewed had a specialized labour force whom he employed by the day, but guaranteed work throughout the season and paid wages weekly. The workers could also get loans and advances from the employer, who thus tied a labour force with an attractive skill to his estate. Here we evidently have an example of a mixed form, lying between permanent and casual labour.[2]

The Kothu *system of collective piece-contracts*

Labour relations are changing in the wet area. *Kothu* or contract gang labour seems to be spreading and gradually replacing *atta coolie* in all major agricultural operations involving much labour. *Kothu* is a kind of collective piece-rate system in which a contract is negotiated between a cultivator, who needs a task to be done quickly, and a gang leader. Payment is for the whole operation, and it is generally shared equally between the members of the gang. Contemporary studies have noted that gang labour has become common in modern Indian agriculture. Desai, for example, says, 'Time wages have been replaced by piece wages for all major operations without much resistance' (1983, p. 60). Yet, very little description or analysis can be found in the literature on gang labour. We will, therefore, deal with this phenomenon in some detail.

The contract specifies the task to be performed, the payment, and usually a time limit within which the work should be finished. The contract is negotiated by a *kothukarar* (male gang leader) or a *kothukari* (female gang leader) representing the workers. When the job is finished, the payment is divided among the workers. The gang works intensively and for long hours. 'In *kothu* we work from 6 in the morning to 5 in the afternoon, while as *atta coolie* we work at most from 9 to 4,' says one *kothu* worker in Poyyamani village. But longer working hours and greater intensity of work also bring higher incomes for the individual workers. They earn considerably more in *kothu* than in *atta coolie*. The *kothu* system is obviously advantageous to the cultivators; or, as one landlord in Poyyamani who also happens to be a good amateur sociologist, expressed it:

[2] Such semi-attached labourers are common in the West Bengal material collected and analysed by Rudra and Bardhan (1983, pp. 3–6).

> The advantages to the landlord is that it (*kothu*) allows for a short and intensive work period, and that the work is done in time. For the worker it means higher wages. It may also involve some solidarity, since an efficient man can cover up for an inefficient or slow worker. So they help each other in this way. A disadvantage to the landlord may be that the workers are sometimes less sincere, so the result may suffer. To counteract this you must have a good relation with the *kothukarar*. Only then will you get a good result.
>
> The workers may also get a bad deal. When there is not much work, as in the off-season, the rates may come down even below the daily wages.

The *kothu* system is today predominant in the wet area, and it has also recently been introduced in the dry area for a limited number of tasks. We have not made any precise calculations, but on a rough estimate it could be said that the *kothu* system covers between 50 and 75 per cent of all hired labour in the wet area. *Kothu* is used by all sorts of cultivators, big and small alike, although the bigger farmers apparently use it more. It is prevalent in all major operations, for example, in paddy cultivation: uprooting of seedlings, transplantation, harvesting, and threshing. Likewise in banana cultivation—channel-making, deepening of channels, removal of silt, planting and harvesting as well as clearing of fields after the second or third crop—all these tasks are nowadays frequently made on contract. In sugarcane cultivation there are a number of tasks under *kothu* like making furrows and ridges, planting of sets, weeding with spades, manuring, twist propping, harvesting, and also clearing of fields after the second crop.

Contract rates vary considerably. In transplanting an acre of paddy, for example, the rate is dependent on the variety sown and the season. High-yielding varieties planted in rows according to the so-called Japanese method, like the varieties of *IR-20* and *Ponni*, are paid Rs. 100–130 per acre. Traditional varieties which require less time for planting since they are not planted in rows cost less: the variety of *Samba*, for example, is paid Rs. 90–110 per acre. Variations in season and demand are also important. One *kothukari* from Naganur says, 'when there is tight competition over labour we may bargain for a better contract.' The degree of difficulty of the task is another factor affecting the contract rate.

Spadework on hard clay soil is, for example, paid more than the same work on sandy soil. In harvesting banana or sugarcane, the distance between the field and the road also affects the rate.

Contrary to the expectations of some observers, female coolies do not seem to loose their employment opportunities because of the massive reliance on *kothu* gangs (cf. Dasgupta, 1977, pp. 318, 327). One reason is that the traditional sexual division of labour is maintained in *kothu*. Women typically plant, uproot, transplant, and participate in harvesting and threshing.

Kothu gangs usually specialize in certain types of operations. Depending on season and demand, there are, for example, spade-work gangs (men only), transplantation gangs (mainly women), harvesting gangs (mixed), etc. This contributes to a considerable mobility of labourers between hamlets and villages. Spade workers may operate over a large area as may banana or cane workers. We met with *kothu* gangs who occasionally went more than twenty miles for work. In such cases the contracting farmer provides shelter and sometimes also meals.

The size of a *kothu* gang may vary considerably from just a few workers to at least twenty-five to thirty persons. The size seems to be determined mainly by two factors. One is the origin of the gang, whether it comes from one tiny colony or from a big hamlet with many proletarian households. The other factor is, of course, the size of the task to be completed. If he has taken on a big job demanding many labourers, a *kothukarar* may also recruit workers from different localities.

Kothu gangs often develop relations outside the work situation. They may arrange lotteries or chit funds. We also met with a gang which used to jointly buy a goat every year, feed it collectively, and then sacrifice it at the annual village festival. Afterwards, the parts would be distributed among the members according to their share in the goat. This is also a reflection of the social composition of the gangs. They mostly recruit their members from one part of a village or hamlet, i.e., from a 'street' or part of a colony, which implies that they usually come from the same caste and sometimes also from the same lineage. In the wet area most *kothu* workers belong to the traditional labouring castes like *Paraiyan* or *Pallan*, but caste fellows from the middle-ranking *Muthuraja* also organize gangs. There are also examples of mixed caste gangs, but we do not know how many there are.

Kothu organised by labour contractors

As far as we understand it, there are basically two types of *kothu* gangs. One type is organized by a 'foreman' (*kothukarar*) or a 'forewoman' (*kothukari*) who takes the position of a *middleman* between the employer and the worker. In fact, he or she is a labour contractor who recruits a gang of labourers on behalf of the cultivator. The contractor and the employer set the terms and rates for the worker. The contractor deducts his 'share' or fee before paying the workers. For a contract rate of say Rs. 250, he may keep Rs. 50 for himself, while the 20 gang members get only Rs. 10 each. When harvesting paddy, the *kothukarar* often gets a special fee called *kothunel* (contract paddy); for example, an extra *marakkal* may be due to him. If benevolent, he may give some extra favour to his workers, like the *kothukarar* who invited all the male members of the harvest gang for tea while the women had to wait outside the tea-stall!

The *kothukarar* in this type of system contracts the labourers and supervises the work. He seldom works on the land himself. He may pay the workers in a number of ways: each day, when the job is finished; once a week—usually on Tuesdays—or sometimes after the particular season is over. Sometimes, when the farmer has not paid promptly, the contractor has also to advance payments to the workers out of his own pocket. Thus, he has to be a moneyed man to engage as a labour contractor. Sometimes workers also borrow from him, or rather take an advance on a future wage. Depending on the size and urgency of the task to be carried out he may call in extra workers. But, at large, this variant of the *kothu* system usually means that the agricultural labourers are more or less 'permanently' employed, at least for the season, not by one particular big farmer, but by a labour contractor.

Here again we have a form of wage labour which lies between the crude dichotomy between casual and permanent labour, which again would support Rudra and Bardhan's (1983) attempt to dissolve the dichotomy by talking of several types of 'semi-attached' labourers lying in-between the 'totally attached' and the 'totally unattached' type.

Fraternally organized kothu *gangs*

In addition to the *kothu* gangs organized by middlemen, there are also fraternally organized gangs in which one of the ordinary members of the group takes on the role as *kothukarar* or *kothukari*. He represents the workers to the cultivator and bargains for a good contract. Or as one *kothukarar* for a spadework gang in Poyyamani put it:

> I used to fix the wages in front of at least three or four members of my *kothu*. But even if I am alone in bargaining, the others will agree without objection.

This *kothukarar* heads a gang of totally eleven labourers, but he too works with the spade and gets the same wage as other members of the gang. Yet, he accumulates funds and pays the workers regularly every week sometimes even from his own pocket, if the landowner has not paid.

A leader of a fraternally organized gang is an experienced worker who has gained the confidence of all the other members. Still, such a position is often hereditary in the sense that one of his parents may have functioned as a *kothukarar* before him. This is also a proof that the *kothu* system is quite old in the wet area, even though it seems to have spread to most major agricultural operations only in recent times.

Changing labour relations

Gangs of casual labourers have a fairly long history in the Kaveri valley. Our informants generally said that the system was in existence even during their parents' time, i.e., twenty-five to thirty years ago. Baker reports about their appearance in the 1930s (1984, pp. 196 f.) But there is reason to believe that the system was already introduced at the turn of the century, with large-scale banana cultivation. It must have expanded further with sugarcane which spread when the sugar factories were established from the 30s onwards. The new cash crops demanded more labour per unit of land than the traditional paddy cultivation.

The *kothu* system must have got a new push with the extension and improvement of the systems of irrigation, which extended the length of the cultivation year. Finally, the introduction of high-yielding varieties must have stimulated its further expansion. As we have seen, today *kothu* is also common in paddy cultivation. It is also being introduced in the dry villages, although on a limited scale.

The first group to be affected by the new system was the *pannaiyal*. Their number was already drastically reduced in the 30s, when, as shown by Baker:

> disputes arose out of the *pannaiyal* labourers' fears about the security of employment. The move to make valley agriculture marginally more intensive and commercial entailed a desire to rationalize the use of labour. The extraordinary glut of labour from the depression years onwards gave the employing *mirasidars* (landowners) considerable opportunity to alter the *pannaiyal* system. It became even easier to rely on the supply of casual labour to cover the workload during the peaks of the cultivation system, and this made it possible to dispense with a large number of *pannaiyals* who were maintained as under-employed for most of the year simply in order to ensure a labour supply at the critical times. By the mid-1930s there were well organized gangs of casual labour who moved up to a hundred miles between different tracts to find work. They were arrayed under a foreman who bargained for a good wage-rate; . . .
>
> The *pannaiyals* first sensed the competition from this new form of labour when they discovered that they had lost their bargaining power in the harvest season. Traditionally, *pannaiyal* tied labourers achieved their most substantial remuneration at this time of the year when their labour was most in demand. Generally they could demand one-seventh or one-eighth of the produce as a harvest bonus. By the 1930s the *mirasidars* could refuse to pay this bonus and bring in a gang of casual workers by lorry. (1984, pp. 196–97)

Baker also says that this conflict between permanent and casual gang labour was particularly intense in the Kaveri tract and has been so up to the present. In the 1930s the Communist Party organized the *pannaiyal* to demand better security of employment and higher wages, which, at least momentarily, resulted in an agreement to protect the *pannaiyal*, an agreement which eventually was to become one more 'paper law' on agrarian relations.

In contrast to the efforts at organization of the Communist

Party, we find today that the *kothu* gangs organized by the *kothukarar* and *kothukari* in the wet area have struck work several times. In this way they have at several occasions successfully pressed up their wages. Therefore, the *kothu* gangs may be seen as a *proto-union* form of organization. Unfortunately, there are no data which can be used to investigate their effect on wage-rates. But even if it is difficult to argue that labourers in the wet area are well-paid—as we shall see, their level of subsistence is quite low—the organization and solidarity of the gangs must at least counteract the downward pressure on wages.

Instead of having large numbers of unemployed or under-employed workers, the wet area imports labour from outside. The relative scarcity of labour, of which this is a sign, may also explain why conflicts between gangs seem to be rare. When demand occasionally slackens, gangs may compete for the same job, with one gang offering to do the task at a reduced rate of payment. A gang may also take over a job from another gang that has failed to complete it for one reason or another. But on the whole, solidarity between groups was stressed and we heard of few conflicts, when we talked to the *kothukarar* or *kothukari*.

Another effect of *kothu* seems to be a greater variance in the earnings of individual workers. This is a result of the fact that a *kothu* gang usually consists of the most able-bodied men and women in a locality. A typical age span may be between 25 and 40. Older workers who cannot keep up with the high tempo may be kept outside. This, however, goes against the ethos of the gangs, expressed by a *kothukarar* from Nangavaram, that, 'Only in extreme situations is a person dismissed from a gang. That is, if he is loyal and disciplined, he will not be dismissed.' But in reality there are a number of dismissals due to slow work, old age, disability due to illness or maternity, etc. Thus, in a way *kothu* must be seen as an *exclusionary labour arrangement* (Hart, 1986), which excludes a number of the potential wage workers from sharing in a given quantity of employment opportunities. We have, however, no measure of the effects on the overall employment pattern, or on the distribution of earnings. But it would seem a fair guess that the variance in the latter distribution has increased.[3]

[3] In a survey of recent research on employment and the new agricultural technology, Basant notes (1987, p. 1300) that 'while total amount of labour time demanded has usually shown an increase in the 'green revolution' areas, the overall participation

The *kothu* workers could be said to be the core and elite of the rural proletariat. They have the highest earnings and thus form a relatively privileged segment of the rural proletariat. But around the *kothu* workers, and often as members of the same households, we find labourers who are less intensively or even marginally involved in agricultural wage labour. Some of them are only active in the main paddy harvest, when all hands are needed. The reasons for their lower activity may be age or inability, or other sources of income, often outside agriculture.

Specialized labourers

The ideal type of traditional village had an advanced division of labour between different households, symbolized by a multitude of castes with different occupational specializations. Even today, artisans and other specialists fulfil vital functions, and the whole sector is still largely organized within the framework of the caste system. Carpenters and blacksmiths (belonging to the *Asari* castes) repair and maintain ploughs, carts, and other minor tools and implements. Cobblers (mainly of the *Chakkiliyan* caste) make and mend the leather-buckets used for *kavalai* irrigation in the dry area. Services to the farmers' households are performed by washermen, barbers, priests, goldsmiths, and potters. There are usually one or two households with these occupational specializations in each hamlet of some size. The relationship between these households and the farmers are still regulated by the old *jajmani* system (cf. Wiser, 1958 and Sharma, 1958) in which a client (*kamin*) performs certain fixed services on an annual basis for a patron (*jajman*),[4] and for which he receives a customary payment, consisting mainly of a fixed share in certain harvests (*sudanthiram*) plus extra payments when the services exceed normal quantity. Today many of the artisans and servants do not work full time as *kamin*. They complement their income by working against cash payment

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rate, especially for intermittent workers, had declined. In particular, harvesting and transplanting which traditionally employed a large number of women, children, and old aged (intermittent workers), were being handled increasingly by migrant contract workers. Thus while the volume of work has increased under the new technology, a smaller number of people are being employed for longer hours to undertake it' (reference to Dasgupta, 1977).

[4] *Jajman* and *kamin* are not Tamil terms and they are not used locally.

for other customers as well as working as wage labourers, mainly in agriculture.

In the wet area we also find other types of traditional 'village' servants: crop watchmen (*kavalkaran*), watermen (*nirpaichi*), and measurement specialists (*vettiyan*). They either enter into seasonal contracts as in the case of *kavalkaran* and *nirpaichi*, or else they are paid on the spot as in the case of the *vettiyan*. They usually work for several cultivators, and receive a fixed quantity in kind (paddy or millet), for a particular period of work. This is also partly a relic of an earlier collective economy. For example, the allocation of *nirpaichi* to various fields is done by a collective of *nanjei*-holders. *Kavalkaran* may even today serve as supervisors to the big landlords. They are middlemen between the landlord or his agent and the tenants, keeping records of crops cultivated, supervizing and collecting the rent at harvest, etc. They are often of the *Muthuraja* caste, and the job for a particular landlord is passed on from father to son.

A new group of specialists has also emerged in the wake of agricultural modernization. Tractor-drivers, operators of power-tillers and power-sprayers, and specialists in banana cultivation belong to this group. They all work under varying but privileged conditions. The tractor-drivers are not a numerous category—there are only a total of about ten tractors in the three wet villages and about five in the three dry villages, all with the big farmers. The drivers are employed on annual contracts. They are paid a monthly wage of about Rs. 300, and they have to drive and maintain their tractors even when the vehicle is rented out to other farmers, which is a common practice. Since tractors are used not only for cultivation but to an even larger extent for transportation, these drivers also partly replace the carters, who used to be employed by bigger farmers on more traditional terms. Likewise, the few operators of power-tillers enjoy similar but less privileged terms of employment. Operators of power-sprayers, on the other hand, are more numerous and work under conditions more similar to ordinary attached labourers. But there are also independent entrepreneurs owning power-sprayers who spray fields on a piece-rate basis. Recently, such a group organized an association to guard their interests. Banana specialists, finally, are casual workers who are experts on some operations in banana cultivation like planting, which demands certain skills. There are a few such specialists in each village in the wet area and they are paid higher wages than ordinary casual workers.

Common to all these modern specialists is that they are not recruited from particular castes, but on the basis of some training. They sometimes, at least in the case of tractor drivers, hail from outside the village.

It should be evident from the preceding sections that wage labour relations in this economy are quite heterogeneous, and they can hardly be described with the simple dichotomies of permanent—casual and skilled—or unskilled. Within each of these crude categories as well as between them we find a number of types whose employment and wage conditions, moreover, are heterogeneous and varying.

We will develop the analysis by considering rates of employment and incomes of the agricultural labourers. However, such an analysis cannot be performed without first making a small diversion into the non-agricultural sector of the economy, which has an important bearing on employment and income earning opportunities both for agricultural labourers and for the peasantry.

Non-agricultural trades

In both the wet and the dry ecotypes a small percentage of the households are entirely occupied in non-agrarian trades and have no relation whatsoever to agriculture: the respective percentages are 9 for the wet area and 4 per cent for the dry ecotype.[5] But the non-agricultural sector is more important than these percentages imply, because in both ecotypes most households combine trades. The non-agrarian component in this combination is higher in the dry area, which can be seen from the following statistics: the percentage of households in the agrarian population which are primarily involved in non-agrarian trades[6] is higher in the dry area than in the wet (34 per cent and 19 per cent respectively).[7] The

[5] The difference between these two figures is not statistically significant.

[6] Our sample frame is the agricultural population, defined as those households who are in some way related to agriculture (as owners, cultivators, or labourers). The population thus includes both primarily agricultural labour households, and primarily non-agricultural households (defined as those who derive a major part of their income from non-agricultural sources).

[7] This difference is significant at 5 per cent level.

percentage of total income drawn from non-agricultural sources is also higher in the dry area (more about this below).

In these respects the dry area still conforms to an old pattern. The low yield and intensity of dry agriculture has always precluded exclusive reliance on farming. The inhabitants of the dry plains have also relied on exports to the wet valleys, and they have been involved in a variety of trades, such as, livestock, stone-quarrying, lumbering, and crafts of various sorts (Baker 1984, p. 143). Our dry villages do not deviate from this pattern, but it is noteworthy that the traditional specializations have been supplemented with a cottage industry which is probably of more recent origin, namely, gem-cutting. In numerous small workshops, boys and young men are employed to cut and polish the raw stones which their employers get from merchants in Tiruchirapalli. The labourers are often bonded to their employers who advance loans to tie skilled workers to their workshops. Like agriculture, gem-cutting is seasonal: the polishing wheels are idle during the agricultural peak season when both employers and workers attend to farm work.

Therefore, one cannot talk of any fully specialized agricultural labour force in the dry area as the peasantry too is to a significant extent dependent upon non-agricultural trades. In fact, it is only among the biggest cultivators that one finds farmers deriving almost their entire income from farming.

As already indicated, the wet area is somewhat less dependent upon non-agricultural sources of income, but here too the combination of trades is widespread among both peasants and labourers. As in the dry area, farmers exclusively dependent upon farm incomes are mainly found among the substantial cultivators. But in contrast to the dry area, the rural proletariat in the wet ecotype contains a group of specialized agricultural labourers. These are the members of the *kothu* gangs specialized in spadework and other operations in banana and cane cultivation. They have work more or less all the year round and are less dependent upon other sources of income.

There is no counterpart in the wet area to gem-cutting and stone-quarrying in the dry one; but we find a large number of non-agricultural occupations, from traditional artisan and service-trades to more modern ones like cycle-mechanics and bootleggers. Likewise, we find industrial occupations, merchants, and government employees.

Employment and income of agricultural labourers

We can talk of three subgroups within the agricultural wage-labour force: (*a*) the agricultural labourers proper, who do not farm and who derive only a minor part of their income from non-agricultural sources; (*b*) peasants who complement income from own farming with income from labouring out; and finally (*c*) workers belonging to non-agricultural households who occasionally work as agricultural labourers. In the tabulations below we have, however, used somewhat different categories, because it seems useful to distinguish between those peasants for whom wage labour is a substantial addition to their income, and others for whom it is only marginal. Here we can use the notion of *poor peasant*, as it will be defined in next chapter, i.e., those peasants whose holdings do not provide their families even with their subsistence need of grain. The poor peasants account for most of the peasant supply of agricultural labour, and the higher peasant classes only for a minor part. In the rest of this chapter, therefore, we will talk of three subgroups in the agricultural wage-labour force: (*a*) agricultural labourers; (*b*) poor peasants; and (*c*) others, where the last group is made up both of peasants and of workers belonging to non-agricultural households.

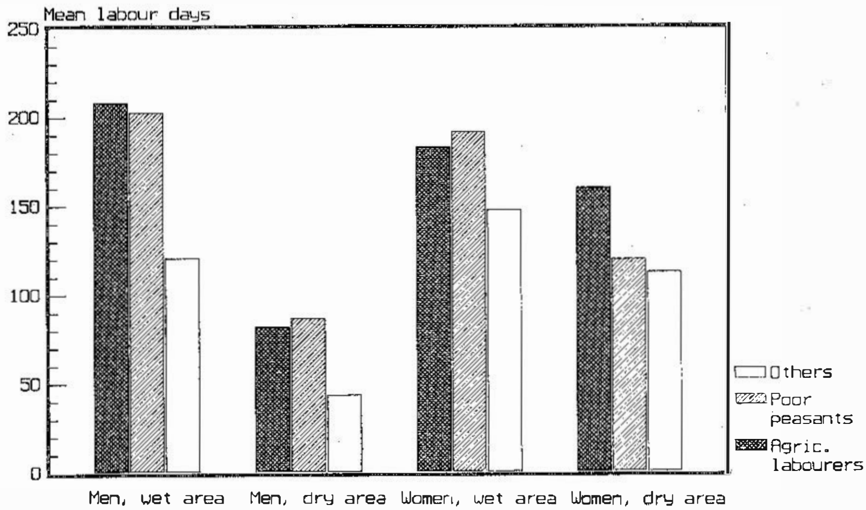
As an overall measure of the frequency of agricultural wage labour we have calculated the annual mean days of coolie work put in by men and women in the three subgroups. As usual we make separate tabulations for the two ecotypes (see Fig. 5.1 and Table 5.2).

The 168 days put in by the male workers in the wet area might at the first instance seem low in view of the descriptive account given above, where we stressed the intensity of wet agriculture and its effects on the labour market. But when we look at the figures for the agricultural labourers proper, we see that these are close to fully employed the year round. And although they have their own farms to attend to, the poor peasants have equally high rates of employment. The overall mean is decreased by the other half of the population for whom agricultural labour is merely a side-line.

The same effect is obvious in the dry area where a low overall mean conceals a higher volume of employment for the agricultural labourers proper. But in the dry ecotype, the labourers do not reach anywhere near full-year employment, with the exception, of

FIGURE 5.1

Mean Number of Labour Days Hired-out Per Worker by Sub-group of Worker, Sex and Ecotype



course, of the *pannaiyals* who are employed by the year. Workers are, therefore, forced to find non-agricultural sources of income; unlike in the wet area, they cannot subsist as specialized agricultural labourers.

The rates of female employment are impressive—in both areas they seem at least as high as those for men. Thus, a decline in female labour days due to the introduction of new technology seems unlikely.[8] Although our data do not permit an historical comparison, there is reason to believe that the new technology with new varieties and more intensive cropping has increased the need for labour (Dasgupta, 1977, p. 322; Basant, 1987, p. 1349), and that this applies to both women and men. This is also the conclusion of Harriss who re-studied some villages in North Arcot

[8] Compare Dasgupta, 1977, p. 327, who draws the opposite conclusion.

TABLE 5.2

Mean Number of Labour Days Hired-out Per Worker by Sub-group of Workers, Sex and Ecotype (with 5% Confidence Interval)

Sex	*Subgroup*	*Per cent of pop.*	*Ecotype*	
			Wet area mean labour days	*Dry area mean labour days*
Male workers				
	Agric. labourers	30	208	82
	Poor peasants	19	203	87
	Others	51	121	44
Overall means	(with 5% conf. int)		168 (+/−33)	68 (+/−28)
Female workers				
	Agric. labourers	16	183	160
	Poor peasants	28	192	120
	Others	56	148	113
Overall means	(with 5% conf. int)		171 (+/−54)	128 (+/−35)

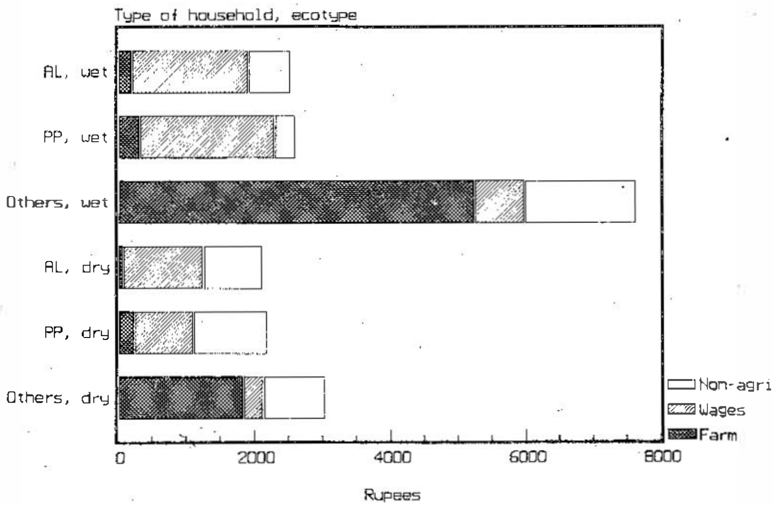
Note: There are no missing cases. These figures have been arrived at by means of the retrospective method. The respondents were asked to recollect their hiring-out during the last year, month by month. This proved to be a weak method; most respondents had difficulties in remembering exactly and made rough estimates. The precision in these figures is therefore far from desirable. This is also indicated by the fairly broad confidence intervals, which are due to high variances both within and between villages. We have tried to check the reliability of these figures by comparing them with the figures on hiring-in, given by the farmers. Such a cross-check pointed to problems mainly with the data for the dry area.

District, Tamil Nadu after a period of about ten years, and found that 'the number of women working both in own cultivation and as agricultural labourers increased,' and although his data are not quite comparable, he believes 'that there has certainly been an increase in the size of the female agricultural labour force' (1985, p. 44).[9] Let us now see what incomes the labourers receive for their work (see Fig. 5.2 and Table 5.3).

[9] This can be a Tamil Nadu phenomenon, because the general pattern seems to be that female employment has decreased. (Dasgupta, 1977; Basant, 1987.) Govind Kelkar also claims that there has been a sharp decline in the size of the female agricultural labour force during the green revolution decade, i.e., between 1961 and 1971, quoting Chakravarty and Tiwari (1979). Mies (1980) and the *Rural Labour Enquiry* (1974–75, pp. 102–3) note the same phenomenon in South Indian agriculture.

FIGURE 5.2

Mean Income by Source, Type of Household, and Ecotype



AL = agricultural labourers; PP = Poor peasants; Non-agri = non-agricultural incomes; Farm = farm incomes.

As it appears from Table 5.3, where kind wages have been evaluated by means of a flat shadow price of Rs. 1.20 per kilogram of grain, the average income from agricultural wages is twice as high in the wet area as in the dry one. Keeping in mind that kind wages in the latter, to a large extent, consist of coarse grains, this in a way understates the difference between the ecotypes. If we were to evaluate the kind wages with different shadow prices for different types of grain we would get an even greater difference between the ecotypes.

The kind portion of agricultural wages is higher in the dry area. Evaluated as above, more than half the wage consists of grains. Since kind wages are mainly paid for harvesting and threshing, this is a direct reflection of the huge amounts of labour absorbed during the harvest of the grain crops. Similarly, the lower percentage of kind wages in the wet area (around 30 per cent), reflects

TABLE 5.3

Mean and Percentage of Income by Source, Type of Household and Ecotype

Ecotype	*Type of household*	*Per cent of pop.*	*Source of income*								*Sample cases*
			Farming		*Agric. wages*		*Non-agric.*		*Total*		
			Mean	*%*	*Mean*	*%*	*Mean*	*%*	*Mean*	*%*	
WET AREA											
	Agric. labourer	30	195	6	1714	76	612	18	2464	100	34
	Poor peasant	19	313	17	1980	73	307	9	2586	99	21
	Other types	51	5224	57	748	19	1652	24	7682	100	49
Wet area total		100	2594	33	1265	48	1069	19	4955	100	104
DRY AREA											
	Agric. labourer	16	69	2	1178	64	867	34	2227	100	14
	Poor peasant	28	232	9	869	52	1076	39	2366	100	22
	Other types	56	1831	55	294	14	914	31	3574	100	53
Dry area total		100	1080	33	577	33	950	34	3010	100	89

Note: The number of missing cases is 40 or 17 per cent (for non-agricultural sources of income, for the total, and for the percentages). For the other means the number of missing cases are less, or 6 and 7 per cent.

the importance of banana and cane cultivation, where much labour is absorbed, and where no kind wages are paid.[10]

We have now discussed the two major components of the incomes of the proletarian groups that we are presently focusing on: the agricultural labourers and the poor peasants. For the latter group, at least, a third source of income should be added to the agricultural w ges and non-agricultural sources of income, namely, farming. In Table 5.3 we have added income from animal husbandry to that from farming. As is evident, this source makes up a minor share of the total income for the rural proletariat. This is hardly surprising as far as the agricultural labourers are concerned, since by definition they do not farm; they occasionally own some livestock or poultry, but it adds only marginally to their income. It also adds little to their subsistence, since they do not consume much of the home-produced eggs, milk, or meat. What little they produce is most often sold or exchanged for more essential goods like grain.

It might seem surprising that the poor peasants do not get more from their farming: 17 per cent of the total income in the wet area and only 9 per cent in the dry area. If we look at the total incomes in Table 5.3, we see that the poor peasants have a somewhat higher income than the agricultural labourers, a difference that could be attributed to their land control. But the difference is not statistically significant, which emphasizes our point that their farm income is generally marginal. Seen from the peasant's subjective point of view, this petty farming might still be worthwhile, since, if he does not count his own labour, it does not cost him much to produce the grain which he gets from his small parcel of land.[11] It may also represent the realization of an ambition: the dream to become landed, to acquire enough land to feed the family. As we have seen in the previous chapter, many landless and small landholders are driven by this dream to purchase land of their own. But the fragility of the dream, and the distance from a petty parcel to a piece of land that one can live from, is well illustrated in the percentages cited above. For most poor peasants their farm income is only a marginal addition to their subsistence.

[10] The difference between these two percentages is highly statistically significant (0.1 per cent).

[11] For an analysis of the micro-economy of a poor peasant holding, see Djurfeldt-Lindberg, 1975a, pp. 135 ff.

So after all, the difference between poor peasants and agricultural labourers is not so big: for both groups agricultural wages is the most important source of income, constituting from half to three-quarters of their earnings. Non-agricultural sources of income rank second, at least in the dry area where they clearly exceed the incomes from farming and animal husbandry. But both groups have a clearly proletarian character, so, from the perspective of these data, our convention of letting the groups together make up the rural proletariat seems well-founded. At the same time, one should not trivialize the segmentation of the rural proletariat. Even though the poor peasants get very little income from their farming, they are objectively and probably also subjectively in a different position from the landless agricultural labourers: they are usually landowners and land-tillers, and they are also petty employers of hired labour. This, together with the combination of trades also among the landless, makes them quite a different proletariat than the industrial one.

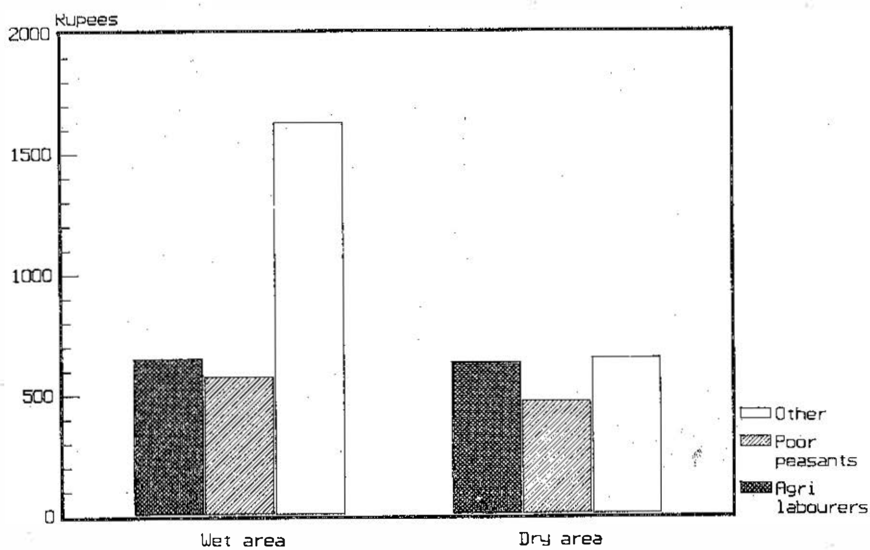
Besides agricultural labourers and poor peasants Table 5.3 lumps the rest of the agrarian population into one heterogeneous category of 'other types' of households. Despite the heterogeneity it may be relevant to compare the incomes of these types with those of the rural proletariat. Not unexpectedly, the non-proletarian groups get a higher share of their incomes from farming and less from agricultural wages, while the share of income from non-agricultural sources seems to be about the same for all groups. This Table also brings out the inequality between the proletariat and the other groups; it is especially pronounced in the wet area where the mean income for the whole population is around three times as high as the income of that majority of the population which are agricultural labourers and poor peasants. Likewise, the lesser inequality in the dry area is reflected in a less yawning gap between the overall mean income and the mean income of the two lowest classes. This tallies well with our findings in the chapter on land relations, which brought out the same difference between the ecotypes.

In Figure 5.3 we have computed incomes per caput for agricultural labourers and poor peasants.

By computing incomes per caput we can compare the incomes in our material with the official poverty line, which was around 800 rupees in 1979/80. Thus, it is evident that agricultural labourers

FIGURE 5.3

Mean Income Per Caput by Type of Household and Ecotype



Note: The percentage of missing cases is 14.8. The percentage increases for this type of composite variables made up of many ingredient variables.

and poor peasants are far below the poverty line. This line is defined with reference to a minimum for subsistence: people with incomes below the poverty line will not be able to buy enough food to attain a minimum intake of calories. So on the basis of this computation we would expect agricultural labourers and poor peasants to live in a kind of permanent semi-starvation. However, as far as we can see, they don't. We have no intention of denying their deep poverty, but, as we shall see, they at least earn enough to fill their stomachs with grain, if nothing else.

There have been attempts by State agencies to influence the wage levels of agricultural labourers. Although unable to influence the number of days for which casual labourers can procure employment, authorities have made repeated efforts to enforce minimum wages for agricultural labourers. In Tamil Nadu 'The National Minimum Wages Act was in vogue till a State law was passed in 1959 fixing minimum wages for seven classes of workers employed in agriculture. The minimum wages were revised upwards in 1969' (Kurien, 1981, p. 125).

It has been claimed that:

> Minimum Wages as fixed by the government have a significance for the rural labour, though they are paid by the farmers employing them and not by the government. They provide a standard with which to compare, and become a basis for demanding wages at least according to this standard. (Nadkarni, 1987, p. 145)

However, as is seen in our study, there is a wide variation in wage rates obtained for different types of operations and by different categories of workers, and we have not been able to discern any visible effect of this legislation.

There is also a law, from the early 1940s, protecting the permanent farm servants. But it is similarly difficult to detect its impact on the conditions of the permanently employed labourers. Instead, there has been, at least over a longer period of time, a reduction in the proportion of permanent farm servants and consequently an increased reliance on casual labourers, especially labour gangs (cf. Baker, 1984, pp. 196 ff.).

In order to demand higher wages and better conditions of work the labourers need some kind of a collective organization. The only such collectivity existing in the field area are labour gangs, who, as we have seen above, can be regarded as a kind of proto-union. Generally, these gangs get paid much above the existing minimum wage rates. In contrast, other types of daily labourers generally are paid below these rates. The latter workers also have not got the collective organization necessary to bargain for better deals.[12]

Levels of subsistence

We have so far worked with a very abstract notion of income. While useful for some purposes, this abstract notion also does

[12] Kurien observes that during the period 1951–52 to the mid-1970s the various minimum wages acts 'did not protect the real wages from falling' in Tamil Nadu (1981, p. 125).

violence to reality, because the income which we have discussed hardly exists as a real category in the minds of the population we are discussing. Moreover, these monetary incomes tell little about the levels of subsistence of the labourers. We will get a much better picture if we break down total income into its cash and kind components. The portion in kind consists of a bundle of use-values of which one stands out as fundamental, namely, grain. For a population at this level of subsistence, food constitutes a major share of the household budget and grain in its turn makes up a major share of the latter (cf. Djurfeldt and Lindberg, 1975b, pp. 68–84). In the following we will only discuss foodgrains, and entirely abstract from other incomes in kind.

To establish the subsistence needs of grain we asked our respondents how much grain (that is, rice and coarse grains) they cook in a day or consume over a year. Expressed per consumption unit,[13] people in the wet area claim to consume on an average around 220 kg. of grain a year. In the dry area the mean is somewhat higher, around 225 kg. However, since more coarse grain is consumed in this area and since we have not deducted the husk content, which varies for different types of coarse grain but which can be taken to be around 10 per cent in our case, 220 kg. can be taken as the mean level of consumption for the dry area as well.

This is the equivalent of 600 grammes a day for an adult consumer. A nutritionist might consider this to be on the high side (cf. Djurfeldt and Lindberg, 1975b, pp. 72 ff.). There may also be a tendency on the part of our respondents to overstate their level of consumption. But the general knowledge about the actual grain consumption in India is weak, as is evident from the recent discussion about poverty and its prevalence (see, for example, Achaya, 1982; Tyagi, 1982; and Ashok and Kulkarni, 1982). Thus, we find no reason to discard the level of consumption reported by our

[13] Consumption units are calculated as follows:

— children aged 0–3 are counted as 0.25 c.u.s.;
— children aged 4–7 as 0.50 c.u.s.;
— children aged 8–15 as 0.75 c.u.s.;
— adults aged 16–59 as 1 c.u.; and
— adults 60 and above as 0.75 c.u.s.

respondents; we will take 600 grammes per day and per consumption unit as the accepted level of subsistence. This gives around 2,200 calories a day. According to Sukhatme (1970), it would be possible to subsist only on this food intake without serious risk of malnutrition. Therefore, 220 kg. of grain can be taken to define a biological minimum, since a food intake below this line involves health hazards (cf. Ashok and Kulkarni, 1982).

The pattern of grain consumption is quite different in our two areas. In the wet area, where paddy is the only important grain crop, very little coarse grain is consumed. This is usually bought, presumably in the off-season, when stocks of paddy are exhausted and cash reserves are meagre. In the dry area, the staple food is *cumbu* and *solam* and smaller quantities of other coarse grain. Rice is not consumed daily.

In view of our earlier finding thatpoor peasants hire-out as wage labourers to about the same extent as the landless labourers, they can be expected to earn higher incomes in kind than the latter, since, in addition to earning kind wages comparable to the landless, they also get some grain from their cultivation. But, as can be seen from Table 5.4, the differences are small and they are not statistically significant. On the average, a poor peasant's entire income of grain does not suffice to cover his subsistence needs. The per caput income is lower than the 220 kg. per caput which we have taken as the norm. This again stresses the minute scale on which most poor peasants operate.

Since agricultural labourers and poor peasants cannot cover their grain needs with what they earn in farming and as wages, they are forced to use their cash wages to buy grain in the market. This means that only part of their cash incomes are available for buying other food items than grain, and for covering other consumption items. Worst-off, in this sense, are the poor peasants in the dry area; they have to use more than half of their cash income (54 per cent) for buying foodgrains, while the poor peasants in the wet area are somewhat better-off, having to use 41 per cent of their income for purchasing grain. In both the ecotypes the agricultural labourers are better placed in this respect: they have to use on the average less than 10 per cent on buying food grains.

But in all these cases it seems evident that labourers and poor peasants can attain a minimum level of subsistence defined as 220 kgs. of grain per consumption unit and year. Thus, they apparently

TABLE 5.4

Mean Incomes in Kind by Source, by Type of Household and Ecotype (Kilogrammes of Grain, Total and Per Caput)

Ecotype	*Source of kind income*				
	Type of household	*Wages*	*Farming*	*Total*	*Per caput*
WET AREA					
	Agric. labourer	570	0	570	162
	Poor peasant	637	270	896	184
	Other types	156	605	712	112
Wet area total		368	505	706	148
DRY AREA					
	Agric. labourer	639	21	595	185
	Poor peasant	435	193	667	162
	Other types	114	773	1318	226
Dry area total		270	746	1039	203

Note: The percentage of missing cases is 5.5.

do not live in permanent semi-starvation, as one could be led to believe by the income statistics quoted earlier. They are not so desperately poor that they always starve. But, obviously, this does not mean that they are well-off in any sense. Being an agricultural labourer or a poor peasant means being doomed to a life of poverty with small possibilities for escape.

When in the next chapter we analyse class, we will use these findings on the level of subsistence attained by agricultural labourers and poor peasants as an instrument for drawing boundaries between the peasant classes.

FAMILY VERSUS HIRED LABOUR

The reliance on family labour has been taken as one of the main defining characteristics of a peasant or family farm (Shanin, 1971, pp. 14–15). On such a farm the cultivator and other members of the household, adults as well as children and elders, would ideally perform almost all the labour necessary for agricultural production. They would only rely on outside help (exchange or hired) for certain labour intensive operations like harvesting, or when special skills are needed.

Today, the peasant farm exists in a market economy dominated by capitalist relations of production and far-reaching State intervention. The farm is deeply drawn into a wide-ranging technical and social division of labour, both on the input and output side: commodities are inputs into the peasant farm, both as means of production (seed, fertilizers, pesticides, etc.) and as consumption goods for the family. Correspondingly, the output is also at least partially in commodity form, and it is only through the sale of its produce or through the sale of its surplus labour power that it finances its own needs of commodity inputs. At the same time, however, the family farm can only survive as a market unit thanks to the non-market features of its economy, primarily family labour but also production for own needs. It is the ability to exploit family labour down to the point where its 'marginal productivity' is close to zero that accounts for this survival (cf. Chayanov, 1966). Nothing implies that the farm is always or usually so close to the margin, although the Chayanovian hypothesis is often taken to mean that it always is. The thrust of the Chayanovian argument, as we take it, is, instead, the strategic importance of family labour and subsistence production to the peasant household—it cannot in the long run reproduce without it. In other words, the peasant farm/households would not normally be able to reproduce as fully commoditized units with both inputs and output cent per cent in

TABLE 5.5

Per cent of Total Labour Input Made by Family Labour, by Type of Farm and Ecotype[14]

Type of farm	Ecotype: Wet area	Ecotype: Dry area
Poor peasant	47 %	43 %
Other	23 %	49 %
Overall percentage	30 %	47 %

Note: The number of missing cases is 5.9 per cent.

[14] Livestock tending is not included in these labour days, but all other farm labour is. Tasks requiring less than a day have been counted as fractions thereof.

commodity form, and/or without the sale of surplus labour power. (This inability could be taken as a defining characteristic of a peasant farm.)

The pertinent question in relation to family labour is, therefore, its importance in relative terms: to what extent do farming households rely on family labour in cultivation; or, alternatively, to what extent do they rely on outside labour power? In Table 5.5 we present an overall picture of labour input in these terms.

From the last row of the Table we see that the reliance on hired labour is higher in the wet ecotype,[15] but also that in both ecotypes hired labour accounts for a major share of the total labour input. The difference between the ecotypes seems easy to explain: the heavy concentration of landholdings in the wet area makes for big holdings which cannot be run with family labour only, so the structure creates, as it were, the demand for hired labour, and the high rates of landlessness would seem to ensure the supply of that demand. In the dry area on the other hand the land distribution is less unequal, middle-sized holdings predominate, and there are few landless. This would make us expect a greater input of family labour. Thus the difference between the ecotypes in the reliance on hired labour, given the institutional set-up, clearly seems to be a consequence of the differing land relations in the two ecotypes.

But the heavy reliance on hired labour in both ecotypes runs counter to the picture of a peasant household as one relying mainly on family labour. Our households depend mostly on hired labour for their agricultural operations; and the averages for all farms, big and small, do not conceal any other pattern. It is a remarkable fact that all farms, including the poor peasant ones (see first row in the Table), hire-in a great deal of labour to assist or replace family labour.

What are the reasons for this reliance on hired labour? As is clear from the Table, in both ecotypes poor peasants use about as much hired labour as they contribute own family labour to cultivation. To understand why, let us first characterize poor peasants more generally. As we have seen, they tend to get a major share of their income from other activities than farming. In the wet area they are usually employed as agricultural labourers. In the dry area, where employment opportunities in agriculture are less, they

[15] The difference is statistically significant at 0.1 per cent level.

tend to be employed in various non-agricultural trades like gem-cutting, lumbering, stone-quarrying, and rope-making. In both areas their farming should be seen, we believe, as a way of economizing with their wages. By investing their wages in cultivation of foodgrains they get more grain than they would be able to buy with the same money. One would expect, however, that under these circumstances they would be eager to economize with cash inputs, and to avoid hired labour and other commodity inputs whenever possible. But their pattern of labour use obviously does not conform to this expectation. One reason for their reliance on hired labour may be its ready availability, which makes family and hired labour substitutable to a certain extent. If a small farmer hires a man for a certain task, he can easily finance this by hiring himself out for another day. There is one obvious advantage to this substitution: farm operations can be carried out more speedily, which may have a substantial impact on yields. This is an aspect of what Djurfeldt and Lindberg (1975a) have called the labour market as a means of labour exchange. In other words, it is wrong to assume that wage labour always is an exploitative relation—when people hire each other, it hardly qualifies as such a relation.

The existence of a substantial non-agricultural sector, like in the dry area, may have a similar effect. If the farmer has an alternative source of income outside farming the opportunity cost of hired labour may be low, if the farmer can earn more than the agricultural wage rate in some non-agricultural employment or trade. Thus, the non-agricultural sector could make for a higher reliance on hired labour.

Thus, we have found two possible explanations for the low importance of family labour, one important in the wet area (a high demand for agricultural labour), and the other in the dry one (a substantial non-agricultural sector). But other factors could of course also be active. We will discuss two such factors, namely, (*a*) the technical nature of paddy cultivation; and (*b*) the effects of the caste system.

It has often been argued that the high incidence of hired labour even on smaller farms is a peculiar feature of paddy cultivation. Mencher, for example, writes:

> An economy based on rice cultivation needs to have either a very efficient system of cooperative production or a high labour

> force of agricultural workers, since even those who own as little as one hectare cannot manage without some outside help (Etienne, 1968, p. 215). In Tamil Nadu (as in the rest of India), the general pattern has been that of having a large reserve of labourers who can be utilized during times of greatest need, and left to manage as best as they can during the rest of the agricultural year. (1978, p. 146)

This feature of paddy production has also been taken as the main reason why the Tamil areas had a landless labour force already before colonial rule (Hjejle, 1967; Kumar, 1965).[16]

In other words, the technical nature of paddy production could be one reason for the use of much hired labour by cultivators, including poor peasants. But since this is a multi-crop system, the technical features of one crop, namely, paddy, cannot in itself explain the entire pattern of labour use. This is illustrated by Table 5.6 containing crop-specific data on labour use.

Looking at these data, the impression gets stronger that other factors than technical ones are at work in determining the pattern of labour use. This is most evident in the dry area where apparently the input of family labour varies little between crops. The technical expediency making for massive hiring-in when growing paddy is not that acute when growing the dry crops of *solam*, *cumbu*, and groundnut. These crops could very well be grown on farms using little or no hired labour. Still, the pattern of labour use for these crops apparently differ little from that for paddy.[17] This result, of course, strengthens our argument that other factors than purely technical ones are responsible for the high extent of hiring-in.

There is also a striking uniformity in the pattern of labour use for different crops in the wet area and the reasons for this are obvious: big estates dominate in the wet area and they of necessity rely on hired labour, irrespective of the crops grown. Only the poor peasants could be expected to have another pattern of labour

[16] Of course the argument in itself is not an adequate explanation for the existence of a landless labour force even pre-colonially—the genesis of a structure cannot be explained by its function. A mechanism explaining the emergence of such a labour force must also be laid bare.

[17] There is a statistically significant difference between, for example, *solam* and groundnut, but this does not affect the argument that the difference is a small one.

TABLE 5.6

Per cent of Total Labour Input Made by Family Labour, by Crop and Ecotype

Crop	Ecotype			
	Wet area		Dry area	
	n	%	*n*	%
Paddy, local and improved varieties	36	26	22	46
Paddy, high-yielding varieties	47	30	65	47
Sugarcane	17	12	—	—
Banana, rasthali variety	15	16	—	—
Banana, other varieties	16	22	—	—
Solam	—	—	69	55
Cumbu	—	—	62	48
Groundnut	—	—	35	43
All crops		17		44

Note: The number of missing cases varies from crop to crop, but the maximum number is 5.9 per cent of the total sample size.[18]

use, but since they grow paddy almost exclusively, we cannot compare the labour use on different crops for this class only.

The only crop which seems to deviate from the overall pattern in the wet area is sugarcane.[19] This must depend on cane being an industrial crop, grown on contract for the sugar factory and following its detailed regulations. Seeds are distributed by the factory and so are the fertilizers. Planting and cutting dates are set by the factory, and detailed instructions to the grower are given by the factory at all stages of cultivation. The factory intervenes in production to such an extent that the whole system comes to resemble one where the individual owner leases his land out to the factory, limiting his contribution only to crop watching and irrigation, besides the land. Looking finally at the only crop which is grown in both ecotypes, i.e., paddy in different varieties, we see that paddy

[18] The totals in this table do not tally with those in Table 5.5, because the latter include all labour on the farm, while the data in Table 5.6 refer only to labour in cropping.

[19] The pattern of labour use for cane differs significantly from that of local and improved varieties of paddy, while the difference between banana and paddy is not statistically significant.

seems to be grown in an ecotype-specific pattern, which, as far as we can see, cannot be explained by ecological factors alone.[20]

To conclude, then, the finding that the pattern of labour use varies so little between crops and so systematically between ecotypes supports[21] the argument that economic and social factors are responsible for the pattern of labour use rather than ecological and technical ones. That is, from the fact that the pattern of labour use is ecotype-specific, we cannot conclude that it is ecologically determined. The pattern of labour use seems rather to be due to the specific social structures prevalent in the two ecotypes, more precisely the ready availability of hired labour which makes hired and family labour substitutable to a certain extent, and, finally, the availability of non-agricultural employment which has the same effect. But maybe other factors too are at work?

In addition to the above, an important cultural factor seems to be active, namely, the caste system, which, as we have noted in previous chapters, differs between the two ecotypes. The dry area has very few 'aristocratic' castes like the *Brahmins*, who shun manual labour and consider it below their dignity even to touch the plough. While the old landlords in the wet area were mainly *Brahmins*, the dominant castes in the dry area were typical peasant castes whose ethos ragarded labour on the land as a virtue. In some of these castes, however, the women were kept away from work in the fields, a practice that would increase the reliance on hired labour.

While caste could be important as a complement to the above explanation of the pattern of labour use, it is obvious that it cannot be a substitute for it. The explanatory power of caste is especially limited in the case of poor peasants, who only rarely hail from 'aristocratic' castes. One could, of course, argue that their liberal use of hired labour is a case of 'Sanskritization', an emulation of the upper castes. But it is obvious that such an emulation would hardly be possible if there were no alternative sources of employment and income.

One question remains: are these petty employers really peasants in the true sense of the word? We have already argued that peasants should be defined, not as exclusively relying on family

[20] The difference in the pattern of labour use for paddy between the ecotypes is significant at 0.1 per cent level.

[21] The difference is significant at 0.1 per cent level.

labour but as strategically dependent upon non-market circuits for the reproduction of their farms and/or on the sale of labour power. If that argument is accepted, it is clear that our respondents may be true peasants despite being petty employers. This argument will be pursued in the next chapter.

Summary and conclusions

We started this chapter with a mainly descriptive account of the forms of hired labour. We first dealt with permanent farm servants. These constitute a minority of the wage-labour force in both ecotypes, and they are used by farmers mainly as a substitute for family labourers. The composition of the permanent labour force differs somewhat between the two ecotypes. In the dry area there are many bonded child labourers working as herdsmen. They are usually bonded by a loan taken by their parents from the employer. In the wet area we find, on the one hand, some better paid labourers working for capitalist farmers and, on the other hand, some *kai varamdar* who are at the same time tenants and permanent farm servants, attached by a multistranded relationship to their masters. This is a relic of a previously common form of labour organization on the big estates in the wet area.

Daily wage labour is common in both ecotypes, but a significant difference is that in the wet area a system of gang labour prevails. Here the gang works on a kind of collective piece-rate. The system has recently spread to the dry area, but it is not common there. The difference seems to be a consequence of the intensification of cultivation on the big estates in the wet ecotype. The extensive planting of banana and sugarcane, the establishment of year-round irrigation, and the diffusion of new high-yielding varieties have together contributed to this intensification in the Kaveri belt.

The prevalence of the gang system makes for a segmentation of the agricultural labour force between a core of mainly young workers enrolled in the gangs and employed more or less throughout the year, and an intermittent fringe of workers, many of whom are children and elderly people who find it more difficult to get employment and who are mainly enrolled in the workforce during peak periods, such as, the paddy harvest.

The differing labour relations in the two ecotypes must be seen as a partial consequence of the importance of the non-agrarian economy in the two systems. In the dry area, agriculture is the sole occupation only for few people. As we saw in the ecology chapter, tilling of the soil cannot on its own support the population. As a consequence, few people can subsist as agricultural labourers or as independent farmers without seeking additional income outside agriculture. Only in the wet area do we find a full-fledged landless labour force, occupied on the land more or less all the year around.

When discussing the employment and income of the labouring population, we introduced the distinction between poor peasants—defined as those farmers whose holdings are so small that they cannot even meet the foodgrain requirement of the household—and agricultural labourers who do not till any land. In both ecotypes, both these groups derive a substantial part of their incomes from agricultural wage labour, but only in the wet area are employment opportunities enough to provide workers with more or less full-year employment. It is also striking that, on the average, poor peasants have very small holdings which provide only a marginal addition to their other sources of income. In these terms they do not seem to be better-off than the labourers, if anything they are poorer; but their landholdings give them a small buffer which the landless often lack. As we saw in the previous chapter, many small landholders have been upwardly mobile in the last generation, but, obviously, this mobility has not in general added much to their income and little to their security. It is more plausible to see their acquisition of land as the attempt to realize a dream, the dream to get landed. Our results stress the fragility of that dream.

Looking at the levels of income we found these to be hovering around the official poverty line, both for agricultural labourers and poor peasants while, on the average, the rest of the population are far above that level. Their poverty forces the labouring population to spend half or more of their income on foodgrains, leaving them very little for consumption of other food items and even less for other consumption.

In the last section of this chapter we discussed the other major category of labour, namely, family labour. The heavy reliance on hired labour, even among the smallest farmers, is one of the most distinctive characteristics of this farm economy. It is especially pronounced in the wet area, but it is also typical of the dry ecotype. The possible causes are several, but our argument led us to emphasize not technical and ecological factors, but economic and social ones. The main factor, we think, is the ready availability of hired labour, and the alternative employment opportunities for family labour, both inside and outside agriculture, which makes for a substitutability of family and hired labour, even on the smallest farms. This gives rise to the question of whether peasants who rely to such a small extent on family labour can at all be regarded as peasants. This question will be taken up again in the next chapter.

6

Identification of Agrarian Classes

Given the ecological variations and the very different land and labour relations in the two areas we studied, we will now—following the aims set out in the introduction—focus on the agrarian class structure.[1] We want to analyse if and how ecology and the relations of production are reflected in the relations of exploitation. Or to put it more precisely, what are the modes of surplus appropriation and the class structures associated with these different relations? We will start with a definition of class and proceed to a discussion of the relations of production studied in the preceding two chapters and their relation to class.

PROBLEMS IN THE DEFINITION OF CLASS

One problem concerns the very definition of classes. We may separate an economic definition of class from the political and ideological ones. A *purely economic definition* sorts people into classes only with the help of economic criteria, for example, the places occupied in the social economy. Most definitions of class, however, are composite, in the sense that they combine the above criteria in various ways. We will not argue for or against these types of definition, but merely make it explicit that in this chapter we work with an economic definition of class. That is, we study the economic structure in order to detect how it 'groups' or 'sorts' people into categories which we call 'classes'.[2]

In this chapter we will apply this purely (or narrowly, if you

[1] This chapter is an edited and expanded version of Athreya et al., 1987.

[2] The peasantry as an actor on the political scene is the subject of a voluminous literature, while the literature dealing with the internal stratification of the peasantry is much slimmer (parts of the literature is summarized in Shanin, 1980).

wish) *economic* definition, and explore the *utility of class* as a concept in *socioeconomic analysis*.

The classical definition of class in this tradition has been formulated by Lenin:

> Classes are large groups of people differing from each other by the place they occupy in a historically determined system of social production, by their relation (in most cases fixed and formulated in law) to the means of production, by their role in the social organization of labour, and, consequently, by the dimensions of the share of social wealth of which they dispose and the mode of acquiring it. Classes are groups of people one of which can appropriate the labour of another owing to the different places they occupy in a definite system of social economy. (Lenin, 1965, p. 421)

It would seem implicit in the above definition that the economic structure unequivocally sorts people into large groups. This chapter will demonstrate that the mechanisms of sorting are not so clear-cut, that the potential groupings in our case are several, and that, as a consequence, the agrarian class structure is not as crystal clear as one perhaps would have expected. As a result the class analysis is by no means straightforward. A number of difficulties arise, which call for precise definitions and incisive arguments.

The difficulties in classifying the peasantry stem from the fact that they share one basic relation to the means of production (being cultivators of the land and participating with their manual labour in the process of production). True, they often differ in another basic relation (in being owners or tenants of the land they cultivate), but this difference may not have a simple and unequivocal implication for their class status. Despite the basic similarity in the relation to the land and to the process of production, peasants differ enormously in 'the share of social wealth of which they dispose.' This difference is mirrored in the 'poor', 'middle', and 'rich' epithets so often used about peasants. On the face of it, these epithets only reflect a *quantitative* difference between peasants; but in a deeper analysis we are likely to find *qualitative* differences—i.e., differences between exploiters and exploited which are dissimulated under the formal identity in the relation to the land, and the merely quantitative difference in wealth.

If peasants are cultivators and sometimes also owners of the land they cultivate, parts of the agrarian population do not cultivate any land of their own. These are:

1. The agricultural labourers, and
2. the landlords.

Households in the group of agricultural labourers may occasionally own some land; in fact, they often do in the dry area, but at most their lands give them a *marginal income* in the form of rent. As agricultural labourers they have to subsist mainly on selling their labour power.

Households in the second group derive their income mainly from land rent. They are the pure landlords. As we have seen, tenancy is quite common in the wet ecotype, where 49 per cent of all operated land is leased-in. We have also seen that the classical system of share-cropping, in which the entire surplus product is appropriated by the landowner, has been almost totally displaced as a result of two processes (cf. chapter 4):

1. The lively tenants' movement in the wet villages has had the effect that about 46 per cent of all leaseholds in this area are registered with the courts, and that the tenants pay regulated rates of rent. As a result there seems to have taken place a general rent reduction.
2. Capitalist farmers cultivating banana and sugarcane are active in the lease market. Their high profits enable them to pay higher rents than those paid by ordinary poor and middle peasants cultivating paddy.

Lessors of land include, as we have seen, not only the big landlords of the traditional type living on rents, but also smaller owners for whom other sources of income are more important. Many owners of land under registered leaseholds are absentees—city-people with white-collar occupations.

Excepting the absentees, most small landowners in the wet area manage to cultivate their land themselves; they do not contribute much to the supply on the lease market. Here, there is a marked contrast with the dry area where many small landowners keep their land fallow, since they lack other means of production (bullocks, irrigation facilities, finance). This occurs hardly at all in the wet area.

Neither of the groups that we have now discussed belongs to the peasantry proper. The analysis of ownership and cultivation rights, in fact, does not take us far into the analysis of the core group of the peasantry—those who operate, and often, but not always, also own some land.

Relations of production and class

The two most important means of production are irrigation works and draught power. Other means of production, like tools and implements, are so few, simple, and cheap that they can hardly be monopolized. Thus they are insignificant for our class analysis.

There are agrarian economies where the ownership of draught-animals is more important than the ownership of land for a peasant's class position. In our area this is not so. There are cultivating households who do not own any cattle at all; they hire the ploughmen they need for tilling the land. So, obviously, lack of draught power is not an absolute barrier to cultivation. There are also owners of draught-animals who do not cultivate any land, but this is not very frequent: 1 per cent of the agricultural labourers in the wet area own bullocks and 7 per cent in the dry area. That they lack draught-animals may none the less be one important reason why many small landowners let their land lie fallow in the dry area. Likewise, it may keep many agricultural labourers away from the lease market in the wet area.

Tractors and power-tillers have only to a minor extent replaced animal draught power. Ownership of such machines is a clear indicator of class status, unlike ownership of bullocks. But irrigation works are, as we have seen in chapter 3, the most important form of investment in the land, leading to an increased potential, both in terms of the number of crops that can be grown in a year and in terms of productivity per crop. As is well-known from the debate on the Asiatic mode of production, there is a communal or collective aspect to irrigation which has interesting social consequences.

Large-scale irrigation works, like the whole Kaveri system benefiting our wet area, are forms of State property (and thus a form of State capital) administered by State officials. The interesting fact is that while the capital is State-owned, appropriation is private. The State appropriates only marginal shares of the huge surplus engendered by irrigation; irrigation fees are small, land taxes are marginal (although higher than on dry lands), and there are no taxes on agricultural income. The considerable concentration of wealth in the hands of a small number of big landowners in the wet area is thus something of a gift from the State, renewed yearly. This contradiction is even more glaring since, as a public enterprise, large-scale irrigation works are not regarded as profitable (cf. Pant, 1982).

Tanks, too, are owned and managed by the State. But as we have seen above (in chapter 3), they are generally not maintained properly. Damage to embankments and sluices are common; so is silting. Therefore, the production potential of the existing tanks is not tapped. There is even a considerable scope for expanding tank-irrigation and, thus, for making better use of the scanty and unevenly spread rainfall. One background to this state of affairs is the investment in well-irrigation, which allows landowners to solve their irrigation problems individually. Wells have been used for centuries in Tamil Nadu both as a supplementary source of irrigation in tankfed lands and as an independent source in *thottam* (garden) lands. Before the advent of the pump, the low productivity of the old method of drawing water from the wells with the help of oxen (*kavalai*) put a barrier to the expansion of this form of irrigation. One man working a full day with a pair of bullocks can hardly irrigate more than an acre or so.

This labour intensity meant that there was little surplus labour to be appropriated from *kavalai* operated lands. Therefore, *kavalai* can only be operated by cultivators commanding lots of unpaid labour, i.e., either by poor or middle peasants with reserves of family labour, or by landlords with bonded or unfree labour.

The pump has changed all this. An owner of a well and a pump-set can now irrigate his land at low costs in terms of both labour and cash. The rapid expansion of well-irrigation since the mid-60s has created a new scope for surplus appropriation in the dry areas. We will see below if this revolution has had any impact on the class structure.

Thus, the control of draught power and of irrigation sources is important to the class position of a household, but these factors do not on their own determine the class structure.

Some relations of circulation

There is a fair degree of commercialization of the agricultural economy, in the sense that inputs are to a certain extent commoditized, and so is consumption. Many cultivators also sell at least part of their output.

Merchant's capital is most exploitative when it combines with usurer's capital in giving production loans to peasants, appropriating surplus labour through the hidden interest charged as a reduction in price. As we will see in chapter 7, this type of relation is not very common in our area. But merchants also give loans free of interest and without any deduction in price against only a promise of delivery. Here the primary function of the loan seems to be to secure supply in a competitive market. The exploitative activities of merchants also surface in our price statistics where there is a systematic tendency for smaller cultivators to receive a lower price than the big ones, a phenomenon which probably cannot wholly be explained by differences in quality, but seems to be due also to the different bargaining positions of small and big sellers vis-à-vis the merchants.

Credit

As we will show in chapter 7, it is significant that private usurer's capital has been replaced to a certain extent by official credit institutions (nationalized banks and credit cooperatives), especially for agricultural investment. Of the total volume of credit, official institutions account for about 54 per cent. These loans carry a lower rate of interest, around 13 per cent, against the 20 to 40 per cent charged on private loans.

The rate of default on bank and cooperative loans has been very high, and it reached drastic proportions in 1979/80 with the boycotts started by the so-called farmers' agitation. The non-recovery of loans means that huge amounts have been practically given away. Sometimes the funds have been misappropriated, but considerable amounts have been invested in well-irrigation. In this way even these privately owned irrigation works are in a way a form of State capital but, like the large-scale irrigation works, appropriation is private.

This summary of some of the salient features of the relations of production and circulation in our area indicates that there is no clear-cut and unequivocal division of classes stemming from these relations. Thus, the relations of production do not on their own determine the class structure; nor does a study of these relations suffice for laying bare the class structure. To advance any further we must go deeper into the concept of class.

The concept of agrarian class

Lenin's 'Preliminary Draft Theses on the Agrarian Question' (1966) contains a standard definition of agrarian classes. Let us first discuss Lenin's definition of four peasant classes. We exclude for the time being his 'big landowners'. We also exclude his 'agricultural proletariat', since it is unproblematical from a definitional point of view.

> *Semi-proletarians* or peasants who till tiny plots of land, that is, those who obtain their livelihood partly by working their own or rented land, which provide their families only with part of their subsistence.
>
> *Small peasantry*, that is, the small-scale tillers who, either as owners or as tenants, hold small plots of land which enable them to satisfy the needs of their families and their farms, and who do not hire outside labour.
>
> *Middle peasantry*: small farmers who (*a*) either as owners or as tenants hold plots of land that are also small but under capitalism are sufficient not only to provide, as a general rule, a meagre subsistence and the bare minimum needed to maintain their farm, but also produce a surplus which in good years may be converted into capital; (*b*) quite frequently resort to employment of hired labour.
>
> *Big peasants (Grossbauern)* are capitalist entrepreneurs in agriculture, who as a rule employ several hired labourers and are connected with the peasantry only in their low cultural level, habits of life, and the manual labour they themselves perform on their farms. (1966, pp. 153 ff.)

A close reading of this text shows that Lenin uses six or seven different criteria for classification. We will discuss each of them in order to sort out what is useful for our purposes.

The area criterion

For some of the classes an unspecified area measure of their holdings is given, but the terms are very vague: *tiny* plots (for semi-proletarians) and *small* plots (for the small and middle peasantry). By implication, big peasants would have *big* holdings.

Area criteria of class may currently be the most commonly used of all criteria. In Indian official statistics, for example, the size of operational holdings is used as a criterion (see table).

TABLE 6.1

Class and Size of Operational Holdings

Official class	*Size of operational holdings (acres)*
Marginal	0.01– 2.49
Small	2.50– 4.99
Semi-medium	5.00– 9.99
Medium	10.00–24.99
Large	25.00+

Sometimes the acreage boundaries are more refined by, for example, assigning different weights to dry and irrigated land. However, as we will see below, this does not appreciably improve the usefulness of the criterion.

A more precise specification of the area held by the different classes presupposes two things:

1. A homogeneity in the productive potential of the land which is unrealistic. In our case it can be illustrated with the difference between an ordinary acre of rainfed land, capable of yielding a few hundred kg. of millets, and the best irrigated land in the wet area where more than 2,000 kg. of paddy can be reaped. The difference is reflected in land prices, with a few hundred rupees per acre for *punjei* lands, and several tens of thousands paid for the best *nanjei* in the wet area. With commercialization, the heterogeneity of land increases further, since the capital intensities differ considerably between crops. On good *nanjei*, for example, paddy can be cultivated at an average cost of below 1,000 rupees, or bananas can be planted with an investment of around 3,000 rupees.

The most intensive crop that we encountered, betel-vine, involves costs which are several times those of banana. Betel-vine, however, is grown only on fractions of an acre; but all the same, *with some degree of commercialization the area loses its usefulness as a measure of economic scale* (for further details see chapter 8).

2. Even if we could assume homogeneity in land, the area criterion would not be an independent criterion of class, since it presupposes some other criterion which can be used to fix the area boundaries between classes. Take a statement like the following: 'Peasants cultivating less than x acres of (homogeneous) land are poor peasants.' The statement builds not only on the area criterion but also on an unstated criterion which has been used to ascertain the class status of peasants cultivating less than x acres, and to establish that peasants holding more than x acres are not poor peasants. It also implies an assumption of a high linear correlation between the unstated criterion and area owned.

So, for example, Djurfeldt and Lindberg (1975a, ch. 5) tried to assess acreage equivalents for a number of reproductive levels without questioning the implicit assumption about the correlation between class and area operated. The same assumption underlies Harriss' attempt (1982a) to estimate the acreage equivalent of a 'basic livelihood unit'. As we will see, there is reason to doubt that the correlation between class and area is high enough to warrant such an assumption.

Here we could also mention Nemchinov's index, as referred by Shanin (1980, see also Cox, 1984). It is a weighted sum of all lands and all means of production owned or leased by a household, where their cash values have been used as weights. By means of weighting, this index takes account of the heterogeneity in land; by the same means tenurial data can be incorporated into the index, and so can data on ownership and leasing of means of production. But Nemchinov's index is not an independent index of class; it presupposes another criterion which can be used for validating the weight system.

Tenurial status

For the semi-proletarians, the small and the middle peasantry, Lenin explicitly states that they may till their own or rented land, and presumably it would be true by implication also for the fourth class, the big peasants; that is, for the identification of these classes, *tenurial status is a non-criterion*. Lenin's use of this criterion conveys only one piece of information, albeit an important one: that the class status of a peasant cannot normally be ascertained from tenurial data. Owner-cultivators and tenants are not discrete classes.

It is possible, though, to imagine an agrarian economy where owners and tenants are in fact discrete classes. But even in such an economy, tenurial status would not be an independent criterion of class. On the contrary, we would have to perform a class analysis by means of some other criterion (or criteria) of class, which would establish that categories of owners and tenants are coterminous with two classes.

Relation to agricultural labour market

Partly implicitly, Lenin works with two criteria which we will treat under one heading, namely, (*a*) if the peasant works as a wage labourer; and (*b*) if he employs wage labour on his own farm. These two criteria are used to distinguish between classes in the way shown in Table 6.2. In this Table we have bracketed the relation to the labour market in those cases where the relation is not explicitly stated by Lenin, but where the implicit relation is none the less clear.

TABLE 6.2

Definition of Peasant Classes Based on their Relation to the Labour Market

Class	*Relation to labour market*	
	Hires-out	*Hires-in*
Semi-proletarians	yes	(no)
Small peasantry	(no)	(no)
Middle peasantry	(no)	yes
Big peasantry	(no)	yes

Note that the criteria in Table 6.2 are used to distinguish only between three classes. The middle and the big peasantry have a similar relation to the labour market thereby requiring some other criterion to distinguish between them. Otherwise, the relation to the labour market, a robust criterion, would have been easy to use and the data easy to gather.

One further point needs to be made. In the Indian context one cannot assume that peasants either only hire-in or only hire-out. Most peasants do both. This complication has to be confronted if the relation to the labour market criterion is to be made useful. Later in this study we will discuss in detail an attempt to overcome this hurdle by taking the net labour hired-in as a criterion.

Reproduction of the family and the farm

Lenin says about the semi-proletarians that their farms can 'provide their families only with part of their subsistence', while the small peasantry 'satisfy the needs of their families and their farms.' The middle peasantry also gain a 'meagre subsistence' and 'the bare minimum needed to maintain their farm.' Thus, Lenin uses *family and farm reproduction* to distinguish between the four peasant classes (Table 6.3a).

TABLE 6.3a

Definition of Peasant Classes Based on Reproduction

Class	*Attains reproduction of*	
	Family	*Farm*
Semi-proletarians	Partly	?
Small peasantry	Fully	Fully
Middle peasantry	Fully	Fully
Big peasantry	Fully	Fully

Like the previous criterion, this one also only operates at some levels: more precisely, in establishing the border between the semi-proletarians and the small peasantry.

However, in the definition of the middle peasantry another criterion is introduced which is closely related to family and farm reproduction: the middle peasant farm provides, 'as a general rule, a meagre subsistence and the bare minimum needed to maintain the farm, *but also produces a surplus which in good years may be* *converted into capital*' (Lenin, 1966, p. 153, our emphasis). The term 'surplus' as it is used here must be taken to mean *surplus over the needs of family and farm reproduction*. Thus, we could have introduced a third column in Table 6.3a as shown in Table 6.3b. The 'yes' in the last row of that table would be true by implication.

TABLE 6.3b

Definition of Peasant Classes Based on Reproduction

Class	*Attains surplus*
Semi-proletarians	no
Small peasantry	no
Middle peasantry	yes
Big peasantry	(yes)

Thus the combined criterion of family and farm reproduction and surplus operates to establish the borders between the three first classes. Like the previous criterion—the relation to the labour market—this criterion distinguishes only between three classes: it does not differentiate between middle peasants and big peasants.

One way to interpret Lenin would be to say that the surplus which the big peasants attain is both regular and substantial, unlike that of the middle peasantry. Thus, the regularity of the surplus could be taken to distinguish between middle and big peasants. But this criterion is not useful in our case, since our data cover only a single year. Therefore, we will propose another way of distinguishing between middle and big (or rich) peasants which, moreover, seems more theoretically relevant.

Like the relation to the labour market, the present criterion or *the surplus criterion*, as we will call it, is a robust one, given adequate data. Before it can be used, however, the terms used would need to be defined. If we take 'surplus' to be defined negatively by the needs of family and farm reproduction, as argued above, these needs too have to be defined.

To avoid misunderstanding it should be pointed out at once that 'surplus' does not refer to surplus *value*. In the following pages we use 'surplus' as synonymous with *surplus appropriated* by individual households, that is, on the one hand, on a micro-level, and, on the other hand, with a focus on *distribution* rather than on *production* of surplus.

By definition, surplus is what is available, either for luxury consumption or for accumulation, once the requirements for simple reproduction have been met. Simple reproduction involves on the one hand reproduction of labour power, and reproduction of the means of production on the other. If the surplus is to be identified, we must be able to distinguish between necessary consumption and luxury. Thus, we must identify *a level of subsistence* which can serve as a demarcation line. Consumption above this level would by implication be luxury (non-basic) consumption which, symbolically speaking, means eating of the surplus, a drain on investible resources.

The level of subsistence is not a biological concept. On the contrary, it denotes the level of consumption of the producers, of the ordinary working members of a society. As such, it is an historical and cultural fact.

The definition of family and farm reproduction must also take account of the level of commoditization, to use the term coined by Bernstein (1982). An agrarian economy is at a low level of commoditization when the reproduction of the farm and of the family involves the consumption of few commodities. In such cases reproduction occurs through non-commodity circuits: it can be family labour working on raw materials and with means of production that are home-produced or it can be labour and means of production obtained through non-market networks of exchange like the Indian *jajmani* system.

In this study we must reckon with a considerable level of commoditization, both of family and farm reproduction. An ordinary South Indian household budget contains a number of items that could be home-produced (grain, milk, vegetables, fruits, etc.), but it also contains a number of industrial commodities (cloth, kerosene, oil, tobacco products, etc.). The same is true about means of production and raw materials: seeds, ploughs, fertilizers, pesticides, etc. The green revolution has increased the level of commoditization by breaking down non-commodity forms of reproduction. Fertilizers and pesticides have become necessities to production; seeds now have to be renewed every two or three years, since the new varieties are not genetically stable.

At the same time, the agrarian economy retains important non-commodity features. In fact, we cannot think of a completely commoditized peasant economy, because in such an economy there would be no peasants. We would have only capitalist farms, where all labour is wage labour (that is, labour in commodity form). A peasant farm is by definition only partially commoditized—at least some labour and probably also some means of production are 'non-commodities'. Here the essential element is labour because we can hardly conceive of a non-working peasant. By definition he and/or his family members must be seen as toiling in his or, for that matter, somebody else's field.

Our case goes to show that family labour may not be all-out dominant. As we saw in the preceding chapter, our peasants to a large extent substitute hired labour for family labour, preferring either to toil as labourers in the fields of others, or for more remunerative non-agrarian sources of income. If they do not contribute any family labour at all, however, it would be awkward to call them peasants. Widows are a case in point: they may own small pieces of land which, if they do not rent it out, they may sometimes cultivate by means of hired labour.

Expressed metaphorically, peasants stand with one leg in the market economy and the other outside, in a 'non-commoditized' economy. They cannot retreat completely from the market because the commoditized elements of reproduction have become necessities to life and to production. The organization and skills needed for a life outside the market are long since extinct (cf. Bernstein, 1982). Neither can these peasants go in the other direction and step inside the market with both legs; if they do so they cease to be peasants, either, in the sense hinted at above, because of being converted into capitalist farmers, or because the peasants cannot reproduce inside the market. In other words, the non-commoditized parts of their economy are also necessities—necessary for reproduction. Again, the essential element is labour: peasant farms are viable units in a market economy only thanks to labour in 'non-wage' form (usually family labour).

We claim then, that, in order to be useful, a surplus criterion of class must take account of this essential characteristic of peasant farming, of being at an intermediate level of commoditization. Our own surplus criterion attempts to fulfil this requirement.

This also implies that we must use a method of accounting which is compatible with the intermediate level of commoditization. First of all, we must be careful with shadow pricing, since shadow prices carry with them the assumption of complete commoditization. To the extent that it is practicable, we must adopt a system of 'double accounting' where market transactions in cash and in kind are treated according to their specificity.

After this digression, let us return to Lenin. The criteria that we have discussed have this in common: they only distinguish between three peasant classes—semi-proletarian, small, and middle peasants. The distinction between middle and big peasants seems difficult to make in terms of these criteria.

Participation in production

What we have just said about the necessity of non-commodity forms of labour, especially of family labour, to peasant reproduction, opens a possibility of distinguishing between middle and big peasants. Both produce a surplus, as we have seen, but that of the middle peasant is small and irregular. One way to look at this surplus is to see it as being produced only thanks to the participation of family labour in production, that is, thanks to the non-commoditized features of the farm economy. The big and regular surplus of the big peasants, on the other hand, could be thought of as being produced even without their own participation in manual labour. If that were the case, their participation would not be necessary to their surplus production.

If we adopt this interpretation, it makes sense when Lenin says that the *big peasants are capitalist entrepreneurs*. The surplus which they produce, then, is profit on capital invested in agricultural production. Their profit can of course be augmented if they participate in production and save on wage expenses. The surplus of the middle peasants, on the other hand, would be of an entirely different kind. If their participation in manual labour is necessary to surplus production, their surplus would stem mainly from their own labour. If extended in this direction, the surplus criterion makes it possible to distinguish between four peasant classes. Its discriminatory power would be one better than the first criterion operating in relation to the labour market.

Cultural and ideological criteria

If participation in production is not necessary to the surplus production of the big peasants, why do they participate at all? The answer seems to lie in the cultural, ideological criterion which Lenin resorts to in the definition of the big peasants. The big peasants are 'connected with the peasantry *only* in their low cultural level, habits of life, and the manual labour they themselves perform on their farms' (emphasis added). This sentence cannot be understood wihout thinking of the specifically Russian setting: a feudal past where the main contradiction was between the peasantry and the nobility. The feudal superstructure long survived the feudal mode of production, and also determined political alignments in the Russian revolution. What Lenin says is that economically the big peasantry belongs to the exploiters, but ideologically they identify with the peasantry. Politically they are likely to align with the peasants against the nobility, as in fact they did in the spontaneous land reform which followed the power vacuum created in the Russian countryside by the city-based revolution and the smashing of the tzarist state.[3]

Big landowners on the other hand are defined as follows:

> *Big landowners* who in capitalist countries—directly or through their tenant farmers—exploit wage labour and the neighbouring small (and in some cases middle) peasantry, do not themselves participate in manual labour, and are in the main descended from the feudal lords, or rich financial magnates or else a mixture of both these categories of exploiters and parasites. (Lenin, 1966)

It is assumed by Lenin that the landlords are descended from the feudal lords, or that they are rich financial magnates. A peasant turned landlord has no place in this schema, although he would be possible in an agrarian economy with considerable mobility in the ownership structure. He is certainly a possibility in an Indian context where, as we saw in chapter 4, room for him has been created by the many old landlords who have left agriculture under the threat of land reform, attracted by the opportunities of an expanding state apparatus and industrial development.

A mixed mode of operation, both capitalist and landlord, is

[3] This is why the point should be stressed that in any comprehensive—i.e., economic, political, and ideological—conceptualization of class the distinction between rich peasants and landlords would be important.

hinted at by Lenin, and would also belong under the sixth category. The big landowners, then, would contain two or three different classes.

Primary and secondary relations of exploitation

Before going into the classification we will demonstrate that there are no *a priori* grounds for expecting that two criteria of class would necessarily give the same result if they work on (*a*) participation data (hiring-in, hiring-out, participation by own labour in production); and (*b*) reproduction (of farm and family) versus surplus.

The first type of criterion works with, what we call, *primary relations of exploitation*, that is, exploitation of labour in the process of production. In our area, as we have seen, such labour can be own (family) labour, or exchange labour, or it can be hired (casual, contract, permanent). The surplus produced by this labour is, of course, in the first instance, appropriated by the cultivator (whether he be owner or tenant). But there is no guarantee that he will be able to keep the surplus thus appropriated, because *secondary relations of exploitation* may be superimposed on the primary ones. The effect of the secondary relations may be that the entire surplus is alienated from the cultivator. Then we would have a case of non-coincidence between the criterion based on participation (according to which our cultivator is an exploiter, appropriating the labour of others); and the second criterion according to which he would not be an exploiter because he appropriates no surplus over his needs for familial and farm reproduction, since the surplus is alienated from him.

What are these secondary relations of exploitation? One has already been hinted at, i.e., *the rent relation*. Another relation is *usury*, where money-lenders squeeze the whole or parts of their surplus from peasant debtors. A third is *commercial exploitation*, where merchants, sometimes also operating as money-lenders, exploit peasant producers.

There is a fourth relation which also belongs here, although it is not a relation of exploitation in the strict sense of the term. This is the *redistribution of surplus* which occurs *via the price system*. In a system where the producers exchange their products (including their surplus product) for money in the market, and where they acquire their means of subsistence and production with the same money on the same market (the C-M-C-circuit in marxist terms), we can very well think of a situation where the money earned by selling own products suffices only for satisfying simple reproduction needs and where there is no surplus for conversion to capital, although such a surplus was in the first instance appropriated via the primary relations of exploitation. In such a case the surplus produced on the farm would be appropriated in the last instance by somebody else operating on the market, but from a more advantageous position. Our results indicate that this could be the case in our area.

A SURPLUS CRITERION OF CLASS

We will now adopt a criterion of class based on the reproduction of the family and the farm. In this way we will try to overcome some of the difficulties identified when dealing with Lenin's 'draft theses'. The following is an extension and hopefully also a refinement of the approach developed bv Djurfeldt and Lindberg in an earlier study (1975a, ch. 5).

The first step in developing a surplus criterion of class—as we call it for short—is to identify the level of subsistence in our area. Moreover, subsistence must be defined partly in kind and partly in cash, since we are dealing with a partially commoditized economy. Subsistence must also be defined in terms of consumption units. Only then can the demographic composition of the peasant household be taken into account.

Subsistence rations of grain

A subsistence basket contains one portion which is home-produced or which at least could be home-produced. Here we have grain, milk, vegetables, fruits, etc. But the basket also contains a portion of commodities, such as, oil, kerosene, clothes, medical services, etc. From the first category we will consider only grain, since the labouring population does not consume much milk, vegetables, and fruits, and since what is consumed of these items is usually bought. Our data indicate that landless labourers and poor peasants only occasionally own milch animals, fruit trees, and vegetable gardens.

In the preceding chapter we discussed the kind incomes of poor peasants and agricultural labourers, and also their incomes in cash from farming, agricultural wages, and non-agricultural sources. We also discussed their levels of grain consumption. On the basis of these data we have defined the subsistence rations of grain given in Table 6.4.

TABLE 6.4

Subsistence Rations of Grain

Area	*Total per c.u. kg.*	*Proportion of*		*Total cash value*
		Rice	*Coarse grain*	
Wet area	220	0.85	0.15	431
Dry area	220	0.33	0.67	322

The cash values of these rations have been estimated by means of price statistics that we collected at the weekly markets in Pettavaithalei (wet area) and Manaparei, and occasionally also from the village grocers. These data indicate an average price of Rs. 2.10 per kg. for rice during the reference year (1979–80), and of Rs. 1.15 per kg. for *cumbu* and *solam*.

Defining poor peasants or semi-proletarians

Now, if we define those farms which are so small that they cannot provide the farmer's family with even its grain requirement as poor peasants or semi-proletarians, we will get two groups which together would make up more than a majority of the working population. We call this group the rural proletariat, although it is not fully proletarianized.

A poor peasant or semi-proletarian household, then, is one where the following conditions hold:

$$A > L \text{ and } Y < K \qquad [6.1]$$

(The symbols used above are defined in Table 6.5 below).

The rationale for defining poor peasants by means of formula [6.1] is as follows: in an overwhelming majority of cases the group

TABLE 6.5

Overview of Symbols and Variables Used in Surplus Criterion of Class

Symbol	*Variable*
Y	Gross income from marketing of farm produce
A	Grain requirement of the household
B	Cash cost for production (including depreciation and maintenance of means of production, cash rent, and debt service)
C	Cash required to meet non-grain consumption needs
D	Wage equivalent of family labour days
S	Surplus
Additional variables	
PA	Cash value of grain requirement (A)
L	Net income of grain from the farm, taken net of kind payments (rent and interest), seed, and sales if any
K	Cash value of grain deficit (that is, the value of A – L)

thus defined is involved in grain cultivation for own use (that is, $L > 0$). Cultivation exclusively for sale is a rarity, that is, if we do not include distress sale of grain which occurs now and then.[4]

The group thus delineated is forced to seek additional incomes both to cover the grain deficit (K) and to earn the cash needed for farm expenses (B), and for non-grain consumption (C). They are a proletarian group since they are practically always constrained to work as wage labourers in agriculture and, when employment is available, in other branches.

Level of subsistence of the rural proletariat

As was shown in chapter 5, agricultural labourers and poor peasants attain a level of subsistence which is higher than what was expected at least by these authors. In our first approaches to classification we worked with a level of subsistence where (C), the cash requirements for non-grain consumption, was defined as only

[4] An exception would be the man in one of our wet villages who grows bananas on his six cents of land. He is a petty commodity producer (with the stress on 'petty'). If the majority of the smallest farmers had been like him (that is, $L = O$, $K = A$, and $Y < K$), there would have been less of a rationale for letting grain requirement serve as cut-off point between categories.

20 per cent of the biological minimum set by the grain requirement (A).

As is clear from Table 6.6, (C) lies considerably higher in our case. This underlines the importance of working with a cultural and historical conception of subsistence. Obviously, the rural proletariat in our area has managed to attain a level of living which is somewhat above the one met with in other Indian cases. If we take the level of living attained by agricultural labourers as defining our variable C, the latter can be conservatively set to 85 per cent of the cash value of A (see Table 6.6). In terms of cash this means that we set the subsistence level per consumption unit as 797 rupees in the wet area, and 596 rupees in the dry area. This can be compared with the official poverty line which was close to 800 rupees in 1979 prices.[5] It is also interesting to note that the poor peasants do not seem to reach the level of subsistence attained by the agricultural labourers.

Surplus due to own labour?

In terms of our notations we might define surplus as:

$$S = Y - (K + B + C) \qquad [6.2]$$

That is, surplus could be defined as the income from marketing of farm produce (Y) net of (K) the grain deficit, and (B) the cash costs for production and (C) the cash needed for non-grain consumption.

Defined in this way, surplus is tailored to the analysis of a peasant farm economy. It recognizes the fundamental fact that the production and consumption units are merged into one unit, the farm-household. Thus, the reproduction of family labour is counted as a part of the reproduction of the farm. This is a 'Chayanovian' feature of the approach adopted here.

On the other hand, we abstract from non-farm sources of income in defining the surplus criterion. We do so, not because we regard non-farm activities as unimportant—which would be counter-factual—but because farm and non-farm activities must be abstractly torn apart if we want to see how they fit together.

[5] That is, the equivalent of Rs. 15 per capita and month in 1960/61 prices.

TABLE 6.6

Mean Values for Classification Variables by Type of Household, by Source and Form

Ecotype	Type of household	Per cent of pop.	Source of income					Total cases (n)
			Kind income, kg. (L)	Grain deficit, kg. (A–L)	Value of grain def.[1] (K)	Cash for non-grain cons. (C)	Non-grain prop. (C/PA)	
Wet Area								
	Agric. labourer	30	570	383	460	2004	1.57	34
	Poor peasant[2]	19	896	261	314	2271	1.52	21
	Other types	51	711	424	508	7276	6.84	57
	Wet area total	100	706	381	457	4522	4.02	112
Dry Area								
	Agric. labourer	16	595	311	374	1857	1.46	16
	Poor peasant	28	667	483	580	1754	1.27	31
	Other types	56	1318	157	189	3417	2.65	61
	Dry area total	100	1039	266	319	2684	2.06	108

[1] The grain deficit has been evaluated at the consumer price for coarse grain.

[2] Note that poor peasants have to pay their production costs from their non-farm incomes, since their income from marketing is marginal. These costs have been deducted here, so that total income is net of production costs in their case.

Note: The variables and the symbols used to denote them are defined in Table 6.5. The figures in this Table differ slightly from those published in Athreya et al., 1987. The differences are due to slight errors detected after the publication of the cited work.

As it stands, formula [6.2] entails that surplus exists only when means of production and labour have been reproduced. But this surplus could be the result both of own family labour and of exploitation of hired labour.

The concept of peasant reproduction that we outlined above entails that a peasant household is one which reproduces itself, and maybe also appropriates some surplus through a combination of market and non-market forms of reproduction. In keeping with this we must try to distinguish between surplus due to own labour and surplus proper.

Those who appropriate surplus from other labour than their own should be able to replace family labour with hired labour. This will be the basis for distinguishing them from those who appropriate surplus only as long as they participate in production. This is our rationale for defining (D), the wage equivalent of the family labour days. This might be an alternative to those approaches to classification which take the mere fact of physical participation as distinguishing rich peasants from landlords, irrespective of whether this participation is necessary or not.

Thus, our definition of surplus will not be that of formula [6.2], but:

$$S = Y - (K + B + C + D) \qquad [6.3]$$

We evaluate (D) by finding out what it would cost to substitute hired labour for family labour.

Female family labour is substitutable by female casual labour. The women of peasant households work alongside hired women in tasks of weeding, transplantation, harvesting, and application of farmyard manure, etc. Thus, the wage equivalent of women family labour can be taken as equivalent to the prevalent wage rate for female coolies.

Male family labour, however, cannot be readily substituted by casual workers. The male labourers of the household, in addition to working alongside hired workers, also perform a number of tasks—importantly irrigation and crop watching—for which coolies are not hired. In such tasks family labour can be replaced by *pannaiyal* (farm servants), or by *kavalkaran*, or *nirpaichi* (watchmen and watermen, see chapter 5). *Pannaiyal* also supervise casual labourers. We will take the wage equivalent of up to 250 man-days to be equal to the cost of hiring a *pannaiyal* for a year.

The conditions of employment of *pannaiyal* vary a good deal between the two ecotypes. Despite this variation, the cash value of their wages tends to vary around the same average in both areas, approximately 1,300 rupees per year.[6]

Reproduction of the farm

Having defined surplus in the manner specified by formula [6.3], we have discussed all the component terms of the formula except (B) and (Y). (B) is straightforwardly defined as all cash costs for production, including wages, inputs of seeds, fertilizers, pesticides, etc.; the cost of maintenance of means of production (tools, ploughs, machinery, farm buildings, etc.); and the imputed depreciation of these means. (B) also includes payment of interest and amortization on loans, irrespective of the purpose for which debts were contracted. In other words, both production and consumption loans are taken as cost of production for our peasant households. This is also in line with our principles of accounting: consumption loans are incurred to secure the reproduction of the production unit.

Kind costs of production are not taken at their opportunity costs, a method which would be alien to our method of accounting. Kind costs are accounted for in two ways: with respect to some items they are treated as deductions from the gross yield. This goes for harvest wages which are an important item in all farm budgets; it also goes for payments in kind for various services (*sudanthiram*); and it goes for seeds, to the extent that these are home-produced. Other kind costs comprise mainly expenses of labour. If, for example, family labour is used for collecting farmyard manure or for cutting green manure in the forest, this is treated as an addition to the labour input.

Our (Y) is defined as the income from marketing of farm produce. This means that payments and receipts in kind are accounted for as such, that is, seeds, harvest wages, rent, and interest in kind are deducted from the gross yield. So is the farm

[6] Here we have used the farm price as shadow price, that is, Rs. 1.15 for paddy and Rs. 1.00 for coarse grain. For the *pannaiyal* the implicit cash value of the wage is higher.

produce kept for own consumption by the farm household. If, however, the farmers have claimed that they keep more than their subsistence requirement of grain, as defined above, we have added the market value of this grain to the actual income from marketing. In fact, wealthier households often consume more than their subsistence rations of grain by entertaining guests and relations on a grand scale. In analytical terms this is eating of surplus, which is thus accounted for by shadow pricing.

Payments of land rent and interest in kind are also taken as deductions from gross yield. Here we can clearly see how the surplus criterion focuses on *surplus appropriated* rather than on *surplus produced*: the effects of secondary relations of exploitation like usury and landlordism are incorporated into the index. This would be one major contrast to Patnaik's index of exploitation, in the form we have given to it (see below).

To the extent that the peasants are victims of commercial exploitation, and to the extent that surplus is redistributed in the economy via the price system, this is reflected in the prices paid for inputs (B) and prices received (Y). By commercial exploitation we mean the tying of peasant producers to commercial or agro-industrial capital which has been the subject of many discussions in recent years (see, for example, Goodman and Redclift, 1981, ch. 3). In our area we find the crude form of integration between usurer's and merchant's capital in which peasants enter into unequal delivery contracts in return for loans (see chapter 7), but it is quite rare. More common is the 'agribusiness' type of integration found in cane cultivation on contract for the sugar factory in Pettavaithalei.

Mathematical definition of the surplus criterion

We have given a simple algebraic form to the surplus criterion, which can be used as a summary of the foregoing discussion. We define the surplus criterion (r) as:

$$r = i - 4 + r_i; \qquad (i = 1,2,3,4,5) \qquad [6.4]$$

where r_i equals:

$$r_1 = 1 - \frac{K - Y}{PA}; \qquad (0 \leq Y < K) \qquad [6.5]$$

$$r_2 = \frac{Y - K}{B}; \qquad (K \leq Y < K + B) \qquad [6.6]$$

$$r_3 = \frac{Y - (K + B)}{C}; \qquad (K + B \leq Y < K + B + C) \qquad [6.7]$$

$$r_4 = \frac{Y - (K + B + C)}{D}; \qquad (K + B + C \leq Y < K + B + C + D) \qquad [6.8]$$

$$r_5 = \frac{Y - (K + B + C + D)}{(PA + C)}; \qquad (K + B + C + D \leq Y) \qquad [6.9]$$

What is defined with r_1 to r_5 is really a number of hierarchically ordered reproductive levels. The rationale for this ordering is as follows:

Reproductive level 1 (r_1): is where the income from marketing (Y) is less than the foodgrain deficit (K). A farm at this level of reproduction does not yield an income sufficient even to cover the grain requirements of the household. This is characteristic of what we have defined as a poor or semi-proletarian peasant. For these households the surplus criterion takes the value $-3 \leq r < -2$.

Reproductive levels 2 and 3 (r_2 and r_3): are those where the basic grain requirement is met, but where the income from marketing (Y) does not suffice to meet (B) the cash costs for production and/or (C) the non-grain consumption requirements. For farms at these levels to be reproduced, additional sources of income are required. In these cases, then the surplus criterion takes values between -2 and 0. There is no immediately apparent logic relating these reproductive levels to the conventional designation of peasant classes. These peasants are clearly above the semi-proletarians at level 1 and below the 'pure' middle peasants at level 4. Let us provisionally regard them as middle peasants of some sort, and await further investigation before assigning them a definite class status.

Reproductive level 4 (r_4): in contradistinction to the lower levels, this defines a fully reproductive farm where no additional sources of income are necessary. This is why (r) is defined so as to change the sign here: $0 \leqslant r_4 < 1$. At this level we find the *notional middle peasant*, that is, a farmer at level 4 may appropriate surplus, but this is only due to his own labour as the surplus is not big enough to allow him to retreat from production and perform only supervisory and managerial tasks. Note that, as we now define them, middle peasants always exploit their own family labour, and that this does not preclude their exploitation of hired labour. The extent to which they exploit hired labour is an empirical question.

This definition of the middle peasant differs from Patnaik's which takes zero exploitation of hired labour as defining the middle peasant (see below).

Reproductive level 5 (r_5): here we find those cultivators who appropriate surplus. They may physically participate in production, or restrict themselves to supervision and management. It does not matter which is the case—their surplus primarily derives from the exploitation of hired labour. For these cultivators, the surplus criterion (r) takes values greater than 1. In order to make it possible to express the size of the surplus $[(S = Y - (K + B + C + D)]$ in terms of the index we have divided S by the subsistence requirements of the household (PA + C). This means that the size of the surplus is expressed in subsistence rations so that, for example, $r = 2$, would denote a surplus which is two times the subsistence requirements of the household.

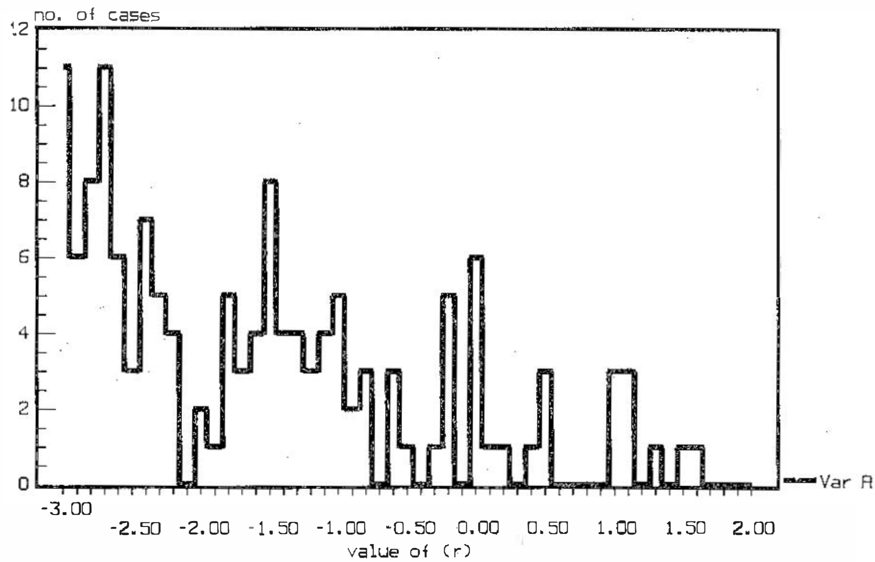
Results

The calculation of (r), the surplus criterion for our material gives the results summarized in Figure 6.1. The Figure builds on the main sample only; it is not representative of the whole population. Moreover, cases from different villages have been lumped together without weighting, so the Figure describes only the structure of our material. Only cultivators are included, totally 168 households, out of which twenty-one have been excluded on account of missing data.

The value of (r) is given on the horizontal axis. The histogram shows the distribution of (r) with the number of cases plotted on the left vertical axis. Sixty-two cases or 42 per cent fall at reproductive level 1 in a skewed distribution with more cases at the lower end of the interval and with few cases bordering on reproductive level 2. This means that the poor or semi-proletarian peasantry is a fairly distinct group, cultivating tiny parcels of land, often not sufficient to meet more than a fraction of their subsistence needs. Sixty-nine cases or 47 per cent have r-values between −2.00 and +0.6. Note that only nine cases fall at reproduction level 4, where we expected the 'notional middle peasants' to fall. The bulk of the middle peasants at levels 2 and 3 cultivate farms which are not fully reproductive units: they are forced to hire themselves out or seek non-agricultural sources of income. Sixteen cases or 11 per cent have r ⩾ 1, that is, they appropriate surplus more than sufficient to replace family labour with hired labour. We return below to the detailed results of the surplus criterion. But first we will test an alternative approach to classification.

FIGURE 6.1

The Surplus Criterion: Distribution in Main Sample



Note: Seven cases with r > 2 excluded.

THE PARTICIPATION CRITERION

An alternative approach has been advocated by Utsa Patnaik (1976).[7] We will start the analysis by modifying her *index of exploitation* to a very simple form. Take all households which contribute family labour (F) to production. Here we do not include supervisory or managerial labour. We exclude those households which do not physically participate in own cultivation, that is, where F = 0. This holds for (*a*) the agricultural labourers and (*b*) the landlords. Both of these classes are easy to identify and define.

Our main interest at present is cultivating households participating in production. For these we will define net labour hired-in/out as proposed by Patnaik:

$$H_i - H_o \qquad [6.10]$$

We thus get two sets, the net hirers-in ($H_i > H_o$) and the net hirers-out of labour ($H_i < H_o$). But a further subdivision can be made by introducing F:

$$p = \frac{H_i - H_o}{F} \qquad [6.11]$$

We then get three sets which, with some legitimacy, we can call classes. They are defined in Table 6.7.

This modified index has the obvious advantage of being simple and elegant but, as is readily appreciated, it has some weaknesses: it reflects only primary relations of exploitation, that is, wage labour. Secondary relations like land rent, usury, and commercial exploitation are not included. The incorporation of these forms into the index requires the conversion of land rent, interest, and commercial profit into labour units—a conversion attempted by Patnaik in a later publication (1980). But, as we will see, the index is fraught with problems in its simple formulation, and these problems do not stem from the exclusion of secondary relations of

[7] Based on Roehmer's work (1982), Bardhan has applied an essentially similar method to data from West Bengal (1984, ch. 13). Patnaik's method has also been combined with discriminant analysis by da Silva on Brazilian material (1984).

TABLE 6.7

The Participation Criterion of Class

Value of p	*Class defined*
$p < -1$	defines the poor peasant who works to a certain extent on his own land, but who works more for others than for himself
$-1 \leq p \leq 1$	defines the middle peasant who hires-in and hires-out to a certain extent but for whom the net hiring-in/out is less than the amount of labour put in on the own farm
$p < 1$	defines the rich peasant who hires-in a considerable amount of labour which exceeds that put in by family labour

exploitation like tenancy. The incorporation of the latter relations would thus not solve the problems.

The homogeneity postulate

The main problem with the participation index is the homogeneity which it postulates between the three types of labour H_i, H_o, and F. More precisely, the assumption is that, for these heterogeneous forms of labour the proportion of surplus labour to necessary labour can be taken to be the same. Only if this assumption is valid does it make sense to treat the labour types as additive.

As we have seen, there is a considerable heterogeneity in the forms of labour. In chapter 5 we described three different forms of hired labour: day labourers (*atta coolie*), contract labour gangs (*kothu*), and permanent farm servants (*pannaiyal*) paid by month, season, or year. We also have labourers of different sex and age, including children, who are paid at different rates. There are also skilled and unskilled labour, where banana specialists are an example of the former group.

The participation index postulates, then, that behind this heterogeneity in form there is a homogeneity in substance, in the productivity of different forms of labour.

1. If this assumption can be accepted for labour hired-in and hired-out, that is, in computing $(H_i - H_o)$ we would get a zero point which would approximate the real dividing line

between exploiters and exploited in the process of production (but still in abstraction from surplus due to own labour and from secondary relations of exploitation).

2. If, furthermore, it can be assumed that wage labour and family labour are homogeneous, then the division of $(H_i - H_o)$ by F would be legitimate, so that the resulting index (p) would also give us an estimate of the true size of the middle peasantry (that is, as estimated by the number of sample households falling in the range: $-1 \leq p \leq 1$).

Let us discuss these two points in reverse order. On theoretical grounds the assumption of homogeneity between family and hired labour is dubious, since, from the discussion of peasant economies, it is widely recognized that the input of family labour by peasants on their own holdings follows another logic than their use of hired labour. In our attempts to use the participation index we soon found out that we had to acknowledge the heterogeneity of labour at least when it comes to livestock maintenance and irrigation.

Counted in hours, peasants often spend hours of labour in livestock maintenance and irrigation equal to that spent on crop production. But the time spent in these activities is not comparable in other respects. Livestock maintenance is an *extensive* use of time. As argued by Warman (1980, p. 124);

> looking after livestock demands more energy than it yields, but this energy is distributed over a longer period and in units of low intensity which can be entrusted to people who cannot fully participate in labour during the critical period because they have little physical energy (such as, children or old people) or who carry out other occupations at the same time (such as, women).

A similar point could be made about irrigation. Labour expended in irrigation involves not only the physical labour of digging and maintaining field canals, but also the time-consuming but less intensive tasks like supervising the water-flow, guarding against pilferage of water, operating the pump-set (which involves a lot of mere waiting since power supply is so erratic). For both these operations it is almost always family labour which is used. Only the richest households hire farm servants for these tasks. Coolies paid by the day are not hired for such purposes but for field labour proper. Thus we see that this heterogeneity in substance is 'recognized' in the two social forms of wage labour, namely *coolie* and *pannaiyal*.

The heterogeneity between F and H influences not the zero point of the index, but the location of -1 and $+1$. Thus it has direct repercussions on the estimated size of the middle peasantry. We found that when livestock labour and irrigation work were given weights equal to field labour, it often led to absurd results: households with clear poor or rich peasant characteristics turned out as middle peasants by this index.

We collected our data in terms of labour days and with the hours of labour specified. In aggregating labour inputs we have left out the labour expended in livestock maintenance. We have thus adopted a compromise solution where irrigation work is weighted as 1 and livestock maintenance as 0. The implication of this is obviously that the -1 and $+1$ points on our scale are somewhat arbitrary and so is the estimate of the size of the middle peasantry.

A preliminary conclusion, then, is that the participation index does not allow for any precise identification of the middle peasantry.[8] But the criticism raised above does not automatically apply to the computation of the net labour hired-in ($H_i - H_o$). So let us now turn to a discussion of this magnitude.

To the extent that the labour market is a form of exchange of labour between petty producers (cf. Djurfeldt and Lindberg, 1975a, pp. 127 ff.), there could be at least an aggregate homogeneity between hired-in and hired-out labour. But a considerable part of all hiring-in is by rich peasants and capitalist farmers. To the extent that these farms, as distinct from those of the petty producers, are operated on a capitalist basis there would be an important heterogeneity between the labour hired by the different

[8] Barbara Harriss (1983) uses $p = H_i/H_o$ as an index of class (since she has no access to data on family labour (F)). She estimates the size of the middle peasantry by arbitrarily assigning them to the interval $0.7 < p < 1.43$. On this basis she claims that the middle peasantry is a very insignificant category in her drought-prone areas in South India. Our own hypothesis would be to the contrary: in these very dry areas the middle peasantry is likely to be numerically dominant. However, to establish or refute this thesis would require other methods and data than those used by Harriss.

classes. But since the aim of calculating net labour hired-in is to find an approximation to the dividing line between exploiters and exploited, this heterogeneity would not influence the zero point of the scale.

Our second preliminary conclusion, then, is that net labour hired-in may be more useful than the participation index. But it should be used with care, because we have also found another major limitation in the usefulness of data on labour use: in households with non-agricultural sources of income like business, jobs outside agriculture, etc., the pattern of labour use in agriculture often deviates from the one expected. Such households often substitute hired labour for family labour, so that the input of family labour into farming becomes lower than what could be expected from their resource position, and so that their net labour hired-in becomes higher than expected.[9] Since a considerable proportion of households in our sample, especially in the dry area, combine agriculture and non-agricultural sources of income, this introduces another bias into an index based on labour use. Fortunately, not all households are involved in this combination of trades so, in principle, it should be possible to isolate the effects of this factor.

Results

In Figure 6.2 we have brought out the distribution of (p), the participation criterion among the cultivators in the main sample. It is striking to note that fifty-nine cases, that is, 38 per cent of the material have ($p > 1$). That is, they have a pattern of labour use which indicates rich peasant status. In contrast to this, only sixteen cases have ($r > 1$). In other words, these cases are assigned rich peasant status by the surplus criterion. As a mirror effect of this, the poor peasantry, according to the participation criterion ($p < 1$), is smaller than its counterpart according to the surplus criterion. The middle peasantry is also smaller when measured by (p) (forty-six cases or about 30 per cent), than when measured by (r) (47 per cent). We have already concluded that (p) should be taken with a pinch of salt in this respect: its delineation of the

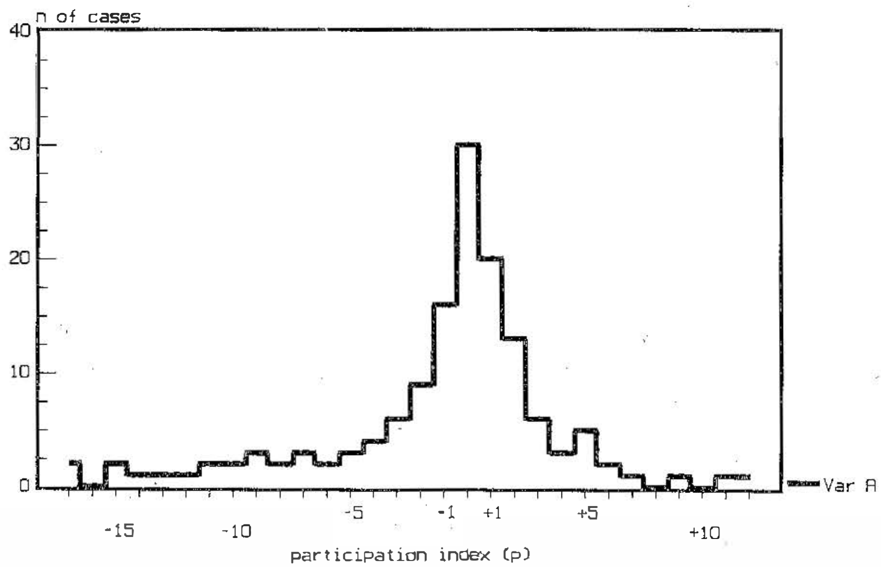
[9] The possibility that a sizeable non-agricultural sector could distort her index has been pointed out by Patnaik.

middle peasantry is subject to doubt. Therefore, it is more interesting to look at the zero point of the two scales.

Eighty-eight cases or 57 per cent of the material are net exploiters according to (p), while only twenty-two cases or about 15 per cent are above zero according to the surplus criterion. This is a major discrepancy between the two indexes which must be investigated in greater depth.

FIGURE 6.2

The Participation Index (p): Distribution in Main Sample



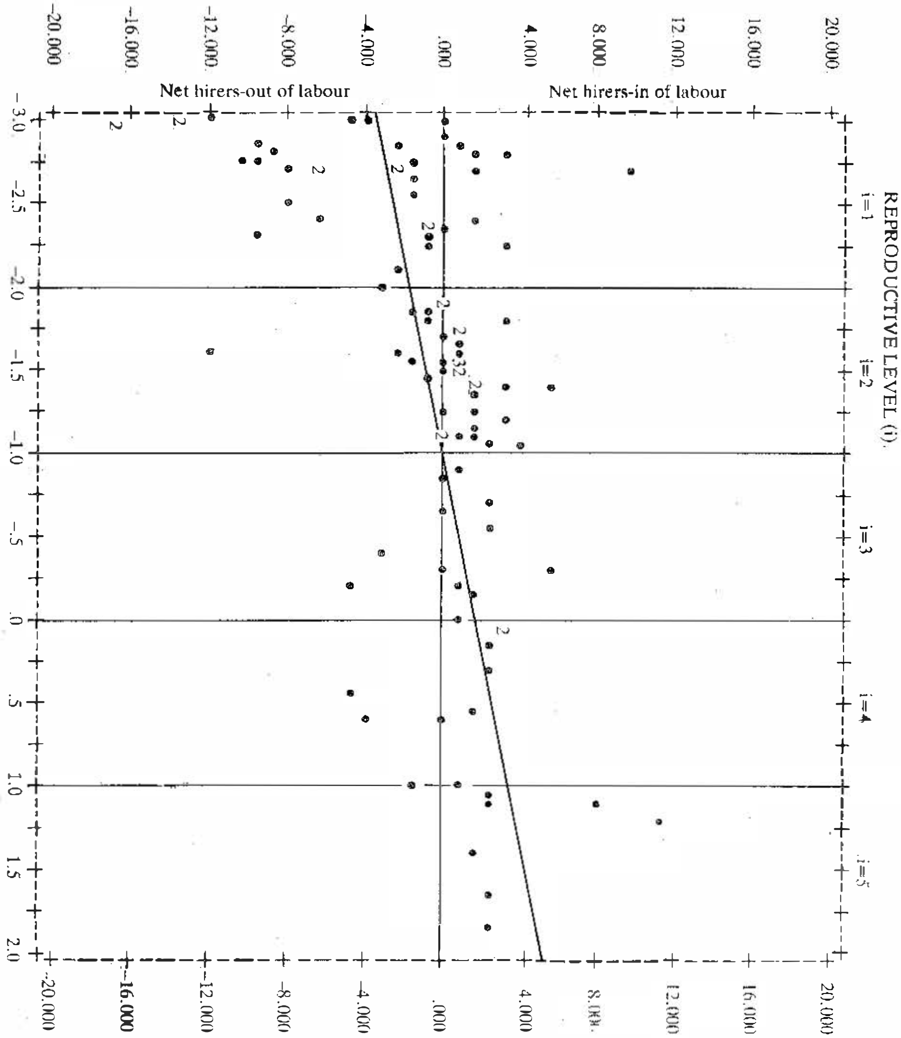
RELATIONS BETWEEN THE TWO CRITERIA OF CLASS

In Figure 6.3 we reproduce a scattergram giving the values for all cases in the main sample on the two classification indexes.[10] The

[10] Seventeen cases with the absolute value of $p > 20$ or $r > 2$ have been excluded from the scattergram.

FIGURE 6.3

Scattergram and Fitted Line Showing the Relation Between the Two Criteria of Class for Main Sample Cases



The Figure should be read as follows: at the head of the Figure we have put the reproductive levels (i) ranging from $i = 1$ to $i = 5$ as the surplus criterion (plotted on the x-axis) increases from -3 to $+2$, which is the maximum value plotted. The line running across the Figure separates net hirers-in of labour ($p > 0$) from net hirers-out ($p < 0$). Using the least square method we have also fitted a straight line to the data in Figure 6.3. Under the assumption of a linear relationship between the two criteria of class, the fitted line gives us the estimate of (p) for a given value of (r).

Analysing the scattergram, we first note the far from perfect correlation between the two criteria. Pearson's correlation coefficient is only 0.44, which is a poor correlation between two variables if they are supposed to tap the same dimension.[11] The correlation improves somewhat if we remove those cases where, in a manual classification, the participation criterion was judged to be distorted, for example, by non-agricultural activities engaged in by members of the household. When forty-two such cases are removed, the correlation improves from 0.44 to 0.60. In other words, even if we exclude those cases where (p) is a poor indicator of class, (p) explains only $R^2 = 0.36$ or 36 per cent of the variation in (r).[12]

The theoretical interpretation of this could be that, for a given level of reproduction (as measured by [r]), there is a wide variation in patterns of labour use (as measured by [p]) ranging from negative to positive values of (p) for almost any value of (r), except the highest ones ($r > 1$). The variations in labour use are due to a host of factors like crop patterns, efficiency of management, demographic composition of the household, overall economic activities engaged in by members of the household, attitudes to work, etc. These variations are another reason why the pattern of labour use as measured by (p), the participation index, is far from perfect as an indicator of class.

In giving the expected value of (p) for a given value of (r), the fitted line abstracts, as it were, from the wide variations in patterns of labour use, bringing out the central tendency at each level of reproduction. As can be seen from the figure, the line

[11] The correlation would be even lower with the inclusion of the above-mentioned extreme cases.

[12] Note that here R^2 denotes Pearson's R, not our reproductive level (which in this text is symbolized by [r]).

$p = 1.82 + 1.75\ r$ crosses the horizontal axis somewhat below reproduction level 3 ($p = 0$; $r = -1.04$). This means that farmers above $r = -1.04$ have an expected value of $p > 0$.

Interestingly enough, the systematic discrepancy between the two criteria of class remains, when we remove the above-mentioned forty-two cases where participation was judged, to be distorted. As we noted above, the correlation improves but the fitted line changes very little: ($p' = 1.72 + 2.27r'$). The slope ($\alpha = 2.27$) changes, but not the intercept ($\beta = 1.72$).

We have not been able to detect any intervening or underlying factors which could invalidate the above result; but it should be stressed that, although the tendency for the sample seems very clear, it does not permit statistical generalization. This is mainly because the variance in (p) is very high with a standard deviance of $s = 18.00$ for the sample. On the other hand, it can be established at the 5 per cent level that the population estimate for the proportion of exploiters according to (r), 10 per cent, differs significantly from that according to (p), which is 40 per cent.[13]

So the statistical basis is not absent for this result, which theoretically is very significant: only farmers at the lowest levels of reproduction ($r = 1$ or 2) tend to be net hirers-out of labour. Obviously, this is the majority of all farmers, but it is significant that in our sample important sections of the middle peasantry (those at reproduction levels 3 and 4) tend to be net exploiters of hired labour. If this finding is not spurious, it throws doubt on the presumption that the middle peasantry is neither exploited as hired labourers, nor is it exploiting hired labourers to any large extent. These results also undermine the presumption that the two criteria of class should ideally give the same result in all cases.

Since the statistical basis is somewhat weak, we should be careful not to draw rash conclusions from this, but it is tempting to revert to our previous analysis of the criteria of class which brought

[13] Other studies point in the same direction. When the p-index is applied to data from Thaiyur *panchayat* in Chingleput District, we get a bigger rich peasantry than we get with a criterion based on surplus appropriation (Djurfeldt and Lindberg, 1978, p. 64). We suspect that a similar relation would be found in Haryana, since Patnaik's own application of her index to data from that state shows that the middle peasantry (according to the p-index) do not reach the poverty line (Patnaik, 1980). The tendency is the same in Barbara Harriss's study (1983) where it seems even a section of the rich peasantry lives below the poverty line!

out the difference between them. One such difference is in focus: in the simple form that we have given to it, the participation index focuses on the primary relations of exploitation while the surplus criterion also incorporates the results of secondary relations of exploitation, such as, landlordism, usury, mercantile exploitation, etc. If it is accepted that net labour hired-in ($H_i - H_o$) reflects exploitation in the process of production—that is, if it is accepted that labour hired-in and labour hired-out in the aggregate contain equal proportions of necessary and surplus labour—then the discrepancy between the participation index and the surplus criterion could be due to the aggregate effect of the secondary relations of exploitation. In other words, the two criteria would reflect different facets of the class structure.

If the trends in our data are correct, even the small farms at reproductive level 3 and to a certain extent those at level 2, tend to be net exploiters of hired labour. But the surplus produced by this labour and by family labour is appropriated from the farmers by landlords, money-lenders, and merchants, and/or is pumped out of agriculture as a result of the terms of trade between agriculture and the non-agrarian sectors of the economy.

Final classification of individual households

In the preceding section we have evaluated a method of classification based on the combination of two criteria defined independently of each other. Our results lead us to discard this method, since we cannot uphold the postulate on which it is built, namely that the two criteria are independent measures of the same dimension of the agrarian class structure. The practical consequence of the above is that we are left with only one index of class, i.e., the surplus criterion, since in the course of the analysis a number of weaknesses have been discovered in the participation index.

However, there are some problems in using the surplus criterion as the sole indicator of class. The two main are:

1. The surplus criterion is more sensitive to flaws in data than the participation criterion like under-reporting of yields, exaggeration of costs, etc;
2. The criterion ideally demands data for a series of years where yearly and seasonal variation can be separated from more permanent features of the farm economy.

On both these accounts our data are far from ideal. Our survey was based on the so-called 'recall' method rather than the superior 'diary' method. This means that data are subject to memory slips and other types of bias on the part of our respondents. Poor and contradictory data is one source of weakness and imprecision, not in the surplus criterion as such, but in its application to our data. Our data cover only one crop-year for each farm. This year is slightly variable, covering either 1978/79 or 1979/80. Fortunately, these years were close to normal in terms of rainfall, but still crop failures are another source of distortion in the surplus criterion.

Imperfection in data, then, is a source of imprecision in the application of the surplus criterion. The level of precision can be improved by incorporating other information about the households, especially indicators of reliability, of consistency, and of non-normal features of the farm economy in the reference year. These can be weighed against the result of the surplus criterion in order to arrive at the likely class status of the individual household. We have done this manually, not on the computer, since very complex considerations have to be reckoned with in judging the reliability, consistency, and representativeness of an interview.[14]

In the final classification twenty-one households have incomplete or unreliable data which render them unclassifiable by the surplus criterion (see Table 6.8). Twelve of these cases have been manually assigned to a class after inspection of the data. Only nine cases have so fragmentary or contradictory data that they remain unclassifiable. Out of the 147 cases where data permit an application of the surplus criterion, 125 or 81 per cent are 'correctly' classified by the criterion while twenty-two cases have been assigned to another class than the one indicated by the surplus criterion.

The largest single group here are those who have been assigned to a higher class than that indicated by the criterion. The most

[14] This is obviously a quite different approach than the one chosen by da Silva (1984), who, after having applied Patnaik's index of exploitation, performs a discriminant analysis whereby three other variables are allowed to codetermine final class: (*a*) amount of land operated; (*b*) proportion of product marketed; and (*c*) family/dependent worker ratio. The method would seem to involve a considerable statistical empiricism, and thus an element of arbitrariness which would be difficult to control. The same could be said about de los Angeles Crummett's (1987) application of factor analysis to a number of variables judged theoretically to be related to class.

TABLE 6.8

Class as Indicated by the Surplus Criterion Cross-Tabulated by Final Class Assigned to Households in the Main Sample

Reproductive level according to surplus criterion	Final class						Total
	Poor peasant	Lower middle peasant	Middle peasant	Upper middle peasant	Surplus appro-priators	Others, unclassi-fiable	
1	51	8	0	0	0	3	62
2	0	38	0	0	2	1	41
3	0	1	13	2	1	2	19
4	0	0	1	8	0	0	9
5	0	0	0	0	16	0	16
Unclassifiable by (r)	6	4	0	1	1	9	21
Total	57	51	14	11	20	15	168

common ground for this upward revision is harvest failure: with a normal harvest the households would belong to a higher class than that indicated by the criterion. A related but less frequent ground is poor data, namely, understated yields and/or exaggerated expenditures. Only two households have been assigned to a lower class than that indicated by the criterion. Both have had irregular sources of income in the reference year—sale of livestock in both cases.

The final category of households has been classified as 'other', although these households have been assigned to a class by the criterion. Besides three borderline cases, this category contains three cases which are difficult to squeeze into a peasant class. All of them show some petty rentier characteristics, although they do cultivate land themselves.

The sum total of all revisions yield the distribution shown in the column totals of the above Table. This is the closest we can come to a determination of the class structure by means of the surplus criterion. Note that the names given to the three divisions of the middle peasants are arbitrary.

However, the analysis does not terminate here, since one major step remains. In the Table all surplus appropriators appear under one heading, although this category is a very heterogeneous one. It contains within itself several classes or subclasses. A subdivision of this group will be attempted below, but first we will reconsider the area criterion of class discussed at the beginning of this chapter.

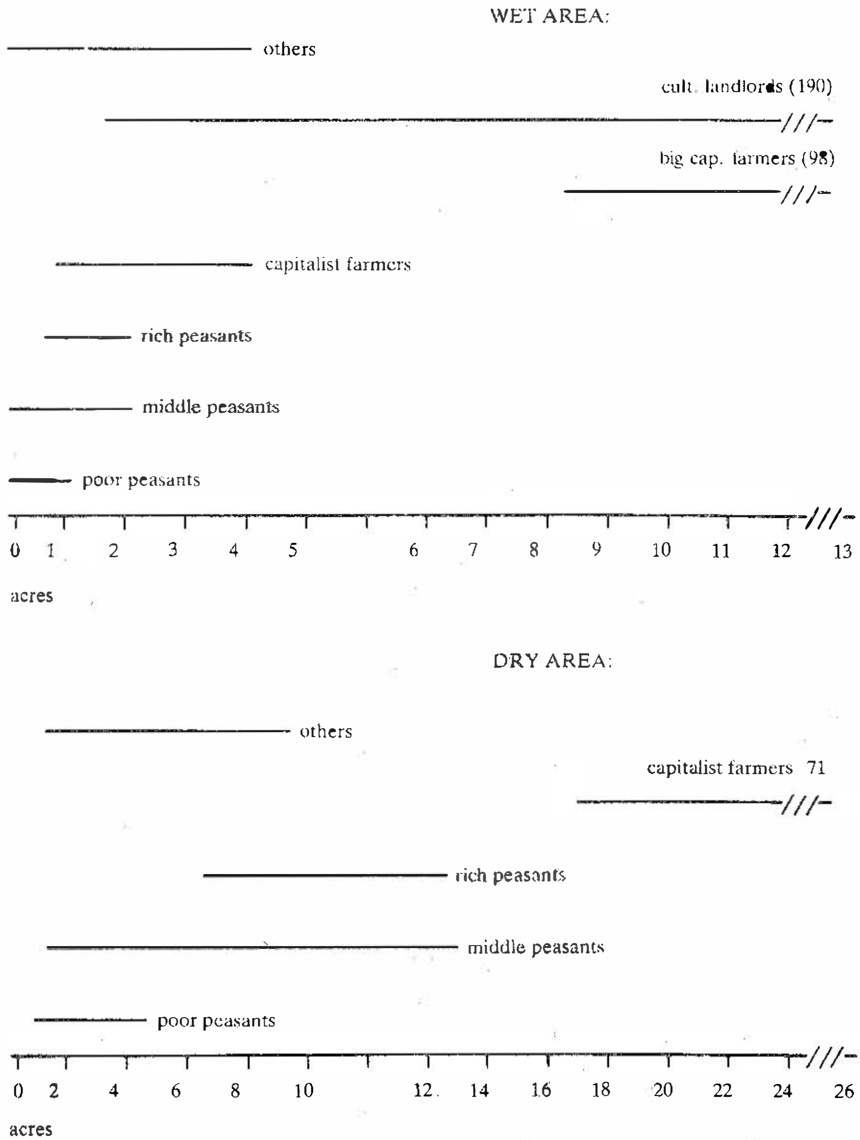
The area criterion reconsidered

Let us for a moment return to the area index of class discussed earlier, which, despite its obvious shortcomings, is the most frequently used criterion of class. In our own method of classification class is defined independently of area. Therefore we can study the correlation between area and class. Is the correlation strong enough to permit the formulation of an area criterion of class, or is it better to entirely abandon the attempts to 'translate' area into class?

In Figure 6.4 we have drawn the distances between the first and the ninth deciles for the variable landownership broken down by class and ecotype. We have anticipated the results of a later section in subdividing the surplus appropriators into several classes:

FIGURE 6.4

Distance Between 1st and 9th Deciles of Landownership by Class and Ecotype



Note: Figures within brackets denote 9th decile where this is relevant.

(*a*) rich peasants; (*b*) capitalist farmers, who are found in both ecotypes; (*c*) big capitalist farmers; and (*d*) cultivating landlords, who are only present in the wet area. Looking first at the upper half of the figure it is readily seen that for all the classes the distances overlap to a large extent. The only class which seems to be unambiguously distinguished by means of its landownership is that of the big capitalist farmers, but that is partly for reasons of definition. We defined this class, somewhat *ad hoc*, as those capitalist farmers belonging to our category of UPC households, i.e., the richest percentile. Otherwise, the decile distances all overlap, and tellingly testify to the impossibility of distinguishing between classes on the basis of landownership alone.

The extent of overlap is somewhat lower in the dry area, as can be seen from the lower half of the figure. But here too neighbouring classes overlap, which implies that it is impossible to deduce the class position of a household from the area owned by it. The only possible exception would be the capitalist farmers, but again these have been defined as equal to the UPC households.

The conclusion from the figure is evident: in both ecotypes the correlation between landownership and class is so low that it invalidates an area indicator of class. Or in other words, it is not possible to infer anything with certainty about the class position of a household from the extent of land owned by it. Such an inference would be doubly dubious if, as is often done, it were made without specification of the agrarian ecotype in which the farm is located, since the economic significance of an acre owned is quite different in the two ecotypes.

The statistical analysis can be carried one step further if, instead of class, we take the surplus criterion (r). Using the r-criterion, we can express the association between area and class by means of a correlation coefficient (Pearson's R). For land owned this coefficient is 0.58 for the wet area and 0.39 for the dry. Squaring, we get the per cent of variance in one variable (that is, landownership) 'explained' by the other.[15] That is, land 'explains' 34 per cent of the variation in class status as measured by the surplus criterion in the wet area, while it 'explains' only 15 per cent in the dry area.[16] See Table 6.9

[15] The term 'explained' is used here (and further on below) in a purely statistical sense and not a theoretical one.

[16] If instead we take the participation index (p) as a criterion of class (cf. earlier section), the correlation between 'class' and landownership is even lower: R = 0.30 and R = 0.20 for the wet and dry areas respectively.

TABLE 6.9

Correlations Between Area Variables and Surplus Criterion by Ecotype (Pearson's r and r^2)

	Ecotype			
	Wet area		Dry area	
	R	R^2	R	R^2
Area owned	0.58	0.34	0.39	0.15
Area operated	0.55	0.30	0.40	0.16

One reason why we get these low correlations is the assumption made by an area index of class about the *homogeneity* of land. But, as we have already discussed at the outset of this chapter, land stands for a very *heterogeneous reality*. Land is of different quality and location so that the same investments of labour and other inputs give different returns. Moreover, investments in the land, especially in irrigation, further accentuate these differences. The economic significance of the crops grown is also variable. Valuable crops like banana, cane, betel-vine, turmeric, etc. give much higher returns to the cultivator than ordinary food-crops.

Furthermore, the economic significance of an acre of land depends on whether it is owner-cultivated or leased. This aspect of the heterogeneity in land can be captured by shifting the statistical focus from area owned to area operated. If we do, we can also take into account the extensive fallowing in the dry area, which must deflate the correlation between own area and class.

But the correlations are not much affected by this shift. In the dry area the correlation between the surplus criterion (r) and area improves very little, from 0.39 to 0.40, as we shift from area owned to area operated. In the wet area, the correlation even decreases somewhat, from 0.58 to 0.55. This can be due to the extensive tenancy in the wet area: area leased-out is not included in area operated while, by definition, it is included in area owned. This could deflate the correlation.

To use operated area instead of owned area does not solve the problem of low correlations. If we want to get any further we must go from a bivariate to a multivariate correlation analysis. That is, we must look at the correlation between class and a set of determinants which can capture more of the heterogeneity in land than the simple variables we have used so far.

We will not devote too much space to this, but merely give a short account of two multiple regressions that we have run. Unfortunately, we have no reliable indicator of the quality of land, so *tenure* is the only aspect of the heterogeneity in land that we can measure in the wet area. When we run our surplus criterion (r) against the sum of land under each form of tenure we get the following equation:

$$r = \mathbf{-2.05} + \mathbf{0.93}x_1 + 0.29x_2 + 0.57x_3 \qquad [6.12]$$

where: x_1 = area owner-cultivated
x_2 = area leased-in
x_3 = area leased-out

Note: Figures in bold are statistically significant at 0.1 per cent level. The regression is also significant at this level.

The multiple correlation is 0.63, i.e., only five points higher than the best bivariate correlation reported in Table 6.9. In other words, not even a multivariate correlation performs very well. It seems reasonable to conclude, at least for the wet ecotype, that area is in fact a poor indicator of class. The ultimate reason for this is, of course, that the class status of a household depends upon a number of other things than the area which it controls.

Let us return to this conclusion after a similar exercise for the dry area. For this ecotype, land type is the best available measure of the heterogeneity in land. Here we get the following equation:

$$r = -2.20 + 0.35x_1 + 0.04x_2 + \mathbf{0.17}x_3 + \mathbf{0.61}x_4 + 0.44x_5 \qquad [6.13]$$

where: x_1 = tankfed area operated
x_2 = rainfed area operated
x_3 = well-irrigated area operated
x_4 = *nanjei-thottam* operated
x_5 = other land types operated

Note: Figures in bold are significant at 5 per cent level. The regression is significant at 0.1 per cent level.

Here too the exercise yields little in terms of correlation. The multiple R improves from 0.40, which was the bivariate correlation between area operated and class, to 0.48 which is the multiple correlation. In other words, even if we take into account the heterogeneity in land type, area 'explains' only 23 per cent of the variance in class in the dry area.

Concluding, it is evident that the correlations we reach between area and class are not very impressive. We get a maximum of R = 0.67 for the wet area and R = 0.60 for the dry area.[17] We could reach better results by further trying to operationalize the notion of heterogeneity of land by, for example, bringing in soil type, the level of the land, etc. But the important point is that class is not uniquely determined by the land factor however defined and measured. Among other things, class also depends on the character of the means of production and on the productivity of the farm. If, moreover, class is defined as the reproductive level of a farm, as in our surplus criterion (r), it would also depend on the demographic characteristics of the farm-household: the number of family workers available and the number of consumption units, that is, the Chayanovian characteristics of the farm. Thus, we can conclude that the above correlation analysis indicates the approximative and relative weight of the land factor as a determinant of class, and that this is far from being as high as is usually assumed. R^2 = 45 per cent and R^2 = 36 per cent for the two areas respectively, indicate that the land factor, provided that it were adequately operationalized, at the most might explain 50 per cent of the variation in class. Moreover, its weight seems to be less in the dry area than in the wet one, probably as an effect of several factors: the lesser importance of land rent in the dry area, the low degree of differentiation there and the consequent higher weight of family labour.

Another result appears from the regression equations [6.12] and [6.13] which deserves attention, viz., the beta-weights of the different types of land. Looking first at the wet area (equation [6.12]), we see

[17] The correlations can be somewhat improved by removing from the analysis those cases where the surplus criterion was judged to be misleading due to abnormal features of the farm economy in the reference year (crop failure, etc.) and other factors. We then get multiple R = 0.67 and R^2 = 45 per cent for the wet area, and R = 0.60 and R^2 = 36 per cent for the dry area. The latter figure is considerably higher than the one we get with the equation in the text.

that owned land carries the highest weight: an acre of owned land means almost one full unit on the class variable. This underscores what we already know that land in the wet area is very valuable, and only a small area is enough to provide a family with its subsistence.[18] Likewise, only a few acres are needed in order to appropriate a surplus from the land.[19] The lowest beta-weight in [6.12] is, not surprisingly, that for area leased-in ($\beta = 0.29$). You have to be a big tenant in order to appropriate any surplus from leased land.[20] As is logical, leased-out land carries a beta-weight of 0.57 which is in between those for owned and leased-in land. This means that only a small area is needed in order to become a landlord.[21]

Let us now perform the same type of analysis for the dry area. Looking at the beta-weights in equation [6.13], we see that the different types of land carry very different weights. Not surprisingly, rainfed dry land (*punjei*) has the lowest $\beta = 0.04$. This serves to emphasise the results of our analysis in chapter 3, which brought out the low intensity and the low yield of dry farming. In the present context, it means that the ownership of *punjei* will not in itself make anybody rich. It may be somewhat more surprising to know that well-irrigated (*thottam*) land also carries a low weight of $\beta = 0.17$. This means that you need a lot of *thottam* in order to get rich or, to be more precise, to appropriate any surplus from such a land.[22] This serves to emphasize a point already made. Many of the wells sunk in dry land have proven to be a liability rather than an asset, and this is one reason why many middle peasants in the dry area were found to be in a 'reproductive squeeze' (see further

[18] If we go by equation [6.12], and estimate (x_1) the area owned necessary to satisfy the subsistence need of grain ($r = -2$), we get the estimate $x_1 = 0.05$ (provided x_2 and $x_3 = 0$). Although this is an unreliable estimate, it stresses the point made in the text.

[19] Here the equation gives the estimate $x_1 = 2.20$ for $r = 0$ (and x_2 and $x_3 = 0$), i.e., according to the regression only 2.20 acres is needed for an owner-cultivator to appropriate a surplus.

[20] A similar calculation as in the preceding note gives 7.07 acres as the area needed to appropriate surplus from leased-in land. Note, however, that the beta-coefficient is not statistically significant, so the statistical estimate is not very reliable.

[21] Here we get the estimate $x_3 = 3.60$ as the limit for attaining $r = 0$, i.e., in order to appropriate a surplus (under analogous conditions to those in the preceding notes). But again, the beta-weight is not statistically significant.

[22] If we set other types of land = 0, it takes 12.94 acres of *thottam* to attain surplus, according to equation [6.13].

below). Instead, it is tankfed (*nanjei*) land ($\beta = 0.35$), and above all *nanjei-thottam*, i.e., tankfed land fitted with a well and preferably also a pump-set which carries a weight in class-determination ($\beta = 0.61$).[23] Only a few acres of such valuable land is needed in order to appropriate a surplus.[24]

Character of the surplus and segmentation of the exploiting class

One final step remains to be taken. In the class analysis made so far, all surplus appropriators have been treated as one class. We will now attempt to subdivide them into segments. In order to do this we must specify the forms which the surplus can take. Materially, of course, the surplus first takes the form of a quantity of farm products which, since they are potential commodities, can be converted into money form. This can be used as capital for accumulation, or for investment inside or outside agriculture. It can also be consumed, in which case we regard it as a luxury consumption. But the uses to which it is put are at present less important than the sources from which it stems. Distinguished by source, the surplus may be either profit or land rent.

Land rent

In the wet area, as we have seen in chapter 4, about half of all lands are tenant operated. Rent is paid both in cash and kind, and at varying rates. Tenants who are protected by tenancy legislation pay fairly low rents, sometimes bordering on the symbolic, as when they pay a fixed money rent which is continuously devalued by inflation. They can also mortgage their land on a usufructuary basis, which essentially is a form of subleasing of land. Fixity of tenure here obviously approaches practical ownership of the land.

But these are only about half of all tenants cultivating around 46 per cent of all the leased-in land. We also have unregistered leaseholds in which the tenants pay higher rents, although the most exploitative forms of tenancy have largely disappeared as a

[23] We can abstract from other types of land (x_5) because they are residual also in terms of area.

[24] The equation here gives the estimate x_4 = 3.61 as the area needed to attain surplus.

result of the struggle carried out by the tenants' movement in the area (cf. chapter 4). As mentioned before, there are also several cases of capitalist tenants who lease in land paying fixed cash rent and who compete in the lease market with ordinary peasants.

The presence of the last category is significant because it signals the presence of the capitalist entrepreneur, and it indicates under what conditions he has to operate: in competition with small tenants paying rent on unregistered leaseholds. This implies:

1. That the production conditions for the crop grown by the tenants (paddy) determines the general level of rent (with the exception of land under registered leaseholds);
2. That the money equivalent of this kind rent is set by the price-level of paddy; and
3. That the capitalist tenants make profit only after the payment of rent.

Thus, the relation between rent and profit can here be seen as the reverse of the English nineteenth century case as portrayed by Marx in volume III of *Capital* where profit is primary and land rent secondary. Marx's case is different, not only geographically, but also structurally. Marx presupposes the universality of the capitalist mode of production; production is carried on only if it yields an average rate of profit; and only if there is some surplus profit over this average which can it be converted into land rent. This is what Marx seems to have had in mind when he subtitled part IV of volume III as 'The transformation of surplus profit into ground rent'.

In our case, the relation of land rent and profit is better seen as the reverse (cf. Patnaik, 1976). Land rent is the primary category, profit is secondary. This depends on the presence of a land-hungry peasantry willing to forego profit to attain subsistence. The peasant's capacity to pay rent from his subsistence production of paddy sets the average rate of rent. Only if there is a surplus over this average can it be transformed into profit. The possibility of this 'transformation of surplus into profit' hinges on the superior productivity of the capitalist entrepreneurs, as correctly pointed out by Patnaik (1976). This possibility can be realised in banana cultivation.

With á total investment of Rs. 500 to 700 per acre, capitalist farmers reap 1,200 to 1,500 kg. of paddy, giving them a net profit of Rs. 700–800. Two such crops can be taken in a year, so a net profit of Rs. 1,400 to 1,600 per acre in a year should be compared with that for one banana crop (since banana is a one-year crop). To grow an acre of banana requires an expense of Rs. 2,700 to 3,500, and it fetches some Rs. 6,000 to 9,000 in the market. The rate of profit is roughly the same for both crops, but what is important in this connection is not the rate but the volume of profit. Here banana is clearly superior giving a net profit per acre and year which is more than double of that for paddy.

Paraphrasing Marx's differential rent I and II, we might define surplus of type I and II and say that the capitalist entrepreneurs in banana cultivation realise a superior level of productivity which allows them to produce *surplus of type II* and transform it into *profit*, after having paid the counterpart of the *surplus of type I* (and maybe somewhat more) as cash rent to the landlord. Surplus of type II is not universal. It can be realised only through higher productivity. But surplus of type I is more or less universal in the wet area: its good soils and, most important, its excellent irrigation assure a level of productivity that is higher than that which determines the production price of paddy prevailing in the market. This is the source of its 'universal' surplus of type I which is the economic precondition for the prevalence of tenant cultivation in the wet area.

A model for class segmentation

This lengthy argument leads to a definite characterization of the surplus in the wet area. If a landowner cultivates his own land it means that the potential rent from the land takes the form of income from own cultivation. This income, then, is *implicit land rent*, and only if the surplus appropriated from own cultivation exceeds the average rate of rent can it be regarded as profit (surplus of type II).

If we denote implicit land rent as (S_{ri}) as opposed to rent received from land leased out (S_{ro}) and as opposed to profit (S_p), we can decompose the surplus appropriated by a household (S) according to the following equation:

$$S = S_{ri} + S_{ro} + S_p \qquad [6.14]$$

But it is the relation between (S_{ri}) and (S_p) which is interesting. So if we abstract, for a moment, from rent receipts we get:

$$S_{ro} = 0 \rightarrow S = S_{ri} + S_p \qquad [6.15]$$

then we get the condition for profit as:

$$S_p > 0 \rightarrow S > S_{ri} \qquad [6.16]$$

The corollary is:

$$S \leqslant S_{ri} \rightarrow S_p \leqslant 0 \qquad [6.17]$$

In the latter case income from own cultivation would contain only implicit land rent and the cultivator must be regarded as a rent-receiver whose surplus stems, not from his entrepreneurial activity but from his ownership of land.

If ($S_p > 0$), on the other hand, the cultivator would have some capitalist entrepreneurial characteristics. These capitalist farmers could be subdivided by bringing in implicit rent. Take first the case which follows from [6.15]:

$$S_{ri} = 0 \rightarrow S = S_p \qquad [6.18]$$

Here we can think of a holding which, if cultivated with the rent-setting crop (paddy) and with average productivity, would yield no surplus for the cultivator (only rent for the landowner if the holding is a leased one). In other words, we have to think of a poor or middle peasant holding. Cultivated with superior productivity, either of paddy or more likely with some capital-intensive crop like banana, the holding could yield a profit (surplus of type II). If this possibility is realised by a landowner or a tenant, it would be correct to call him a rich peasant who, by virtue of capital investment in production and entrepreneurship, is able to move upwards from the poor or middle peasantry into the ranks of the surplus appropriators. Another case fulfilling the conditions specified in [6.18] would be the capitalist tenant already referred to.

A third possibility is that we have:

$$S > S_p \text{ and } S_p > 0 \rightarrow S_{ri} > 0 \qquad [6.19]$$

Here we have a landowner who is not content with the implicit rent yielded by his holding, but who invests capital in intensive cultivation and produces a profit exceeding the level of implicit rent. We can call this type a capitalist landlord since he combines rent and profit appropriation.

A final possibility is:

$$S_{ri} + S_p = 0 \rightarrow S_{ro} > 0 \qquad [6.20]$$

This would of course be the pure landlord whose surplus exclusively consists of rent from leased-out land. This way of treating land rent proper implies that when a landowner is cultivating at least parts of his land himself, the mode of cultivation on that land becomes decisive for our way of classification. In other words, to all the preceding formulae except the last one we may add a condition:

$$S_{ro} \geqslant 0$$

This argument has been summarized in Table 6.10.

TABLE 6.10

Key for Subdivision of Surplus Appropriators

Level of implicit rent (S_{ri})	*Level of profit* (S_p)	
	$S_p = 0$	$S_p > 0$
$S_{ri} = 0$	pure landlord (cf. 6.20)	rich peasant or capitalist tenant (cf. 6.18)
$S_{ri} > 0$	cultivating landlord (cf. 6.17)	capitalist landlord (cf. 6.19)

In the dry area characterization of the surplus is simpler. Since tenancy is so infrequent, land in the dry area generally carries no implicit rent, that is, in general ($S_{ri} + S_{ro} = 0$) and thus ($S_p > 0$). Surplus appropriating farmers in the dry area must thus be regarded as capitalist entrepreneurs. This goes well with the fact that they derive their surplus mainly from *thottam* lands, and from the investment of capital in wells and pump-sets. Only tankfed lands could perhaps yield some surplus of type I, but since they are so marginal (2 per cent of all land operated, 5 per cent of all irrigated land in the dry area),[25] it seems fair to characterize surplus appropriators in the dry area as rich peasants in the original sense of the word, that is, as deriving their surplus from entrepreneurial activities and from capital investments in the land.

This is not to deny the importance of landed property in the dry area. It is a precondition for appropriation, but it is not in general an independent source of surplus in the form of land rent, as it evidently is in the wet area. In the dry area, the monopolization of the means of production (wells and pump-sets) through the investment of capital is the basis of the class structure. Paradoxically, we thus have a purer form of capitalist farming in the dry area than in the wet one, where capitalist development has to overcome the barrier created by landed property and land rent. On the other hand, this 'purer form' of capitalism goes together with very backward relations of production, such as, bonded labour, which as we have shown is more common in the dry area than in the wet one.

Application of the model

In formula [6.14] only S_{ri} and S_p are unknowns, that is, in order to apply this model we need an estimate of the implicit rent carried by an acre of owner-cultivated land in the wet area. Then we would get:

$$S_p = S - (S_{ri} + S_{ro}) \qquad [6.21]$$

Open market rentals for wet land vary greatly, but we found that a rough estimate of Rs. 1,000 per acre was all we needed in order to be able to assign the surplus appropriators to their respective classes.

In Table 6.11 we give the results both for the main sample which we have so far discussed, and for the separate material collected from the wealthiest 1 per cent of the households, the census of the upper percentile (UPC). Again note that the material is unweighted so that it does not give any population estimates but merely describes the structure in our material.

[25] This is *nanjei* without wells. Eighty-six per cent of all *nanjei* in the dry area have supplementary irrigation from wells.

TABLE 6.11

Segmentation of Surplus Appropriators in the Wet Area for the Main Sample and for the Census of the Upper Percentile (UPC)

Class	*Main sample*	*UPC*
Rich peasants	9	0
Capitalist farmers	5	25
Cultivating landlords	2	5
Pure landlords	3	1
Total	19	31

It is striking to note that the parasitic rent-receivers, the landlords, are numerically in a minority (about 25 per cent of the surplus appropriators in the main sample), and that the capitalist entrepreneurs is such a large group. This is a very significant finding which implies that the high level of land rent has not acted as an absolute barrier in the development of capitalist farming. We will return to the reasons for and the implications of this remarkable result.

The capitalist tenantry, which is such a strategic group for the development of this analysis, is not numerically strong. They have been merged with the capitalist farmers in the description of the population.

THE EMERGING PICTURE OF THE CLASS STRUCTURE

To arrive at the population estimate main sample cases have to be weighted villagewise. UPCs are weighted = 1. The result, specified for each ecotype, is given in Table 6.12.

The precision of the estimate is decreased somewhat by the category 'others and unclassifiable' which contains cases with contradictory, incomplete, or unreliable data. The higher proportion of such cases in the wet area is mainly due to a number of petty landlord or rentier cases placed in this category. Although their rental income is not high enough to provide them with full subsistence, and thus to make them into landlords, it is so significant that it would be wrong to treat them either as peasants or as agricultural labourers. Some of them are what could be called 'social security cases'; that is, they are unable to cultivate their land due to old age or physical or social handicaps (widows, for example), and are forced to rent it out.

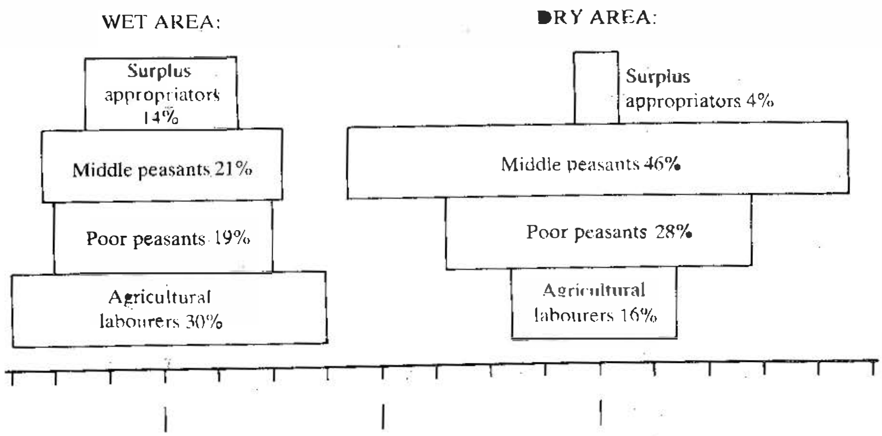
Looking at Figure 6.5 and the more detailed Table 6.12, it emerges that the size of the rural proletariat is not very different between the two areas. The higher polarization in the wet area is reflected, not so much in the size of the rural proletariat as in its composition. More than 60 per cent of these households do not cultivate any land. Here the poor peasantry has been reduced to a minority while the situation is the reverse in the dry area. In the latter ecotype only 36 per cent of the rural proletariat do not operate any land. This difference in proportions is further reinforced by qualitative differences: the wet rural proletariat is a specialized workforce with less land, less non-agricultural income (see Table 5.3), and with higher forms of organization (the gang system, see chapter 5). One could perhaps see the dry rural proletariat as an agricultural proletariat in formation. But as we have seen, they are less alienated from the land; many of them own some land which they have acquired in the current generation in the aim of getting landed. Of course they do not cultivate this land, but they seem to have that aim. Therefore, it would be wrong to treat the dry agricultural labourers as a class in formation. Although they are less specialized in agriculture than their wet counterparts, they earn a significant share of income from non-agricultural sources.

The most dramatic difference between the two areas is in the size of the middle peasantry. The polarized nature of the class structure in the wet area is directly reflected in the size of the middle peasantry, a mere 21 per cent. By contrast, nearly half of the agrarian population in the dry area (46 per cent) belong to the middle peasantry.

The favourable conditions for agricultural production in the wet area and the surplus which they make possible is directly reflected in the size of the category of surplus appropriators, which reaches an impressive 14 per cent of the population in the wet area, a proportion which is three or four times higher than that in the dry area. The 14 per cent of surplus appropriators in the wet area is internally segmented in a most significant way. The high level of surplus has formerly been associated with an elaborate system of landlordism of the classical South Indian type. It is a measure of the profound transformation that has occurred since Independence that only about 20 per cent of the surplus appropriators can now be classified as landlords. This transformation

FIGURE 6.5

Class Structure by Ecotype



has made it possible for a stratum of rich peasants, constituting about 40 per cent of the surplus appropriators, to assert themselves. Out of the big landowners (that is, rich peasants uncounted), a majority of nearly two-thirds have been classified as capitalist farmers.

Here numbers can be deceptive. As the reader may recollect from the multiple regression analysis above, we got a high beta-weight for leased-out land when we regressed land-type on class. This is a signal for the importance of the landlord class in the wet area. In the class analysis performed so far, we have laid the stress on the capitalist tendency. We have attached considerable theoretical significance to the existence of a stratum of capitalist tenants, and to the fact that capitalist farmers also exist. In terms of numbers, the capitalists also outnumber the landlords. If we consult Table 6.12, we see that the capitalist farmers and the rich

TABLE 6.12

Estimated Class Structure of Wet and Dry Areas (Percentages of Agrarian Population)

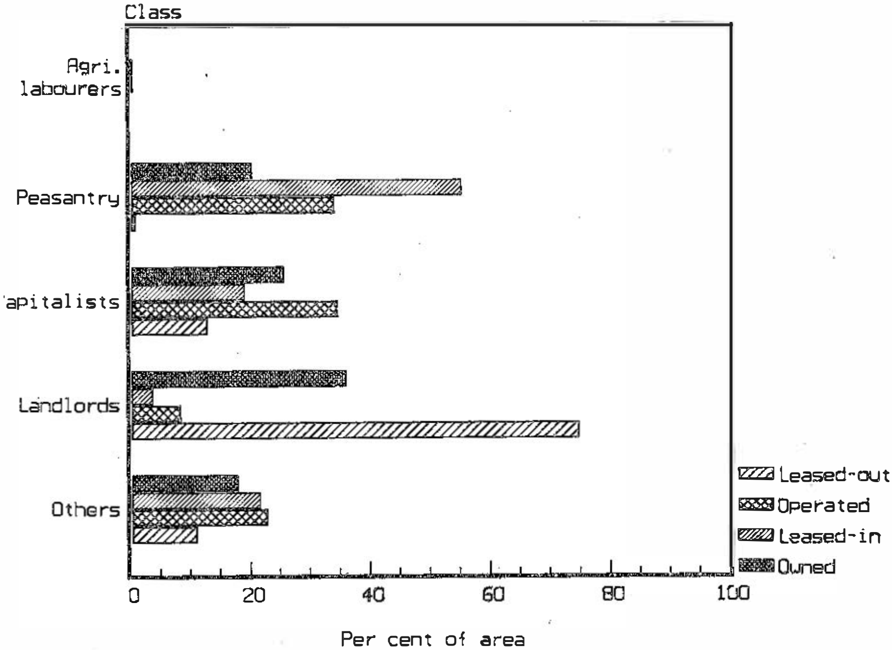
Class	*Wet area*		*Dry area*	
Rural proletariat				
Agricultural labourers	30	49	16	44
Poor peasants	19		28	
Middle peasants				
Lower middle	13	21	33	46
Middle	3		9	
Upper middle	5		4	
Surplus appropriators				
Rich peasants	6	14	4	4
Capitalist farmers	5		0	
Cultivating landlords	2		0	
Pure landlords	1		0	
Others and unclassifiable	16		6	
Total	100		100	

peasants together make up 11 per cent of the agrarian population in the wet area, compared to a mere 3 per cent for the landlords. But numbers is one thing, class power another. In view of the above argument, the small landlord class must be more powerful than their numbers. This conclusion is fully borne out by Figure 6.6.

The small landlord class controls 36 per cent of the area owned by the sampled population and they control 75 per cent of the area leased-out. This makes it necessary not to revise our earlier conclusions, but to qualify them. It remains true that landlordism has been forced to retreat by the tenants' movement and by the deconcentration in landownership that we brought out in chapter 4, but landlordism still has a stronghold in the wet ecotype—a small number of very big landlords still control a considerable part of the area. But, as we have also seen above, they have not proved

FIGURE 6.6

Relative Distribution of Gross Area Controlled by Type of Tenure and Class, Wet Area



Missing cases: None. Fallowed and mortgaged area is not included in the figure.

an absolute barrier to a capitalist development in agriculture. Capitalists control about a quarter of the owned area and more than a third of the operated one.

The dry area never had such an elaborate system of landlordism. Its system of tank-irrigation may once have supported a small landlord class, but nothing like as wealthy as its counterpart in the wet area. This structure seems to have disintegrated concurrently with the tank system. We find no representatives of this old landlord class in our material. Without exception, our dry rich peasants have invested in wells. These wells often have a superior location on tankfed lands. Thus the owners of such good lands—the landlords of the old system—are better equipped to take advantage of the advent of pump-irrigation. But it would be wrong to label these cultivators as landlords, since their income has no rental elements but is surplus of type II, stemming from investment of capital in the land and bearing the form of profit.

A precise designation could be the combined category of rich peasants/capitalist farmers,[26] because it is difficult to find any exact economic ground for drawing the boundary between the two classes. At the lower end of the interval we would have the rich peasant for whom participation with own labour in production, although not necessary for the appropriation of surplus, is still important to the size of the surplus. At the upper end we would have the capitalist farmers for whom participation with own labour is truly marginal in its effect on the size of the surplus. But if we look at the relative distribution of land among the classes in the dry area, we can take one step further in the analysis (see Figure 6.7).

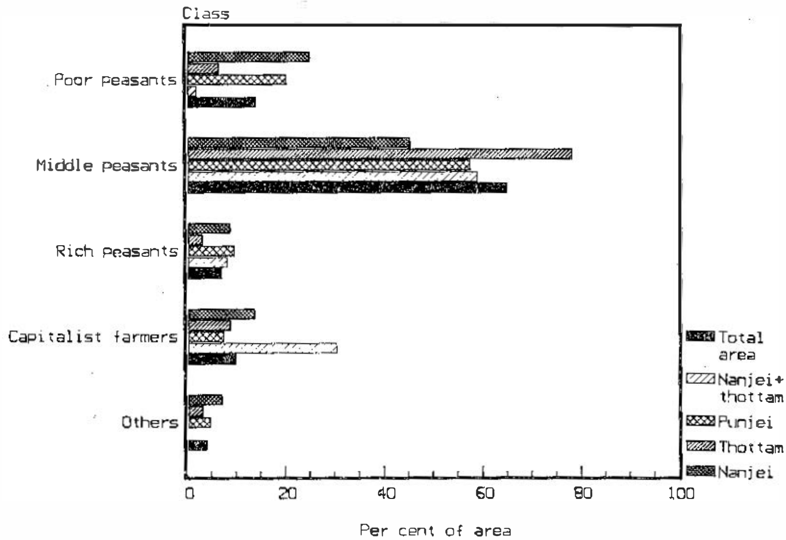
Comparing the relative distributions of land types we see (*a*) that the middle peasants seem to control a disproportionate share of the *thottam*; and that (*b*) the capitalist farmers, i.e., the UPC households in the dry area seem to control an equally disproportionate share of the most valuable land, the *nanjei-thottam*. In none of the cases, however, is the disproportion statistically significant. (*c*) Rich peasants, on the other hand, seem to have about the same share in all types of land (with the possible exception of *thottam*). Since the differences cannot be corroborated statistically, we shall not draw too far-reaching conclusions from them. But they do bring to notice a feature of Figure 6.4 which we have not commented upon. In terms of their landownership, the rich peasants are hardly distinguishable from the middle peasantry — the distances between the first and ninth deciles for the two groups almost completely overlap. The capitalist farmers, on the other hand, clearly stand out in terms of their landownership: they own large areas, and of these a disproportionate share of the most valuable land.[27] This leads us to modify our earlier conclusions on two points. First, regarding the rich peasantry, it is important to underline that they belong to the peasantry—they are not distinguishable from the rest of the peasantry in terms of landownership, and they work on the land as other peasants. It is

[26] This is the designation used in Athreya et al., 1987.

[27] This difference is statistically significant at 1 per cent level.

FIGURE 6.7

Relative Distribution of Area Operated by Land Type and Class, Dry Area



Missing cases: 5 per cent.

significant that when we tried to identify rich peasants to include an additional purposive sample of this class, almost all of the candidates turned out to be middle peasants! Therefore, it is questionable if the rich peasants have been properly designated as such; maybe we should call them 'well-to-do middle peasants' instead? Second, regarding the UPCs in the dry area, they clearly stand out as a separate class, both in terms of the size of the surplus which they appropriate and in the size of the area which they own, and, we might add, although the tendency is too weak to be statistically significant, a disproportionate share in the most valuable land, the *nanjei-thottam*. Therefore, it would seem correct to view this class as a descendant to the old landlord class in the dry areas, which based their class position on the control of the best irrigated land, of the irrigation works, and on privileged access to external markets, and to higher-level authorities.

This old ruling class in the dry areas, as it existed during 1878 to 1929, has been portrayed by Washbrook:

> In every locality there were *pattadars* [tax-paying landowners, our addition] who paid the government a land revenue of more than Rs. 50 per annum and whose broad acres contrasted with the miserable plots of their neighbours. In 1900 the 7 1/2 per cent of *pattas* paying more than Rs. 50 met 43 per cent of the revenue demand, Rs. 100 met 14 per cent. The men who held these large *pattas*, and possessed landed resources twelve or more times greater than the average stood at the centre of the agrarian economy. They supplemented employment by hiring labourers or by letting out their land to tenants. . . They used their surplus to sink wells and buy heavy ploughs, which they made available to small cultivators. At the harvest they bought much of the village produce and put it into huge storage pits. Above all, they had the cash and grain to pump into the rural credit network and keep the economy turning over. (1978, p. 72)

Washbrook estimates that what he calls the ruling elite of the dry areas made up 2.4 per cent of the population in the period mentioned. In our dry villages they make up less than 1 per cent, but they seem to be the descendants of the class described in the quotation. It is significant that the entrepreneurial traits of this class are much stronger than of their counterparts, the landlords in the wet area. The UPCs in the dry area have without exception invested in wells and pump-sets, and thus rely upon capital investments in the land for the appropriation of surplus. But since the pump-sets are often attended to by bonded labourers, their masters do not fit neatly into any ideal type of 'progressive farm entrepreneurs!'

The most striking feature of the middle peasantry in both areas is that the middle peasantry proper, that is, those who reproduce themselves fully and autonomously thanks to their own labour, is a small group in both areas (24 per cent of all middle peasants in the wet area and nine per cent in the dry area). The majority of the middle peasantry is pushed below the level of autonomous reproduction and depend on non-farm sources of income for their reproduction. One way to interpret this finding is to say that there is no middle peasantry to speak of in any of the areas, except those that we have labelled upper middle peasants. We prefer another interpretation: there is a sizeable middle peasantry, especially in the dry area, but it is squeezed so hard that few of them can subsist only on their farming.

The squeeze is exerted by market forces, and it is made effective by the significant inroads of commoditization both into consumption and into farm reproduction. In the process the middle peasantry has become more vulnerable to unfavourable fluctuations in the prices paid for consumer goods and farm inputs, and prices received for labour hired-out.

In this interpretation, price and market conditions exert a profound influence on the agrarian class structure. But the poor peasants are relatively less influenced by movements in the price of farm produce, since they are not commodity producers to any significant degree. They are, however, affected by market forces to the extent that they use purchased inputs and to the extent that prices of industrial consumer goods affect the real value of the wages they earn from hiring-out. There is, however, a certain fluidity in the class structure, between the different types of middle peasants and even between the middle and the rich peasantry, which is due to the movement of the prices. A more favourable relation between prices received and prices paid might have resulted in more rich and upper middle peasant households. Seasonal and yearly variations in yield induce a similar fluidity.

This fluidity might seem alien to the concept of class, since class has some robust and viscous connotations. A critical reader may conclude from this lack of viscosity that we have not managed to capture the agrarian class structure in our area. We prefer another interpretation, namely, that the agrarian class structure is quite fluid, except at the extreme poles. The nature of our data, that is, their covering of only one crop-year makes it impossible to measure this fluidity. Table 6.12 is like a snapshot of a process in movement which hides the fact that the size of the classes is variable.

The price-induced fluidity in the class structure brings to focus the role of the state in the formation of the agrarian class structure. Agricultural prices, both on the output and the input side are to a significant extent administered prices, and thus there is a political element hidden behind the 'invisible hand' of the market.

Some concluding remarks

In this chapter we have investigated the class structure in our study area by means of two methods of classification. Our results suggest that a surplus criterion of class like the one formulated here, although very demanding in terms of data, seems more promising than the labour participation index developed by Patnaik and others. The surplus criterion of class allows for the identification of the class status of individual households and at the same time gives clues to the class structure of which they are parts. It should be stressed, however, that the surplus criterion cannot be more than one in a set of tools used for class analysis. It does not tap all the complexities of class, even if the class analysis is provisionally restricted to the economic level, as has been done in this chapter.

The class structure was found to be quite different in the two ecotypes, both in terms of proletarianization and polarization. Although the size of the proletariat does not differ very much between the two ecotypes, the wet rural proletariat is predominantly a landless labour force while the dry rural proletariat mainly consists of poor peasants. Polarization is also higher in the wet area with the middle peasantry as a small class, compared to the dry area where the middle peasantry predominates. In both areas, however, only a minority of the middle peasants are ideal-type middle peasants, in the sense of being autonomously reproductive, while the majority depend on non-farm sources of income for their reproduction. In both ecotypes there is a significant capitalist tendency, and the surplus appropriating classes depend on capitalist exploitation. At the same time, however, landlordism remains entrenched in the wet ecotype.

7

Usury and Credit

In the preceding chapter we studied the diverse class structures in the two ecotypes, but did not deal with one facet of this structure in detail, namely, the position of moneylenders and merchants. This chapter deals mainly with usury, but we will also attempt to socially locate the merchant's capital.

We have already shown that relations of production and class structures differ significantly between the two ecotypes. We have also delineated the important changes that have occurred in technology, in relations of production, and class structure. We will continue the analysis by asking if the position of the moneylenders and the merchants also differs between the ecotypes; and, how have these economic agents been affected by the processes of change that have occurred? We begin by discussing theoretical issues, and continue by presenting our empirical findings.

Usury as a relation of exploitation

Let us first define usury. We will use Marx's classical definition.

> Interest-bearing capital, or, as we may call it in its antiquated form, usurer's capital, belongs together with its twin brother, merchant's capital, to the antediluvian forms of capital, which long precede the capitalist mode of production and are to be found in the most diverse economic formations of society. (Marx, 1959, p. 593)

Credit capital, on the other hand, is the form taken by money-lending capital within the capitalist mode of production. One characteristic of this form is that the general rate of profit prevailing in the economy as a whole also comes to rule the movement of credit capital (Marx, 1959, part V). Within a classical evolutionist paradigm, capitalist development thus becomes a question of a *transition from usury to credit.*

For Marx, usury could under certain conditions aid in the development of capitalism (Marx, 1959, p. 597). The prevailing view within development studies would rather be the opposite one: usury is seen as a major obstacle to agricultural development. This goes both for neo-classical economists and for neo-marxists.

In the neo-classical tradition, three factors have been used to account for the usurious rates of interest prevailing in Third World agriculture: high rates of default, high costs of administration, and monopoly. In a neo-classical schema, monopoly, of course, has a different status than the other two, since the existence of a monopoly would violate the preconditions for applying an equilibrium model. Therefore, it has been difficult for many neo-classical scholars to admit to the existence of a monopoly (see the review of literature in Roth, 1983). Others, like Binswanger and Rosenzweig (1986), admit to the existence of a monopoly and, in the classical fashion, see the development of better credit markets as a means of getting rid of usury, and as a necessary part of agricultural development.

Among marxists too, usury tends to be seen as an obstacle to capitalist development in agriculture. In a previous work, Djurfeldt and Lindberg (1978, pp. 91 ff.) grouped the various conceptions on how usurious capital functions in relation to agricultural production into two basic models: The Land Rent dominated System (LRS), and the Merchant/Usury dominated System (MUS).

In a land rent dominated system, usurious capital is an important but subsidiary form of surplus appropriation. So is merchant capital. Both these forms of capital exist, to paraphrase a famous sentence of Marx's, in the pores of the society created by landed property and land rent. Within the marxist tradition, the most elaborate version of this model might be the one developed by Bhaduri (1973 and other works), which he calls a 'semi-feudal' system. A central figure in this model is the landlord exploiting his share-cropper simultaneously via land rent and usury (by extending consumption credit in the off-season, and by lending him seeds, etc., when the agricultural season starts). The combined grip of landlordism and usury over this system is so strong that, according to Bhaduri, it precludes technical improvement altogether. In order to ensure the persistence of semi-feudal production relations, the landlord resists agricultural modernization (Bhaduri, 1973, p. 130).

Bhaduri's model has been heavily criticized by many authors, e.g., Griffin (1979, pp. 85-94). Its postulate of a personal union between the landlord and the usurer, and the thesis which is deduced from this, of the crippling grip of the landlord-cum-usurer over agricultural productivity, seems far from generally valid. So, for example, in a study from West Bengal, the state to which the model was originally applied, it was found that tenants borrow very little from their landlords, and when they do, rates of interest tend to be far from usurious (Khastabis and Chakravarty, 1982).

Utsa Patnaik has formulated a less restrictive version of the model which does not presuppose a personal union of the landlord and the moneylender, but where, nevertheless, usury and commerce are structurally dependent upon landed property and the landlords:

> Those classes with investible funds inevitably put these funds into the traditional avenues—land purchase, trade and money-lending. The primary producer—whether small peasant paying revenue direct to the State or tenant paying rent to the landlord—had no investible surplus. The landlord and dominant landholders obtained a comfortable living from land rent or cultivation through labour paid subsistence wages: and as long as the mass of destitute peasants and labourers existed, a fair return was assured to money-lending as well. The security for loans was the land, crops, or failing all else, the peasants' labour. In spite of default, the high nominal rate of return on money-lending meant that the real rate of return would be fairly high. The growth of commerce and exchange within such a structure merely meant that the profitability of investing in the traditional fields was enhanced. In short, all the evidence to date indicates that the rate of surplus extraction on the traditional precapitalist basis was so high that there existed no incentive on the part of any rural class with investible funds, to change the organisational basis of agricultural production or to undertake productive investment in the land. (Patnaik, 1972, p. 24)

In Patnaik's version too, the land rent dominated system is a formidable barrier to agricultural modernization. But in another publication (1976), Patnaik has showed that under some conditions this barrier can be surmounted, provided the new technology makes possible dramatic improvements in productivity. In the preceding chapter we showed that capital-intensive cash crops may also permit such improvements in productivity that the land rent barrier to capitalist development can be at least sporadically overcome.[1]

To formulate a hypothesis we would expect to find a variant of the LRS model in the wet ecotype, where the prevalent landlordism would seem to relegate usurious capital to a subordinate position in the manner specified by this model. But there is also another widespread conception of how usurious capital functions in the exploitation of peasant labour. This is when merchant and usurious capital in combination is dominant. Banaji (1977) has formulated a clear-cut version of this merchant/usury dominated system (MUS). This model is in a way antithetical to the LRS models.

While the LRS models presuppose that landlordism is the primary relation of exploitation, the MUS models imply that landed property is a marginal means of surplus appropriation. On the other hand, the MUS models require a certain level of commercialization,. which is a prerequisite for the merchant to establish control over the production by means of extending credit to the peasants. In this way the combined merchant/usurious capital links petty commodity-producing peasants to the capitalist (world) market. Extorting the entire surplus value from the immediate producers, the merchants-cum-moneylenders effectively control the development prospects of the subordinate agrarian economy, and they can forestall the development of the productive forces.

In this perspective the peasant becomes a wage labourer in disguise; he retains the formal possession of the means of production, but in reality they are controlled by the merchant. Being the real 'owner' the merchant would seem to have the same position as the landlord in Bhaduri's model: he can forestall a

[1] Somnath Sen (1983) has made a comparable attempt to modify Bhaduri's model.

technical development, or he can initiate it. But the logic of the model seems to imply that agricultural development cannot bypass the merchant-cum-moneylender.

To formulate another hypothesis: we would expect to find a variant of the MUS model in the dry ecotype where, as we have seen, landlordism is virtually absent in the sense that only a small share of the surplus takes the form of rent. Therefore, the field would be free for merchant/usurious capital. Both the MUS and the LRS models tend to see State intervention in credit markets, aiming to facilitate the expansion of credit capital, and to combat monopolies in rural credit markets as largely ineffective. Our material will allow us to see if this prediction can be substantiated.

State-subsidized credit has been an important part of the so-called New Agricultural Strategy, aiming to diffuse the technologies associated with the 'green revolution'. Aware, to some extent, of the problems with usury as an exploitative relation in agriculture, and faced by the need of financing the new and more expensive agricultural technology (wells, pumps, and bio-chemical inputs), successive Indian Governments have intervened in the rural credit market. As early as 1904, the colonial government initiated primary agricultural credit societies, but for their first fifty years these societies made little progress in fighting usurious money-lending. Beginning in the 1950s a multi-structured system of agrarian credit organization was set up. Towards the end of the 60s, in connection with the New Agricultural Policy, there was a substantial flow of credit into the system. The expansion of lending was financed to a great extent by foreign aid, and facilitated by attractive rates of interest.[2] However, as is well-known, a number of contemporary studies have argued that:

> availability and distribution of credit are a function of the power structure in a given region. The existing power structure in rural India is such that even the organised credit which is almost always subsidized (the nominal rate of interest charged on formal loan being far lower than the rate charged on loans in the informal credit market) flows to the rich who use that to exploit the poor even further. (Sarap, 1987, pp. 83–84)

[2] For a short overview of official credit for agricultural and rural development see Shivamaggi, 1986. For a more elaborate treatment see Desai (1983, pp. 359–530).

On this basis one might expect that the inflow of modern credit capital would not affect usury, and that moneylenders would be able to retain at least parts of their grip over the rural economy.

In our case, one fundamental assumption of the reviewed theories does not hold. They predict or theoretically seek to 'explain' stagnation in agriculture.[3] However, as we have seen in the preceding chapters, in both ecotypes capital nowadays exists not only in the sphere of circulation, but also in production. In the wet area this entry is epitomized by the capitalist tenant growing bananas and cane---capital-intensive crops with handsome margins of profit. In the dry area capital mainly takes the form of investments in private irrigation works, i.e., wells and pump-sets. Therefore, one conclusion could be drawn: land rent and usury have not prevented the introduction of new agricultural techniques and the appearance of capitalist relations of exploitation. Therefore, the MUS and the LRS models with their common emphasis on agrarian stagnation could already at the outset be suspected to poorly fit the cases at hand. Thus it may be more relevant to ask what is the position of usury in the transformed relations of production; and conversely, what is the position of credit capital? And, finally, has State intervention in credit markets succeeded in defeating usury? But before we go into empirical detail, we will try to get an historical perspective.

An historical perspective

Recent historical research by Baker (1984) indicates that the conventional view of the paralytic effect of usury on agricultural development does not hold even for the colonial era. One can share Baker's suspicion that modern scholars have taken over a colonial myth about the stifling grip of usury:

> The British administrators of the late nineteenth century seized on money-lending as a simple explanation for the torpidity of agriculture. It was easy to blame usurers for the poverty of the average rustic, and it also helped to justify the levels of land revenue if it could be shown that revenue payments hurt the

[3] As we pointed out above, Patnaik's conceptualization of a land rent dominated system would be at least a partial exception.

> ryot far less than interest payments. Administrators and economists elaborated a picture of predatory moneylenders, seizing the profits and often also the land of the downtrodden cultivator. The picture also proved amenable to national ideologues, who could find the origin of the moneylender in the supposed creation of a land market under British rule. From there, the argument was passed to the Marxists and 'rural romantics', who saw in the moneylender the extension of capitalism into the rural, peasant based economy. Most of these analysts have condemned money-lending as 'usury', with little attention to its context or purpose. It would, however, seem more sensible to examine the role of money-lending against the background of the local society and economy. (pp. 153--54)

Although more nuanced, the picture provided by Baker partly confirms what he is describing as follies of administrators and nationalists. Let us see how.

Baker analyses 'plains' and 'valleys' separately, corresponding to our dry and wet villages. He distinguishes 'between money-lending which forms part of trade and commerce', which would correspond to our MUS model, and 'money-lending which forms part of the internal system of redistribution of the village' (p. 154). Although the latter formulation is far from one we would have used ourselves, it turns out to correspond quite closely to our LRS model. Baker notes that the latter type was by far the most important in the dry ecotype at the beginning of this century, and that the structure of the dry villages at least in an early phase prevented urban-based merchant-usurious capital from entering these villages:

> Given the questionable character of land as a form of surety, it was dangerous for an outsider to lend money directly in plains villages. The only people who were really capable of assessing a villager's creditworthiness and compelling repayment were other villagers who could rely on personal pledges for security and who could use the village's internal government to sort out any dispute. (p. 154)

In the plains even prior to British rule, 'credit transactions between cultivators are best considered as part of the hierarchically-ordered system of redistribution within the village' writes Baker, and notes that it was the big farmers (such as, village chiefs) who had concentrated wealth in various ways, who 'redistributed it in the form of grain doles, wage payments, and loans' (p. 154). Interest, if at all, was very often not in cash or kind but in labour service, and expressing the fact that the debtor was often a tenant or farm servant of the creditor-cum-landlord. As cash-cropping increased and more profits were made in agriculture, alternative sources of credit were, however, made available to debtors, reducing 'this form of tight clientage' (p. 154). In a process that is strikingly parallel to what has happened in the 1970s, cash-cropping opened the closed credit markets, but only partially, as we will see below.

As regards the wet valley villages Baker describes the systems of debt-bondage that was rather common among *pannaiyal* employed by the *mirasidars* of the Kaveri delta (pp. 172–73), and which could be considered to be a variety of the LRS model. Compare the following extract from Tiruchy District in 1876:

> The *merasidars* will lend small sums of money (without interest) on the occasion of a birth, funeral, or marriage, and in some *talooks*, the expenses consequent on these events are defrayed by the *merasidars* gratuitously; but the amount is very trifling being but from 5 to 10 rupees for a marriage, and few annas for a birth or funeral. These labourers are always in their masters' debt, and are not allowed to work for any other person without previous permission to do so. Their families are expected to aid in harvesting the crops, and while so employed are paid as daily labourers. . . . [4]

A picture emerges of a 'system of redistributive money-lending' in both the ecotypes which was a relation of dependence between the debtor and the creditor, where interest more often than not was paid through labour services. Since the creditors were *mirasidars* in the wet villages and 'big farmers (such as, village chiefs)' in the dry villages, both systems could obviously be seen as varieties of the LRS models.

But even during the colonial era cash crop production expanded

[4] *Selections from the Records of the Madras Presidency. No. L.*, papers relating to the Survey and Settlement of the Trichinopoly District, 1876, para 49.

in the Tamil Nadu countryside. Usury did not contain this commercialization; on the contrary, as Baker reveals, it was itself affected by it. The expansion of cash crops, such as cotton and groundnut in the dry areas and plantains and sugarcane in the valleys from the late nineteenth century onwards, also saw the development of outside financing of agricultural production. Even then most of the credit seems to have come from local sources, at least in the dry areas:

> Although the groundnut shedmen and the cotton *kapas*-dealers were tied down by forward contracts and liberally provided with forward finance from export houses and local bankers, they made little attempt to lend money into the villages to ensure cultivation and to secure a holding on the crop. This was largely because for the town merchants, almost as much as for the foreign firms, the plains countryside was an alien and commercially dangerous place. . . The finance for cultivation, harvest and primary bulking was found in the locality and only very rarely came from the marketing network. Such finance was usually marshalled by a village dealer, who was usually the local shopkeeper, perhaps a professional rural moneylender, and *most often simply a substantial cultivator*. These dealers often lent out sums midway through the cultivation system with stipulations about delivery of the crop, and perhaps also with devices to ensure that they could purchase crops at premium. Village-dealing was a pivotal role, with enormous opportunities for profit, but it depended on a unique blend of skills. (Baker, 1984, pp. 256–57, our emphasis)

In the terms of our models, this would mean that the LRS system held sway both in the dry and the wet villages, but, contrary to the assumption of modern theorists, it was not an obstacle to commercialization.

Baker also maintains that, at least before the great depression, which hit Tamil Nadu agriculture hard, the money-lending market was a very competitive one, so that farmers had many alternative sources of finance, which also meant that terms were not too cumbersome (pp. 257–60). Most of the rural elite, writes Baker, 'stuck to local money-lending and dealing in commercial crops' rather than investing their money in productive investments which often proved unrewarding (p. 279). During the 1920s, outsiders also dared to venture into the business of giving credit to cultivators in the dry villages, as reported from Tiruchy District (p. 259).

During the 1930s and the great depression, the prices of agricultural commodities fell drastically, and farmers had to default not to get ruined. The Madras Government intervened with an Agriculturists' Relief Act in 1938, in which arrears of interest dating from 1932 were either wiped out or scaled down to 5 per cent. Though far from a success, the Act created an acute shortage of credit, moneylenders being reluctant to lend out money, and, according to Baker, had at least two consequences. First, real rates of interest were pressed upwards and were extracted in various ways, but official rates recorded in the documents were the legal ones. Second:

> Since the late nineteenth century, with the extension of trade in agricultural produce and the keenness of entrepreneurs to offer loans in the countryside to secure produce, this characteristic of the rural money-market had been being gradually eroded; now the uncertainty created by the depression and legislative interference pushed matters backwards. Lending continued, but it was more of the character between neighbours, than between entrepreneurs and producers. (pp. 306-7)

'Lending between neighbours' is a nebulous formulation, but it would seem to imply that the big landowners regained their control of local credit markets, and that the inroads to urban-based credit capital were closed by the depression.

What lessons can we learn from this historical excursion? First of all, if Baker's story (which ends in the 50s) remains true also for the end of the 70s, we would expect local credit markets to be controlled by the landed elite in both types of villages. But, as we saw, commercialization affected credit markets already during the colonial era. At the end of the 70s we had a much more developed commercialization, which, moreover, had partially transformed relations of production. Therefore, there are reasons to expect that local credit markets have also been affected by this process.

A NOTE ON DATA COLLECTION AND QUALITY

Given the precarious nature of enquiries into indebtedness most rural socioeconomic studies treat credit and indebtedness in a summary fashion like stating what type of lenders are found, official credit extended to various size-groups of farmers, average rates of interest charged by different lenders based on qualitative information, etc.[5]

Our data on usury, credit, and commerce are more detailed and come from several sources. We have collected quantitative material from banks and credit cooperatives. Moneylenders have been covered in several ways: by interviewing informants, and by collecting information from the respondents sampled for our survey. We also interviewed the merchants themselves—grain merchants, rice-mill owners, fertilizer dealers operating both in our sample villages and the neighbouring commercial centres. For obvious reasons the merchants were hard to work with, and reluctant to inform us about all aspects of their operations.

Our main material comes from the other end in the credit and commercial relations, those who borrow from the moneylenders and the credit institutions, and those who sell and buy from the merchants, that is, the respondents sampled for our farm and household economic survey. They gave us details on their indebtedness and on their involvements in market transactions.

The questions on indebtedness were posed towards the end of a very long interview, sometimes extending through several sittings. By this point both the respondents and the interviewers were exhausted thereby affecting the quality of the data. Probing was not done too vigorously. Therefore, we have perhaps missed some of the small consumption loans with very high rates of interest.

The survey was conducted in the aftermath of the Emergency (1975/77), and the moratorium on interest payments, which was part of the twenty-point programme was still in the air. It made some respondents reluctant to disclose the true rates of interest for fear of the moneylenders who wield a lot of power in these small villages.

Yet we think that the survey data on debts are not too unreli-

[5] A penetrating study by Sarap conducted in 1980–1981 in three wet and three dry villages in Western Orissa comes very close in design to our study (1987). But a drawback of the article based on that study is that the author does not systematically discuss the differences, if any, between his two ecotypes. Neither is it clear what statistical procedures he has used in arriving at estimates and in making statistical tests.

able. We think we have covered the main debts of the households as well as their source, purpose, security, year of contraction, amortization, and interest rate. This has been possible due to the atmosphere which was one of struggle against usury. Moreover, this was in the heyday of a farmers' agitation which among other things demanded that loans taken from cooperatives and nationalized banks should be written-off, since the farmers found it so difficult to repay them.[6]

Overall indebtedness

Our data indicate that the domination of usurious capital in the credit market—if there ever was one—has been broken by credit capital, by loans extended mainly from credit cooperatives and nationalized banks. According to our estimate, about 50 per cent of all credit in both ecotypes derive from these institutions.

The agrarian population in the three wet villages had together borrowed Rs. 10.1 million, out of which nearly half had been lent by banks and cooperatives. In the dry area the credit volume amounted to 7.4 million of which slightly more than half were institutional loans. The loosening grip of usurious capital is also reflected in interest rates. The mean rate of interest per household was 18 per cent in the wet area, and slightly higher in the dry area or 20 per cent.

While the above results deviate from what is usually reported from agrarian credit surveys in India,[7] another result is less deviant:

[6] The data have been collected for each individual debt of the sampled households, but they cannot be analysed at this level. Many small debts with high interest would give an exaggerated impression of the prevalence of usury. Instead, debts have been aggregated to household level, and interest rates have been calculated as a weighted average (i.e., the total amount of interest divided by the total amount of debt). On this aggregate level simple arithmetic means have been used, or medians when the former are misleading due to skewed distributions. Purpose, security, etc., have not been tabulated with the individual debt as a unit which again would be misleading, but as a percentage of the total volume of debt.

[7] Some recent studies confirm the massive impact of credit from institutional sources. Harriss (1985, p. 83) reports that 40 to 60 per cent of total credit comes from the formal sector in three villages in North Arcot District, and the average rates of interest seem close to the ones that we have found. Sarap reports of 78 per cent formal credit and only 22 per cent from informal sources in Orissa. On the other hand, Guhan and Bharathan found that only about 23 per cent of credit in Dusi village in North Arcot was from formal sources (1984, p. 70). So the spread of institutional credit may be quite uneven.

the rate of indebtedness is high. Eighty to ninety per cent of the population is indebted in both areas. Similar proportions were, for example, found by Sarap in his study of three wet and three dry villages in Western Orissa in 1980–81 (1987, p. 86). As could be expected, the volume of debt per household is also substantial. The mean debt is around Rs. 3000 in the wet area and somewhat higher in the dry one, or about 3500 rupees, but the difference is not statistically significant.[8]

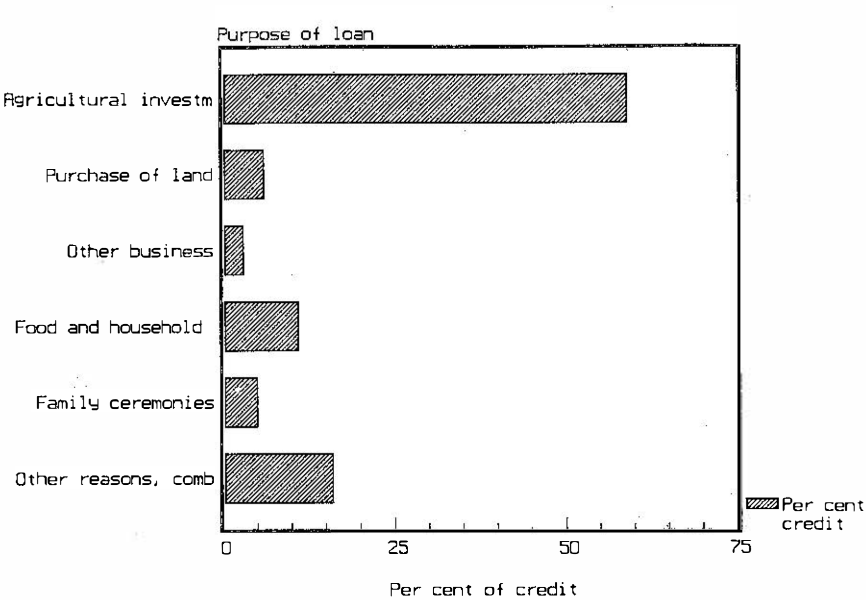
In a previous chapter we set the level of subsistence to nearly 800 rupees per consumption unit in the wet area, and nearly 600 rupees for the other area. If we count with roughly four consumption units per household, this implies that the mean debt in the wet area is roughly equal to the subsistence requirement for a full year, while in the dry area it exceeds these requirements by about 50 per cent. The relatively higher volume of debt in the dry area may have a background in the recent expansion of private investments in irrigation there.

The transformation of the credit market is also shown by data on the purposes for which money has been borrowed (see Fig. 7.1). This pattern, which is more or less the same for both ecotypes, is very different from the one which is usually reported. Less than 20 per cent of all credit has been taken for purposes of consumption (household expenses plus ceremonies), and about 70 per cent has been used for investment. Compare the data in the Figure with, for example, data from Thaiyur in 1969–70 (Djurfeldt and Lindberg, 1975a, p. 97), where only a quarter of all debt had been taken for purposes of cultivation, and where consumption accounted for most of the remaining credit. Singh, in a study of ten villages in Borsad Taluk in Gujarat in 1969–70, also found that much less than half of all loans had been used for productive expenses (Singh, 1985, p. 229). The recent survey of Dusi village in North Arcot reports that larger loans were contracted for marriages, house construction, and land purchase (Guhan and Bharathan, 1984, pp. 70–71). Sarap's data from Orissa 1980–81, however, also

[8] In their study of the North Arcot village Dusi in 1983, Guhan and Bharathan found that the average debt among ninety indebted agrarian households was Rs. 3,615, excluding short-term production loans and small consumption loans (1984, p. 70). In the same village and year, Harriss found that among a sample of forty-seven households the average debt was Rs. 5,328 per household (1985, p. 73).

FIGURE 7.1

Purposes for which Money has been Borrowed (Per cent of Total Credit Volume)



Note: The number of debts in the sample is 668. The percentage of missing cases is 1.5.

point to a higher proportion of productive investments (1987, p. 89), and Harriss' restudy of a number of North Arcot villages in 1983–84 also indicates the same changes (1985, pp. 78–84). Apparently, these data are a reflection of the transformation in the relations of production that we have documented in earlier chapters.

CLASS AND INDEBTEDNESS

As can be seen from Figure 7.2, there is a rather clear correlation between class and indebtedness, that is, the higher the class position the higher the loan contracted.[9] This has been commonly noted also in other contemporary studies, and must be interpreted as an effect of the changed pattern of indebtedness, more on which below.

The rural proletariat of agricultural labourers and poor peasants are least indebted, but, on the other hand, there is a tendency that they pay higher rates of interest, which is, however, not statistically significant.[10] Dry agricultural labourers not infrequently become victims of usurious exploitation leading to debt bondage, but this is not reflected in the above rates. They borrow frequently for marriages, but also to tide over crises of reproduction due, for example, to drought. Lacking the means for repayment and collateral, they have to pledge the labour of some family member to the creditor. This is perhaps the most prominent remaining niche of usury, and a continuation of the traditional practice in which the creditor commands the labour of the debtor (cf. earlier section and chapter 5). Sarap (1987) calls this a linked transaction, where the loan is tied to sale of labour or product, and he shows that especially landless labourers commonly use future labour service as collateral (pp. 95–96).

In striking contrast, the wet agricultural labourers seem less indebted than their dry counterparts, especially in view of the higher level of subsistence in the wet area. They owe on the average 425 rupees or about half of the yearly subsistence requirements for one consumption unit, while the dry agricultural labourers owe 878 rupees on an average, which is around 1.5 times the subsistence requirements of a consumption unit. The rate of indebtedness is also low for the wet agricultural labourers: only 47 per cent of the households are indebted. Moreover, they pay quite low interest on their loans.

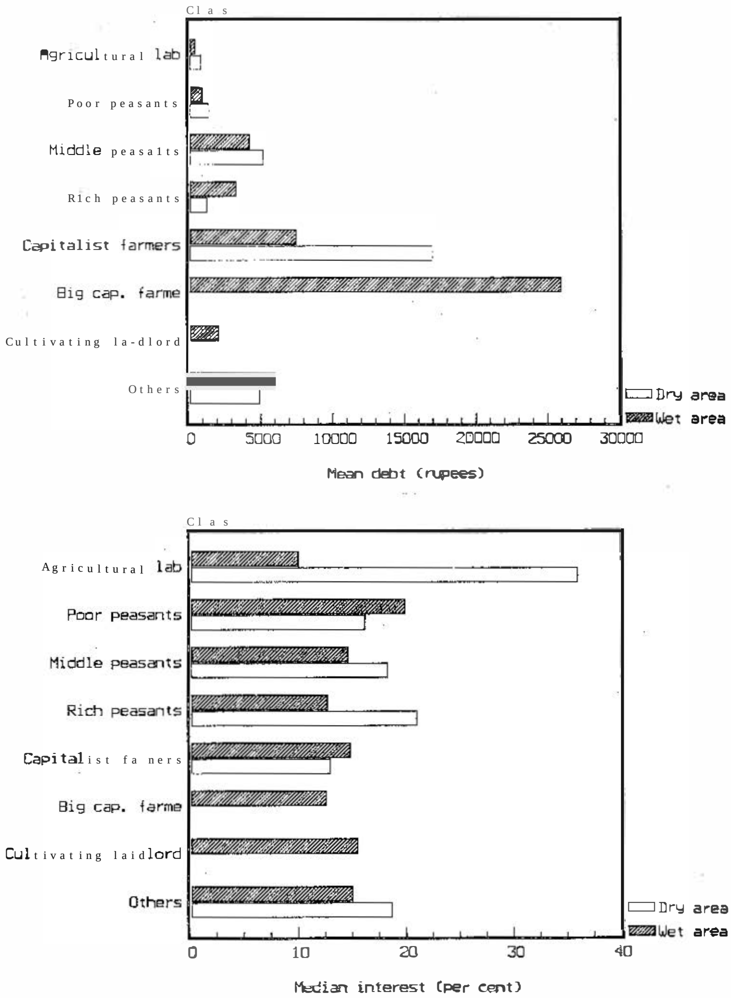
One reason why the agricultural labourers in the wet area are

[9] We have tested the difference in mean size of debt between, on the one hand, the agricultural labourers and the poor peasants, and on the other hand the middle peasants, for each ecotype separately. The differences were found to be significant at the 1 per cent level in both cases.

[10] A statistical test of differences in mean rate of interest paid by poor peasants and by other classes in the wet area shows that the difference is not significant. The difference in mean rate of interest between agricultural labourers and other classes in the dry area is also not significant. The high mean and median stem from extremely high rates in one dry village.

FIGURE 7.2

***Mean Debt and Median Rate of Interest Per Household by Class and Ecotype*[11]**



[11] The overall mean debt in the wet area is Rs. 2,962 and the median interest is 14.6 per cent. The corresponding figures for the dry area is 3,489 and 18 per cent respectively. The number of loans is 301 and the percentage of missing cases is 37 per cent. The high percentage of missing cases is in a sense a statistical artefact of the procedure of aggregation, because a household is treated as missing if interest is missing for one of their loans. The number of missing cases is much less in the disaggregated material. By comparing aggregate and disaggregated data we can judge the representativeness of aggregate figures. Note, however, that the rich peasantry is a small category in the sample, so that statistical generalization is made difficult for them.

less prone to be victims of usurious exploitation can be their higher level of subsistence. Employment opportunities are also better here than in the dry area, and they are spread out more evenly over the year. Thus the wet agricultural labourers should generally be in less desperate need for credit, and they need not resort so often to borrowing against usurious rates of interest.

The ability to withstand usurious exploitation seems to be less for the other part of the wet rural proletariat, the poor peasants. They pay the highest median rate of interest of all classes in the wet area, or 19.9 per cent. As noted above, the difference is not statistically significant, but since about 60 per cent of their loans are private (cf. Fig. 7.4), they must, at least to some extent, be the victims of usurious exploitation. If we look at the purpose for their indebtedness (Fig. 7.3), we see that, like the agricultural labourers, poor peasants in both dry and wet villages generally borrow a great deal for consumption purposes (34 per cent of their debts). A break down of this figure further reveals that this is especially true for the wet poor peasants, 48 per cent of whose loans have been taken for purposes of consumption. This would seem to indicate that the wet poor peasants do not attain the relatively high level of subsistence enjoyed by the agricultural labourers in the wet area.[12]

The dry poor peasants borrow more for production purposes than their wet counterparts (61 versus 27 per cent). The background to this may be the higher initial investments required for the cultivation of dry land. In the dry area a peasant can hardly do without own cattle. He could hire ploughmen as the poor peasants in the wet area frequently do, but he needs livestock also for manuring his fields, a need, as we noted above, which is less pressing in canal- and tankfed land.

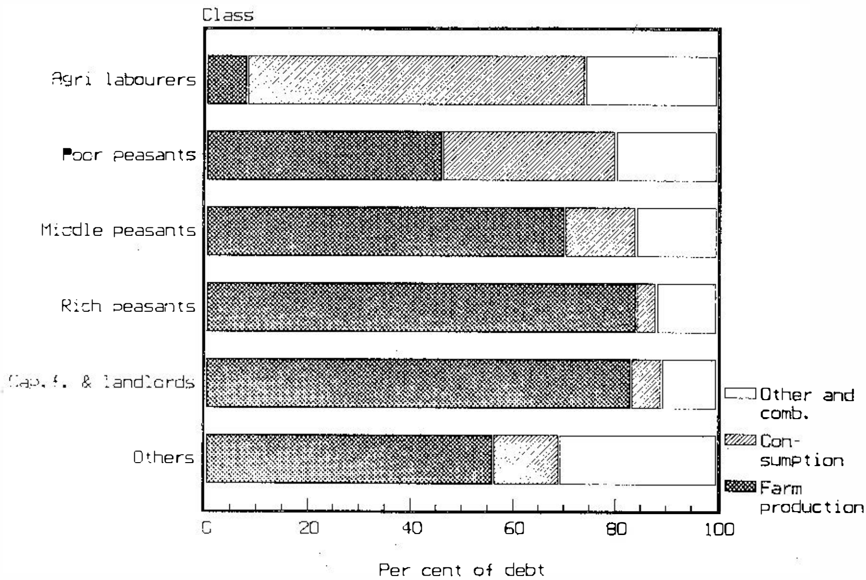
However, note that the median rates of interest paid by the poor peasants in both areas are far from usurious. It is less than 20 per cent, and only a few percentage points over the official bank rates. As can be seen from Figure 7.4, this low average reflects a fair share of institutional borrowing by these classes.

In both areas, middle peasants have a higher volume of debt than poor peasants. The reason is investment. In the dry area loans have been taken to deepen wells and install pump-sets, and in both areas money has been borrowed to finance the cultivation

[12] We got an indication of the same result in chapter 5.

FIGURE 7.3

Percentage of Debt by Purpose and Class



Note: The overall percentages are 65 for farm production, 16 for consumption, and 19 for other and combined purposes. The figure is based on 668 loans of which information is missing for 4 per cent.

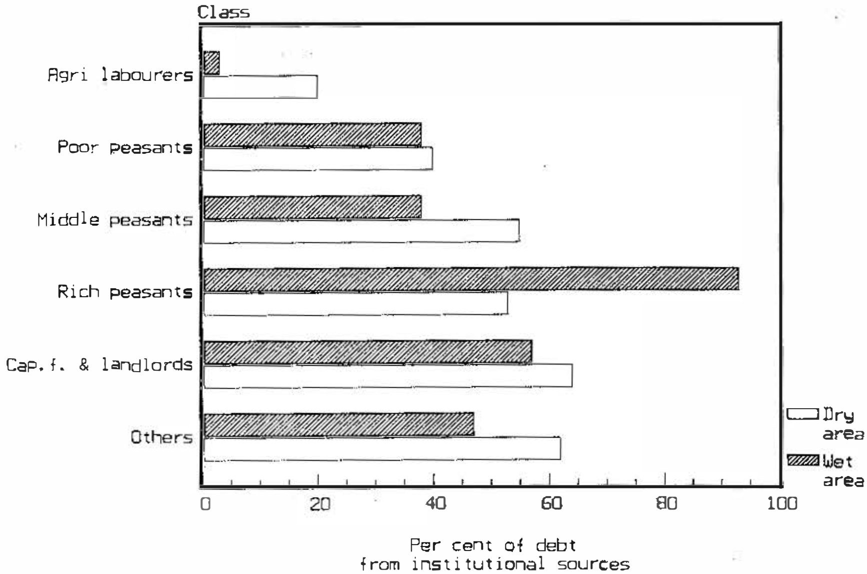
of high-yielding varieties of paddy and millet. The middle peasants also seem to have a more solid household economy, since, as can be seen from Figure 7.3, they have a low percentage of debt contracted for consumption.

The dry rich peasants also have a high median rate of interest on their loans, but this figure should not be taken at face value, since the numerical base is weak.

Mean rates of interest which approach the bank rates are found only in the upper classes of rich peasants in the wet area, and among capitalist farmers and landlords in both areas. In those classes the volumes of debt are substantially higher than those of the lower classes, and debts have been contracted almost exclusively

FIGURE 7.4

Percentage of Debt from Banks and Credit-Cooperatives by Class and Ecotype



Note: The overall percentages are 47 for the wet area and 53 for the dry ecotype. The number of cases in sample is 665 and information is missing for 4 per cent.

for the purpose of investment. Besides loans for high-yielding varieties and irrigation equipment, these classes have also borrowed for buying tractors and other agricultural machinery.

The foregoing account shows that an association between class and indebtedness still is there, but the pattern is not quite the one that could be expected on the basis of earlier studies: it has been modified by the penetration of institutional credit into the agrarian economy. The volume of bank and cooperative credit is substantial, even among poor and middle peasants; it has even made some inroads into the agricultural labour class in the dry ecotype (cf. Figure 7.4), but not to the extent that it has provided an alternative to the debt bondage into which members of this class are easily drawn.

But institutional credit may have had an emancipatory effect for other classes, since, as we have seen in Figure 7.2, the interest rates which they pay on their loans are less than one would have expected. In other words, institutional credit may have had a 'civilizing' effect on usury, forcing a reduction in the rates of interest demanded by private lenders. These findings are supported by some other studies and observations. John Harriss, revisiting some North Arcot villages in Tamil Nadu in 1983–84 claims that 'The expansion in the supply of formal sector credit capital particularly in the last decade has surely contributed to the weakening of usury in the strict sense within this economy' (1985, pp. 83–84). Barbara Harriss, comparing the situation in Sri Lanka and India, states that the formal money-market in India has had a dampening effect on informal rates (1977, p. 179). And Ahmed states:

> Some studies indicate that in recent years about 33 per cent of the institutional credit was shared by small farms holding less than 2 hectares which had only about 25 per cent of the total cultivated area. . . The interest rate was reduced to 10–15 per cent in the informal credit markets of the Punjab and Haryana by innovative credit institutions and new technology. (1986, p. 124)

Institutional credit capital

The material that we have collected from local branches of banks and credit cooperatives points to a remarkable increase in lending, especially during the 70s, as an effect of the national policies described in the introduction to this chapter. The expansion has not only benefited the upper classes—as previous studies would lead us to expect—but some credit has also seeped down to the middle and poor farmers, and in some cases even to agricultural labourers.[13] The latter is the result of special campaigns with the

[13] This does not mean that credit policies have entirely overcome the rural-rich bias built into the formal credit institutions, which has been observed in many studies (e.g., Chinnappa, 1977, p. 115; Singh, 1985, pp. 44-45 with a wealth of evidences; Sarap, 1987; Kurien, 1981, pp. 130-131). The point is that there have at least been some achievements in that direction even if, as we shall see below, they may be fragile.

aim to stimulate poor peasants and agricultural labourers to go into petty commodity production. The campaigns have had various names, and the target groups have been named 'small' and 'marginal' farmers, and landless labourers. As one observer of the rural scene exclaims:

> Development of market institutions, particularly those related to new technology, has been impressive. Credit and marketing cooperatives, special programs for small and marginal farmers, intensive agricultural development in selected districts, and special employment programs for rural labourers are some of the institutional arrangements that have few parallels in other low-income market economies. (Ahmed, 1986, p. 124)

The efforts can be traced in our survey material (cf. Fig. 7.4), but it is doubtful if it has stimulated petty commodity production among the target groups: poor peasants remain almost exclusively subsistence oriented, and agricultural labourers find few alternatives to wage labour.

As part of the credit campaign, the institutional network has also been strengthened. True, the network was not completely absent before the campaign; credit cooperatives and land development banks were established quite early in this area—Kulithalei Agricultural Credit Cooperative was, for example, founded in 1927. However, many new branches, especially of banks, have been opened after bank nationalization in 1969, so that banks now can be found in major villages and in small towns. Credit cooperatives cover all villages, and the membership is quite widespread. In both the wet and the dry areas, around 50 per cent of the poor, middle, and rich peasants are members of a credit cooperative, and membership reaches 70 to 80 per cent among capitalist farmers and landlords. Agricultural labourers, however, are seldom members: less than 10 per cent in the wet area and around 15 per cent in the dry area have been enrolled.

Now 'cooperatives' is clearly a euphemism, since these organizations raise very little of their capital from their members (cf. Shivamaggi, 1986, pp. 272–276). Instead, they have been the instruments of the State for the distribution of credit capital, and subservient to the aim of 'modernizing' agriculture, i.e., increase fertilizer consumption, spread high-yielding varieties, etc.

60 per cent of all institutional loans in the wet area and 90 per cent in the dry area have been taken for agricultural investment, and the result is clearly visible, especially in the dry area where the number of energized wells is impressive, and where, as a result of this, well-irrigation is much more important than tank-irrigation. Of course, not all loans reported as having been taken for agricultural investment are really thus utilised, but the general tendency is quite clear.

Considerable amounts have also been distributed as crop loans, with a portion disbursed in kind as seed and fertilizer. Again the result is visible in the spread of high-yielding varieties, especially of paddy, which to a large extent have replaced both the local and the improved strains bred from local varieties. The success is less for other grains, mainly because the new varieties are difficult to adapt to field conditions.

Some amounts have also been lent for purchase of land, especially in the wet area (6 per cent of the institutional loans). Likewise, small amounts have been used for consumption loans (less than 10 per cent). On the whole it cannot be doubted that as a result of the massive campaign and of subsidization, institutional credit has emerged as an alternative to the usurers, at least for the landed households. But the question is whether institutional credit can maintain its position.

Rates of default are enormous: according to our data, yearly repayments amount to only a few per cent of the amounts borrowed. This may be an underestimate, but not a distortion of the real situation—while many farmers have gladly received the credit so generously extended to them, they have been less happy when asked to repay. This is a commonly observed phenomenon.

The underlying reasons are not difficult to understand. Poor and middle peasants do not produce any surplus, with the exception of a small group among the latter (see chapter 6). Their farms are not reproductive units, even though they may possess wells and pumpsets, or shares in such equipment, and even though they may cultivate high-yielding varieties. So they meet difficulties in raising the cash needed for instalments on loans. These difficulties are exacerbated by several factors: many wells are not up to expectation, especially since the increased exploitation of groundwater seems to have led to a sinking water table. Successive monsoon failures during the late seventies together with an unfavourable price situation have made these credit-financed investments more of a burden than a boon. This is the background to the farmers' agitation which in this area went on from 1975 and reached a climax in 1979/80. The farmers demanded better prices for their produce and lower prices of inputs, especially of electricity. They also wanted their loans to be rescheduled or written-off. One of the means of struggle was to refuse to pay both interest and instalment to banks and cooperatives. Harriss observes from his restudy in a number of North Arcot villages in 1983–84 that:

> It is widely expected by people in the villages that if they hold out long enough debts incurred as a result of failure to repay these loans will eventually be cancelled, as they have been in the past (after the State Legislative Assembly elections in 1980). (1985, p. 83)

The movement was strongest in the dry area where, as we have seen, the burden of debt is also the highest, but the difference between the two areas is hardly visible in our data on membership rates (see Fig. 7.5).

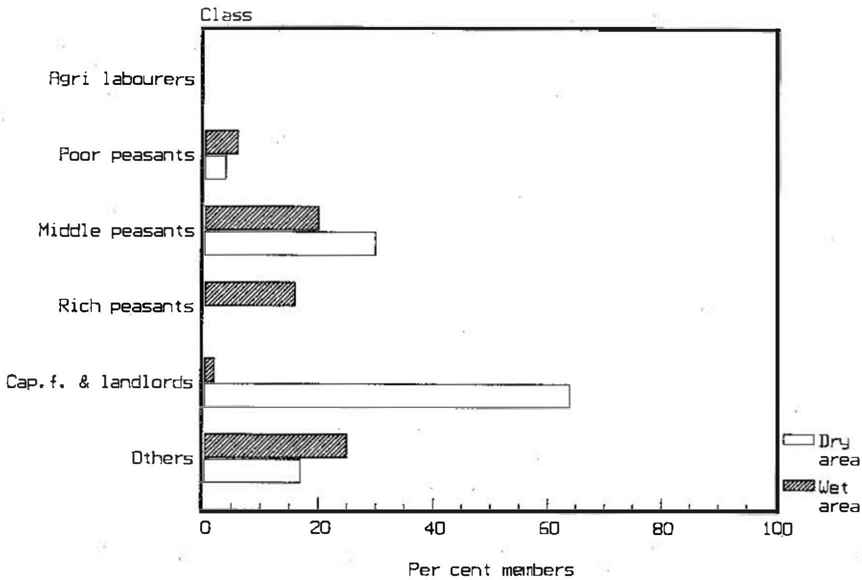
The agitation flagged in 1982 after some concessions from the government on price and electricity issues. But the dilemma still exists. While it may be easier to bring down the rate of default among rich peasants and capitalist farmers who need a continuous supply of credit in order to expand the scale of their operation, it must be more difficult to impose such a discipline on middle and poor peasants. They may prefer a lower level of commoditization and choose to rely on family labour and non-farm income for their reproduction. Among these classes, therefore, the replacement of usurious capital by institutional credit may be a temporary victory. In the long run the field of operation of credit capital may be circumscribed by these mechanisms, so that only the upper classes of farmers continue to benefit from these sources of credit. A point to be noted here is also re-lending of institutional credit by affluent recipients.

Usury on the retreat?

The preceding sections have documented the massive expansion of subsidized credit to agriculture which has gone hand in hand with a wave of investments in private irrigation works, in high-yielding

FIGURE 7.5

Membership of Farmers' Associations by Ecotype and Class



Note: The overall means are 11 and 17 per cent for the respective ecotypes. The number of cases in the sample are 154 and 147 respectively. Information is missing for 3 per cent of the households. Note also that the numerical base for the rich peasantry is weak.

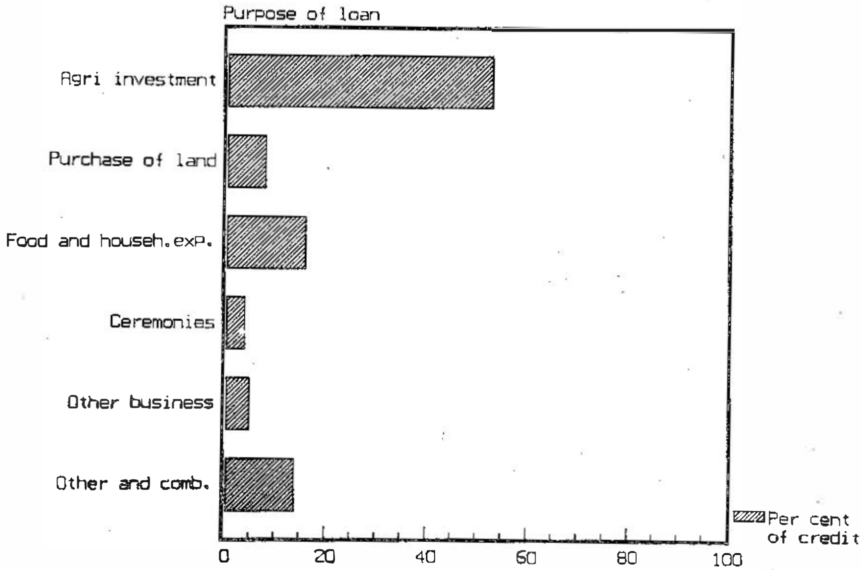
varieties, and in capital-intensive crops like banana and sugarcane. Even private loans may to some extent have been used to finance such investments (see Fig. 7.6).

More than half of the *private* credit volume has been used for agricultural investments.[14] Thus, usury caters not only or mainly to consumption needs, as one might have expected.

[14] The pattern is almost the same for the two ecotypes. The amounts used for agricultural investments and purchase of land clearly surpass the amounts used for other purposes, mostly consumption expenditures. The difference is statistically significant on the 1 per cent level in the wet area and on the 0.1 per cent level in the dry area.

FIGURE 7.6

Purpose of Private Loans (Per cent of Credit Volume)



Note: The number of cases in sample is 283 and information is missing for 2.4 per cent. Loans given by friends and relatives have been excluded from the figure. So have usufructuary mortgages. If the latter were to be included, the percentage for food and ceremonies, and for other business would increase.

However, it is not possible to tell from these figures to what extent loans have been taken to finance investments in new technology or new crops, and to what extent loans have been used as circulating capital. Credit would function in radically different ways in the two cases. If private loans have been taken to finance new technology or new crops, it goes to show that the expected returns from the new investments must have been quite high. We know that private credit occasionally functions in this way, but our data do not permit us to tell how often. If, on the other hand, private loans were taken without any attempt at expanded reproduction, it would be a sign of a reproduction crisis. In the latter situation the farmer runs the risk of losing his land to the usurer, unless the crisis is overcome.

Thus, there is a dualism in the functioning of private money-lending. It can function, and in fact it often seems to function, both as *credit capital* in the exact sense of the term (as defined above in the introduction to this chapter) and as an usurious capital aiming at surplus extraction and maybe also at the appropriation of the means of production of the debtors.

A clear case of private money-lending capital functioning as credit capital are the private banks which were not nationalized in 1969. The biggest of these function more or less in the same way as the nationalized banks, and their lending should ideally be counted as institutional credit. But our data do not permit us to distinguish between these banks, and the smaller establishments where 'bank' is a euphemism for 'usurer'. This mixed category of 'private banks' is most important in the wet area, where they account for 11 per cent of the private credit volume while they are negligible in the dry area. Less than 20 per cent of their lending is to poor and middle peasants; their main customers are the capitalist farmers and landlords and 'others' in terms of our classification. The median rate of interest charged by them is 26.1 per cent. This would indicate that the private banks, at least partly, have a credit function, but also that some usury enters under the heading of 'private banking'.

Another instance where private lending is not functioning as usury is loans from friends and relatives. In the wet area 10 per cent of the private credit volume belong to this category. The corresponding figure for the dry area is 16 per cent. As can be seen from Figure 7.7, friends and relatives are mainly important for the lower classes. Rates of interest vary from zero and upwards, with an overall mean of 6 per cent. They hardly ever reach usurious levels.[15]

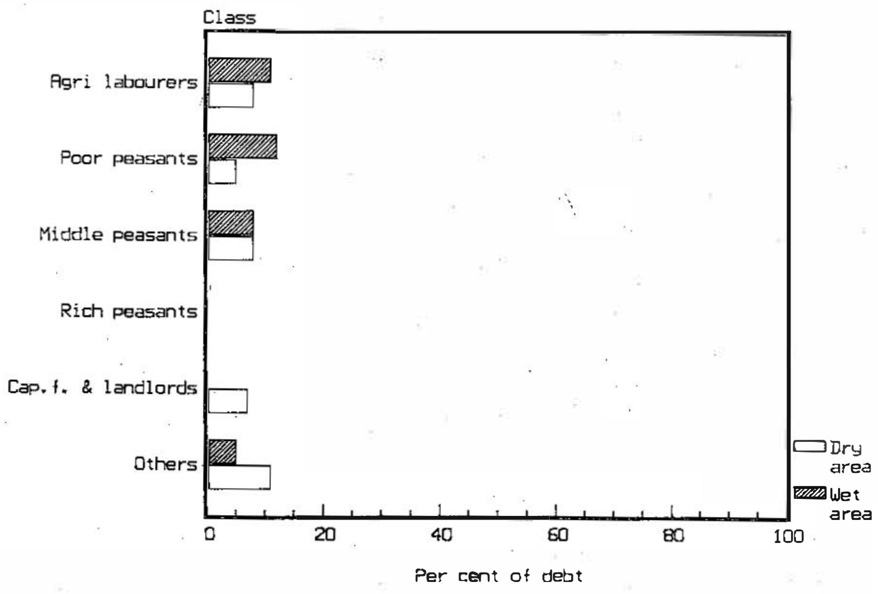
The most notorious form of usury is perhaps the cases of usufructuary mortgage where the debtor has to give up the cultivation rights to a piece of land until the debt is repaid. Usufructuary mortgaging (*pogiyam* in Tamil) is current in the wet area where it accounts for 21 per cent of the total private credit volume. But

[15] This also contrasts with other findings. In Thaiyur Djurfeldt and Lindberg (1975a, p. 238) found that relatives charged usurious rates of interest. This is also reported from Bangladesh by Cain (1981).

here too there is a dualism in function. Sometimes, when the mortgage period is infinite it is a stage in a proletarianization process, but more often it seems that the mortgage period is specified, so that cultivation rights are in lieu of repayment and interest, so that the land reverts to the debtor after the specified period. Here *pogiyam* functions like credit—to tide over a temporary crisis or even to provide the finance for expansion of farm and other business.

FIGURE 7.7

Percentage of Debt from Friends and Relatives by Ecotype and Class



Note: The overall percentages are 5 and 7 per cent respectively. The number of cases in sample is 304 and information is missing for 1.5 per cent.

There is also a system of a non-usufructuary mortgaging in the private market. As can be seen from Figure 7.8, land is the collateral for 41 per cent of the total private credit volume in the wet area. But bond letters too are often used, especially in the dry area,[16] and they can serve as instruments for acquiring the land of the debtor in case of default. It is, of course, impossible to tell from these data what risks of loss of land debtors incur when they take recourse to usurious loans. It depends partly upon the rate of interest, and as we have already noted the expansion of credit capital seems to have brought about a reduction in the level of interest. Thus the risk of debtors losing their land would seem to have at least temporarily diminished. It is worth recalling too that our study of land mobility in chapter 4 did not throw up any evidence that would contradict this conclusion. On the contrary, the centripetal process in the ownership structure that we documented in that chapter also indicates that small landowners not only hold on to their land, but even tend to increase their share of the total area.

Excluding friends and relatives, and loans with usufructuary mortgage but including private banks, the median interest paid on private debts is 20 per cent in the wet area and 24 per cent in the dry ecotype. This can hardly be regarded as usurious, at least not the rates prevailing in the wet area. It would seem to indicate that the presence of banks and cooperatives has a restraining effect on usurious lending.

But we should hasten to add that this restraining effect is not as marked in the dry area where private loans carry a median interest of 24 per cent (see Fig. 7.9), which is more than 10 per cent over the institutional rate. So it would seem that usury holds on to some of its positions in the dry area at least. Still, the median interest of 24 per cent in the dry area is below the rates reported in other studies.[17] In Thaiyur, for example, the average interest was close to 40 per cent in 1969/70 (Djurfeldt and Lindberg, 1975a). In that village interest was also frequently paid in kind: one bag of paddy (57 kg.) per 100 rupees of loan.[18] In the present study we have found few such cases, although they occur to some extent in the wet area.

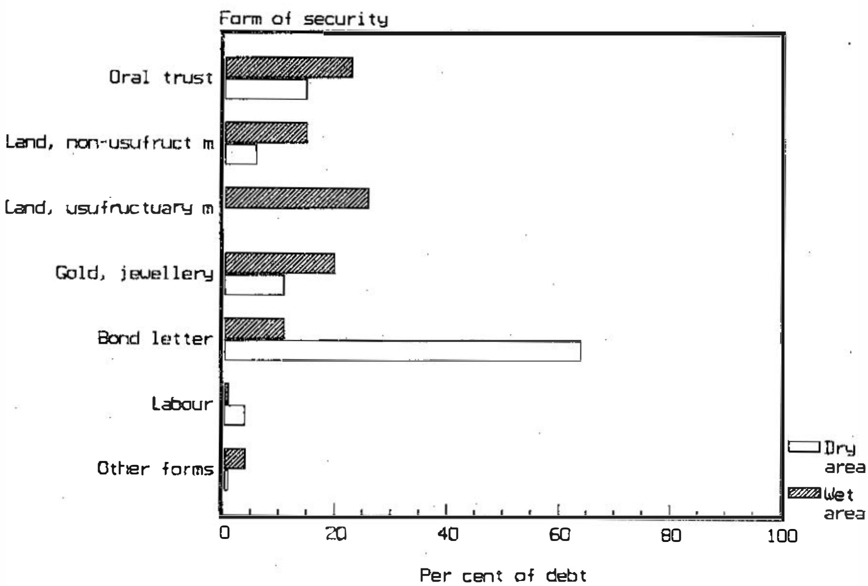
[16] The difference between the proportions of loans taken with bond letters as security in the dry and the wet area is statistically significant on the 1 per cent level.

[17] One exception is the study by Harriss (1985, p. 82) who reports that interest rates of 24 per cent are common on private loans in North Arcot villages.

[18] Equally high or even higher rates were found in a study in 1982 of Palakurichi in East Thanjavur (Guhan, 1983, p. 93), in a study of Dusi in North Arcot (Guhan and Bharathan, 1984, pp. 70–71), and in a study of Iruvelpatti in South Arcot (Guhan and Mencher, 1982, pp. 56–58).

FIGURE 7.8

Security of Private Loans (Per cent of Total Credit Volume)



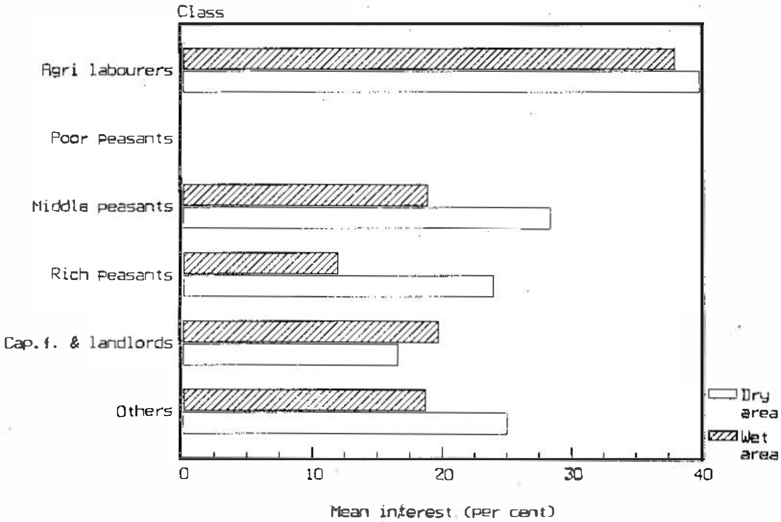
Note: The number of cases in the sample is 304; information is missing for 3 per cent of these.

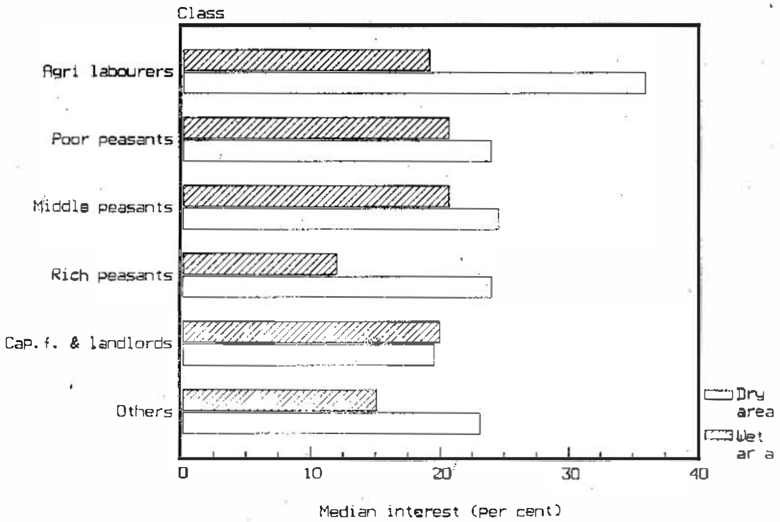
The more skewed a distribution the longer is the distance between the mean and the median. Keeping this in mind, it is obvious that those classes for which (Fig. 7.9) the mean interest is considerably higher than the median, are those classes which to some extent are affected by usury. Those classes for which both statistics are uniformly high are, by the same logic, almost completely unfavoured by the expansion of credit.

As we have already noted, the dry agricultural labourers seem to be the favourite clients of the usurers. They are the only class which seems almost completely without benefit from credit capital (although, as we have seen, they too have a few institutional loans). The usurers also retain a partial grip over the agricultural

FIGURE 7.9

Mean and Median Interest Paid on Private Loans by Ecotype and Class





Note: The overall means are 26.5 and 28.8 respectively for the two ecotypes and the medians are 20.0 and 24.0. There are 143 cases in the sample, and of these information is missing for 27 per cent. (Compare the note to Fig. 7.2) labourers and the poor peasants in the wet area.[19] Otherwise, there is only a weak negative correlation between rate of interest and class and it is not statistically significant. We interpret this as a result of the presence of credit capital.

The social location of usurious capital

As we noted above, some definite hypotheses have been put forward regarding what we call the social location of usurious capital, namely Bhaduri's model of semi-feudalism which merges the figure of the usurer and that of the landlord into one person (which can be considered a variety of what we called the LRS model), and Banaji's theory of another merger, that between merchant and usurious capital (our MUS model) (cf. earlier section). In our discussion of these models we found it convenient to formulate the hypothesis that, if we were to find approximations of these models in our material, we would expect to find an LRS model in our wet villages and an MUS model in the dry ecotype.

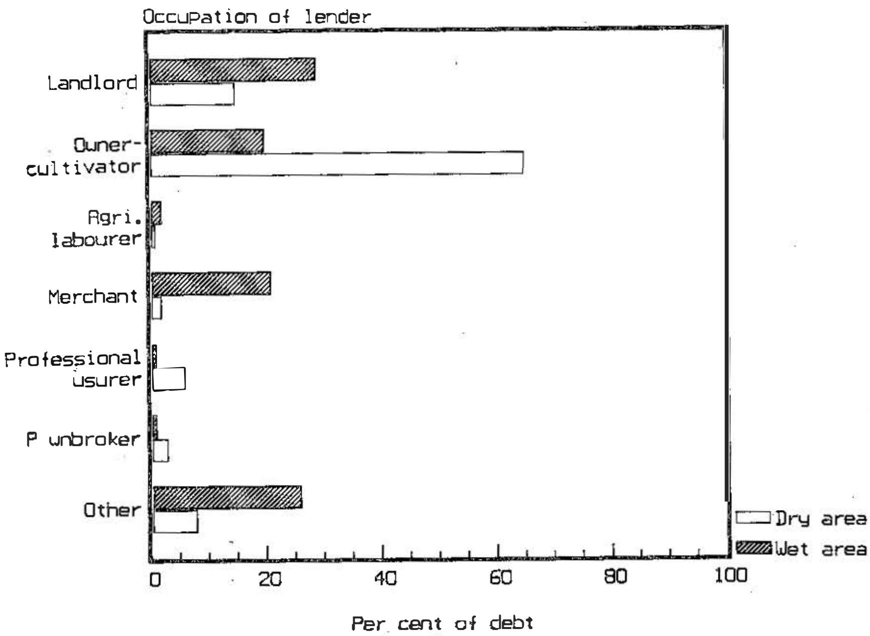
We asked our survey respondents to state the occupation of those persons they had borrowed money from. Although there are considerable problems in interpreting these data, they do give some clues to the analysis (see Fig. 7.10). Unfortunately, colloquial Tamil has no direct counterparts to our theoretical categories, so the parcelling out in the Figure of the debt among 'landlords' and other landowners should not be taken at face value. Therefore, we have to proceed carefully when interpreting Figure 7.10.

In fact, a closer scrutiny of the loans given by 'landlords' shows that no single case involves a landlord and his tenant in a usurious relation. So our data fail to support Bhaduri's thesis of a personal union between the landlord and the usurer. Still, the data seem to support a weaker version of Bhaduri's thesis: landlords in the wet area often combine the exploitation of tenants with money-lending. But our results indicate that they have been forced to a retreat on both accounts. As we saw in chapter 4, landlords have lost much land in the last generation; and, as we found above, their usury must have become less lucrative since the advance of credit capital seems to have forced about a reduction of interest rates.

[19] The difference between mean interest rate paid by agricultural labourers and poor peasants on the one hand, and that paid by the other classes on the other hand, is only significant at the 10 per cent level. Other differences are not statistically significant at all.

FIGURE 7.10

Debt to Private Lenders by Occupation of Lender and Ecotype



Note: The number of cases in the sample is 281; information is missing for 5 per cent of these.

The diffuse category of 'owner-cultivators' accounts for 20 per cent of the private credit in the wet area and 65 per cent in the dry one. If we merge the categories of landlord and owner-cultivator we see that in the wet area around 50 per cent of the total debt is owed to landowners while in the dry area the corresponding figure is 80 per cent (!).[20]

A landowner can, of course, belong to any class from poor peasant upwards. This brings to mind the view sometimes put forward that in this society there is such a massive demand for credit that anyone who has a surplus of cash is tempted to let it multiply by lending it out, and many fall prey to the temptation,

[20] The difference between the two areas is statistically highly significant.

especially since there is no widespread taboo on usury. In a way this view is supported by the almost marginal position of the professional moneylenders and pawnbrokers. In fact we now and then met with poor and middle peasants engaged in money-lending, but, although we have no data on this matter, it would seem fair to assume that most usurious capital stems from the surplus appropriated by the upper agrarian classes.

If this assumption is accepted, it would imply that in the dry area most usurious capital would be in the hands of the rich peasants and capitalist farmers. But as we have seen, the rich peasant part of this class is small; so primarily the usurious capital must be in the hands of the capitalist farmers, roughly corresponding to our UPC category. In this respect little has changed in recent decades; already in chapter 6 we concluded that the ruling class in the dry ecotype remains the same as it was before Independence, or in the words already quoted from Washbrook, 'the men who. . . possessed landed resources twelve or more times greater than the average. . . had the cash and grain to pump into the rural credit network' (Washbrook, 1978, p. 72). They controlled local money-lending, and they apparently do also today, but now challenged by the expansion of credit capital. What would seem new, however, compared to the historical situation is that this class obviously combines 'pre-capitalist' relations of exploitation (usury and bondage) with advanced capitalist methods of production (compare chapter 5 on bonded labour in the dry area). But in Washbrook's analysis, they had some entrepreneurial characteristics already before Independence: they 'used their surplus to sink wells and buy heavy ploughs, which they made available to small cultivators' (p. 72).[21]

At least in the wet area professional moneylenders and pawnbrokers seem to be confined to a special market for short-term credit where loans are small and interest rates are computed per week rather than per year. Many small consumption loans are extended by petty usurers who can belong to any class. In the dry area, on the other hand, professional moneylenders and pawnbrokers seem to have a somewhat wider field of operation, which

[21] This contrasts with Baker who asserts that the rural elite in the dry plains were not very attracted by investments and that these were risky and unrewarding (cf. above section).

can be seen from the result that the share of total credit which they have given is above that in the wet area.[22]

A more striking difference between the two areas seems to be the share of credit given by merchants. The share is 21 per cent for the wet area and 2 per cent for the dry one. This seems to move in the direction opposite to the one that could be expected on the basis of Banaji's thesis. On the basis of his thesis we were led to expect that merchant/usurious capital would have more influence in the dry ecotype, where a commodity-producing middle peasantry confronts the merchants without the mediating link of the landlord. Similarly, in the wet area where the marketable surplus is concentrated in the hands of the landlords and bigger cultivators, a combined merchant/usurious capital would have less chance of establishing its dominance. At first glance Figure 7.10 would seem to say the reverse, but again that is too hasty a conclusion. The difference is not statistically significant.

Clearly our data do not support Banaji's thesis: in the dry area where usury still occurs, the merchants are hardly involved in it. In the wet area, on the other hand, merchants may lend somewhat bigger amounts of money, but as we have seen usury is very much on the defensive there. Consequently, one might raise the question if at all there is any combined merchant/usurious capital in this economy.

A COMBINED MERCHANT/USURIOUS CAPITAL?

When getting to know that 21 per cent of the total private credit volume in the wet area has been lent by merchants, one is tempted to look for the ways in which these merchants/usurers are related to production. Do we find cases of crop-tying, that is, cases where the loan is a form of advance payment for a later delivery? Such a loan involves an obligation on the part of the farmer to sell his crop to the merchant/usurer. Repayment as well as interest are in a sense made in kind. An usurious interest rate can be a form of surplus appropriation where the entire surplus product accrues to the merchant. In such cases the market relation takes on the function of a production relation.

[22] The difference is, however, only statistically significant at the 5 per cent level.

As we have already hinted at, such cases are rare in both our areas. Even in the wet area, where merchants are active as money-lenders, loans are seldom tied to deliveries, and if they are, the rates of interest are far from usurious. This is fully brought out by a closer scrutiny of the loans given by merchants.

First of all it should be noted that some of the merchants included in Figure 7.10 do not deal in agricultural commodities at all, but are provision merchants, cloth merchants, or cycle-shop owners. Apparenty, they engage in money-lending as a side-line to their ordinary business.

Grain merchants are the main type of merchants mentioned as lenders by our respondents in both areas. They as well as the commission agents in Manaparei sometimes advance money to farmers, but usually at non-usurious rates of interest. In our material the mean rate of interest is about 17 per cent, that is, slightly above bank rates. The underlying distribution contain both interest-free loans, and a few loans above 20 per cent interest. Evidently, these loans primarily aim at securing deliveries rather than at increasing margins by pressing farm prices downwards with the help of usury. This finding obviously contradicts the Banaji thesis.

We have not found a single case of crop-tying involving the grain merchants. Even if our interviewers were not probing as deep as desirable on this point, we would hardly have missed it had it been a more frequent occurrence. The few cases of crop-tying that we have found involve banana and milk merchants. Some private milk distributors have imitated the organizational model used by the dairy cooperatives, i.e., they give loans to prospective dairy producers for acquiring milch animals. But it is not a common phenomenon, and most dairy production is organized along 'pre-capitalist' lines. Likewise, we have found one case of crop-tying in banana where a petty producer—he cultivates 0.06 acres only!—is financed by a merchant. But this too is an infrequent occurrence, and it can hardly be otherwise when most banana growers are rich peasants and capitalist farmers, as they presently are.

The many fertilizer dealers operating from Kulithalei, Manaparei, and from the bigger villages do not as a rule give direct loans to the producers. Sometimes they may assist the farmers in getting loans from banks or credit cooperatives for buying fertilizers, but as a rule they do not charge anything for that service. Of course, nothing prevents a fertilizer dealer from investing also in money-lending, but such investments are not organically related to his commercial venture.

The only frequent case of crop-tying which occurs in this area involves sugarcane, but here no merchant capital is involved but rather an industrial capital, the Pettavaithalei sugar factory. This is the ordinary type of vertical concentration associated with cane cultivation in India (Amin, 1979). A cane refinery supplied by many small producers requires detailed planning to secure deliveries throughout the crushing season. This can only be achieved through contractual arrangements with the growers. The sugar factory cooperates with the banks in arranging credit to the growers. Obviously, this has nothing in common with the merchant/usurious capital that we are looking for.

In short, Banaji's merchant/usurious capital hardly exists in our area,[23] and although it may prevail in other parts, it does not seem frequent in Tamil Nadu agriculture (cf. B. Harriss, 1981).

Conclusion

As should be clear from the above, there has been a certain measure of capitalist development in our area. It should also be clear that usury has not been an insurmountable obstacle to this development. Capitalist development is manifested in the wave of investments in private irrigation works in the dry area, and in the figure of the capitalist tenant cultivating cane and banana in the wet area (cf. chapter 6). Institutional credit has played a role in this process, at least in the dry area; and usurious capital has not put up much resistance to it. On the contrary, banks and credit cooperatives have taken over much of the credit market, and they have had a 'civilizing' effect on the rates of interest prevailing in at least parts of the markets where private money-lending continues to prevail.

Obviously, any theory which posits usury as an impediment to capitalist development is thereby thrown into doubt, and as we saw in the introductory sections to this chapter, there are many such theories. But this does not mean that we have to revert to a unilinear, evolutionist paradigm in which usury is bound to be superseded by credit capital.

[23] Harriss reaches the same conclusion from his study of peasant households in eastern North Arcot (1985, p. 82).

First of all, private moneylenders still cater to about half of the credit needs, and the less usurious rates of interest have by no means benefited each and everybody. Second, the entry of credit into the rural markets may be temporary, as it was in the 20s and 30s (cf. section above). The massive rates of default may bring about a new retreat of credit capital, leaving a bigger share of the market to usurious capital, and, in the same process, giving it a chance to hike up interest rates again.

Third, and maybe most important, there is no automatism built into the expansion of credit capital. It is not the result of a self-reproduction of capital, neither is it the result of the establishment of a 'free' credit market. As we see it, the initiative is with the State not with the market; the whole process is a result of State intervention, a political intervention in the economy that aims to increase the level of commercialization in the agrarian economy.

With this analysis of usury and merchant's capital, the class analysis which was begun in chapter 6 is brought to an end. The picture that emerged in chapter 6, which featured a polarized and proletarianized class structure in the wet villages, and a big middle peasantry in dry villages, dominated by a small landed elite, can now be complemented. We expected a 'dominant triangle' of landlords, merchants, and moneylenders, but the latter two categories have surprisingly been shown to play a more discreet role in the system than we expected. We interpret this as the effect of state-induced capitalist development. This takes us to a final task, which is to study the effects of the capitalist transition on production itself.

8

Economies of Scale or Advantages of Class?

This chapter[1] deals with the determinants of productivity in agricultural production in the light of the previous analysis of ecology and class structure. The overall problem is if the two concepts of ecology and class can contribute anything to the analysis of the determinants of productivity. Since much of the debate has been waged in terms of 'farm size and productivity' we will first review some of the theoretical arguments and standpoints in this debate, and then analyse our data on productivity on a farm level and crop level basis.

Farm size and productivity

The issue of agricultural productivity has been presented in the literature largely in terms of the relationship between productivity defined as value of output per unit of land and the size of the landholding. It should be obvious that this is only one way—and not necessarily the most fruitful way—of posing the issue. Several writers have drawn attention to this limitation, yet the debate has essentially stayed within the terrain of the relationship between 'size' and 'productivity'.[2] Such an outcome has, to a significant extent, been the product of the alleged discovery of an inverse relationship between farm size and value of output per acre, held

[1] This is an edited version of the article by Athreya et al. (1986a) published in the *Economic and Political Weekly*.

[2] Ronald Herring has drawn attention to the complex issues involved in conceptualizing agricultural productivity and the limitations of the conventional definition (see Herring, 1984, especially pp. 204–209).

to be widely valid for different countries, especially in the Third World.[3] Ideology has also, not unexpectedly, played a part in this outcome, with neo-populists regarding themselves vindicated by this finding, and with the World Bank experts seeing in the 'discovery' an efficiency-based argument for limited land reforms to ensure that the green revolution takes on only palatable pastel hues.

In the Indian context, the debate started with an inference of a general inverse relationship between farm size and productivity drawn from data provided by the Farm Management Studies (FMS) first carried out in the late 1950s. Assuming the finding to be true, many scholars sought analytical explanations to account for it or, more often, draw out policy prescriptions from it.[4] But others were also quick to point out the difficulties and pitfalls involved in inferring the existence of such a relationship from FMS evidence.[5] In a seminal contribution, Krishna Bharadwaj (1974) pointed out that the statistical relationship could not be held to be generally valid. Also, and more importantly, where it did hold, the relationship could not have any obvious 'efficiency implications'—such as, small farms being more efficient than large ones in general. Instead, the farm size and productivity relationship needed to be probed to bring out the underlying factors at work. First, the inverse relationship at the farm level was often found not to hold at the crop level. Given that the crops varied significantly in value, the crop pattern of the farm would obviously play a significant role in

[3] While the existence of such a relationship in Indian agriculture was first inferred from Farm Management Studies conducted in the 1950s, it rapidly became part of 'conventional wisdom', and was invested with practically universal applicability by textbooks in development economics. Despite the much more sober assessment of the evidence by the participants in the size-productivity debate, textbooks (and some scholars) present the alleged relationship as an accomplished and universally valid fact, which furthermore 'proves' the superior 'efficiency' of the small farm. Thus, Todaro writes that '. . . recent evidence from a wide range of Third World countries. . . clearly demonstrates that small farms are more efficient. . . producers of most agricultural commodities' (1981, p. 262, quoted in Barbier, 1984).

[4] Sen (1962, 1964) was the first to seek an analytical explanation of the phenomenon. Others, such as, Khusro (1968) and C.H. Hanumantha Rao (1966) sought to draw policy prescriptions.

[5] Among the early dissenters was A.P. Rao (1967). A persistent and painstaking critic, throughout the debate, has been Ashok Rudra (1968a, 1968b). See also Chattopadhyay and Rudra (1976) and Rudra and Sen (1980).

determining farm level productivity. Further, since land was not the sole input, differences in the intensity of use of non-land inputs—labour, irrigation, and other material inputs—would also influence productivity levels.

The incisive criticisms against any facile acceptance of a universally valid inverse relationship between farm size and productivity, both statistical and analytical, were soon buttressed by a number of researchers analysing the impact of the 'green revolution' on economies of scale in farming. Many of them argued that even if an inverse relationship had existed in the period before the 1960s, it would no longer hold true under the new technological package of high-yielding varieties of seeds, fertilizers, and pesticides effectively complemented by irrigation. This package, being rather capital-intensive, would be beyond the reach of small farmers, and the new technology with its higher yield potential would favour the larger farms.[6]

In recent years, however, studies have been published which assert that even in the 'post-green revolution' period the inverse relation holds. Berry and Cline, for instance, claim that their study '. . considered the relative productivity of small and large farms from both theoretical and empirical standpoints, and reached the general conclusion that the former normally generate higher land productivity . . . ' (1979, p. 128). They also claim that the anti-small farmer bias of the 'green revolution' was an initial phenomenon reflecting the incomplete diffusion of the new varieties. In the 1980s, when the new technology has been accepted by all classes of farmers, its scale-neutrality would make it possible for the small farmers to exploit their competitive advantage vis-á-vis the big ones, namely, their command of reserves of family labour used for a more careful tending of crops, resulting in equally good or better yields on small farms (pp. 115–16).

On the other hand, Pol Barbier (1984) has suggested that the alleged relationship is more a product of the imagination than of science, and reiterated the important points of statistical methodology raised earlier by Chattopadhyay and Rudra (1976). However,

[6] Cf. C.H. Hanumantha Rao: 'the inverse relationship between farm size and output per acre found under the traditional, labour-intensive technology, does not seem to hold good in areas undergoing technological change' (1975, p. 150, cited in Booth & Sundrum, 1984). See also Dasgupta (1977, p. 206), G.K. Chadha (1978), and Bhalla and Chadha (1982).

it is not our intention to review the whole debate here. Nor do we think it possible to even attempt to resolve all the tangled issues of this complex discussion. But we wish to raise some questions about the problematique itself, and try out an alternative approach to the problem.

In the debate on the relationship between farm size and productivity, an implicit assumption shared by researchers holding widely different positions seems to be that farm size is an appropriate measure of scale. In fact, the discussion has frequently been conducted in terms of the presence or otherwise of 'economies of scale'; and the alleged negative relation between farm size and value of output per acre has been interpreted as an indication that there are no economies of scale in Indian agriculture, or even more strongly, that there are decreasing returns to scale. Even those who question the existence of the inverse relationship do not always question the implicit equating of size with scale. For instance, Pol Barbier, criticizing the use of farm size as the single crucial independent variable in explaining productivity, writes:

> . . . the reduction of the complex organization of a farm unit or of an agrarian economy to *the sole aspect of the scale of agricultural operations* constitutes evidently an oversimplification (1984, p. A 197, emphasis added).

It would seem that Barbier is implicitly treating 'size' and 'scale' as synonymous. This assumption needs to be questioned.

Given the fact—recognized explicitly by most participants in the debate—that agricultural productivity depends also on the quantity and quality of non-land inputs (and increasingly so with the modernization of agriculture under way in most Third World countries), it seems more useful to abandon the strait-jacket of the size-productivity framework altogether. Therefore, we need to consider afresh the determinants of agricultural productivity. Retaining, in this context, the definition of productivity at the farm level as value of output per unit of land area, we would like to discuss the variables that may have a decisive impact on productivity. One such determinant would, of course, be the *scale of operation*. Even if returns to specific inputs in a technical sense were unrelated to scale, there would be possible economies of scale in overheads, or indivisibilities in the use of one or more inputs. Size of holding or of operated area has generally been used as a measure of scale, but it may be more fruitful to use other measures, such as, total value of inputs.

A second determinant of productivity would be *intensity of input* use defined as value of inputs per unit of land area. In the specific Indian context it has been argued that one must distinguish between labour inputs and other material inputs, since these may to some extent be substitutable. Such a distinction has the further advantage of enabling us to avoid the conversion of family labour days into a cash equivalent by imputing a wage rate, even though this distinction does not adequately deal with the problem of heterogeneity of labour.[7]

A third determinant could also be proposed based on the size-productivity debate. It is widely recognized that there are qualitative differences in inputs as between different farms. It is also well-known that access to various inputs differs—for reasons, both economic and political—between farms. Lastly, farms could also face varying input and product prices. While in the size-productivity debate, so far, the superior quality of inputs on small farms—higher proportion of area irrigated, family labour better motivated than hired labour, etc.—has been proposed to 'explain' the alleged inverse relation between size and productivity, there are really no *a priori* grounds to generalize on this point. With regard to the inter-farm differences in relation to the product and factor markets, the literature has stressed the advantages of 'size'. We wish to propose an alternative way of capturing the impact of access to input and product markets and of qualitative differences in inputs. Specifically, we want to suggest that the 'class status' of farming households—as we have defined it above—is a variable that reflects the aspects discussed above, and, thus, could be considered as one of the determinants of productivity.

Another dimension that is often completely ignored in studies of this kind is that of ecology. As we have seen, farmers operate under very diverse ecological conditions, ranging from intensive canal-irrigated lands with assured irrigation during practically the whole year to very dry lands completely dependent on a few

[7] As we have seen in chapter 6 above, heterogeneity of labour arises not only between, for instance, family labour and hired labour, but also between labour used in different operations. So, for example, labour expended in tending livestock can hardly be equated with labour expended in transplanting. Attention should also be drawn to differences in the intensity of work.

showers of rain per year. Earlier chapters have demonstrated the systematic differences between the ecotypes, not only ecologically, but in relations of production and class structure. Therefore, there are reasons to suspect that also the determinants of productivity will vary between the ecotypes. Based on these considerations we shall propose a set of models and examine their validity at both farm and crop level for our empirical material.

Farm level data

We begin our study of productivity at farm level by defining our measure of productivity as the market value of farm production per unit of operated area. That is, we have added the income from marketing of farm produce to the imputed value of produce kept for own consumption. Productivity, then, is defined in monetary terms, which is unavoidable at farm level, and which makes it reflect the relative prices of various crops. This, of course, may introduce a bias in comparing farms with different crop patterns, but we can control this bias when, at a later stage in the chapter, we disaggregate the analysis to crop level and use physical indicators of productivity.

To calculate productivity, we divided the total production by operated area rather than by gross cultivated area. The reason is that we are interested in the output per unit of land over the reference year and not in the output per crop. The logic of this procedure can be brought out as follows: in the study area, two or even three crops of paddy can be grown on an acre of canal-irrigated land in a year, but only one banana crop can be raised on the land in one year. Since the relevant notion of productivity can only be one of how much an acre of land yields in a given time, one must compare the total value of production from the two (or three) paddy crops with that from the single banana crop. Hence the use of operated area as the divisor. Output per crop, that is, per gross cultivated area becomes relevant in the crop level analysis.

Thus, it has to be kept in mind when interpreting the following that differences in intensity of land use and in crop patterns are reflected in farm level figures. This can be seen in the mean productivity and its standard deviation for the two ecotypes. For the wet area the mean value of farm production is Rs. 3,660 per acre operated, and the standard deviation is 3,166 indicating a highly skewed distribution with a right-hand tail of highly productive farms. The mean for the dry area is much lower or 964, but again with a high standard deviation of 1,126, signalling a similar skew. Farm sizes differ in the opposite direction: the mean operated area is 2.08 acres in the wet area (s = 1.96), while farms on the average are twice as big in the dry area (m = 4.46, s = 3.98).

Pearson's product-moment correlation (R) is used for measuring the correlation. This means that we catch only a linear relation between the variables, and that non-linear relations may exist which are not reflected in the (R).[8] On the other hand, the debate over farm size and productivity has frequently been waged in exactly these terms—for or against a linear relation between the two variables. So it might not be entirely out of place to first look at this crude measure (see the first row in Table 8.1).

In the wet area we seem to have a near zero correlation between farm size and productivity, while it seems to be slightly negative in the dry area. Even if the latter is statistically significant,[9] it

[8] Chattopadhyay and Rudra (1976, p. A 107) have suggested that the relation between farm size and productivity should be measured by a rank correlation coefficient, since, in contradistinction to Pearson's R, it does not presume anything about the form of the relation, whether linear or other. We have instead inspected the scattergrams to see if they suggest any form other than the linear one.

[9] Since our sample is not a simple random one we cannot straightforwardly use methods of testing developed for simple random samples for they generally underestimate the sampling errors in a multi-stage design (Kish, 1957). We can, however, estimate sampling errors in means and proportions as described in chapter 2. It is also possible to compare these with the sampling errors calculated on the basis of simple random sample formulae, in the manner suggested by Moser and Kalton (1979). Such exercises indicate that the standard errors in our sample are about 30 per cent higher than the standard errors calculated by the SRS-formula. This is what Moser and Kalton call 'the design effect' of the sample.

It is, however, not possible to exactly calculate variance estimates for other and more complicated statistics. Thus, we cannot perform any strict statistical tests of the regression analyses made in this chapter. But we have used an approximate method which is as follows.

We first tested for significant variations *between* villages with SRS methods. We generally did not find any significant differences which would make it legitimate to add the inter-village variance to the residuals, against which the regressions are tested. In a second stage, we tested the significance of the equations (the F-test) and of the beta-values (t-tests) again with the ordinary SRS-based methods. But we added a rough 30 per cent to the p-values of the Fs and the ts, so that a result was judged 'likely to be significant at the 5 per cent level', only if the probability of getting a significant t or F was less than 3.8 per cent. A similar adjustment was made at the 1 per cent level. Moreover, we inspected the design effects, and where these were high we added the necessary qualifications.

TABLE 8.1

Scale, Intensity and Class: Means, Standard Deviations and Correlations with Productivity by Ecotype

Variable	Wet area			Dry area		
	Mean	*Standard deviation*	*Correlation with productivity*§	*Mean*	*Standard deviation*	*Correlation with productivity*§
Operated area of farm (acres)	2.08	1.96	−0.02	4.46	3.98	−0.23
Imputed costs of labour and non-labour inputs (rupees)	5251	5237	0.34	4131	2861	0.11
Cost of all inputs per unit of operated area (rupees)	3486	2799	0.45	1456	1267	0.73
Class (according to surplus criterion)	−0.76	2.28	0.63	−1.63	1.22	0.36

Note: The correlations are based on sixty-one observations in the wet area and eighty observations in the dry. The percentage of missing cases is 28 per cent and 18 per cent respectively in the wet and dry areas. Correlations coefficients are Pearson's R. Coefficients underlined once are likely to be significant at 5 per cent level, those underlined twice are likely to be significant at 1 per cent level. Cf. note 9.

'explains' very little of the variance in productivity in the dry area (R^2 equals 0.05). Thus, it would be fair to say that our data do not indicate any strong correlation between farm size and productivity. Or, if we treat farm size as an indicator of scale, we do not seem to have either positive or negative returns to scale in our area. But is this the whole truth?

Evidently not, because if we look at the other rows in Table 8.1 we see that these convey other impressions. In the second row we give the correlation between productivity and our indicator of economic scale, the imputed costs of all labour and non-labour inputs on the farm. Here too the means differ between the two ecotypes: the mean input costs in the wet area are Rs. 5,251, and the standard deviation is 5,237, again indicating a skewed distribution with a small number of farms having much higher costs. The mean is somewhat lower in the dry area or 4,131 with a standard deviation of 2,861. Here the standard deviation does not approach the value of the mean, indicating a comparatively less skewed distribution.

The variable referred to in the previous paragraph is defined as the sum of all labour costs and the imputed value of family labour,[10] the imputed value of kind expenses,[11] and the cash spent for non-labour inputs, both in cropping and on overheads (depreciation and maintenance of means of production, and debt service, that is, interest and instalment on the current debt of the household).[12] We have tried alternative definitions of this highly complex variable, excluding, for example, debt service or overhead costs, or treating

[10] The imputed value of family labour was taken as the cost of substituting male family labour by one or more permanent farm servants, and the cost of substituting female labour with casual labour (cf. chapter 6).

[11] Kind expenses have been handled as follows: expenses in kind of a crop grown on the farm (for harvest wages, seeds, etc.) have been deducted from the gross yield. Other kind expenses have been treated as expenses of labour, that is, when, for example, green manure is cut in the forest and added to a crop it would not be accounted by a shadow price, but by counting the labour, either hired or family, expended on it.

[12] To include debts among overhead expenses involves the additional difficulty of distinguishing between productive and unproductive debt. However, we have not made that distinction. This could disturb our results. In chapter 7 above we have shown that about 65 per cent of the total debt is taken for purposes of farm production. This percentage varies among cultivators from a low of 46 per cent for poor peasants, to a high of about 85 per cent for rich peasants and capitalist farmers.

labour and non-labour inputs separately. These exercises have given broadly similar results, but weaker correlations than the version used here.

In theoretical terms we regard costs of labour and non-labour inputs as an indicator of economic scale, in contrast to the area indicator which defines scale merely as the physical extent of the farm. The latter is, as we have already noted, a poor indicator when the intensity of land use varies so much as it does in our area. Economic indicators of scale are conventionally used in studies of European and American farms.

As can be seen from Table 8.1, the correlation coefficients change sign when we shift to an economic indicator of scale, but only the coefficient for the wet area is likely to be statistically significant. In both instances we seem to move one step: from zero to positive in the wet area, and from negative to zero in the dry. But again, the statistically significant correlation that we get in one area (the wet villages) is fairly weak, accounting for about 12 per cent of the variance in productivity.

Thus, the choice of scale indicator affects the results reached, but neither of them can account on its own for the inter-farm variations in productivity. Let us, therefore, look at some other possible determinants of productivity.

The scale indicator refers to the *absolute* amount of inputs used on the farms. A *relative measure* would seem obviously relevant to the determination of productivity. If we divide the absolute indicator by operated area we get the *intensity of input use*, where the mean is Rs. 3,486 per acre in the wet area (standard deviation = 2,799), and Rs. 1,456 in the dry area (s = 1,267). The correlation between this variable and productivity is given in the third row of Table 8.1. As was to be expected, intensity of input use is significantly correlated with productivity in both ecotypes. Moreover, on a bivariate basis, intensity 'explains' more of the variations in productivity than the previous indicators or, more precisely, 20 per cent in the wet area and 53 per cent in the dry ecotype. Thus it is obvious that in a multivariate analysis of productivity, intensity of input use should be one of the independent variables.

Another variable which could be used in such an analysis would be *class*, something which we have argued for in the introduction above. The correlations between class and productivity are presented in the last row of Table 8.1. It turns out that like intensity class is also significantly and positively correlated with productivity in both ecotypes. Class 'explains', on a bivariate basis, nearly 40 per cent of the variance in productivity in the wet area, but much less, or 13 per cent, in the dry area.

It should be pointed out that class and productivity are logically independent. As we have defined it in chapter 6, class of course reflects the total production on a farm, but this has no necessary relation to production per acre, which is our measure of productivity. There are therefore no *a priori* grounds to expect a correlation between class and productivity, or to expect any particular sign.

A multivariate analysis

The preliminary look taken above at the pairwise farm level correlations between productivity on the one hand, and a number of potentially relevant variables taken one at a time on the other hand, raises as many questions as it answers: how shall we interpret the contrary results we get when using an area-based and an economic indicator of scale, and what are the relations of these indicators to those of intensity and class, which seem to be more important determinants? Can the size of Pearson's R for the latter be taken as an estimate of their relative weight; and is it possible that they are of varying importance in the two ecotypes? Despite the many pitfalls contained in the method, and notwithstanding its frequent misuse, it would seem relevant to turn to multivariate regression to try and disentangle the influence of each of the proposed determinants on productivity.

We will fit an equation of the following form to the data:

$$y = a + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 \qquad [8.1]$$

where the variables are defined as follows:

y = value of farm production per unit of operated area (that is, productivity)

x_1 = operated area of the farm

x_2 = total value of inputs used

x_3 = total value of inputs used per unit of operated area (that is, intensity of input use)

x_4 = class status of the farm-household (according to the surplus criterion defined in chapter 6)

Since our main interest is in the relative and not in the absolute contribution of each independent variable to the variance in productivity, we have chosen to work with standardized variables. Thus, if x_{ij} is the value of the j^{th} independent variable for the i^{th} household, then we define:

$$z_{ij} = \frac{x_{ij} - m_j}{s_j}$$

where m_j is the mean of the j^{th} variable, and s_j is its standard deviation. Similarly, we standardize the dependent variable y. The standardized regression has the following form:

$$y = B_1z_1 + B_2z_2 + B_3z_3 + B_4z_4$$

where y and z_1 to z_4 are the standardized versions of the variables defined for equation [8.1]. The beta-values (B_1 to B_4) can be taken as rough indicators of the relative contribution of each independent variable to the variance in the dependent variable.

But we will also work with another model, on the basis of the argument that the economic indicator of scale (x_2) lumps together heterogeneous inputs, and that this obscures one phenomenon which, if we go by the literature, is an important one, namely, the substitution of labour for non-labour inputs. That is, the hypothesis has often been put forward that peasants who find difficulties in financing non-labour inputs, like fertilizer, compensate for this by increasing their input of family labour. If such a substitution occurs, it would be masked by the pooling of labour and non-labour inputs in (x_2). Similarly, it can be argued that the intensity variable should be split into labour and non-labour intensity. Taking these arguments into account, an alternative model with six independent variables can be formulated as follows:

$$y' = a' + b'_1x_1 + b'_2x'_2 + b'_3x'_3 + b'_4x_4 + b'_5x_5 + b'_6x_6 \quad [8.2]$$

where y, x_1 and x_4 are defined as in equation [8.1] and where:

x'_2 = total value of non-labour inputs used

x'_3 = total number of labour days

x_5 = value of non-labour inputs per unit of operated area

x_6 = total number of labour days per unit of operated area

We may call this the disaggregated form of the earlier model. As before, we will work with the standardized form and beta-values. Table 8.2 brings the results of these two regressions separately for each ecotype.

The results make interesting, but partially puzzling reading. In both models and for both ecotypes, the hypothesis that class and intensity are important determinants of productivity is supported by the data. It would also seem that their respective order of importance is reversed between the two ecotypes. In the wet area class seems to be much more important, while in the dry area intensity seems to be the most important determinant of productivity.

The results are less clear and seemingly inconsistent for the two indicators of scale—operated area and value of inputs. When we move from the aggregated model to the disaggregated model, the relative weight of operated area declines, but it remains negative and statistically significant. In the dry area the weight changes sign, but remains insignificant. In the same process, the economic indicator altogether loses its significance in the wet area while in the dry area it changes sign and its labour component becomes statistically significant. In both areas a breakdown of the intensity indicator demonstrates strongly positive and significant contributions by both of its components.[13]

What are we to make of this? Part of the difficulty in interpreting these results arises from the aggregation implicit in farm level data. As we will see subsequently, neither measure of scale—operated area and value of inputs—appears statistically significant at the crop level for any of the crops.

Going by this, we can outline one possible interpretation. When we break down the economic scale indicator and the intensity indicator into its labour and non-labour components, the more

[13] Non-labour input per acre has a high design effect (deff = 1.91) in the dry area. However, it is likely to be significant at 5 per cent level.

TABLE 8.2

Beta-Weights for the Productivity Regressions, Farm Level

(A) *Aggregated form*

Ecotype	*Operated area*	*Class*	*Total value of inputs*	*Total value of inputs per acre*	*Multiple R^2*	*No. of observations*
Wet area	−0.72	0.75	0.47	0.22	0.73	62
Dry area	−0.17	0.45	0.12	0.71	0.73	80

(B) *Disaggregated form*

Ecotype	*Operated area*	*Class*	*Total value of non-labour inputs*	*Total no. of labour days*	*Value of non-labour inputs per acre*	*Total labour days per acre*	*Multiple R^2*	*No. of observations*
Wet area	−0.45	0.74	0.15	−0.09	0.34	0.19	0.78	61
Dry area	0.26	0.34	−0.17	−0.35	0.69	0.35	0.84	80

Note: Figures underlined once are likely to be significant at 5 per cent level; figures underlined twice are likely to be significant at 1 per cent level (cf. note 9). All equations are highly significant (F ≤ 0.001).

precise definitions of the variables have the effect of (*a*) bringing down the relative and negative weights of the area which, we would claim, is purely an effect of aggregation; (*b*) of similarly bringing down the relative weight of the economic indicator; and (*c*) finally, it has the effect of further emphasizing the importance of an intensive use of labour and non-labour inputs to productivity. The crop level analysis to which we now turn strengthens such an interpretation, and underlines the importance of class and intensity as determinants of productivity.

Crop level analysis

In one sense it is obviously better to work with crop level data when seeking to identify determinants of productivity, since we can avoid the problems of aggregation, which creates such problems in the interpretation of farm level data. Moreover, we can express productivity in physical rather than value terms, and also avoid the problems of interpretation caused by differential prices of crops. However, there are other problems as well. For one thing, it is difficult to find an unexceptionable basis for allocating farm overhead expenses among the crops. We have solved this in the easiest possible way, namely, by excluding overheads.[14] Another problem is that in our case the number of observations decrease, making it more difficult to reach statistically significant results.

The crops studied

Despite the difficulties mentioned above, we have carried out a number of regressions at crop level for the ten major crops. In Table 8.3 the means and standard deviations of the variables used in the regressions (model [8.3])are given. For each crop involved a short comment is called for.

Paddy

We distinguish between local and improved varieties (LIVs), on the one hand, and high-yielding varieties (HYVs), on the other

[14] We have made some attempts at apportioning overheads among crops, and to run regressions with overheads included. The results do not differ substantially from those reported here.

(cf. chapter 3). As we have seen HYVs and LIVs are about equally common in the wet area, while in the dry ecotype HYVs account for about 80 per cent of the paddy area. The proportionally greater standard deviations around the means for LIVs can be due to the differences between coarse local and finer improved varieties included in this category.

Banana

We distinguish between the *Rasthali* variety and other varieties of bananas. The former does not require propping with bamboo-poles to support the stem and the bunch, especially during the windy season from August onwards. Therefore, it is cheaper to cultivate, and it is often preferred by smaller cultivators. In our reference year it fetched very good prices, and was probably unusually lucrative.

Banana prices seem to fluctuate a great deal. Well-established relations in the market and market intelligence are therefore essential for the success of a banana grower. This should probably be included among the class advantages that we discuss below.

Sugarcane

Cane is of marginal importance in the dry area, but covers some 8 per cent of the gross cultivated area in the wet villages. Virtually all cane is grown on contract for the sugar factory in Pettavaithalei. The factory sets planting and cutting dates, prescribes dosages of fertilizers and pesticides, and distributes the inputs via contracts with dealers. The function of the cultivator is reduced to providing the land, supervizing the labour, and watching the standing crop.

Solam (Sorghum vulgare)

Solam is a minor crop in the wet area. It is, however, important in the dry area, where it is grown both on irrigated garden lands as well as on dry, rainfed lands. Yields vary accordingly. Irrigated *solam* yields twice as much as the mean for the crop as a whole, and inputs are correspondingly higher. Rainfed *solam* is often inter-cropped with pulses of various sorts.

Cumbu (Pennisetum typhoide)

The same type of intra-crop variation holds for *cumbu*, which in

TABLE 8.3

Yield Per Acre, Area Under Crop, Labour and Non-Labour Inputs by Crop (Means and Standard Deviations)

Crop	*No. of sample cases (farms)*	*Yield per acre (kgs. §)*		*Area under crop (acres)*		*Non-labour input/acre (rupees)*		*Labour input/acre (days)*	
		m	*s*	*m*	*s*	*m*	*s*	*m*	*s*
Paddy, traditional and improved varieties, *wet area*	55	873	470	2.19	2.59	281	200	130	77
Paddy, high-yielding varieties, *wet area*	78	1065	475	1.67	2.60	393	225	168	76
Paddy, traditional, *dry area*	38	756	444	0.84	0.75	240	208	159	98
Paddy, high-yielding, *dry area*	94	907	293	1.41	1.98	314	141	154	60
Sugarcane	36	44.7§	11.9	1.29	2.42	1311	496	301	99
Rasthali variety of banana	44	710§	300	1.00	0.78	1472	595	300	124
Other banana varieties	34	740§	244	2.16	2.98	2330	1302	259	107
Solam	95	257	228	2.16	2.37	42	60	57	46
Cumbu	89	506	351	1.02	0.88	96	81	86	48
Groundnut	54	310	150	1.10	1.26	298	204	124	72

§ Note: All crops are measured in kgs, except cane (tonnes) and banana (bunches).

the main is grown on irrigated lands with hybrid seeds, but which is also sown on rainfed lands. The means in Table 8.3 underestimate the yields of hybrid *cumbu* by about 15 per cent, while yields of rainfed *cumbu* are exaggerated by about 200 per cent! Inputs vary accordingly.

Thus, not even disaggregation to crop level entirely relieves us from the problems of aggregation which hampered the analysis at farm level. The crops themselves are heterogeneous, and would merit a study on their own.

Groundnut

In contrast to the previous two crops—which together with paddy are the most important crops in the dry area—groundnut is a pure cash crop. It is grown almost entirely (9● per cent of the area) on well-fed lands. So the mean figures in Table 8.3 reflect mainly production conditions on such lands.

Test of models

The above six crops do not exhaust the crop pattern. Especially in the dry area, a great number of minor crops are grown, but the selected ones are those that are frequent enough to provide enough cases for a statistical analysis.

Two models were tested out at the crop level. In both models class as well as non-labour and labour intensities were retained based on their performance at the farm level. Since a preliminary look at crop level bivariate correlations between area and value of inputs showed very high correlations in the case of practically all crops, it would have created problems of multi-colinearity to include both these indicators of scale in the regression. Therefore, we decided to simultaneously use only one of them. Thus we got two models. The first one is:

$$y = a + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 \qquad [8.3]$$

where for a given crop:

y = output per acre in physical terms

x_1 = gross area cultivated

x_2 = class status of the farm-household

x_3 = value of non-labour inputs, excluding overheads, per unit of gross cultivated area

x_4 = total number of labour days per unit of gross cultivated area

The second model is:

$$y = a' + b'_1x'_1 + b'_2x_2 + b'_3x_3 + b'_4x_4 \qquad [8.4]$$

where for a given crop y, x_2, x_3, and x_4 are the same as in [8.3] while:

x'_1 = value of inputs used in cultivating the crop (again excluding overheads)

The results of the crop level regressions are given in Tables 8.4 and 8.5

A look at the results highlights the fact that with far fewer observations it becomes considerably more difficult to find a statistically significant multivariate regression which would account for the variances in productivity. Nonetheless, some definite patterns do emerge.

When area is used as an index of scale, we get significant overall regressions in seven out of ten cases. The regressions with value of inputs as an index of scale perform more poorly. There are, however, no *a priori* grounds for arguing that area should be preferred to value of inputs as an independent variable in the regression on productivity. To do so *a posteriori* on the ground that such a regression worked better would mean succumbing to a kind of empiricist opportunism.

So, although we are on thin ice methodologically, two points may be noted. First, at the crop level, and given that we are controlling for crop variety and ecotype, land type variations are likely to be of less importance. Therefore, area would be a less faulty indicator of scale at crop level than at farm level. Also, our measure of the value of inputs has some weaknesses. It necessarily involves the questionable procedure of imputing values to family labour. Moreover, it does not include overheads and if we were to include these we would run into difficulties with allocating overheads to the various crops, and difficulties in distinguishing

TABLE 8.4

Productivity: Results from Model [8.3] at Crop Level

Crop	*No. of cases*[1]	*Beta coefficients for*					
		Area under crop	*Class*	*Non-labour input/acre*	*Labour input/acre*	*Multiple R square*	*Significance level of F*
Paddy, traditional and improved varieties, *wet area*	28	0.18	0.23	0.54	−0.19	0.26	n.s.
Paddy, high-yielding varieties, *wet area*	38	−0.23	0.48	0.31	−0.16	0.30	sign.
Paddy, traditional . . *dry area*	16	−0.02	0.53	0.45	0.33	0.72	sign.
Paddy, high-yielding . . *dry area*	46	0.05	0.34	0.37	0.08	0.25	sign.
Sugarcane	14	−0.42	0.48	0.29	0.47	0.67	sign.
Rasthali variety of banana	14	0.22	−0.37	0.43	0.03	0.22	n.s.
Other banana varieties	11	−0.23	0.53	0.94	−0.41	0.71	n.s.
Solam	58	−0.12	0.29	0.16	0.51	0.42	sign.
Cumbu	50	−0.10	0.29	0.32	0.36	0.63	sign.
Groundnut	30	0.10	0.33	0.41	0.38	0.55	sign.

[1] I.e., no. of farms, which may contain one or more sample plots.

Note: Level of significance:

——— is likely to be statistically significant at 5 per cent level.

═══ is likely to be statistically significant at 1 per cent level (cf. note 9).

TABLE 8.5

Productivity: Results from Model [8.4] at Crop Level

Crop	*No. of cases*[1]	*Beta coefficients for*				*Multiple R square*	*Significance level of F*
		Cost	*Class*	*Non-labour input/acre*	*Labour input/acre*		
Paddy, traditional . . *wet area*	21	0.19	0.22	0.50	−0.20	0.27	n.s.
Paddy, high-yielding . . *wet area*	33	−0.10	0.41	0.36	−0.15	0.22	sign.
Paddy, traditional . . *dry area*	12	0.50	0.26	0.33	−0.04	0.78	sign.
Paddy, high-yielding . . *dry area*	40	0.17	0.25	0.27	0.21	0.21	sign.
Sugarcane	12	−0.33	0.41	0.48	0.55	0.67	sign.
Rasthali variety of banana	9	0.29	0.03	0.44	−0.18	0.38	n.s.
Other banana varieties	9	−0.46	0.44	1.09	−0.45	0.75	sign.
Solam	47	−0.11	0.25	0.21	0.49	0.39	sign.
Cumbu	42	−0.19	0.24	0.43	0.39	0.65	sign.
Groundnut	26	0.27	0.27	0.25	0.33	0.53	sign.

[1] I.e., no. of farms, which may contain one or more sample plots.

Note: Level of significance:

——— is likely to be statistically significant at 5 per cent level.

═══ is likely to be statistically significant at 1 per cent level (cf. note 9).

between productive and improductive debts which also is unavoidable in an economy where farm-households are both production and consumption units. Given these circumstances, we believe that the regressions with area as an independent variable should be regarded as more reliable and decisive. In any event, both exercises taken together come up with the finding that neither area nor value of inputs appear to be significant determinants of productivity for any crop. This is an important finding since it shows that the strong and significant inverse relation between area and productivity, which held at the farm level in the wet area, must be interpreted as a result of aggregation. The same holds for value of inputs at farm level in the wet area.

On a more positive note, the crop level regressions confirm the importance of class and input intensities in the determination of productivity. The picture we get mirrors to some extent the farm level features: intensities are more important in the dry area and class in the wet area. But it must be stressed that class emerges as a key variable in both ecotypes; whether it is sugarcane or HYV paddy in the wet area, or it is HYV paddy, *cumbu*, or *solam* in the dry area class remains an important determinant of productivity. The evidence thus suggests that it may be more appropriate to speak of 'advantages of class' than of 'economies of scale', either in the cost sense or in the sense of size of holding.

A question may, however, be raised at this point: Since class and intensity are both important in 'explaining' productivity variations, is it not possible that the exploiting classes derive their higher productivity from more intensive use of inputs? In any event, the positive influence of class on productivity still remains to be explained analytically, since the surrogate for class used in the regression does not have an immediately apparent link with productivity. We take up these questions now.

Class and productivity

Let us first take up the question of the relationship between class and intensity. The first two rows of Table 8.6 present mean input intensities for various classes in each ecotype at the farm level. The data do not suggest any clear pattern in the variation of labour intensity across classes in either ecotype. It is, however, possible to discern a rather faint pattern of increasing intensity in the use of non-labour inputs as we move up the class ladder. But given the large standard deviations, a simple test for differences in means would end up insignificant in most cases.

Since a comparison of means does not show a clear picture, let us take a look at the correlation coefficients that we get when running the intensities against our surplus criterion of class (see Table 8.7). The correlation coefficients confirm the impression gained from Table 8.6 that there is little linear relation between class and input intensity. In only one case do we get a significant coefficient, namely, between non-labour intensity and class in the wet area, but the correlation is a very weak one, 'explaining' only 6 per cent of the variance in productivity.

We cannot escape the conclusion that class as such is a major determinant of productivity, while the other important determinant, intensity of input use, is unrelated to class. Intensive cultivators are apparently to be found in all classes. In other words, intensification is a strategy which in principle seems open to all classes, but the benefits to be gained from that strategy are determined by the 'advantages of class', so that the lower classes would have less to gain from intensification than the upper ones.[15] But what exactly are these 'advantages of class'? That is the question to which we now turn.

'Advantages of Class'

The term 'advantages of class' is meant to refer to those aspects of class position which may account for the positive impact of class on productivity. We can make a list of potential candidates: land quality (soil fertility, level, accessibility, etc.); quality of the means

[15] An analysis of tenant cultivation leads to results which are fully in line with the results established in this chapter. Without going into details, the analysis shows that in a bivariate farm level analysis there is a negative, though not statistically significant, correlation between the proportion of operated area under lease and productivity. But this correlation disappears in a multivariate regression where, in addition to the proportion of area under lease, intensity and class enter as independent variables. That is, the apparent negative correlation seems to be an effect of differences in class and intensity of cultivation. In fact there is a negative correlation between class and intensity on the one hand, and the proportion of area under lease on the other.

TABLE 8.6

Class, Intensity and Productivity by Ecotype

Ecotype and class	*Total no. of labour days per operated acre (days)*		*Cash costs of non-labour input per operated acre (rupees)*		*Value of farm production per operated acre (rupees)*		*Minimum no. of cases in sample (farms)*
	Mean	*Standard deviation*	*Mean*	*Standard deviation*	*Mean*	*Standard deviation*	
Wet area	293	254	1673	1908	3660	3166	80
Poor peasants	248	173	1515	3285	1525	1429	22
Middle peasants	319	343	1530	1022	3705	2716	26
Rich peasants	293	149	2214	1353	6905	3191	9
Capitalist farmers	371	260	1416	744	4468	1318	5
Big Capitalist farmers	253	106	2150	344	5421	1108	6
Cultivating landlords	264	9	1062	54	missing		2
Others	291	213	1873	1090	5227	4278	10
Dry area	118	82	503	488	964	1126	93
Poor peasants	89	86	308	372	513	642	31
Middle peasants	138	77	619	541	1227	1301	48
Rich peasants	88	26	204	77	901	256	4
Capitalist farmers	101	47	742	417	1690	1142	8
Others	88	57	358	329	727	368	2
No. of observations	n = 200		n = 173		n = 192		n = 173

TABLE 8.7

Class and Input Intensities, Correlation Coefficients

Ecotype	*Pearson's correlation coefficients between*	
	Class and Labour days per acre	*Class and Cost of non-labour inputs per acre*
Wet area	0.19	**0.25**
Dry area	0.15	0.11

Note: The minimum number of sample cases are 51 and 69 respectively in the wet and the dry ecotypes. Figure in bold is likely to be significant at 5 per cent level (cf. note 9).

of irrigation and drainage; the quality of inputs and their timely availability; the ready control of a motivated labour force; non-crop sources of farm income; ready availability of finance and cheap credit; and advantages in product and factor markets. Let us discuss land quality first.

In the wet area almost all land is irrigated, but lands differ in quality, especially in terms of level, location, and soil fertility. Unfortunately, our efforts to measure these quality differences in the land were not very successful, so we can only go by impressions gained in the field. These suggest that the concentration may be even sharper when it comes to the control of the best land, than it is for wet land in general (cf. chapter 4). Much of the best land, the *ul-nanjei* in Tamil, seems to be in the hands of the class that we have designated as the 'big capitalist farmers'. This land has all the qualities needed for growing high-value, long duration crops like cane and bananas—good soil, high level, year-round availability of water, and good drainage.

In the dry area, the advantages with respect to land quality relate mainly to ownership of *nanjei-thottam*, that is, tank-irrigated lands with access to well-irrigation. This is because the best soils, improved by generations of cultivation and manuring, are located in the feeding areas of the tanks, and so are the best wells—in the feeding-areas the groundwater is continuously recharged from the tank. The rich peasants and capitalist farmers who constitute 4 per cent of the agrarian population in the dry villages control 40 per cent of the *nanjei-thottam*, which is above their share in overall landownership (16 per cent).[16] Similarly, they are well-endowed with means of irrigation: rich peasants and capitalist farmers have a pump-set for every 3.43 acres of well-irrigated land, while the middle and poor peasants have only one for every 6.55 acres. We have not been able to retrieve our data on depth and yield capacity of the wells, but it would be fair to guess that the wells of the upper classes are of a better quality than those of the lower classes. In the field we were struck by the large number of shallow, dry wells reportedly owned by the lesser cultivators. One reason for their going dry may be the lowering of the water table brought about by the extraction of groundwater from deep, energized wells.

The exploiting classes have a readily available labour force to be deployed when and where necessary. In the wet area they have *kavalkaran* for watching the crops, which is especially necessary for the valuable crops. They also have *nirpaichi* to irrigate their fields. In both ecotypes the number of permanently employed farm servants (*pannaiyal*) is strongly associated with class. In the wet area, moreover, casual labour is organized in a fashion which would seem advantageous to the bigger cultivators: as we have seen in chapter 5, we find a system of gangs led by foremen (*kothukarar*). The latter negotiate with the cultivators over the price and conditions for a contract to perform a certain operation on a certain field. Those offering big contracts and good pay would have all the chances in the world to outbid the small guys, who would be forced to wait until the gang has finished the more attractive jobs.

The same advantages of class are present when it comes to plough bullocks and other means of production and transport, such as, tractors, power-tillers, power-sprayers, and carts all of which also provide economies of overhead reflected in higher value of farm income per unit of operated area. The ownership of these means is also strongly correlated with class. Fertilizers and other inputs are, of course, widely available, but here too there are quality differentials as well as problems of availability. We have not, however, been able to document these in quantitative terms.

The productivity index used at farm level—farm business income per unit of operated area—includes income from livestock as well as other farm business like hiring-out such farm implements as carts, sprayers, and tractors. All of these are strongly associated

[16] The difference, however, is not statistically significant.

with class, but only one of them is of any real significance, namely, income from livestock. It is especially important in the dry area, where the mean value of livestock owned by capitalist farmers is on the average six times that owned by middle peasant households.

Productivity differences at farm level also reflect differences in the value of crops grown. In the size-productivity debate, this fact has been brought in to argue that smaller farms show higher productivity by growing more high-value crops, and this in turn has been traced to the fact that these farms tend to have a higher proportion of irrigated area. In our analysis we get another picture. The advantages of class that we have so far discussed, better quality of land and irrigation, ready availability of labour, and better access to means of production and inputs, make it possible for rich peasants and capitalist farmers to invest in high-value crops (banana and cane in the wet area), or secure higher yields (irrigated *solam* and *cumbu* in the dry area, sown with purchased new seeds with better yield performance).

Another advantage of class is that enjoyed by the upper classes of farmers in the product and factor markets. These are not merely price advantages, although price discrimination also exists. These advantages, being partly qualitative, unfortunately cannot be documented in any systematic fashion. But we will cite a few illuminating facts.

Labour, for instance, is often available at cheaper rates to the very upper end of the class scale (the uppermost percentile or so). Average daily wages for a permanent farm servant, worked out notionally by using data on cash and kind wages per annum and perquisites, and assuming a working year of 300 days, are equivalent to Rs. 4.85 per day in the wet area and 4.30 in the dry. Against this are the daily wages for casual labour which work out to Rs. 7 to 8 in the wet area and Rs. 5 in the dry ecotype. For an ordinary rich peasant employing one or two *pannaiyal*, the economies might not be substantive because in his case the *pannaiyal* mainly replace family labour, and attend to tasks for which casual labourers are not ordinarily hired. But for the bigger capitalist farmers, with a small army of *pannaiyal*, the economies are obvious. In their case, the *pannaiyal*, also replace casual labour, but work longer hours, and often have a deep sense of devotion to their masters which make them a good labour force.

We also have some evidence on price discrimination in the output markets. Prices received by big capitalist farmers in the wet area for paddy were on the average 25 per cent higher in the case of LIVs and 10 per cent higher in the case of HYVs than the prices received by poor and middle peasants. A similar situation prevailed in the case of sugarcane, between capitalist farmers and middle peasants, while the price difference was as much as two-thirds in the case of bananas other than *Rasthali*. Similarly, in the dry area capitalist farmers enjoyed a 15–20 per cent price advantage over poor and middle peasants in the case of *cumbu* and HYV paddy.

It could be argued that these price differences can be wholly or partly due to quality differences in the products marketed by the different classes, but the counter-argument would obviously be that the quality differences which undoubtedly are there are again the result of advantages of class. As pointed out above (see chapter 3), there is a great difference between coarser and finer varieties of paddy, but the finer varieties generally demand more in terms of soil quality, irrigation, etc., factors which, as we have seen, favour the upper classes. Likewise, the sucrose content of poorly cultivated cane goes down, which again can discriminate against the cultivators with less access to high-quality inputs. Quality differences in banana are huge, according to our local informants, and are likely to be correlated to class in the same manner as for the crops already discussed.

In the preceding chapter we discussed the issue of class discrimination in the credit markets. Although the discrimination is not so severe that the lower classes are entirely barred from getting institutional credit and restricted to borrowing only from usurers, there is a tendency for the higher classes towards easier access to cheap credit.[17] This should be added to the list of advantages enjoyed by them.

We could add a number of other factors, for example, the higher educational levels of the upper classes, their better access to newspapers and other media, the tendency of extension workers to prefer contacts with upper class farmers, etc. (compare also the papers by Byres, 1981 and Herring, 1984).

It has been a pet thesis in the size-productivity debate that poor and middle peasants compensate for their disadvantages in the

[17] The tendency, however, is not statistically significant (cf. earlier section).

product and factor markets by substituting family labour, both for hired labour and for non-labour inputs. This feature too seems to be absent in our area.

Our data do not show any higher labour intensity on the poor and middle peasant farms. Nor do our crop level regressions indicate any substitution of labour for non-labour inputs. We did get significant beta-weight for labour-intensity in the case of three crops: sugarcane, *solam*, and *cumbu*. But none of these can be interpreted as being caused by the kind of substitution which we are looking for because (*a*) for cane the input of family labour is negligible, and the beta-weight reflects the overall labour-intensity of the crop; and (*b*) for *solam* and *cumbu* the beta-weight is probably due to intra-crop varietal differences. As pointed out above, *solam* and *cumbu* are grown both on dry and irrigated lands and the more intensive cultivation of the latter is reflected in the high beta-weights.

Moreover, both poor and middle peasants use substantial amounts of hired labour. Somewhat less than fifty per cent of the labour input, counted in labour-days, is put in by the family labour of poor peasants in both ecotypes. The same percentage holds for middle peasants in the dry area, while middle peasants in the wet area put in even less or 22 per cent. This non-substitution can be due to full employment of the available family labour force during the cropping season—at least this might hold for middle peasants in the dry area whose mean family labour input is quite high or 291 days. It can also be due to the availability of non-farm sources of income at equal or higher remuneration than that paid to casual labourers. This would hold for agricultural wage labour in the wet area, and for non-agricultural employment like gem-cutting in the dry area. Whether they cannot or whether they prefer not to, our poor and middle peasants obviously do not 'behave' as they should if we were to go by the textbook.[18]

Conclusions

We began this chapter by expressing some reservations about the major problematique within which agricultural productivity has

[18] Evidence collected by Basant (1987) indicates that input of family labour goes down where non-farm employment opportunities are good. Our case seems to illustrate this tendency.

been discussed in the literature, namely, the farm size-productivity framework. Quite apart from the weaknesses of farm size as a measure of scale, it seemed useful to directly bring into the analysis other determinants of productivity. We proposed three likely determinants: scale, intensity, and class. These factors were then operationalized and placed in regression models, which were applied to our material. Let us now try to draw out the major findings.

First, our material showed a significant negative relationship between operated area and value of output per acre at the farm level, but only for the wet area. There was no relationship between these two variables in the dry ecotype. Our farm level analysis thus highlights the distinct economic structures of the two ecotypes, and the danger of making generalizations regarding the size-productivity relationship without distinguishing between ecotypes. The importance of the 'distinctiveness' of ecotypes seems to have been largely neglected in the size-productivity debate.

Second, even in the wet area, the observed inverse relationship between farm size and productivity disappears at the crop level. It is not a significant variable in any of the crop level regressions. Crop level results, on the other hand, confirm the importance of the two other determinants which were also significant at the farm level: intensity and class. It thus becomes clear that the apparent inverse relationship between farm size and productivity at the farm level cannot be interpreted as evidence of 'diminishing returns to scale' or of the superior efficiency of the small farmer. What it does reflect, among other things, is the coexistence in the wet area due to historical reasons, of intensively cultivated small farms and a few very large holdings with a certain proportion of their land left fallow and the rest indifferently cultivated. There is less of such variations of a 'socioeconomic type' among the holdings in the dry area. These findings, together with the insignificance of the total value of inputs as an explanatory variable also suggest that there is no clear evidence of economies of scale.

Third, the upper classes in both ecotypes possess the advantages of class discussed in the previous section, and this gives them an edge in productivity. At given levels of input intensity a higher class position would imply a higher level of productivity in both ecotypes. However, there is again a difference between the two ecotypes. In the wet area, monopoly over high quality land and command over credit, cheap labour (permanent farm servants), and other inputs play a far more important role. In the dry area, advantages of class consist mainly of ownership of better irrigated lands and of more livestock, but they are less crucial than intensity of input use in determining productivity. What this implies is that superior levels of productivity in the wet area can be traced, in marxist terms, to a greater extent to differential rent of type I (cf. our discussion of this in chapter 6), while in the dry area differential rent of type II, reflecting returns to capital investments, are more important. Of course, this is not to say that other factors are not at work. Possession of a herd of plough bullocks and of a number of permanent farm servants, which we have included under the rubric of 'advantages of class', also make possible a certain economy of scale in both areas. Similarly, intensive cultivation is certainly a feature of the banana crops (mostly raised by the surplus appropriating classes) and of the sugarcane crop. Thus, intensive cultivation is not a unique feature of the dry area. But what is brought out by the relatively greater importance of class in the wet area and intensity in the dry ecotype is the need to recognize the role of both the ecological and the historical specificity of a farm economy in the determination of productivity.

The evidence we have brought together can, of course, be neither conclusive nor immediately generalizable. It pertains to a case study in a specific region with its own specific ecological and historical features. The same holds true for our conclusions. Indeed, we would like to stress this point at a methodological level, since, as we have pointed out, earlier participants in the size-productivity debate have not always shown an awareness of this point. Nonetheless, our findings do raise some questions about the continued use of the size-productivity framework to analyse the determination of agricultural productivity. Quite apart from showing that one cannot presume an inverse relationship between farm size and productivity, our analysis also makes it clear that where such a relationship appears to exist at the farm level, it would be quite wrong to infer the existence of diminishing returns to scale. The analysis has also shown that intensity of input use and class may be more important in the determination of productivity than measures of scale, such as, farm size or value of inputs.

9

Summary and Conclusions

Barriers have been broken along the river Kaveri, both in the down-to-earth sense that systems of water management have been put under strain by an increasing ecological crisis, and in the symbolical sense that processes of change have been unbound, and old restraints have shattered.

In this chapter we will try to summarize the processes of change that we have studied, and in the process we will highlight one of the main theses of this book, namely, that production relations cannot on their own explain processes of agrarian change. Our case demonstrates that certain State interventions have been strategic in unleashing the processes of change that we have documented. We will now try to summarize our main results, with these State interventions in focus. It should be stressed, however, that we do not aim to describe and analyse the whole inventory of State interventions and their local effects; our aim is much more modest, i.e., to point to those interventions whose impact strike the eye in the analyses undertaken.

Ecology (chapter 3)

After having dealt with methodological issues in chapter 2, we made an ecological analysis in chapter 3, and defined the two agrarian ecotypes which have been contrasted throughout the book. The wet ecotype prevails in the canal-irrigated belt along the river Kaveri, and the dry ecotype is characteristic of the dry plains south of the river. These ecotypes represent two different strategies for dealing with the basic constraint to agricultural production, which in this semi-arid tract is the lack of water. With only about 800–900 mm of rain per year, and with high rates of evapotranspiration, the natural growing season is only two-three months.

Without irrigation it is only possible to grow millets, sorghum, and pulses which are drought-resistant but low-yielding crops. However, the length of the growing season can be extended by storing rain-water in open-air tanks, or by drawing on ground-water reserves. Tanks and wells make it possible to irrigate millets and sorghum, and thus substantially to increase their yields. One can also grow paddy and other irrigated crops like groundnut, chilli, and cotton. Although rainfed lands make up more than half of the cultivated area in the dry ecotype, they contribute less to the total production than the wet lands where yields are higher and crops are more valuable. This goes especially for the small areas in which irrigation from tanks and wells are combined, which thus get assured irrigation for at least two crops a year, and where lands are usually quite fertile. These areas are, however, quite small compared to the dry areas irrigated only by wells. In terms of acreage, well-irrigation is the most important form of irrigation in the dry area. Peasants have long since had small areas of dry land which they irrigated by the strenuous method of lifting water from shallow wells by means of bullocks. This enabled them to grow cash crops, and obtain a complement to animal husbandry and the non-farm sources of income which were always important in the dry area: forestry and forest-based trades, quarrying, and others.

Well-irrigation has been revolutionized in recent years by the introduction of pump-sets. The State has stimulated this mechanization of irrigation by extending subsidized credit. The expansion of well-irrigation without an overall plan has led to a possible over-exploitation of groundwater reserves.

The spread of new agricultural technology is another important change. Improved and high-yielding varieties of paddy have almost replaced the traditional varieties grown both in tankfed and well-irrigated lands. Although the new high-yielding varieties—despite their name!—do not yield dramatically more than the traditional varieties, they allow economization of water, which is a considerable advantage in this climatic regime. The most notable HYVs are strains of paddy, but other crops are also affected. Hybrid *cumbu (pennisetum typhoide)* covers a substantial part of the irrigated area under millets. Improved varieties of chilli and groundnut have spread to many growers. Here too the State and its various organs are important agents of change. Efforts at improving local crops by breeding started early this century in South India, and the extension services were expanded from the 50s. The credit schemes already mentioned have also had a role in the diffusion of the new varieties by extending loans with a kind portion of seed, fertilizers, and pesticides.

The wet ecotype has a type of irrigation which does not occur in the dry area: the natural water constraint is eased by the 'import' of water. The river Kaveri has its catchment areas in the Western Ghats under a more humid rainfall regime. The Kaveri brings water to the eastern parts of the peninsula also during the dry season, at least to the upper reaches of the system where our field area is located. Farmers in the wet ecotype get water for ten to eleven months a year, and this allows them to take two crops of paddy a year plus a third crop of, for example, sesame. If they have well-drained lands and capital, they can also grow long-duration crops like banana and sugarcane; and, in fact, a considerable part of the land resources in the wet area are under these highly valuable cash crops. This intensive agriculture depends heavily on the State-owned capital represented by the canal-irrigation works. These represent an old form of State intervention into agriculture.

The Kaveri system started to be built with state support under the Chola kings from 900–1200 AD. The British considerably improved and expanded the system in the early parts of this century, and the post-colonial State continued this endeavour so that parts of the areas irrigated in Kulithalei Panchayat Union have been brought into the system only in this century.

While the ecology chapter brought out considerable dynamism in both the ecotypes, with intensive cash cropping nursed by strategic state intervention, it also brought out disturbing signs of an ecological crisis which must be mentioned here. The system of water management suffers from many deficiencies which has brought salinization, waterlogging, and flooding, and, in the dry area, a reduction of the area irrigated by tanks. The crisis to a large ex ent has its origins in the catchment areas of the irrigation systems where deforestation, overgrazing, and unsound cultivation practices bring about soil erosion, which increases the rates of siltation in the irrigation works, and adds to the problems of management.

LAND RELATIONS (CHAPTER 4)

Ecological diversity is mirrored in land relations. The dry ecotype has a less skewed distribution of landownership than the wet one, a contrast which has both an ecological and a historical background. The wet area belongs to the heartland of upper-caste (mainly *Brahmin*) landlordism, and the stark concentration of land in the hands of a small group of very big owners continues to characterize the area. But the landlordism of the wet area obviously has an important prerequisite which is ecologically grounded, namely, the intensive cropping which is made possible by the irrigation system and which makes high levels of rent possible. The dry area in contrast has not got the same level of potential rent and therefore it never allowed room for the same type of landlordism as in the river-irrigated tracts. True, the small tanks are partly an exception; they allow intensive cultivation and, potentially, a certain measure of landlordism. But, unlike other parts of Tamil Nadu, our dry area is too dry to allow any extensive system of tank-irrigation, and this is one fundamental reason why the distribution of landownership is much less uneven here than in the wet area. Likewise, the rate of tenancy is almost negligible in the dry area, while in the wet ecotype about half the area is operated by tenants.

In the wet area the stark concentration of land goes together with a high rate of landlessness. About half the agrarian population owns no land at all. However, a considerable part of the landless lease in land, so that the proportion of non-owning and non-cultivating households is brought down to about 30 per cent of the agrarian population. As a contrast, landlessness is much less in the dry area or about 4 per cent.

We noted two important processes of change in land relations. The first one relates to tenancy in the wet area. In the 50s the area had a lively tenants' movement which, with the strong political support from the DMK and the Communist Party, managed to partially implement a Tenancy Act which remained much of a paper law in the rest of Tamil Nadu. As a result, many tenants are protected, and rates of rent seem to have gone down, even for unprotected tenants.

The second process of change is in the distribution of landownership. During the last generation land seems to have become deconcentrated, at least in the wet area; and the rate of landlessness seems to have gone down—many households which started out as landless have acquired land during this generation. Even if the concentration of land has only gone from extreme to a somewhat less extreme, a considerable redistribution of land has occurred; the *Brahmins* have lost much of their land monopoly, and new groups have taken over.

These findings are significant on two accounts. First, they imply that certain 'popular' prognoses about the impact of the green revolution do not seem to have been confirmed in our area. According to these prognoses the green revolution would increase both the concentration of land and the rate of proletarianization. Although our area is deeply affected by the green revolution, based on these premises, its effects on land relations are not the ones that one may expect to find.

A second important implication of these findings relates to the evaluation of land reforms. As is well-known, Indian land reforms have not been very successful in implementing the ceilings set on landownership, and Tamil Nadu is no exception. But the selling out of large areas by big landowners in the wet area must be interpreted as having occurred in anticipation of land reform. Thus, although little land has been expropriated as a direct result of land reform, much land has changed hands to evade it. The end result may not be the same, but at least similar: a considerable deconcentration of landownership, or what could be described as a 'land reform without land reform.' It could also be speculated that the loud propaganda about land reform has prevented an increasing concentration of land, by putting a disincentive on the acquisition of land by big owners. So, here again, we see that the State and the political factor are crucial to an understanding of agrarian change.

Labour relations (chapter 5)

Since the land distribution is less uneven in the dry area and since landlessness is less in this region, one would expect family labour to be more important in the dry ecotype. This expectation is also borne out by our data: somewhat less than half the labour input (47 per cent) is by family labourers, while it is only 30 per cent in the wet area.

It is more surprising to find that, on the whole, family labour accounts for such a small part of the labour input. Even on the smallest farms, those of the poor peasants, hiring-in of labourers is considerable. The reliance on hired labour, which in different degrees is characteristic of both ecotypes, seems to have an economic and probably also sociocultural background rather than a merely technical one. It probably relates to the ready availability of hired labour, and of alternative employment opportunities for family labourers, both inside and outside agriculture.

Family labour is complemented by hired labour, especially in the wet area where family labour seems almost marginal to production. In both areas we have an agricultural proletariat, which, however, differs both in size and structure.

A small core of the agricultural proletariat in both ecotypes are permanent farm servants employed by bigger farmers to complement or substitute family labourers. Although the percentages of permanent labourers are quite similar in both ecotypes, it is striking that in the dry area a large proportion of the farm servants are bonded labourers. These are usually children or youngsters whose poor parents have been forced to borrow to tide over a reproduction crisis and have had to pledge the labour of some family member in lieu of interest or repayment. Bondage is thus a means for the big farmers to solve what they term 'the labour problem.'

Most hired labour in both ecotypes are casual labourers employed by the day. The forms of employment differ in an interesting way between the two ecotypes. In the dry area most labourers are employed individually, but in the wet area intensive cultivation has brought about a system of gang labour wherein a gang is employed on a collective piece-rate to perform a certain task, like harvesting a field, and where the gang leader receives the payment and distributes it in equal portions among the gang members. This makes for a segmentation of the rural proletariat, dividing the casual labourers into an 'elite' of young and strong workers—who are members of the gangs, who are employed almost throughout the year, and who earn comparatively higher wages—and a fringe of workers, mostly consisting of elderly people and children, who can only be sure of getting employment during the peak periods of the year, and who can be glad if they find some casual employment during the leaner seasons.

The rural proletariat does not consist of only landless labourers; the poor peasants, whose holdings are too small to provide their families with their needs of grain, are also an important part of the rural proletariat. Most poor peasants have holdings which are so small that they add only marginally to their subsistence. Their landownership does not put them in a much more privileged position than the landless labourers—if anything poor peasants seem to have lower incomes than the labourers—but their land may be both a buffer in times of crisis, and the materialization of a dream, the dream to get landed.

In money terms, the rural proletariat in both ecotypes earn incomes which on the average are close to the official poverty line. But they are somewhat better-off than their incomes would indicate; they earn a considerable part in kind, i.e., in paddy or in coarse grains, and their standards of calorie consumption are somewhat higher than the cash equivalent of their incomes would lead one to believe.

State intervention in labour relations seems less significant. There is a minimum wage legislation, but it has no readily apparent impact on wages. There is also a law protecting the permanent farm servants, which was enacted in the 40s, but its main effect seems to have been to stimulate the big landowners in the wet area to cut down the number of permanent labourers and to increase their reliance on labour gangs (cf. Baker, 1984, pp. 196 ff.). On the other hand, labour gangs can function as 'proto-unions' and ease the downward pressure on wages. In other words, struggle of the workers for wages and working conditions are of course not absent, even if the State has not intervened to support it by means of effective enforcement of existing legislation.

In contradistinction to the changes in land relations, the processes of change in labour relations, of which the growing importance of gang labour is the most readily discernible, seem to be propelled mainly by economic forces rather than by State intervention.

Class analysis (chapter 6).

After a conceptual analysis we formulated a surplus criterion of class, which places farmers appropriating a surplus over their subsistence needs among the 'upper classes' of farmers. Farmers not reaching this level were grouped into poor and middle peasants, depending upon the reproductive level which they attain. Poor peasants, as already mentioned, cannot even cover their subsistence needs of grain from own farming, while middle peasants can.

We cross-evaluated this criterion of class against a simplified version of the 'labour participation index' formulated by Patnaik (1976, 1980, 1987), and the results led us to discard the participation index in favour of the use of the surplus criterion for developing a full-fledged classification of the households.

We also used our surplus criterion to 'validate' or rather to demonstrate the invalidity of an area criterion of class. We demonstrated that area owned or operated is a very poor indicator of class. This finding has considerable methodological implications, since area is the most commonly used operationalization of class. While, for practical reasons, it will undoubtedly remain so, this result stresses the importance of basic research into agrarian class structures. Official statistics, and other data based on area categories, give us poor tools to understand the functioning and transformation of agrarian class structures.

Not unexpectedly, the class structures differ between the two ecotypes. In view of the lesser concentration of land, a lower rate of landlessness, and less reliance on hired labour in the dry area one would expect the middle peasantry to be a more significant stratum in the dry area. They make up 46 per cent of the agrarian population, while in the more polarized wet area they constitute only 21 per cent. In both areas, however, only a minority of the middle peasants have fully reproductive farms; most of them cannot cover their cash needs for reproduction, and they are thus forced to seek supplementary incomes, either as agricultural labourers or in the non-agricultural sector. So the 'true' middle peasantry, those that are autonomously reproductive, make up a mere 4 to 5 per cent of the agrarian population in both ecotypes. We call this 'the squeeze on the middle peasantry', and we found it to be related to the prices received for farm output and prices paid for inputs and means of consumption. Since the markets for such goods are characterized by a considerable measure of administrative intervention, we again meet with a crucial State intervention into the conditions of reproduction of the agrarian classes.

The character of the surplus appropriated by the upper classes of farmers varies between the two ecotypes. As already pointed out, the rental element is quite insignificant in the dry area. Therefore, we concluded that the surplus there is essentially profit on capital invested in private irrigation works and in cultivation. This led us to characterize the upper stratum in the dry area as one of rich peasants/capitalist farmers. There seems, however, to be an important dividing line running between (approximately) the upper percentile of wealthiest farmers and the small segment of rich peasants. The former are the really big farmers who often combine the appropriation of considerable surplus from farming with other sources of income like money-lending, trading, and entrepreneurial activities outside agriculture. They seem to be the contemporary representatives of the rural elite which long since has dominated in the dry plains (cf. Washbrook, 1978).

In volume, the surplus in the wet area is much bigger than in the dry ecotype. The surplus appropriating classes are also much bigger; they make up 14 per cent of the agrarian population in the wet area, compared to the mere 4 per cent in the dry one.

Unlike in the other ecotype, surplus in the wet area has a considerable element of either explicit or implicit land rent. By implicit land rent we mean the surplus appropriated from own cultivation, but which implicitly is rent in the sense that it could also be attained by leasing out the land. Based on this distinction we divided the surplus appropriating classes in the wet area into segments. First, we distinguished pure landlords comprising, one per cent of the agrarian population, and, next, cultivating landlords, making up two per cent. The latter have at least some own cultivation, but they use extensive methods which do not yield more surplus than they would attain by leasing out their holding. Interestingly, capitalist entrepreneurs make up a majority of the surplus appropriators (11 per cent of the agrarian population). We grouped them into two roughly equally big groups, the rich peasants who cultivate small holdings with very intensive methods and capitalist farmers, whose holdings are bigger and who may at once be tenants, owners, and landlords. While these figures testify to the capitalist transformation of a domain of entrenched landlordism, data on the areas commanded by the various surplus appropriating classes modify this impression. Landlords still control 36 per cent of the area owned in the wet ecotype, while capitalist farmers control only 25 per cent. So, even if landlordism has been forced to a retreat in recent years, it continues to have a strong grip over the wet area.

While, as we have seen, the State intervention represented by the New Agricultural Strategy has not brought about the polarization of the class structure anticipated by many, other measures of State intervention work in exactly that direction. We refer to the 'squeeze on the middle peasantry' exerted by the terms of trade and to the fact that at the same time the agricultural surplus appropriated by the upper classes of farmers is not taxed, at least not directly in the form of any agricultural income tax. Thus it is easy to envisage additional measures of state intervention which could further promote the tendencies to a deconcentration of landownership, and sustain the reproductive niche of the middle peasantry—if that were the aim!

Credit and usury (chapter 7)

We proceeded to deal with the question of the surplus and its distribution, which, of course, is not only a question of the distribution between land rent and profit within agriculture, but also a question of its appropriation by non-farming classes, through processes that we termed secondary relations of exploitation (chapter 6). Chapter 7 considered the position of the merchants' and usurious capital in the two ecotypes.

Chapter 7 started with a consideration of the indebtedness of the agrarian population which led to a number of interesting results. We were led to conclude that usury has been forced to a retreat by the massive expansion of State-supported credit schemes. As a result, private usurers occupy a smaller share of the total credit market, and, as a result of competition, their rates of interest have also gone down. Agrarian classes are of course differently affected by this process, but much to our surprise we found that the lower classes have also benefited from the extension of credit. Only one class seems to be largely unaffected, namely, the dry agricultural labourers whom, as we have seen, run the risk of bondage, getting trapped by poverty into taking usurious loans.

We failed to find the prevalence that certain models in the literature would predict, especially in the dry area, of merchant/usurious capital in the trade with agricultural produce (e.g., Banaji, 1977). Merchants do occasionally extend credit, but seldom against usurious rates of interest; instead, they aim to secure deliveries by offering cheap credit, which is an evidence of a competitive commercial sector.[1]

[1] In an important study, Barbara Harriss (1981) has shown that State intervention into the commercial sector in Tamil Nadu functions so as to assure the merchant class of a share in the total surplus which exceeds what they would get in a competitive market. These mechanisms are completely different from those postulated by theories of combined merchant/usurious capital.

A word of caution needs to be added here. Although the extension of credit has forced usury to a retreat, the victory may be temporary, at least as far as the poorer classes are concerned. Rates of default have been enormous, and the difficulties in recovering the loans may in the long run endanger the credit schemes. If credit becomes difficult to obtain for the poorer classes, the market for usurers may become lucrative again.

Class and productivity (chapter 8)

It is largely believed that small farmers are more productive than big ones. Our findings throw doubt on this. When we correlate productivity with size of holding our data point in the familiar direction. But, if size is taken to be a proxy of class, one may also ask if, defined by a more reliable index than their landownership, poor peasants are more productive than middle or rich ones? In both ecotypes productivity is positively correlated with class, and it seems to be spuriously correlated with area.

Instead of economies of scale, we were thus led to talk of advantages of class. The surplus appropriating classes enjoy a number of advantages which on the average make their farms more productive than those of the peasantry. Our data do not permit us to evaluate the different factors that may enter here, but the advantages of class may relate to: the quality of the land possessed by the upper classes, the quality of irrigation and drainage, the quality of inputs and their timely availability, the ready control of a motivated labour force, the ready availability of cheap credit and finance, and advantages in the product and factor markets. But we were also able to show that intensive, high-yielding agriculture is no exclusive domain for the upper classes of farmers. Intensification is possible also for the middle and poor peasants, although the turnout, due to the disadvantages they suffer, is likely to be lower.

The disadvantages or handicaps which poor and middle peasants suffer from is the other side of the mirror. Both advantages and handicaps are partly the result of historical processes of accumulation and expropriation. But they also partly relate to the current position of the classes, for example, in relation to the markets, or in relation to the State and its institutions (extension agents, banks, and credit cooperatives). The largely successful extension of credit, also to the lower classes, demonstrates that many of these advantages and handicaps are administratively and politically manipulable. The State could further support the productive capacity of the peasantry, although at present this support is both erratic and faltering.

Theoretical implications

A number of popular theories have been thrown into doubt during the course of this research project. In particular, doubts arise concerning (*a*) the view of Indian agriculture as largely stagnating due to a paralyzing grip of landlordism and merchant/usurious capital; and (*b*) the polarization and proletarianization thesis, according to which inequalities increase at the same time as small and middle peasants are driven to sell their land and become wage workers.

When these two assumptions are made explicit, it is striking to note that they were shared by many participants in the debate on the mode of production in Indian agriculture (cf. Thorner, 1982). They are obviously built into the, otherwise contradictory, models of Bhaduri (1973 and 1983) and Banaji (1977), which we mentioned in the introduction and discussed more in detail in chapter 7. We call these models the LRS and MUS models, where LRS denotes a land rent dominated system and MUS a system dominated by merchant/usurious capital. Irrespective of which exploitative agent they posit as dominating, these models concur in regarding the exploiting agent as parasitic and as a fetter on the productive forces. They also concur in regarding exploitation as leading to (formal or disguised) proletarianization.

Another assumption which was shared by many, but far from all, of the participants in the mode of production debate was that the State had mainly one role, that of conserving the existing relations of production. Thus they were led to look for mainly economic factors as driving forces for the development of capitalism in Indian agriculture. The theme running through this chapter, that of State intervention, leads us to exactly the opposite conclusion. The process of development that we have documented is not driven by economic forces alone; on the contrary, State intervention has been strategic in promoting the process. Thus, we can conclude that the traditional focus on the State as an upholder of status quo, as an ultimate guarantee for the preservation of the existing relations of production is misleading in our case. The role of the State must be seen as more complex, not only as conserving, but also as transforming the relations of production.

Now our criticism of the assumptions shared by many participants in the debate should not be taken as a reversal of these assumptions. To put it plainly, questioning the stagnation of Indian agriculture does not imply asserting its all-out dynamism. And equally plainly, the failure to document a polarization and proletarianization process in our area should not be taken as an assertion of homogeneization and peasantization.

This 'development' can be interpreted in terms of three contradictions, and the balance between them: the contradictions between (*a*) landlords and peasants over the land; (*b*) agrarian commodity producers and the State over policies affecting the terms of trade between agriculture and industry; and (*c*) the contradiction between agricultural wage labourers and their employers, especially the capitalist farmers.

In the late 70s and 80s, the first contradiction, that over land, has somewhat receded into the background. As we have seen, in our area landlordism has been partially displaced. Although this is not a general process, characteristic for the whole of India, it is probably one which has affected many parts of the country. In our case it led us to modify our views of land rent as an obstacle to capitalist development in agriculture, and similarly to modify our views on the effects of land reforms—in our area the indirect consequences seem to outrun the direct effects with important repercussions on landownership and tenancy.

With an unavoidable measure of simplification we may put it as follows: in the past the contradiction over land led to many confrontations, of which the tenants' movement in our area is an obvious example. The incomplete displacement of landlordism has partly defused this contradiction. A partial defuse obviously implies what is says—the struggle over land is not over, but in areas similar to ours, the voltage has been reduced; and thus the possibilities of its lighting a prairie fire have dimmed. The maoist scenario of an impending peasant revolution in India (cf. Myrdal, 1980) seems remote. The prognoses about the green revolution turning red seem ill-founded.

Instead, it is clear that the contradiction between agrarian commodity producers and the State over policies affecting the terms of trade between agriculture and industry has come to the fore. As we have pointed out, this is a contradiction which potentially unites the middle and rich peasantry with the capitalist farmers thus threatening to deprive the rural proletariat of their potentially most important allies, the middle peasantry. For those who have followed the Indian political scene since the late 70s, the increasing importance of farmers' movements comes as no surprise. In some parts of the country, more or less the entire peasantry has been mobilized into large-scale agitations on the issue of 'remunerative prices'. This contradiction has sharpened in the context of an acute economic crisis, and especially a fiscal crisis of the Indian state.

But poor and middle peasants are obviously unstable partners in the alliance mobilized by the farmers' movements. They are not only commodity-producers but also suppliers of wage labour. For them the third contradiction mentioned above, that between agricultural wage labour and their employers, is at least as important. Add to this, that although landlordism has been partially displaced in many areas, the land question remains conflict-ridden.

The agrarian scene is thus complex and contradictory. Which contradiction will predominate politically is not merely a question of the fluctuations in economic parameters like prices and wages, but also of the organizational strength of the various agrarian movements. Is it possible for militant class movements based on agricultural labourers and poor peasants to rally other sections of the peasantry around themselves by taking up the issue of 'remunerative prices' while continuing to fight for fundamental land reforms and for the demands of agricultural labour? In that case the farmers' agitations may well peter out. At the moment, however, the farmers' movements are catching the headlines, and the uneasy question is: What will these movements bring to the rural proletariat—further pauperization or a share in the increasing wealth?

This study has no answers to these questions, but we hope that it can contribute to finding answers by demonstrating the structural transformation that has occurred or is under way in Indian agriculture, and by suggesting some methodological tools for the further study of that process.

Glossary of Tamil and Indian English Terms

(The phonetic spelling of Tamil words is given within brackets.)[1]

al-varam	(āḷ-vāram) share-cropping where the landlord meets all costs of production. Tenant supplies only labour
anna	(aṉṉa) previously used coin, there are 16 annas to a rupee
Asari	(ācāri) Tamil caste
atta coolie	(atta kūli) day labourer, daily wage
ayacut	(āyakaṭṭu) feeding area of a tank or canal
benami	(benamī) a gift transaction, often used in connection with fictitious grants of land to avoid ceiling laws
brahmadeya	(Sanskrit: brahmadeya) gift to Brahmins, specifically, a grant of village income and management to Brahmins
Brahmin	(Sanskrit: brahmin) or *brahman*, a person belonging to the *Brahmin varna* in the caste system
bund	(Anglo-Indian, Hindustani *band*; of Persian origin) any artificial embankment, a dam, bank, dyke, or causeway
casuarina	a quick growing tree, suitable for infertile sandy soils
Chakkiliyan	(cakkiliyaṉ) an untouchable Telugu-speaking caste
Chettiar	(ceṭṭiyār) Tamil caste

[1] We want to thank Ruth Waldén at the department of Afro-Asian languages at Uppsala University for help with this list.

Chola	(cōḻa) rulers in a region in central Tamil Nadu c. 900–1200 A.D.
coolie	(kūli) day labourer
cumbu	(kampu) type of millet (Latin: *Pennisetum typhoide*)
Devendra Pallan	(tēvēntirappallaṉ) Untouchable Tamil caste
dharma	(Sanskrit: dharma) religious term meaning 'world order', also 'duty' accruing to a member of a particular caste
DMK	(drāviṭa muṉṉētra Kaḻakam) the Dravidian Progress Party
gingelly	or gingili, another name for sesame
gopuram	(kōpuram) temple tower
grama	(kirāmam) village
Harijans	term, meaning the children of God, coined by Mahatma Gandhi to denote members of the untouchable castes
HYV	high-yielding variety
jajman	(Sanskrit: Yajman, Tamil: ecamāṉaṉ) patron in the social organization of production in pre-colonial India (cf. jajmani system)
jati	(jāti or cāti) caste, endogamous unit
kai	(kai) as in *kai varam*, meaning a leasing arrangement where the tenant contributes only manual labour
kalam	(kalam) local measure
kamin	(kammin) 'servant' to the *jajman* in the *jajmani* system
karnam	(kaṇakkaṉ) village accountant
Kattu Naickan	(kāṭṭu nāyakaṉ) Tamil caste
kavalai	(kapilai) the bullock-drawn device used for lifting water from irrigation wells
kavalkaran	(kāvaṟkāraṉ) watchman
Kongu Kavundan	(koṅku kavuṇṭaṉ) Tamil caste
kothu	(kottu) contract, form of gang labour organization (cf. chapter 5)
kothukarar	(kottukkārar) leader of a *kothu* gang
Kshatriya	(kṣatriya) the next highest varna in the caste hierarchy
kuli	(kūli) cf. *coolie*

kuthagai	(kuttakai) lease with fixed rent, either in cash or kind
marakkal	(marakkāl) local measure
mirasi	(Tamil: mirācu, of Persian origin) ownership rights in land (cf. next entry)
mirasidar	(mirācutār) a customary privileged landholder
Mudaliar	(mutaliār) respectful title used for many castes
munsiff	multi-function village level State official
Muthuraja	(mutturācar) Tamil caste
Naickan	(nāyakaṉ) group of Telugu castes
nanjei	(nañcai) land irrigated from canal or tank
nirpaichi	(nīrpāycci) waterman
Padayachi	(paṭaiyāṭci) Tamil caste
palaiyakaran	(pāḷaiyakāraṉ) local warlords in the Chola period, also called *poligars*
Pallan Moopan	(pallaṉ mūppaṉ) Untouchable Tamil caste
Pallava	(pallava) rulers in a region in northern Tamil Nadu c. 300–800 A.D.
panchayat	(pañcāyattu) caste council, village council
Pandithan	(paṇṭitaṉ) title, e.g., assumed by barbers
pangu	(paṅku) share, particularly in wet land
pannai	(paṇṇai) estate, owned by a *pannaiyar*
pannaiyal	(paṇṇaiyāḷ) farm servant
Paraiyan	(paṟaiyan) Untouchable Tamil caste
patta	(paṭṭa) land ownership deed
pattadar	(paṭṭatāri) a holder of a landownership deed
Pillai	(piḷḷai) Tamil caste name
pogiyam	(pōkkiyam) land mortgage
ponni	(poṉṉi) paddy variety
poovan	(pūvaṉ) banana variety
poramboke	(puṟampōkku) common land
punjei	(puñcai) rainfed land
ragi	(ragi) a type of millet (Latin: *Eleusine coracana*)
rasthali	(rasṭāḷi) banana variety
ryot	farmer
sabha	(sabhā) council, e.g., council of shareholders in *mirasidari* village
samai	(cāmai) a type of millet (Latin: *Pannicum miliare*)
samba	(campā) paddy variety, sown in main (*samba*) season

sangam	(saṅgam) organization
sanskritization	term coined by M.N. Srinivas referring to the adoption of brahministic codes of conduct by lower castes
solam	(cōḷam) sorghum (Latin: *Sorghum vulgare*)
Soliya Vellala	(cōḻiya veḷḷāḷa) Tamil caste
sudanthiram	(cutantiram) a system of payment for village servants in which they get customary shares or kind payments from the harvest of the cultivators
Sudra	(sūdra) the fourth varna in the caste hierarchy
sukkuman	(cukkumaṇ) alkaline soil
taluk	(tāluk) administrative subdivision of a district
tenai	(tiṉai) a type of millet (Latin: *Setaria italica*)
thali	(tāli) the marriage ornament of the bride
thoppu	(tōppu) orchard
thottam	(tōṭṭam) land irrigated from well
Udaiyan	(uṭaiyān) frequently a dominant caste in the dry ecotype
ul-nanjei	(uḻ nañcai) high quality land, literally 'arable land'
Uppiliya Naickan	(uppiliya nāyakaṉ) a Telugu caste
uppuman	(uppumaṇ) saline soil
ur panchayat	(ūr pañcāyattu) village council
Urali Kavundan	(ūrāḷi kavuṇṭaṉ) Tamil caste, frequently a dominant caste in the dry ecotype
vaisya	(vaiśya) the third varna in the caste hierarchy
valan	(vālā) a traditional paddy variety
Valluvan	(valluvaṉ) a subcaste among the *Paraiyan*
varagu	(varaku) a type of millet (Latin: *Paspalum scrobicutalum*)
varam	(vāram) share-cropping
varamdar	(vāramdār) share-cropper
varna	(Sanskrit: varṇa) the *varna* order classifies the castes into four estate-like status groups
vellaiman	(vellaimaṇ) alkaline and saline soil
Vellala	(veḷḷāḷa) Tamil caste name
vettiyan	(veṭṭiyāṉ) village servant, responsible among other things for the measurement of harvest yields
Yadava Konan	(yātava kōṉāṉ) Tamil caste

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