PART TWO

THE DETERMINATION OF GEOGRAPHICAL PATTERNS OF LAND TENURE

The conditions of (the peasant's) tenure vary widely from region to region, and even from village to village. According to figures published by the Department of Agriculture and Commerce for 1918, about 50% of the peasants were occupying owners, 30% were tenants, and 20% owned part of their farm land while renting the remainder. The differences in the proportions of the three classes in different provinces were, in each case, striking. The proportion of owners was highest in the northern provinces, somewhat less in the north-eastern, less still in the central, and least in the southern. . . .

The distribution of different forms of tenure is influenced by the past history, soil conditions, types of farming and general economic environment of different parts of China. Occupying ownership is least prevalent in the proximity of great cities where urban capital flows into agriculture — in the Canton delta 85 per cent of the farmers, and in the neighbourhood of Shanghai 95 per cent, are said to be tenants — and most general in the regions but little affected by modern economic developments. The provinces of Shensi, Shansi, Hopei, Shantung and Honan, where some two-thirds of the farmers are stated to be owners, . . . have been little touched as yet by commerce and industry. The yield of the soil is too low to make it an attractive investment to the capitalist, while the farmer has not the resources to rent additional land. In the south, where the soil is more productive, agriculture yields a surplus; the commercialization of economic relations has proceeded further; and both the inducement and the ability to invest capital in land are accordingly greater.

R. H. Tawney. 1932, p. 34, 37-38.
Land and Labour in China. London: Allen & Unwin.

CHAPTER 4 A Model of How Productivity and Population Density Determine Land Tenure Patterns

4.0 Introduction to Part Two

In Part One I presented a rationale for why landownership distribution in agrarian societies practicing partible inheritance might be more or less constant: Repeated partition of large estates results in a particular profile of distribution, with the top quarter of the population owning about three-quarters of all land. I also proposed that this profile of landownership may vary only a little regardless of differences in productivity, surplus, or rate of rent, because of a rough balance between processes of reproduction and rates of exploitation. The implications of such an equilibrium for patterns of reproduction, and how these might be seen in empirical data, were the subjects of Chapters 2 and 3.

The proposition is that the profile of landownership is stable relative to the average ownership per capita, though the value of that average ownership in terms of grain and other products of the land may vary greatly. These are very large hypotheses, but they are not entirely intractable or beyond empirical verification. Here in Part Two I will deal with the landownership distribution per se, and in particular its manifestations in different forms of land tenure.

The significance of the landownership distribution is that the inequality of that distribution spawns a set of social relations of production in which the owners of land extract a large part of the fruits of the labor of those who lack land. A measure which tells us the extent of these exploitative relations, and which indirectly reflects the landownership distribution, is the proportion of all land that is involved in the land/labor market, i.e. that is tilled with the labor of someone other than the owner.

The two main forms of the land/labor market are renting out the land to tenants, and farming with the help of hired labor. The differences lie in control of the process of production, in rights to variable portions of the product, and in secureness of the relationship. Generally, by providing some of his own and family labor, at least in the form of supervision, the landowner utilizing hired labor takes a larger portion of the product than he would in renting out the land. On the other hand, the intensification of

cultivation and self-exploitation by tenants may produce a greater total product. The two forms are not totally distinct; for example, tenancy in which the landlord provides all the inputs and the tenant must hand over 70-80% of the product is tantamount to the low wages of hired labor. Debt peonage and land mortgage with periodic repayment in kind are among the numerous legal arrangements that are in effect forms of tenancy or service as hired labor. Later on in Chapter 7 we will investigate the conditions of the relative advantages for the landowner in the choice between renting out and farming with hired labor, but for now it is merely significant that both represent forms of exploitation that arise from the inequality inherent in the landownership distribution.

In seeking to measure the underlying landownership distribution, we must get beyond a myriad of uncertainties in dealing with survey materials on farm size: sampling representability, absence of landlords and agricultural laborers from surveys, and variation in land quality and productivity, to mention only the major ones. Despite these uncertainties, which will be discussed at length in good time in relation to the Chinese data to be examined, I discern a relationship between landownership distribution and the proportion of land on which others' labor is exploited, a relationship that can be summarized in two simple principles:

- There is an absolute level of income in agricultural product at which, on the average, owners of land will choose to substitute others' labor for their own and family labor, rather than seek additional income. This is an avoidance of physical drudgery, a valuation of the social status of leisured gentleman, and/or a shift to occupations in trade or money-lending that utilize capital. Whatever the social causation, the result is that there is a particular level of landownership yielding "sufficiency", and thus the assignment of the land to be worked by others' labor.

- The high cost of transporting bulk staples to market in a pre-industrial society can greatly diminish the exchangeable income that can be obtained from a given amount of agricultural production. This somewhat affects the level of income in agricultural product at which landowners can forego physical labor, but even more it determines the level of income at which a landlord can depart from the rural sector where the income is collected. Population density is the simplest proxy for measurements of transport cost in judging this effect. Substituting cash crops for staples in exports might seem to mitigate the friction of transport (i.e. products such as cotton, silk, and opium have high value with low weight), but the need for local self-sufficiency under conditions of difficult transport and frequent crop failure, as well as the consumption needs of population concentrations, seem to preclude extensive substitution.

Model Two, constituting Chapter 4 of this thesis, will explain the rationale and operation of these principles in determining land tenure patterns. As before, the model is an abstraction that highlights certain central features while keeping constant many things

that might vary in the real world. However, I believe that the features analyzed are the main source of determination of land tenure patterns.

In the subsequent sections of Part Two, Chapters 5 through 7, we will take up issues that are related to the determination of the relations of production on the land, and the subsequent effect of land tenure forms on occupational structures and demographic processes. Chapter 5 first reviews some of the debates on land inequality and land tenure for prerevolutionary China. Then it takes up the basic hypotheses posed in Model Two, examines empirical data, and compares these with the model. The central issues are the effects of productivity and population density on land tenure. These are investigated mainly by interregional comparisons of the Buck survey data.

Chapter 6 follows out the implications of the land tenure patterns. This is a wide-ranging chapter that seeks to integrate the insights into land tenure patterns with the population processes described in Part One. The intermediary between these two is the occupational structure that is spawned by the relations of production on the land, an occupational and social structure that is not just contained within the rural sector, but is also shaped by the unseen town/urban sector fed with the surplus siphoned off from the land. In this analysis we explore marketing, side occupations and migration of the members of the farm families, and demographic processes such as sex ratios, age at marriage, and birth rates.

Chapter 7 returns to the first principle proposed above in the determination of land tenure patterns, that there is an absolute level of income in agricultural product, the "sufficiency threshold", at which owners of land will choose to substitute others' labor for their own and family labor. The chapter marshalls empirical evidence of its operation, and specifies the geographical influence on whether land is farmed by hired labor or given over to tenants.

4.1 A Just-So Story of Landownership Distribution and Land/ Labor Relations: The Proportion of Land Farmed by Non-Owner

Let me begin here another "just-so" story that will illustrate the rationale for the relationship between landownership distribution and the proportion of land on which the labor of others' is exploited.

Lin Village is an imaginary settlement in a small river valley on the edge of the Szechwan Basin; it enjoys plentiful rainfall and produces enough rice for its inhabitants although there is no more land suitable for expansion of cultivation. In 1925 it is of middling prosperity. There are a hundred families that derive their livelihood from the village, though some are not always resident there. There are one hundred hectares of farmland tilled by the residents of Lin Village, and each produces a standard 2200 kilograms of grain or its equivalent in food value annually, in total double the minimum consumption needs of the villagers, so there should be plenty to go around. But land ownership and thus its product is unevenly enjoyed. Some of the families are big landowners and some are self-sufficient in land, but half don't own even enough land to provide basic food needs. Let us be more specific and attach some numbers to this description.

We have first collected detailed information on 20 of the families present in 1925. For convenience in this just-so story, all the families are the same size. Each has the equivalent of five adults in terms of consumption needs. The minimum consumption for a family of five is 1100 kg. of grain-equivalent annually, because 220 kg. per capita is the minimum for bare subsistence, consisting of an intake of virtually all starch staples and only a few percent expenditure on clothing, housing, medicine, etc.

The landownership distribution of these twenty families is very close to that which would be expected from repeated partible inheritance; the richest 25% of families, that is, the five Ai, Bai, Chen, Deng and Fu families, own 75% of land, a total of 15 out of 20 hectares. The twenty families all have different names because three generations ago Lin Village was a frontier garrison town; that makes it easy to distinguish them.

Dataset 4.1.1 Hypothetical Lin Village, 20 Families, 1925: Landownership Distribution and Product per Capita for Each Family, at 2200 Kg. per Hectare

There are a total of 20 families and 20 hectares of land producing 2200 kg. per hectare, or an average of 440 kg. per capita annually.

Family Number	Family Name	Land Owned (hectares)	Product per Capita on Own Land (kg.)
1	Ai	6.40	2816
2	Bai	3.20	1408
3	Chen	2.40	1056
4	Deng	1.70	748
5	Fu	1.30	572
6	Gong	1.00	440
7	Huang	0.85	374
8	Jin	0.70	308
9	Kung	0.55	242
10	Liu	0.45	198
11	Mao	0.35	154
12	Ni	0.30	132
13	Peng	0.25	110
14	Qiu	0.20	88
15	Su	0.15	66
16	Tang	0.10	44
17	Wang	0.06	26
18	Xu	0.04	18
19	Yang	0.00	0
20	Zeng	0.00	0

With production at 2200 kilograms of grain per hectare, the top six families own enough land to meet or exceed the standard for a comfortable living — 440 kg. of grain-equivalent per capita, which is just double that necessary for bare subsistence. The next three families, Huang, Jin and Kung, are below this level but can still feed themselves from the staples produced on their own land, since their production exceeds the minimum necessity of 220 kg. per capita. The remaining eleven families, those owning less than half a hectare, Liu through Zeng, fall woefully short. This is the case even though the overall level of agricultural production is high. We can suppose they farm others' land as tenants or hired labor, and do crafts and other labor off the farm, in order to subsist. However, in this just-so story, we, like neo-classical economists, are not much concerned with their plight. That will come in later chapters.

We are concerned with the leisure of the well-to-do. Those whose family members obtain as much as 440 kilograms each from their own land's production can live well, eating to surfeit and enjoying meat raised with their own grain and luxuries purchased

with the marketed surplus. This level of ownership provides the "sufficiency threshold" of income; beyond this point the peasants on the average prefer leisure to more consumption. The family surnamed Gong has just this level of production, but they must labor hard to farm their land. The Fu family, however, can still achieve an income in kind of 440 kilograms per capita by letting out half a hectare at the prevailing share-cropping rent of 40% of the crop, while farming the remaining 0.80 hectare with their own muscle power.

Dataset 4.1.2 A. Hypothetical Lin Village, 20 Families, 1925: List of Six Largest Landowners and Land Farmed by Non-Owner at 2200 Kg. per Hectare

Family No/Name		Land Owned (hectares)	Land Let Out (hectares)	Own Land Farmed (ha.)	Income Per Capita (kg.)
1	Ai	6.40	6.40	0.00	1126
2	Bai	3.20	3.20	0.00	563
3	Chen	2.40	2.33	0.07	440
4	Deng	1.70	1.17	0.53	440
5	Fu	1.30	0.50	0.80	440
6	Gong	1.00	0.00	1.00	440

A total of 13.6 hectares of land out of 20 are tilled by non-owner, i.e. 68%.

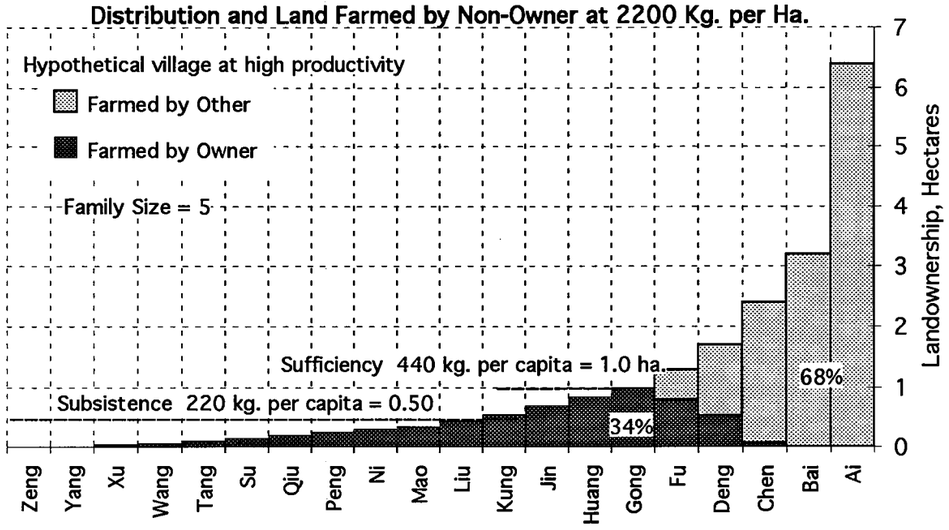
Only the top five families can let out land and thus substitute leisure for income. (We will simplify the story for the time being and neglect to differentiate between handing over the land to tenants, and hiring agricultural laborers. I will use the term "let out" to include both. "Landlord" then is used here with the Chinese sense *di zhu*, which may be either a landowner living off rents or a managerial farmer with extensive holdings We will also ignore possible labor-saving variations such as farming more extensively and enjoying less product.) The landownership distribution of the full twenty families and the amount of owned land they farm and let out is shown in Dataset 4.1.2 B. No doubt the land let out is farmed by some of the land-short, but, again, we are not concerned with that at present.

A significant social feature of landlords and part of the value of freedom from manual labor is that although landlords usually maintain a home in the ancestral village, and may live there part of the time, they can utilize their leisure status to participate in wider society in the market town, whether in political, commerical, or cultural realms. Among the landowners of Lin Village only the Ai and Bai families reach the status of gentlemen and rentiers with complete freedom from physical labor. They maintain

houses in the market town; the patriarchs can frequent teashops and provide tutors for sons in the hopes they will become literati.

Projecting from this 20-family sample, 68 out of a hundred hectares of the Lin Village lands are land let out to others, whether to hired labor or tenants. It so happens then that there is plenty of land for the bottom half of the population to work, and only the laggards and the disabled go hungry.

Dataset 4.1.2 B Lin Village, 20 Families 1925: Landownership Distribution and Land Farmed by Non-Owner at 2200 Kg. per Ha.



4.2 Variation in Level of Production and its Effect on the Proportion of Land Farmed by Non-Owner

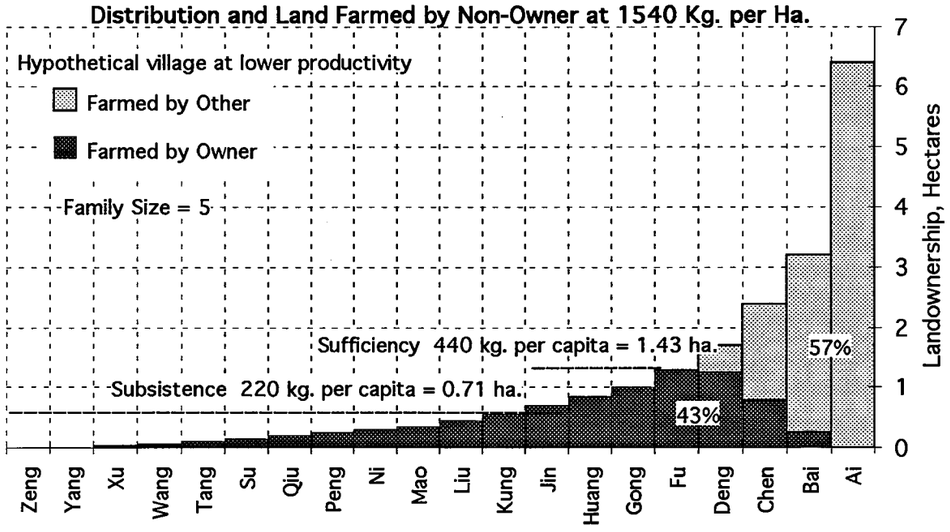
But good times in Lin Village do not last forever. In 1935 a severe flood carries away the topsoil of the valley, topsoil enriched by generations of carefully-applied "nightsoil", a.k.a. human manure; and the receding waters deposit sand in its stead. There is a 30% long-term drop in the productivity of the soil, from 2200 to 1540 kg. per hectare per annum. This still allows 308 kg. of grain-equivalent per capita for the whole village, but the effects of maldistribution are such that not just eleven families, but thirteen out of the twenty families we are studying, fall below self-sufficiency on their own land. A marked change in land/labor relations is a further consequence: The Bai family finds that it cannot achieve the desired 440 kg. level of consumption on rents alone, and takes back 0.25 hectares of land from their tenants to farm themselves; they still rent out 2.95 hectares. The Fu family gives up leisured status altogether, and the Chens and Dengs also let out less land. Altogether, 2.18 hectares revert to the owner; now there are 11.42 hectares of land owned by landlords, i.e. 57.1% of land is let out instead of 68.0%.

Dataset 4.2.1 A Lin Village 1935: Proportion of Land Farmed by Non-Owner at Production Level of 1540 Kg. per Hectare (Average 308 Kg. per Capita)

Family No/Name		Land (Ha.) Owned	Land (Ha.) Let Out	Own Land Farmed (Ha.)	Income (Kg.) Per Capita
1	Ai	6.40	6.40	0.00	788
2	Bai	3.20	2.95	0.25	440
3	Chen	2.40	1.62	0.78	440
4	Deng	1.70	0.45	1.25	440
5	Fu	1.30	0.00	1.30	400
6	Gong	1.00	0.00	1.00	308

A total of 11.42 hectares of land out of 20 are tilled by non-owner, i.e. 57%.

Dataset 4.2.1 B Lin Village, 20 Families 1935: Landownership Distribution and Land Farmed by Non-Owner at 1540 Kg. per Ha.



This is as shown in table form in Dataset 4.2.1 A here, and in chart in Dataset 4.2.1 B, set on the same page with Dataset 4.1.2 B above for comparison.

The simple principle is that the higher the product per capita, the greater the proportion of land that is let out. The underlying conditions for this relationship are a

distribution of landownership that is constant relative to the average, and a set threshold of sufficiency beyond which freedom from manual labor is preferred to more income.

If we apply a mathematical simulation, using the same sufficiency threshold and the same landownership distribution of twenty families in Lin Village over a wider range of levels of agricultural production, we find a positive but not a linear relationship, as shown in Dataset 4.2.2: The proportion of land let out increases with product per capita, but at a decreasing rate, i.e. the relationship is a positive, slightly convex curve. The range of average product per capita covered here varies from just barely subsistence to three times subsistence.

Dataset 4.2.2 Hypothetical Lin Village, 20 Families: The Relationship between Product per Capita and Percent of Land Farmed by Non-Owner.

Product per Ha. (kg.)	Product per Capita (kg.)	Land Farmed by Non-Owner
1100	220	45.3%
1320	264	51.2%
1540	308	57.1%
1760	352	61.8%
1980	396	65.2%
2200	440	68.0%
2420	484	70.6%
2640	528	72.6%
2860	572	74.8%
3080	616	76.6%
3300	660	78.4%

It is striking to discover in this supra-historical view that even when there is no net surplus, that is, when average product per capita is just at bare subsistence — 220 kg. grain-equivalent per capita —, there is still a basis for exploitative land/labor relations, mainly because the biggest landowning family, with its holding of 32% of all land, can afford to foreswear all physical labor, while the mass of the population is land-short.

4.3 The Cost of Leisure and Differentiation in the Forms of Land/Labor Relations

So far in this just-so story, letting out of land has been designated the only land/labor relationship for the sake of simplicity in calculating the total land which is farmed by other than the owner. However, it is time to take another step towards the complications of real-life environments. We can see in the above Dataset 4.2.1 at 1540 kg. production per hectare in 1935 that the Ai family lets out all its holdings, whereas the Bai, Chen and Deng families let out part and farm part of their own land. At the earlier 1925 productivity of the land (2200 kg.) both the Ai and the Bai families could entirely absent themselves from Lin Village and merely send a bursary to collect rents. This gave them a different social character from other large landowners who needed to stay in the village to farm some residual parcels. In general, those remaining in the village and going out to the fields, if not plowing themselves, still smell of the earth; they are not of the status of leisured gentlemen. They obey the routine of the seasons and know the lore of the crops. It is still within their competence to manage the process of agricultural production, though they avoid most of the exertion of tilling and harvesting their large estates by hiring and supervising teams of long-term or seasonal workers.

At this point we designate the local landlords to be mainly managerial farmers (i.e. farming largely or partly with hired labor, which generally lets the landowner retain more of the product than renting to tenants), and assume that the absentee landlords are rentiers (which they almost certainly are since they are absent from the scene of production, and hiring overseers of hired labor would probably eat up the advantage over rents). This makes sense because the supposed part-farmer, part-landlords might as well seek the greatest profits they can in the village, if they cannot take up the opportunities and status of the market town. However, this is basically a simplification that facilitates further comparisons.

Datasets 4.3.1 A and 4.3.1 B differentiate between landlords who can afford to be absentee landlords, and those who, at the prevailing 40% rate of rent, must farm some of their land themselves in order to maintain a plentiful material life. The variation in product per capita is the same as before, and the landownership distribution is virtually the same, except now the experiment has been carried out on the entire 100 families of Lin Village with a finer gradation of ownership sizes, so that we can see more subtle

differences in numbers of large landowners who absent themselves at different levels of production.

Dataset 4.3.1 A. Hypothetical Lin Village, 100 Families: Numbers of Absentee Landlords and Local Managerial Farmers at Different Levels of Product per Capita and Land Farmed by Non-Owner

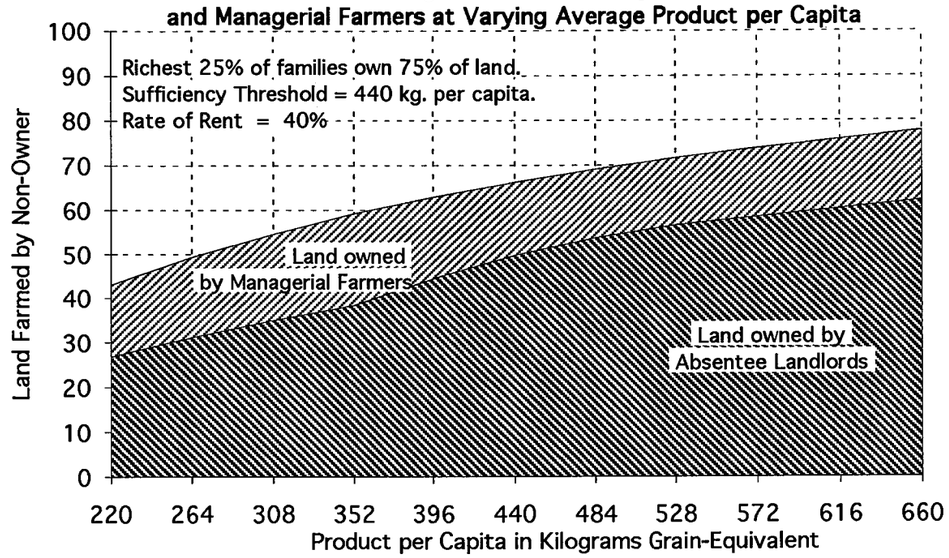
Total 100 hectares of land and 100 families; 25% richest own 75% of land.

Product per Capita	Absentee Landlords Number	Absentee Landlords Rent Out	Managerial Farmers Number	Managerial Farmers Farm w/Hired	Total Farmed by Non-Owner
220	4	26.8	10	16.1	45.3
264	5	31.1	12	18.2	51.2
308	6	34.9	15	19.7	57.1
352	7	38.3	16	20.9	61.8
396	9	44.3	17	18.6	65.2
440	11	49.7	18	16.4	68.0
484	13	53.6	19	15.4	70.6
528	14	56.5	20	15.0	72.6
572	15	58.4	21	15.3	74.8
616	16	60.3	22	15.4	76.6
660	17	62.2	23	15.4	78.4

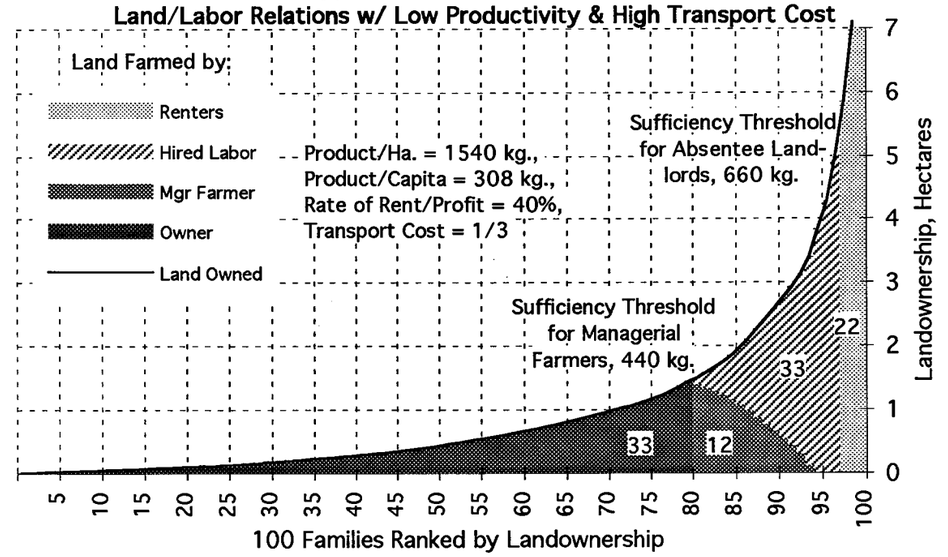
The same is shown graphically in Dataset 4.3.1 B. Land rented out by absentee landlords, which is the major portion of land, increases steadily as the number of absentee landlords increases with higher average product per capita — but as smaller and smaller landlords are incorporated into the class of absentee landlords, the rate of the increase in quantity of rented land slows. The table and figure also make it clear that the amount of land let out (i.e. farmed with hired labor) by managerial farmers does not vary greatly with average product per capita, other things being equal; in fact it tends to decrease slightly, even though the numbers of managerial farmers still rise. This is easy to understand, because the managerial farmers are a class that is always sandwiched in between the absentee landlords and the owner-farmers — i.e. those who are below the landholdings needed to live well off rents alone, but above mere sufficiency.

The total of land let out by local managerial farmers and by absentee landlords is of course the positive and slightly convex curve of land farmed by non-owner, as seen before in Dataset 4.2.2.

Dataset 4.3.1 B Lin Village: Land Let Out by Absentee Landlords and Managerial Farmers at Varying Average Product per Capita



Dataset 4.4.2. Hypothetical Lin Village, 100 Families, 1940: Land/Labor Relations w/ Low Productivity & High Transport Cost



4.4 The Friction of Transport and its Impact on the Forms of Land/Labor Relations

Let us take the just-so story of Lin Village a step further. Lin Village lies in a small river valley, and ordinarily the grain to be sold from the village is sent to market in small barges to a town that is some ways down the river. Product per hectare is still the reduced 1540 kilograms per hectare, i.e. 308 kg. per capita. After 1935 the six remaining largest landowners of the one hundred families of Lin Village (as shown in Dataset 4.3.1 A for 308 kg.) live in the market town and transport all of the crops they receive in rents to the market there. With downstream water transport the cost of marketing the grain has been negligible. Their holdings and the rents they receive are listed in Dataset 4.4.1 below. But a few years after the great flood of 1935, which also washed big boulders down into the river, there is a long dry spell, and by 1940 the river becomes too shallow and obstructed to serve for navigation. The labor to transport the grain to market by wheelbarrow on small winding paths costs about one-third of the grain itself. So for 1500 kilograms of grain a landlord brings out of the village, he receives only the cash value of 1000 kilograms in the town.

Dataset 4.4.1 Hypothetical Lin Village, 100 Families, 1940: Quantity of Rents Received by Six Absentee Landlords at 40% Rent and 1540 Kg. Production per Hectare, Less 33% Cost of Transport to Market Town.

Landlord Number	Land Owned (ha.)	Product of Land (kg.)	Rent Rec'd per Capita	Rec'd after Transport
1st	8.92	13,741	1099	732
2nd	7.02	10,813	865	576
3rd	5.86	9,027	722	481
4th	5.00	7,705	616	411
5th	4.27	6,573	526	350
6th	3.83	5,891	471	314

Under these 1940 conditions only the three largest landowner families out of six are able to achieve an income of 440 kg. per capita for town living. The other three close up their houses in the town and move back to the village, where it is easier to eat off the rents. In fact they take back some of their lands when tenants' contracts expire, to gain a greater profit with hired labor. So now in Lin Village only 21.8 of the one hundred

hectares is rented land belonging to absentee landlords; five years before it was 34.9 hectares.

From this section of the Lin Village just-so story we can extrapolate this generalization: the higher the cost of bulk transport for marketing staples, the less the proportion of land that will be rented land. The logic of this is clearer if we view the "sufficiency thresholds" for use of hired labor and for status as an absentee landlord pegged against the landownership distribution for Lin Village, the standard one with the top 25% of population owning 75% of land.

Let us review the conditions that result in this outcome. Product per hectare is 1540 kg. grain-equivalent, and with a standard five persons per family, the average product per capita for all 100 families is 308 kg. Those families owning more than 1.43 hectares of land (440/308 = 1.43), which is necessary to supply 440 kg. per capita (the sufficiency threshold), can afford to hire in at least a little labor. One family owns almost precisely that amount, and lives well but only hires negligible labor. Twenty families own more than 1.5 hectares. As we saw in Dataset 4.4.1, with the high cost of transport it is necessary for a family to collect 660 kg. per capita in rents (at 40%) in the village in order to live a life of leisure in the town; only three families can manage that, those who own more than 5.36 hectares of land (660/40% / 308). The other seventeen families remain in the village and use just enough hired labor so that they can keep an income of 440 while enjoying as much leisure as possible; but most still have to do a little farming themselves.

As shown in Dataset 4.4.2, the result of this in the hypothetical 1940 Lin Village is a situation of land/labor relations in which hired labor works more land than tenant labor. Out of the total 100 hectares of land held in the village, there are 22 given over to tenants; managerial farmers own 45, on which nearly three-quarters of the work, or the equivalent of 33 hectares, can be attributed to hired labor; and the remaining 80% of the population has only 33 hectares to work as owner/operators. But if the use of hired labor could not be clearly seen — at times other than seasonal plowing, planting and harvesting, the fields might be empty, and only a few hired year laborers seen cleaning up the barns — , then a casual observer might say that about 95% of the families are owner-operators.

The sufficiency threshold for hiring labor is a floor that determines the minimum ownership which allows some freedom from manual labor in the village; as analyzed in

depth in Chapter 7, it seems to be fairly constant. But the second threshold, that for absentee landlord status, is very variable, and very sensitive to transport and marketing conditions. The wider the gap between the two, the more the range that will be occupied by managerial farmers or "rich peasants", those in between hard-working owner-farmer and fully leisured rentier status.

In general the cost of marketing is greater where water transport is lacking, and/or where population is dispersed and thus markets are farther away. Population density is the simplest proxy when there is insufficient information on cost of transport. Then in sum the effect of population density on the proportion of land rented out will be similar to the effect of increasing average product per capita: a positive relationship with decreasing slope. Commonly the two are conflated in live data, but we can separate the effects of the two in interregional comparisons with areas that have high productivity and low population density.

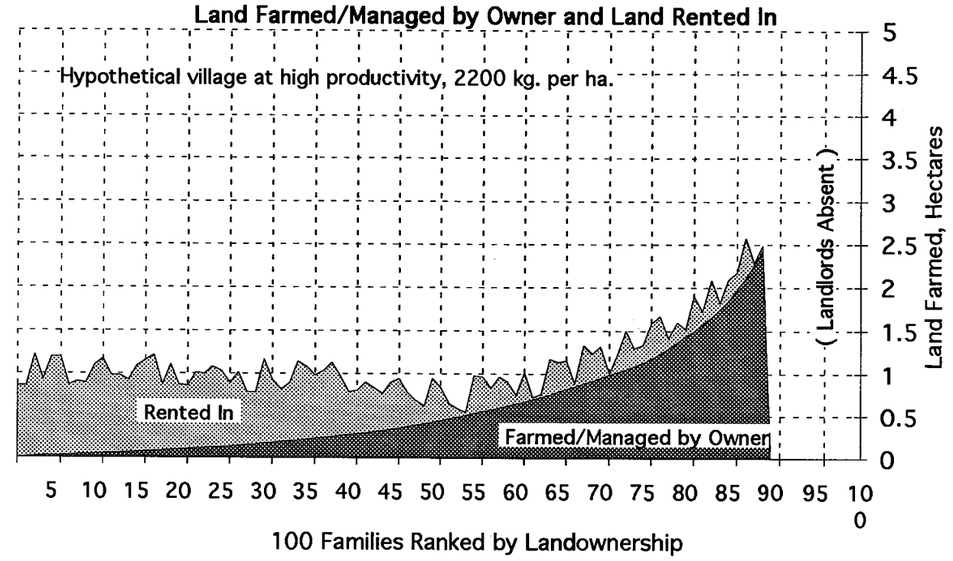
4.5 Hypothetical Surveys of a Just-So Village: From Landownership Distribution to Farm Size Distribution

With all these conditions, we are closer to describing a real village rather than just an abstraction in a just-so story. Let us suppose that Fei Hsiao-Tung directed a survey of Lin Village in 1925, before it suffered the disastrous flood, and there was also a 1940's re-survey by G. William Skinner after the flood and the consequent decrease in productivity and navigation on the river. As so often is the fate of real life surveys, the original survey schedules are no longer extant, and we have to rely on the published summaries, which were compiled by size of farm and were unable to include the landlord families which did not operate farms themselves.

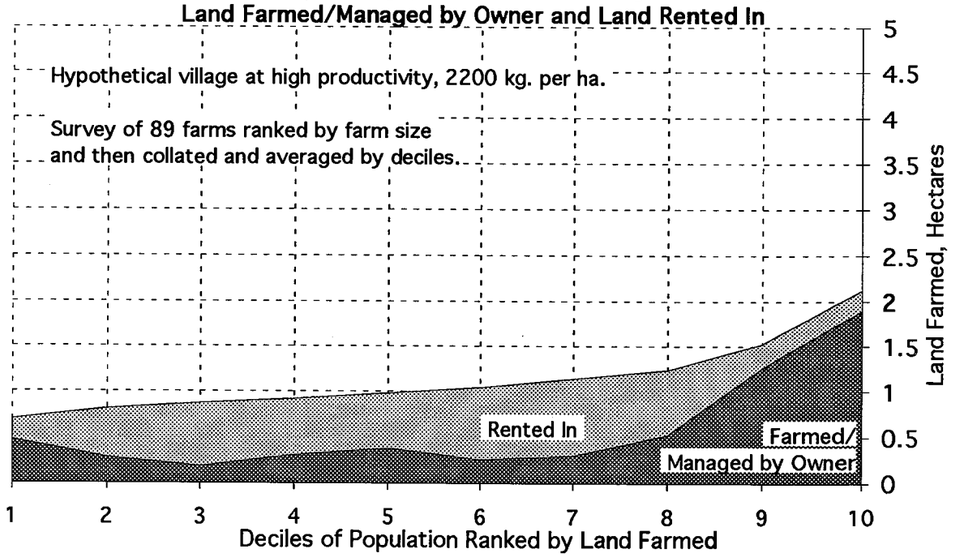
Miraculously, though, in 1990 an energetic native research assistant with special connections has managed to resurrect the original information of the two surveys. The enterprising Mao Qi-Sheng, the grandson of poor peasant activists and now hopeful of going to the United States in the guise of study, has done this by delving into the political dossiers of all the villagers from the land reform period, when a special effort was put into establishing how much land the landlords owned and assigning all the villagers to "poor peasant", "middle peasant" and "rich peasant" categories. This is a windfall for this hypothetical research project, one that will allow us to evaluate how the full landownership distribution compares with the results of usual survey methods.

Looking over the 1925 data and comparing land owned against land farmed for individual families, it appears that in general the landless or near-landless had to work the hardest to make ends meet, so that was the first factor determining which villagers enlarged their holdings with rented land. However, there was a partially opposing factor in operation, that the most impoverished were often those who lacked labor power due to poor health or absence of adult males, or who lacked the capital to invest in seed and fertilizer and expand production beyond bare subsistence. Also landlords tended to rent out to those with some personal or affinal ties. So there seems to have been some unevenness or multiple influences in assignment of rented land, especially for land that was rented in beyond the bare needs for survival, where some elements of ambition or thrift may have held greater sway. Such unevenness has been simulated in this just-so story by a random number generator (see the effect in Datasets 4.5.1 A and 4.5.2 A, following figures).

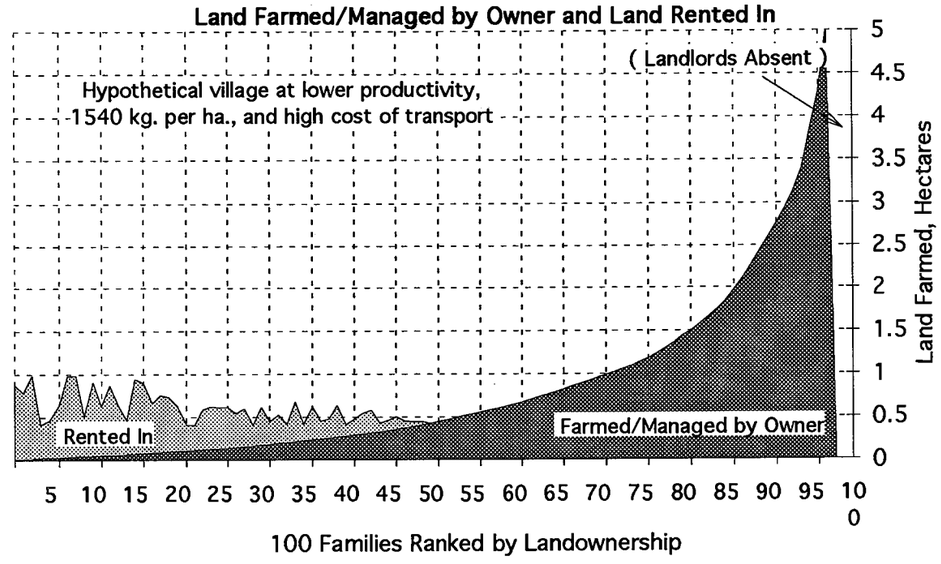
Dataset 4.5.1 A Lin Village, 100 Families Ranked by Land Owned,1925: Land Farmed/Managed by Owner and Land Rented In



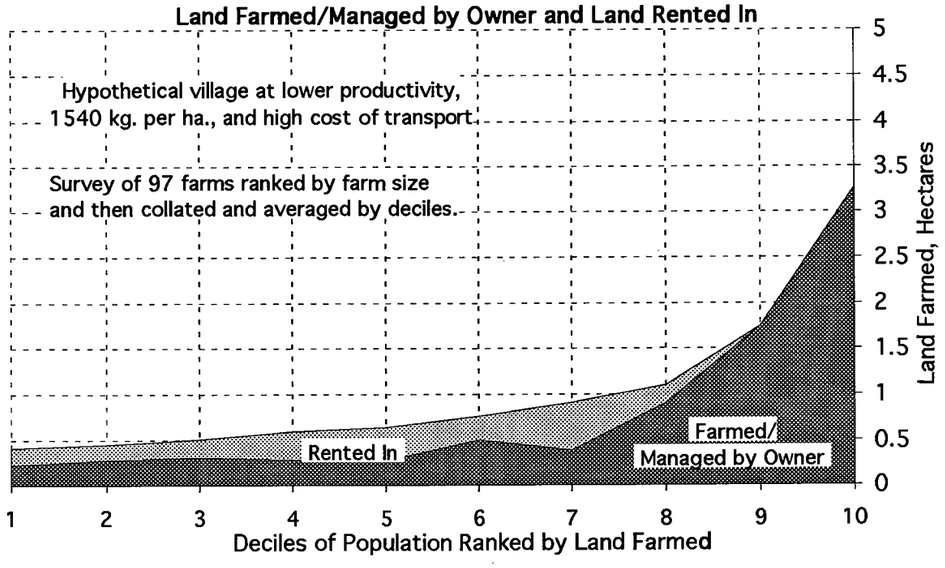
Dataset 4.5.1 B. Lin Village, 89 Farms Ranked by Farm Size, 1925: Land Farmed/Managed by Owner and Land Rented In



Dataset 4.5.2 A. Lin Village, 100 Families Ranked by Land Owned, 1940: Land Farmed/Managed by Owner and Land Rented In



Dataset 4.5.2 B Lin Village, 97 Farms Ranked by Farm Size, 1940: Land Farmed/Managed by Owner and Land Rented In



In 1925 when productivity was high, only half the population was short of land, and their need was satisfied with less than half of the 49.7 hectares available. Some large farmers rented in land as well; the rich soil repaid their additional labors well. Still, the poor had to rent in more land on average, because the less land they owned, the more they had to rent in, in fact nearly twice as much (at 40% rent, 1.66 ha. must be tilled to keep 1.0 ha. product), in order to meet both subsistence and rent payments. We, the 1990 researchers, find that the actual land/labor pattern of 1925 appears quite different in the 1925 field study summary, where the data was averaged by deciles of farm size. The former (100 families ranked by landownership, with land rented in stacked on top of land owned and farmed, and a blank space reserved for the absentee landlords, whose land is rented out) is shown in Dataset 4.5.1 A, and the latter (89 farms ranked by farmsize and averaged in deciles) is shown in Dataset 4.5.1 B. The scale of these figures is kept constant, with the y-scale for Land Farmed on the right extending up to 5 hectares, to aid visual comparison. In the summary it appears that farm size is not very unequal, and that anyway it is the medium-size farmers who rent in the most land; the smallest farmers are not necessarily the worst off. In fact, the more land that is rented out, the more the shuffling together of tenants, part-owners and owners in the same farm-size groups obscures the exploitative land/labor relations inherent under the landownership distribution.

The same comparison between individual data ranked by landownership, and the survey summary compiled into deciles by farm size, is made for 1940 as well. We can grasp the distorting transformation of the data by scanning Datasets 4.5.2 A and B (Figures), parallel to Datasets 4.5.1 A and B. In the 1940 data on individual families (see Dataset 4.5.2 A, Figure), the largest farm is 5 hectares; but when the farms are averaged by deciles, the largest farm size is only about 3.2 hectares.

Dataset 4.5.3 below gives the summary data further boiled down to quintiles of population.

Dataset 4.5.3. Hypothetical Lin Village: Measurements of Inequality from 1925 and 1940 Survey Summaries

Data compiled and averaged by farm size; 20% of farms in each group.

	1925 Survey of 89 Farm Families: Production at 2200 kg./ha.		1925 Survey of 97 Farm Families: Production at 1540 kg./ha.; high cost of transport.	
Farm Size Group	Farm Size, ha.	% Land Rented	Farm Size, ha.	% Land Rented
Large	1.82	14%	2.50	0%
Med. Large	1.19	65%	1.00	36%
Medium	1.01	68%	0.70	44%
Med. Small	0.89	73%	0.55	46%
Small	0.75	50%	0.43	42%
All	1.12	50%	1.03	22%

The contrast between the 1925 and 1940 summary surveys allows us to arrive at some deductions than will be useful later when we face real compiled surveys where there is no way to resurrect the original interview schedules[35]. In the comparison of these two hypothetical surveys, it seems that two apparently unrelated variables operate simultaneously: the lower the average product per capita, the greater the degree of rural inequality. As seen in Dataset 4.5.3 above, for the 1925 survey the largest farms are only 2.4 times the size of the smallest farms; for the 1940 survey they are 5.8 times as big. But in both surveys the underlying landownership distribution, encompassing the land owned by landlords, is the same. The two variables are not

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[35]Dataset 4.5.3 (Table) also serves to highlight some computational and measurement complications that we should be aware of in dealing with surveys. First, the fact that part of the population, whether landlords, hired laborers, or itinerant peddlers, is indirectly supported from the agricultural economy, but not caught in most farm surveys, means that there is some inaccuracy in the estimation of overall product per capita. From the summary survey data, it would be judged that product per capita of Lin Village in 1925 is 2200 kg./ha. x 1.1236 ha. average per family / 5 members per family, or 494 kg. per capita; but our just-so story set the product per capita at 440 kg. We should perhaps correct empirical surveys by estimating the absent population, in order to get closer to what is probably the underlying land/labor relationship; but the basis for doing so is speculative.

A computational problem that is trivial but cannot be neglected in dealing with averages and percentages is that illustrated in the Dataset 4.5.3 (Table) data on percent of land that is rented in each farm size class. For the 1925 survey, this is 50%, 73%, 68%, 65%, and 14% for the five equal-sized groups; the average of those figures is 54%. But since each group holds a different area of land, that simple average is not correct. All rented land and all farm sizes must be tallied up in concrete measures, and then the percentage or proportion of rented land calculated from that. The correct overall figure is 49.7%.

unrelated; the effect of the product per capita and transport conditions on the number of landlords is the link.

Again, the largest landowners, the landlords, are absent from the survey summaries; and the more they are absent, the greater appears the equality among those remaining, first because they are not counted in the reckoning, and second because their large holdings are distributed among renters.

So, given a landownership distribution profile that is constant relative to the average, rural inequality among those farming would be greater either where average product per capita is lower, or where transport costs to market grain are higher. That is, low productivity means few large owners can reach the sufficiency threshold on rents alone; and high transport costs impede the potential exodus of large landowners from the rural sector. These two elements are usually compounded because fertile areas with mild climate and ample precipitation facilitate multiple-cropping and intensification of cultivation, resulting in fairly high product per capita and dense population on a landscape criss-crossed with waterways. The opposite, dry land and short growing season, generally yields lower product per capita, a sparser population, and laborious overland transport conditions.

However, the variation is not necessarily bipolar, and in various terrains it is possible to have high productivity and poor transport, or low productivity and good transport. Each of these possibilities has outcomes in land tenure that can be basically analyzed in terms of the simple paradigm of variables that has been introduced here: landownership distribution, product per capita, population density (or other determinants of marketing costs), sufficiency threshold. The empirical data will speak for itself in the following chapters. Each of these will be examined, directly or indirectly. Of particular centrality to the operation of Model Two is the proposition that there is an absolute level of sufficiency at which freedom from physical labor is preferred to more income, the "sufficiency threshold". I will defer addressing this proposition in full until Chapter 7, being merely content in Chapter 5 to demonstrate that the empirically observed variation resembles that described for the hypothetical Lin Village.

The reader of this just-so story may doubt that it is all that simple. He may consider that the description of Lin Village contains too many blithe assumptions even for an analytic model. Notable among them is the 40% rate of rent that remains constant while the level of production and the quantity of the surplus over subsistence change markedly.

Since the rate of rent directly affects the total rent received by landlords, it is significant in the subsequent analysis of land tenure. The rate of rent is not constant, but it would be premature to present the complex solution for it before the rationale of the determination of land tenure has been explicated.

Part Three, the final major part of this thesis, will be devoted to an analytical and quantitative explanation for the determination of the rate of rent in terms of the same simple variables, product per capita and population density, and I believe that this will provide a compelling closure to the paradigm.

CHAPTER 5 Geographical Patterns of the Chinese Agricultural Economy: Productivity, Population Density, Land Tenure

5.0 Introduction

Chapter 4 laid out a model of how productivity and population density could determine land tenure patterns, given a particular profile of landownership distribution. As proposed in Part One, there is a demographic explanation for why the profile of the landownership distribution might be more-or-less the same, relative to its mean, independent of differences in productivity from region to region or from time to time. From this it may be deduced that the demographic and economic processes that proceed from the landownership distribution can retain certain relationships with each other, even while they are in dynamic interaction with broad developments such as increasing population or environmental degradation.

The reader should not think of these relationships on the small scale of the just-so story models in which they were introduced; the relationships are posited for a very large scale of social functioning in space and time: A village may exhibit some of the predicted patterns, but it does not contain within it the full range of the social hierarchy that upholds inequality and extraction. Transient historical events may level or may exacerbate the landownership distribution for a few decades, but the pattern of gradations will eventually reassert itself due to the habitual social functioning of concentration due to exploitation and dispersal due to partible inheritance.

When we move to find the relationships illustrated in the models in empirical data, the task is of course complicated by myriads of geographical and historical happenstances. But a large scale of observation also averages out much random "noise" and reveals the broad outlines. The analysis in Part Two is drawn mostly from 1930's Chinese data, with some brief reference to South Asian surveys as relevant. The following chapters will relate this empirical material to Model Two as follows:

Chapter 5 sets the stage first with a discursive review of literature on land tenure and inequality for prerevolutionary China. The great range of environments over the vast territory of China provides a natural test for the relationships proposed in Model Two. The variations in land tenure patterns for China, divided into ten regions, will be shown

to be consistent with those predicted by Model Two laid out in Chapter 4. This is shown in three respects:

1. Rural inequality appears lower where productivity is higher (see Section 4.5 for model; Dataset 5.2.1 for empirical data);

2. Land farmed by non-owners is a higher proportion of all land where productivity is higher (see Section 4.2 for model; Datasets 5.4.5 and 5.4.8 for data); and

3. Tenancy predominates as the form of labor exploitation where population is denser (see Section 4.4 for model; Dataset 5.5.3 for empirical data).

I hope, however, that these relationships will not be reduced to static correlations, but understood by the reader in the framework of Model Two as logical and quantifiable, though often nonlinear, outcomes of the landownership distribution.

The determination of land tenure forms and the relations of production in agriculture as laid out in Chapter 5 have further implications for both the agricultural and town/urban economies. Chapter 6 will present a conceptualization of the rural/urban link, how the surplus drawn from the countryside in rents and farm profits feeds the population concentrations of "parasitic" towns and cities, and creates a labor market that also employs male labor shed from the rural sector. A large part of Chapter 6 will deal with occupational structures and the apparent "secondary circulation" of rents and farm profits in purchasing non-agricultural labor and services. This conceptualization is useful in that it provides an explanation for the variation of population processes that were seen in Chapter 2 — , age at marriage, reproductive strategies, and adolescent and adult sex ratios as they are shaped by labor markets and labor migration. Last, this leads to a discussion within a historical context, how contradictions in relations of production within highly commercialized areas may be related to contradictions in population processes and presage an incipient transition.

Chapter 7 takes up for further examination a matter that was taken as an assumption in Chapters 4 and 5, the question of whether there is an absolute level of income, fairly constant across regions, at which farmers on the average prefer freedom from drudgery to additional income, a "sufficiency threshold". The income cannot be measured directly, but only in terms of the level of landowning at which hired labor is engaged The investigation of this question involves examining data on size and production of farms, and amount of hired labor utilized. As usual in applying measures of landownership and farmsize in this research, average annual production of the land is considered more

significant and comparable across regions than is surface area. The use of hired labor is affected by variation in the wages to labor, but still the investigation seems to show considerable constancy of a "sufficiency threshold" at a little more than double the level of bare subsistence.

The two benchmarks "sufficiency" and "subsistence" will play a central role in defining the supply and demand for rented land in Part Three, which analyzes the determination of the rate of agricultural rent. Subsistence is much more easily established than sufficiency, in terms of its physiological minimum, due to calorie studies by Buck and others. Chapter 6 sets the context for the analysis of the determination of the rate of rent in that it delves into empirical material on the means by which the land-short may achieve subsistence, either by renting-in land or by off-farm labor. The estimate of income for quintiles of the farm population in Chapter 6 also helps establish the level of grain income that is minimum subsistence for a self-reproducing population, in that it is found that the bottom 20% of farmers just barely make or fall a little short of the subsistence benchmark.

Part Two is wide-ranging and calls upon empirical data from several sources and several angles. Some of the sections are not central to Model Two, but they fill out the description of the agrarian economy and point out directions for future research.

5.1 The Patterns of Land Tenure in Prerevolutionary China

Over five decades ago, in his monumental work Land and Labour in China, R. H. Tawney (1932) proposed a general explanation for land tenure patterns based on both environmental and social factors. He characterized agriculture in China as follows:

> Geographers have distinguished six, ten and fourteen regions in China, but the fundamental agricultural division is the conventional one, which is cultural and political, as well as economic. It is between the south and the north, the dividing line running between the Yangtze and the Yellow River. The former is predominantly a land of high rainfall — in the Yangtze valley between 1,000 and 1,500 mm. — multiple crops and water-farming, carried on in valleys or on terraced hill-sides. In addition to rice, its characteristic crop and foodstuff, its typical products are silk, sugar and tea. The latter is a country of lower and more irregular rainfall, severe winters, recurrent drought, and dry farming, with wheat, millet, kaoliang, beans and maize as its staple crops. Overlapping the two, and stretching north from the Yangtze to the Hwai River, a distance of some 150 miles, is an intermediate region, where the agricultural features of south and north fade into each other (pp. 29-30).
>
> The conditions of (the peasant's) tenure vary widely from region to region, and even from village to village. According to figures published by the Department of Agriculture and Commerce for 1918, about 50% of the peasants were occupying owners, 30% were tenants, and 20% owned part of their farm land while renting the remainder. ... The differences in the proportions of the three classes in different provinces were, in each case, striking. The proportion of owners was highest in the northern provinces, somewhat less in the north-eastern, less still in the central, and least in the southern (p. 34).
>
> The distribution of different forms of tenure is influenced by the past history, soil conditions, types of farming and general economic environment of different parts of China. Occupying ownership is least prevalent in the proximity of great cities where urban capital flows into agriculture — in the Canton delta 85 per cent of the farmers, and in the neighbourhood of Shanghai 95 per cent, are said to be tenants — and most general in the regions but little affected by modern economic developments. The provinces of Shensi, Shansi, Hopei, Shantung and Honan, where some two-thirds of the farmers are stated to be owners, are the original home of Chinese agriculture. They have been little touched as yet by commerce and industry. The yield of the soil is too low to make it an attractive investment to the capitalist, while the farmer has not the resources to rent additional land. In the south, where the soil is more productive, agriculture yields a surplus; the commercialization of economic relations has proceeded further; and both the inducement and the ability to invest capital in land are accordingly greater (pp. 37-38).

A recapitulation of the main elements in Tawney's explanation of land tenure variation is in order here.

First, the productivity of the soil, given necessary inputs, determines whether the land yields an appreciable surplus above the subsistence of the tiller. If it does, the land may be the object of interest by investors. Second, if the area is commercialized — this implies that the product of the land can be readily transported and profitably marketed, as in the vicinity of large cities, and that the land is within range of supervision by the investor — then those with capital are even more likely to invest, and the area transformed to high rates of tenancy. Let us consider what this means in terms of the inevitable transactions between owners of land and owners of bare hards.

Gradations of Landownership, Alienation from the Means of Production, and Extraction of the Surplus

To elaborate on the first proposition, an analogy may be made to Marx's theory of surplus value and exploitation for industrial society. The maintenance of a labor force that is entirely alienated from the means of production requires that workers be remunerated approximately with the cost of their subsistence, so that the labor force is not subject to an attrition greater than can be refilled by reproduction or in-migration. However, payment to labor will not be higher than its necessary subsistence and reproduction, according to Marx's analysis of early industrial development in England. The workers, thrown off the land, cut off from an independent livelihood, more numerous than available jobs, and in desperate competition with one another, bid down the price of their labor to bare survival.

In an agricultural society with infinite gradations in scale of landownership and stagnant agrarian technology, there is no such straightforward bifurcation of society into workers and capitalists. Moreover, peasant tenants have within their own hands temporary or contingent custody of the means of production — land — on which they may intensify labor input for the sake of their own subsistence. Despite this, the underlying mechanisms of exploitation bear comparison to those in industrial society: concentration of ownership of the means of production, and alienation of a large portion of the population from adequate independent means of subsistence. The latter issue applies both to landless tenants and agricultural laborers, and to smallholders and part-owners whose minuscule inherited plots cannot sustain them, who all must resort to wage labor or renting of land.

Despite the ample historical accounts that those alienated from the means of production in China generally suffered some deprivation, it must be noted that my use of the term "exploitation" does not refer to the degree of misery of the laborer, but to the fact that the laborer surrenders a portion of his product to a landowner for the profit of the latter. It is no contradiction to this definition that some tenants were wealthy, and some owner-cultivators impoverished, even within the same areas.

Analogous to the conditions Marx described for industrial society, the ethnographic literature of the period supports the applicability of the concept of a reserve army of labor: that there was an impoverished portion of the population, both urban and rural, that lacked sufficient employment or land to cultivate. In a 1928 survey of Wuhing county, Chekiang it was found that "persons in public places" (e.g. migrant workers, vagrants, and beggars) constituted over 4% of the total male population (The China Institute of Economic and Statistical Research, 1939). According to other surveys of the period, agricultural workers and landless others were about 10% of the population in most areas (Esherick, 1981, 402). The Buck data on months per year that farmers were occupied in farm tasks, to be examined later in Datasets 6.3.3 and 6.3.6, suggest underemployment on small farms.

Parallel to Marx's analysis of industrial society, we may propose that tenants and hired farm workers would retain from their production little more than the cost of their subsistence, and according to the circumstances they might also retain the cost of reproduction. If this parallel holds, then the higher the productivity of the land, the greater the portion of their product that would be claimed by the landlord or the farm manager, that is, the higher the rate of extraction of surplus value, in Marxist terms.[36]

The Size of the Surplus and the Concentration of Ownership as Measured in Tenanted Land: Why the Relationship?

Then what relationship might there be between surplus value and the proportion of land tenanted, the topic of Tawney's remarks?

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36 This is a working proposition that is generally substantiated by the analysis in Chapter 5. However, important elaborations and revisions of this proposition will be found in Part Three on the determination of the rate of rent.

If the productive capacity of the land in a region is so low that what it produces barely suffices to feed the tiller, then there is little margin for rents, profits, or reinvestment. However, this general statement must be qualified somewhat: It is possible for tenants to pay some rent on such land, if they can compensate for the shortfall in subsistence by performing services or crafting useful objects for the class of owners, taking back some of the lost production in the form of wages or profits on petty commerce. We can envision, then, that concentration of landownership can be present and accompanied by transfer of surplus even where the average product per capita for the entire population barely meets subsistence. But intuitively we would not expect to find a great amount of rented land under these circumstances, because landowners would probably not have unlimited desires for peasant services and crafts, and moreover they could not under this economy retain much savings for reinvestment in land without upsetting the balance of exchange that maintains subsistence for all.

On the other hand, if the land under human labor produces considerably more than the subsistence of the tiller, then there is a margin for savings, investment, and profits on investment. We may project that at any point in time the process of differentiation among peasants is proceeding: A few industrious and frugal souls blessed by good health, ample family labor, and fortuitous harvests add to their holdings parcel by parcel, whereas those struck by illness and crop failure mortgage what they own to moneylenders and landlords. There is an element of randomness in this. But in the language of neoclassical economics, the usual savings function is that those with higher income save a larger percentage of income, which facilitates investment. Landlords and owners of large farms would be expected to expand their holdings over time.

By this logic it could be advanced that there would be more polarization of landownership (i.e., the richest percent of the population will own more land, whereas a greater portion of the population will be landless), and probably more rented land, where land productivity is higher. This accords with Tawney's observations. However, at least one other explanation for this outcome exists: landownership is not more polarized where the surplus is higher (due to the demographic processes described in Part One), but more of the population is able to reach high income and forego physical labor where land productivity is higher.

This alternative explanation follows on the analyses of the Russian agrarian economist of the 1930's, A.V. Chayanov, and his Theory of Peasant Economy. Chayanov's (1966)

insight is that the capitalist logic of the maximization of income does not apply to all aspects of the peasant economy. The peasant family is employer, laborer, and consumer all in one, and the latter role is central to its functioning.

> [T]he results of comparing the series [of data on payment and annual work days] lead us to the undoubted conclusion that the energy developed by a worker on a family farm is stimulated by family consumer demands, and as they increase, the rate of self-exploitation of peasant labor is forced up. On the other hand, energy expenditure is inhibited by the drudgery of the labor itself (p. 81)... The second circumstance undoubtedly indicates to us that the annual intensity of labor declines under the influence of better pay (p. 80).

Thus, under pressure of subsistence, family labor may be applied past the point at which it would yield a net return, if wages were paid to family labor; but at higher incomes avoidance of manual labor may be preferred to additional income. And in the process of this research I have expanded Chayanov's point on peasants' minimization of drudgery of labor to the concept that a landowner will forsake manual labor altogether if sufficient income can be accrued through farm management profits or rents. This is the "sufficiency threshold" that will be investigated in detail in Chapter 7.

As may be seen in Chinese and Indian agricultural studies, standard means of avoiding the drudgery of labor in traditional agriculture were hiring labor and renting out the land; but those remedies were accessible only to those with landholdings extensive enough to yield an acceptable income under these circumstances. Let us outline the implications of avoidance of drudgery more completely. If there is a given profile of landownership distribution, one constant relative to the average, then the higher the product of the land per capita, the greater the production of the land for any certain level of ownership. Then more of the population will have income meeting or surpassing "sufficiency"; and the greater the proportion of the population that will be able to meet adequate income while substituting hired labor or tenant labor for the labor of the owner's family. In short, the higher the productivity of the land per capita, the greater the proportion of land on which the labor of others will be exploited, even if there is no variance in, say, the percentage of land that is owned by the wealthiest 10% of population.

Consider again the two alternative, but not necessarily mutually exclusive, explanations for the phenomena that productivity is positively related to the proportion of land on which others' labor is exploited. The first argument is that the higher surplus allows higher rents and exacerbates concentration of ownership, such that a fixed class of landlords owns a greater proportion of all land. The second argument is that the higher

surplus allows more of the population to take on the status of landlords, even though there is no increased concentration of ownership. The second explanation is that which has been depicted in Model Two, Chapter 4. As will be seen in the data analysis in this and later chapters (Section 5.4 especially), the second rationale can substantially explain variation in land tenure patterns. But there is still a small margin for considering the former. [37]

In short, Chapter 5 focuses on establishing the relationship between land productivity and the proportion of land on which the labor of others is utilized by landowners. The means is comparison of data for regions of China. This task, the analysis of land tenure patterns, follows on the spirit of the observations made so long ago by Tawney. First, however, we must skim through the literature and debates about the basic level of inequality in prerevolutionary China, and get a birds' eye view of its vast geography. Then we must wade through the muddy complexities of real-life data in order to marshall the evidence.

The Great Debate on Inequality in Prerevolutionary China: Ideological Perspectives and Research Tactics

Many subsequent researchers have not concurred in Tawney's opinions, and it seems that the search for the rationale of land use and tenure forms has been largely forsaken. The

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37 Earlier in this research, during the data analysis for my article "Landownership Concentration in China: The Buck Survey Revisited" (Modern China 1986 12(3):259-360), I believed the first explanation was probably the right one, despite the property-dispersing effects of partible inheritance, and so I referred to the measure of land on which others' labor is exploited as "landownership concentration". But in late 1985, when I quantified the theoretical effect of different levels of production on a constant landownership distribution, I concluded that the second explanation could substantially cover the variation observed in the empirical data. Although I believe the variation in average productivity acting on a more-or-less constant landownership distribution and set "sufficiency threshold" explains the broad relationship between productivity and proportion of land on which others' labor is exploited, as shown in Model Two, I still do not rule out the possibility of some variation in the land ownership distribution. That is, an equilibrium between differential reproduction and land concentration due to exploitation may limit the range of the outcome, but still allow some variation in the landownership distribution that results from the equilibrium. To illustrate, the top 25% of the population may own from 45% to 55% of all land, with the higher figure applying at higher rates of surplus extraction. To judge this matter further from empirical observations requires some very complex processing of the farmsize data to try to recreate the underlying landownership distributions of different regions with greater precision.

reason for this lack of results in clarifying the logic of patterns of tenancy does not seem to be lack of interest on the part of students of Chinese political economy and society; in the last few years the issue of social stratification and inequity in China, both pre- and post-communist revolution, has been near the top of the agenda, as witness books and articles by Brandt, Elvin, Esherick, Faure, P. Huang, Lardy, Lippit, Myers, Parish, Rawski, Riskin, Roll, Selden, Watson, and Whyte.

Over the last two decades, a debate has continued on the absolute level of inequality in distribution of land. The question is not merely one of measure, but rather involves inquiry concerning what was the structure of central importance, and the driving mechanism of Chinese society, prior to the Chinese Revolution of 1949. The evaluation can imply a moral valuation of the 1949 Chinese Revolution and the Chinese Communist Party, and by implication, also of America's hostile foreign policy toward China in the decades following. To the extent that landownership inequality was extreme, and moreover constituted the root cause of gross exploitation and misery of the mass of the populace, then the Chinese Revolution was the only route for the uplifting of the people; whatever bloody excesses may have occurred may be seen as the righteous wrath of a downtrodden peasantry.

On the other hand, if landownership inequality was not so extreme, or was only one minor determinant of income among many significant factors, then the position may be supported that the reverses for China in the early twentieth century, the natural disasters and the dislocations attendant on the modernizing impact of Western economic incursions, would have gradually been overcome, and eventually greater prosperity achieved under a free market and capitalist economy than has been seen under socialist development. "The new forces [devastating natural disasters, violent shifts in world demand for China's exports] eroded the favorable spread effects of the treaty ports and produced severe economic fluctuations" (Myers 1980, 21).

These perspectives are not far below the surface in the sinological writings of the 1960's-1980's, the writings that form the background for the present discussion. Joseph Esherick has thoroughly reviewed this debate in his 1981 article, "Number Games: A Note on Land Distribution in Prerevolutionary China".

In contrast to the claims of Communist revolutionaries and other social critics of the 1930's, that land was grievously maldistributed, with 10-20% of the population owning 70-80% of the land, the Buck data, a major survey of the period, seems to show

moderate inequality. Dataset 5.1.1 presents a few indices from Buck's summary of this survey.[38] These figures reveal considerable skewing of size of farm. With a longer growing season and more multiple cropping, the South was much more productive in terms of land area, but farms were much smaller. Thus Buck's largest-category farms averaged 11.0 hectares in the North, but only 4.7 hectares in the South. To understand experienced maldistribution, however, the sizes of farms relative to the average are more important than absolute farm size. The fourth column of the table reveals that in North China the bottom 60% of farms averaged 30% of the overall average size, and in South China the bottom 63% of farms averaged 38% of the overall average size. By this relative measure, land in the South was only slightly more even distributed.

38 The Buck 1937 survey will be the main source of data for this research. Beginning in this chapter, source of data for tables and figures is from Buck 1937 unless otherwise noted.

Dataset 5.1.1 The Buck Survey Summary: Household Size, Crop Area Per Person, and Percent of Land Rented by Size of Farm

Size Category	N of Farms	Percent of Farms	Size of Farm, Ha.	Size Rel. to Average	Size of Household	Crop Area /Person*	% Land Rented**
NORTH CHINA — 71 Localities							
V V V Large	26	0.4%	11.05	4.85			
V V Large	109	1.5%	10.08	4.42	(all very large combined)		
Very Large	655	9.2%	7.05	3.09	10.3	0.40	11.1%
Large	863	12.1%	3.81	1.67	8.4	0.31	14.2%
Med Large	1234	17.3%	2.46	1.08	7.1	0.24	12.8%
Medium	2447	34.3%	1.45	0.64	5.8	0.17	12.9%
Small	1677	23.5%	0.73	0.32	4.6	0.10	13.2%
Very Small	125	1.8%					
All Farms	7136	100%	2.28	1.00	6.5	0.23	12.7%
SOUTH CHINA — 97 Localities							
V V V Large	9	0.1%	4.67	3.71			
V V Large	22	0.2%	4.13	3.28	(all very large combined)		
Very Large	557	5.8%	3.70	2.94	9.8	0.25	36.0%
Large	954	9.9%	2.18	1.73	8.2	0.19	39.2%
Med Large	2071	21.5%	1.65	1.31	6.8	0.16	41.0%
Medium	3824	39.6%	0.93	0.74	5.3	0.12	42.0%
Small	2105	21.8%	0.47	0.37	4.3	0.08	41.6%
Very Small	108	1.1%					
All Farms	9650	100%	1.26	1.00	5.9	0.15	40.3%

NOTE: Farm size and crop area have been converted to hectares. 1 ha. = 2.471 acres.

* This figure is from acres crop area per person, by Buck's definition not area of land, but acres cropped in multiple-cropping. It does not equal Farm Size/Household.

** The last column here, percent of land rented, bears comparison with Dataset 4.5.3 (Table). Even though those who own little land often rent in more land, when farms of the same size — owners, part-owners, and tenants — are averaged together, it appears that rented land is rather evenly distributed among all classes of farmers. The leveling effect of rented land is more marked, and creates a more illusory appearance of equality, in surveys that consolidate the data on the basis of farm size, as does the Buck survey.

Source: Buck 1964, p. 271, 272, 278, 279, 194

However, because average size of household also increases with size of farm, per capita inequality is not so great as farm size inequality. Looking to Crop Area/Person, in which the one very small and two very large farm size categories have been collapsed into adjacent categories, the ratio of crop acres for very large farms to that for small farms is 4:1 for North China and about 3.3:1 for South China. Moreover, because percent of land rented in is only slightly greater on small farms than on large ones, counting only

land owned by the operator would not appear to significantly increase the ratio of inequality.

The Buck survey has been used by writers such as Mark Elvin (1973, 254-255) to argue that "the amount of land held by landowners who did not themselves farm was clearly too small to serve in and of itself as an adequate basis for a distinct and socially dominant class".

Esherick disputes this view. His main criticism is that the Buck survey was reportedly biased in favor of wealthier farms (Esherick 1981, p. 396). The effect of this bias could be to underestimate the number of tenants and the number of small owners holding land insufficient for subsistence. He discounts the Buck survey in favor of other extensive surveys carried out by Chinese governmental agencies a few years later. Esherick's estimates of ownership imbalance for all of China are given in Dataset 5.1.2.

Dataset 5.1.2 Estimate of Population and Landholding by Class for Prerevolutionary China, Adjusted for Size of Family

	Esherick's Estimate			Arrigo's Adjustment		
Class	% of Households	% of Land	Land Rel. to Average	Est. Size of Family	% of Population	Land Rel. to Average
Landlords	4%	39%	9.8	7	5%	7.4
Rich Peasants	6%	17%	2.8	7.5	9%	2.0
Middle Peasants	22%	30%	1.4	6	25%	1.2
Poor Peasants	60%	14%	0.2	5	57%	0.3
Agri. Laborers & Others	8%	0%	0.0	3	5%	0.0
Total	100%	100%	1.0	5.3	100%	1.0

Source: Derived from Esherick (1981, 405)

We can evaluate the ownership of a group relative to the average for the whole population by dividing the percent of land owned by the percent of population it constitutes: Landlords, 39/4 = 9.8, that is, landlords own nearly ten times the average land per household, in Esherick's estimation.

However, for a more useful measure of inequality of ownership, we must also take account of the fact that landlord and rich peasant families are larger on the average than those of poor peasants and agricultural laborers. Based on data indicating family size and household type in the Buck data, I have assigned family sizes to the household types given

by Esherick to come up with an estimate of relative ownership per capita, also shown in Dataset 5.1.2. These calculations reveal a less extreme landownership distribution.

The Buck survey data do not encompass landlords and nonfarm households, so the range from rich peasants to poor peasants is the appropriate comparison in Esherick's table. Considering further that Esherick's category of poor peasants contains about 57% of the population, the degree of inequality he proposes is certainly at least twice that reported in the above summary from Buck. In short, there appears to be considerable disagreement among the scholars about inequality just within the farm sector. However, Esherick's is the more comprehensive vision of Chinese society. As seen in Esherick's estimate, the gap between landlords and peasants of all types is greater than any differentiation among peasants. In a thorough analysis of Chinese society and inequality, those groups that tend to disappear from a survey of farm operators like Buck's (landlords, agricultural laborers, and other landless population) cannot be excluded. Among the crucial elements of the debate, then, are the conceptualization and the comprehensiveness of measurements.

Ramon Myers, in his 1970 study of North China villages based mainly on Manchurian Railway survey records, does not deny that land was quite maldistributed, but he counters that this was not new in Chinese history, and that landownership concentration was continually broken down by partible inheritance on large estates. Myers's repeated contention is that there were labor and trading opportunities that equalized income, regardless of landowning, and in the commercialized and modernized areas these were most plentiful. But Fei and Chang's Peasant Economy in China (1949) shows that labor and handicrafts did not go far in redressing the differential of income from land.

Myers (1969) focuses on a cross-section of income distribution. Myers's proclivity is also to underplay the maldistribution of landownership, for example, by counting landownership distribution within the rural sector according to the ownership of households found there. Esherick (1981, 392) rightly faults Myers for thus excluding land owned by absentee landlords from the measures of inequality.

In this debate, those maintaining that landownership inequality was not serious or not determinative of income (Elvin and Myers) have often cited the Buck data in support of their position. Those emphasizing the seriousness of inequality have sought to discredit the Buck survey. Among those in the latter position, Stross has castigated John Lossing Buck as a well-meaning but misguided defender of the status quo under the Nationalists

in his 1986 book The Stubborn Earth: American Agriculturalists on Chinese Soil, 1898-1937.

But some delving into Buck's 1937 massive Land Utilization in China, Statistics Volume, exposes a much more compelling reason for reassessing previous views on the Buck survey — both Elvin's and Esherick's among them. Buck's data for the 168 localities surveyed reveal considerably greater maldistribution of land and resources than do the Buck averages and summaries that researchers have subsequently relied upon. Careful reassessment of the Buck data in fact confirms the communists' picture of stark inequality. To indicate the magnitude of this divergence, Dataset 5.1.3 (figure) compares Buck's summary report for farm size inequality in the Szechwan Rice Area with a recompilation of the same from Buck's own data on farm size groups in localities, ranked by absolute size of farm in hectares. According to Buck's summary, the largest farms were only about three times the size of the average farm. In recalculation, the largest farms are shown to be six times the size of the average farms. According to Buck's summary, the top 10% of farm held about 24% of the land. By recalculation, the top 10% held 39% of the land. This thesis is based upon complete recalculation and recompilation of the Buck survey from the locality data by farm size groups.[39]

But the degree of inequality is not the only bone of contention. Similar to the framing of the debate on inequality, the "imperialists" and the "communists" (as I have dubbed the two camps in hyperbole) disagree on the condition and definition of the agricultural surplus for China in this period. The former generally deny that there was any significant surplus; they cite overpopulation and lack of technological advance — which could have been brought by continuing Western commercial contact — as the reason for this. This argument was elaborated by Mark Elvin (1973) as the "high-level equilibrium trap", and again articulated by Kang Chao (1986) in Malthusian terms in the conclusion of his Man and Land in China: An Economic Analysis. According to this standard neoclassical analysis, population expansion had already led to excessive labor inputs in which the marginal product of labor on family farms did not meet subsistence.

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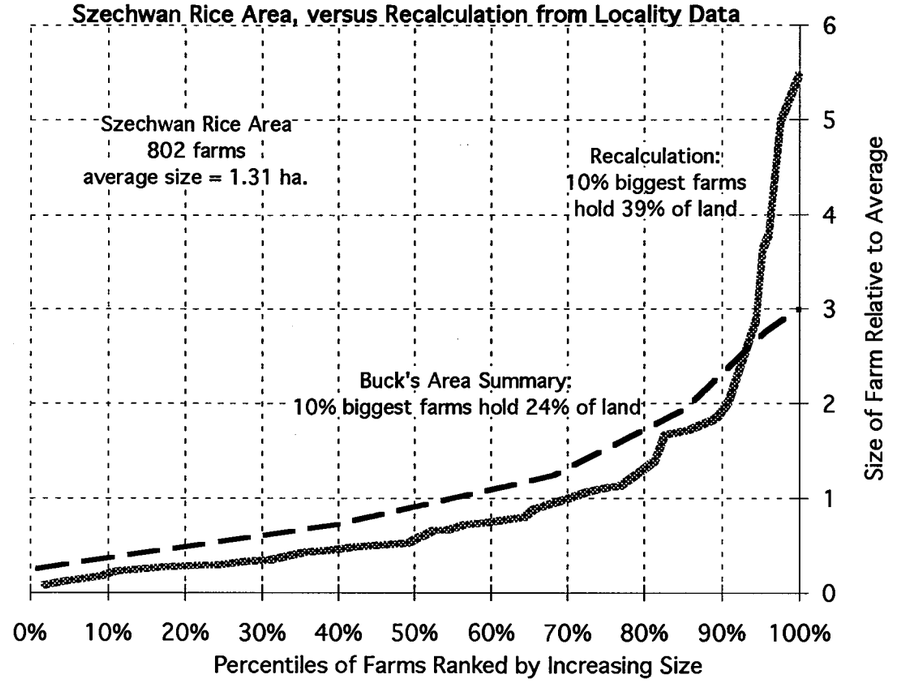
39 The recalculation is described in detail in Appendix E, with examples of the original distortion of the data. Some idiosyncratic averaging of farm size groups across localities, very large farms in one locality averaged with small farms in another, suggests that Buck or his staff may have been under political pressure to disguise the degree of inequality in the findings.

Dataset 5.1.3 Farm Size Distribution: Buck's Summary for the Szechwan Rice Area, versus Recalculation from Locality Data



The latter camp generally asserts that there was a sizeable surplus, but that it was appropriated and unproductively consumed by landlords and elites, such that the infrastructure supporting production could not advance. In defense of this view, Victor Lippit (1974) made an estimate of the transfer of income from the laboring classes to elites for this period as:

Source	Percentage of National Income
Land Rent	10.7%
Farm Business Profits	3.4%
Interest	2.8%
Taxes and Special Levies	2.1%
Total	19.0%

This estimate shows a sizeable surplus of almost one-fifth of national income of all of China.[40]

Part of the problem of producing a figure for inequality or for surplus in all of China is the extremes of regional diversity and the uncertainty of samples. This is an appropriate point to return to the issues raised by Tawney. In searching for a representative sample by which to judge inequality, Esherick found bewildering local variations:

> Many local variations in land distribution are bound to frustrate any attempt to find meaningful patterns from figures aggregated at the provincial level, for the fact is that variations *within* provinces and regions were just as great as variations *among* the provinces. In fact, anyone who has looked closely at Buck's figures or any fairly broad range of village surveys is aware of the fact that even within a given county there was likely to be substantial variation. ... Certain patterns are reasonably clear, for example, the relative pervasiveness of landlordism in the rich commercialized rural economies of Jiangnan and the Canton delta. But in other cases, even where we have county-level data on the extent of tenancy, the data do not appear to plot out on the map in any clear and consistent pattern. (Esherick 1981, 388)

Lacking means for analysis of the pattern, many China scholars have settled for treating China's agrarian sector as an undifferentiated whole.

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40 Needless to say, this thesis falls in the latter camp on the issue of surplus as well as on inequality. I will quantify the agricultural surplus in Section 5.4 below and estimate the marketed outflow of surplus in Section 6.2 in the following chapter.

5.2 The Rationale for Regional Variation in Land Tenure Patterns

A Rough Interregional Comparison of Income Levels and Rural Inequality

Fortunately, another study has taken the investigation of regional patterns of inequity a step further. Reporting on some detailed village studies of the period, Roll concluded that although work in handicrafts and hired labor tended to offset some of the inequality due to farm income — the less land owned by a peasant, the more the labor put into handicrafts and other side occupations — landownership remained the main determinant of income (Roll, 1980, 23-31). Roll estimated inequality of income for sixteen provinces based on a survey of the National Land Committee carried out in 1935. It is possible to use his calculations of income disparity as a muted proxy for landownership inequality among rural households in a comparison of regions.

Roll's statistics for (1) average household income, and (2) income of top 10% of households as percentage of total income in area, form a fairly distinct pattern when the figures for several provinces are averaged together (Dataset 5.2.1). The more northerly provinces, and, to a lesser degree, inland provinces, exhibit greater inequality of incomes. As mentioned previously, this implies a greater inequality of farm sizes. Moreover, where average income is higher, as in the South, inequality is usually lower. This might be taken to contradict Tawney's observation of greater concentration of wealth in the fertile southern areas, and to support Myers' thesis that commercialization brings with it new opportunities and relatively greater advantages for the poor. However, there is another possible interpretation, one that is perhaps foreseen by Esherick's brief suggestion that "rich peasant holdings show a distinct tendency to vary inversely with landlord holdings" (Esherick 1981, 403).

In Dataset 5.2.1, Roll's data for sixteen provinces are averaged in three regions, North, Central, and South, and then the provinces of the Central and South regions are divided among the inland provinces, and those along the coast and the lower Yangtze River. Next to Roll's data I have arrayed figures from the Buck survey of farm households on percent of land rented.

Dataset 5.2.1 Household Income, Income Disparity, and Percent of Land Rented for 16 Provinces of China Grouped by Regions

	ROLL		BUCK	
Provinces	Average Income, Chinese $	Income Share of Top 10%	N of Localities	Percent Rented Land
NORTH CHINA				
Chahar	$74	59.9%	- -	-.-
Suiyuan	$199	37.9%	2	5.0%
Shensi	$155	29.1%	8	17.5%
Shansi	$108	37.8%	12	15.8%
Hopeh	$124	30.5%	11	9.8%
Shantung	$88	30.9%	15	9.8%
Average	$125	37.7%	48	11.6%
CENTRAL CHINA				
Honan	$95	29.5%	10	23.1%
Hupeh	$127	28.1%	6	31.2%
Anhwei	$166	33.4%	9	59.5%
Kiangsu	$173	29.9%	20	33.3%
Chekiang	$138	27.4%	13	31.0%
Average	$140	29.7%	58	35.6%
SOUTH CHINA				
Hunan	$146	29.7%	9	36.9%
Kiangsi	$126	24.5%	6	51.4%
Fukien	$239	23.9%	5	55.7%
Kwangsi	$203	30.0%	2	26.0%
Kwangtung	$275	24.2%	7	54.3%
Average	$198	26.5%	29	44.9%
INLAND, UPPER RIVER				
Honan, Hupeh, Hunan, Kiangsi	$143	29.3%	31	35.7%
COAST, LOWER RIVER				
Anhwei, Kiangsu, Chekiang, Kiangsi, Fukien, Kwangtung	$186	27.2%	60	47.5%

Sources: Buck (1937); Roll (1980). The percent of land area rented was calculated as a simple average of the data for localities sampled in the respective provinces, Statistics volume, Chapter II, Table 21, "Percentage of Farm Area Rented...".

Average income increases from North to South, as do, incidentally, the growing season and multiple cropping. The skew of the income distribution simultaneously decreases. However, the percent of land rented increases markedly. The contrast between inland and coastal provinces is parallel to this pattern but less significant in effect, with higher income and percent of land rented in the coastal and lower river provinces. This simple table brings us to a rudimentary level of understanding of the pattern of land tenure: that landholding distribution and incomes among those who operate farms in the rural sector become slightly more egalitarian as rented land increases. However, the prevalence of rented land also suggests that some large portion of owners is not to be found among the farm operators.

No doubt by now the reader has recalled Section 4.5 of the previous chapter, "Hypothetical Surveys of a Just-So Village: From Landownership Distribution to Farm Size Distribution", and in particular the farm size distributions depicted in the figures Datasets 4.5.1 and 4.5.2. In this simulation, the starting point was a single landownership distribution, but then there was a divergence between lower and higher product per capita for the two cases, with the result that more landowners were absentee landowners in the latter case, and there was more rented land. Just the removal of large estates from the farm size distribution when large landowners became landlords decreased the farm size range. But there is another effect as well.

One outcome of the increase in rented land is the leveling of farm size. As outlined by Kang Chao (1982) according to neo-classical economic theory, landlords tend to distributed their land widely, in medium-small allotments, to force intensification of production by tenants and greater production per land area. Leveling of farm size brings some leveling of income, for tenants do garner some livelihood from their rented land; this is relevant in considering Roll's income figures. This outcome of the increase of rented land does not mean, however, that overall inequality of ownership — encompassing the absentee landlords — is any less, or that the extraction of surplus is necessarily mitigated.

Tenants versus Hired Labor: Commonality and Differentiation in the Forms of Land/Labor Relations

If extraction of surplus through rents and farm profits from hired labor is the manifestation of unequal relations attendant on the landownership distribution, then measuring these would help us evaluate the landownership distribution which is largely obscured in farm size compilations. That goal suggests devising a common measure for rented land and land farmed by hired labor. These are discrete phenomena in terms of the relations of production, but they are also alternative uses of land in the hands of those who own more than can be farmed by family labor, and/or who prefer to avoid manual labor after an acceptable level of income has been met. A measure common to both of these is the extent of land which is farmed by non-owner. For landlord/tenant relations, even if we cannot attach land to particular large owners because absentee landlords are absent from surveys, the percent of land that is rented land is readily available. Surveys do generally give figures for percent of farm area that is rented; a contractual relationship is clearly related to a particular area of land. But it is not so easy to identify land farmed with hired labor. Often the labor of owner and hireling is mixed. However, there are measures such as percent of farm labor performed by hired labor that allow estimates. Together these two kinds of relations of production can yield a measure related to the landownership distribution, the extent of land on which the labor of others' is utilized.

In addition, Model Two has proposed a particular relationship between the proportions of the two forms of land use (see Section 4.3, "The Cost of Leisure and Differentiation in the Forms of Land/Labor Relations"). This also provides clues about the landownership distribution. Other things being equal, increasing product per capita leads to increasing rented land, but land farmed by hired labor tends to stay at about the same level despite increasing product per capita. On the other hand, if other things are not equal, and transport is impeded (as modelled for the just-so Lin Village when its river becomes unnavigable) then land farmed by hired labor displaces rented land. Empirical verification of these proposed patterns remains to be seen.

Fei and Chang (1949, 68-69) have given us an ethnographic account of these alternative land uses for a remote village in Yunnan, southwest China, named Luts'un, which they compare with a densely populated and highly commercialized village 80 miles west of Shanghai, Kiangts'un, where Fei carried out fieldwork previously:

> The management of land by the use of hired labor, as in Luts'un, is in sharp contrast to the situation in Kiangts'un [the village described in Village Life in China], where most of the villagers were tenants and there are almost no hired laborers, because the extremely few resident owners work their own farms. This difference leads us to inquire as to the economic factors which are responsible for the development of the system practiced in Luts'un. Both the renting-out of land and the hiring of labor are the results of the owner's desire not to assume himself the burden of the farm work. Assuming that the decision to shift this burden to others has been made, the owner is faced with the necessity of making a choice between the two methods. The answer to the two questions which are important in influencing his choice, namely, whether it is possible for him to assume active management and whether renting out his land or hiring labor will bring him the larger profit, will depend upon the particular conditions prevailing in a locality.
>
> A comparison between the villages of Luts'un and Kiangts'un will illustrate certain conditions which determine whether or not management by the owners is possible. For present purposes, management is defined as consisting of three functions: formulating the schedule of farm activities, providing the tools and other farm capital, and supervision of the farm work. It is obvious that owners who do not live near their farms are incapable of performing at least the last of these functions, so that only residents can be managers in the true sense. In Kiangts'un, where most of the land is held by individuals who live in the city and who may not even know the exact locations of their properties, owner management is impossible, whereas it is almost inevitable in Luts'un, where the holdings are so small that the income would not support life in the city. Luts'un owners, living as they do in the vicinity of their farms and in a region where neither commerce nor industry is well developed, must either perform the functions of management or have nothing on which to expend their time and energy.
>
> Notwithstanding the fact that management by resident owners is convenient, it would not be practiced were it not more profitable than renting out the land. If the earnings of a self-managed farm, after payment of wages and other expenses of cultivation, were less than the rent which could be commanded, the land would inevitably be rented. (Fei and Chang, 1949, pp. 68-69)

Fei and Chang estimated that ownership of 27 *kung* of land (the local measurement; apparently about 42 *kung* = 1 ha., so 27 *kung* is only about 0.64 ha.) would be required to cover the total domestic expenditures, at a fairly low standard of living, of a household farming entirely with hired labor. This labor was often migrant labor. But actually men owning as little as 18 *kung* enjoyed freedom from personal exertion by requiring women of the household to supplement the work of hired labor — in Luts'un, Yunnan, idle men could be found in one out of every three houses. Mean ownership in the village was a little under 15 *kung*.

This situation in Yunnan of high fertility of the land combined with low urbanization and commercialization is not typical of China, but it serves all the better to illustrate the conditions of choice in utilizing land owned, and the proportion of leisured population that may be supported by the agricultural surplus. It also well illustrates two logical points of transition in a hypothetical graphing of peasant status versus landlord status: from laboring peasant to semi-leisured managerial farmer, and from managerial farmer to landlord living from rents. These transitions are correctly understood by the Chayanov-type precept that peasants will seek to avoid labor, not to maximize profits, once a decent living has been secured. To this we may add consideration of the mobility strategies and status rankings of Chinese society. A well-to-do landowner might forsake the countryside, even at the loss of some farm income, to enjoy the social and cultural environment of towns, opportunities for mercantile ventures, and perhaps to cultivate a son for the route to the imperial examinations.

Here again, discussing migration out of the villages in Yunnan, Fei and Chang are eloquent.

> Those who move out are not only the poor people but also the rich. The motives for moving out are different, however, in the two groups. The poor move out because thy are driven forth by the hardships of life. The rich, on the other hand, are impelled by the craving for greater comfort and prosperity. ...
>
> Moreover, in the town there is better opportunity to get rich. As regards the twenty householders who moved to town from the village, six of them engaged in trade, selling such things as drygoods, groceries, candy, salt, and medicines. The scale on which business is carried out is comparatively large and can be carried on only in a town. Remaining in the village, they would not have had opportunities of this sort. ...
>
> The rich households tend to stay closer to home, however, than do the poor. Among the thirty-seven poor peasants, twenty of them went outside the district. But among the twenty rich householders who moved out, only three went outside the district; the rest all settled in the nearby town. Although they had moved out, most of them still kept their ownership of land. In order to collect the rent, they must not move too far away. The poorer peasants have less to keep them near at hand, and so they go wherever they find the best opportunity for a livelihood. They can often find better jobs if they go farther away. For instance, the skilled gardeners have less competition in the mining center or some of the other more distant places. The rich, unlike the poor, do not really sever connections with the village. But the rich who move into the town gradually give up the management of their own land. Among the twenty households mentioned above, thirteen have become absentee landlords. The rest still manage their own land, but with difficulty. If they succeed in making enough money in the town, they will be likely to rent out their land also. (Fei and Chang 1949, pp. 268-270)

> To get rich, one must go outside of agriculture. To improve one's social position, one must go outside the village — this is well established. Those who have prestige in traditional Chinese society are not those who work on the land but those who are scholars, working with books. ... This traditional idea still exists in the minds of the villagers. To be a scholar is a way to enter the government and become socially important and also to become rich. (Fei and Chang 1949, p. 273)

In this description we see the inducements for taking up town life. But in North China, where farming is more extensive than in Yunnan, it is easier to understand the relative profitability in farming with hired labor.

In his 1985 book The Peasant Economy and Social Change in North China, Philip C.C. Huang has analyzed managerial farmers in North China in detail, based on the field studies of the Japanese South Manchurian Railway Company (Mantetsu), as well as on retrospective interviews with farmers in present-day Hopeh. He sets out the conditions prevalent on these farms unequivocally. First, a scale of over 100 mu (which is 6.67 hectares: one hectare equals about 15 mu) was necessary for full utilization of hired labor, in particular labor hired by the year.

> Since a male adult in this area could farm upwards of 15 mu, and since most of the more well-to-do peasant households contained more than one adult male, a farm clearly had to reach a certain minimum size before hired labor would predominate over the family's own labor.
>
> At the same time, an optimal combination of labor with land could obtain only if the hired labor actually worked at the maximum level of effort. That, I suggest, is not something a worker would normally have done voluntarily and without close personal supervision from the employer, which is why most managerial farms were operated under the personal management of the farmer himself.
>
> A farm that met these conditions could be expected to effect substantial savings in labor costs relative to farms on which labor was underemployed. (Huang, 1985, 171)

Second, managerial farms were unlikely to exceed 200 mu (13.33 ha.) because (1) beyond that size personal supervision became untenable, and (2) ownership of more land than that usually could generate rents that sufficed for a comfortable living as an absentee landlord. Even if the profit per mu from tenanting the land was only about half that from managerial farming, the owner, freed from the burden of farm management, could seek alternative income in moneylending and commerce (pp. 173-174).

> Managerial operations like the ones in Michang (Hebei) imposed their own limits on the farm size because the total landholdings were highly fragmented. Take the case of Dong Tianwang: his farm was divided into 17 parcels, or an average of

> seven mu per parcel. On Dong's scale of farming, this fragmentation did not present difficult logistical problems. He could personally oversee the work of his four hired men and move with them from one parcel to the next as a team. However, if his scale of operation were doubled to 250 mu and eight hired workers with no change in parcel size, ... [and] if they split up and worked separate parcels, they could not all be closely supervised.
>
> But what kept these managerial farmers from hiring "foremen" to help them oversee farmwork, we might ask. The difficulty there is that this would have quickly eroded the thin margin of advantage the managerial farm enjoyed over the family farm. (Huang 1985, p. 172)

In the case of intensive rice farming and multiple cropping, as in the South, management would certainly involve even more cumbersome personal involvement. Chayanov's view was that returns to scale were limited in peasant agriculture; the more intensive the agriculture, the smaller the optimum size of farm. The labor of carrying fertilizer and collecting the harvests increased more than proportionately with the size of the farm (Harrison, 1977). It could still have been more profitable in gross returns to use hired labor, but supervision costs would no doubt have negated that advantage at an even smaller scale in the South.

Possession of more land in itself allowed a family to gain more income with the same family labor, due to a considerable marginal productivity of land at the upper ranges of farm sizes, i.e. a good crop could still be had with a little less than the usual high labor input. However, there were limits to the amount of land that an adult male of the family could cultivate; and a well-to-do peasant would probably not want to push himself to those limits.

The rate of rent and the price of hired labor affected a landowner's point of decision as to how much land must be accumulated before conversion from rich peasant/managerial farmer to town-based landlord would be feasible. Before that point, there would not be much sense in renting out any land but that exceeding the scale of manageability, other things being equal, because profits almost certainly would be higher with hired labor than with tenants. Hired labor could be substituted for some or all of family labor, at some loss to income. The level of wages for hired labor, which differed from place to place, affected at what point a middle peasant could start substituting hired labor for family labor. In sum, it is proposed that roles of managerial farmer or landlord renting

to tenants were first a function of the level of income at which manual labor could be avoided comfortably, and only secondarily the outcome of income maximization.[41]

Given the above conclusions to the discussion of landowners choosing between tenants and hired labor, conclusions which will be further substantiated in this chapter and in Chapter 7, it should be recognized that the amount of land rented out will be governed more by the scale of ownership and derived income that can afford landlords a comfortable living than by the relative profitability of the choices.

The Effect of the Friction of Transport on Land Tenure

Whether a well-endowed landowner enjoying a certain level of receipts from his land would take up the role of an absentee landlord also depends on marketing and transport conditions. If his home village were remote or lacking in water transport, much of the value of the product received as rent at the point of production would be lost to transportation costs. Tenants would likewise have difficulty paying rents in cash. The threshold of landholding for a villager to become a town-based landlord would be much higher then. If the owner were going to remain in the village or countryside anyway, then he may as well use hired labor to the maximum and gain the greater profit. Of course, absentee landlordship could also come about through nonvillagers buying up land, but returns on such investment would be subject to the same marketing constraints. So population dispersal would weigh the balance toward managerial farms and away from tenancy. (The reader may look ahead to Dataset 5.5.3, Figure, for verification of this.)

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[41] I have belabored this point somewhat because this problem has often been dealt with by the standard neoclassical approach of pure maximization of income. Such is the case in Kang Chao's analysis of land tenure systems in traditional China (Chao 1982), which assumes that the landowner will use either hired labor or tenants depending on which yields the higher profit; and that profit may be higher on either. After many elaborate equations, however, the outcome is still indeterminate. This approach typically starts with a bifurcation between owners of capital and non-owning labor, and proceeds only on the line of maximization of profits for an individual owner. But it would not seem to stretch the neoclassical paradigm too much, however, to incorporate the Chayanovian precept of avoidance of drudgery and consider a landlord class of elastic numbers, as done here.

This observation on the effects of population density can be integrated into a center-periphery regional analysis. Centers of population tend to grow up on the lower stretches of rivers, where they can be provisioned by the surplus of the upstream areas. Elites tend to gather in these centers, stimulating commerce, manufacturing, and luxury crafts, and raising the demand for, and the price of, labor over that which would otherwise be paid to farm labor. This attracts merchants, craftsmen, laborers, and servants to the population centers as well. Concurrently, increased population density pushes up the rates of rent, and the nearby urban market makes land an attractive investment with a secure cash return. The result is an elevation of the prevalence of rented land in the lower river regions over that in the upper river regions, even if the two are at the same level of productivity. This is more or less what I believe we see in the coastal/inland comparison at the bottom of Dataset 5.2.1, and will be developed with study of occupational structures and migration in Chapter 6.

From Tawney's description and Buck's statistics on the high friction of transport in China, we know that rents paid in kind to absentee landlords, as well as taxes and grain purchased by merchants, were transported preferentially along navigable river routes and canals, the cheapest means of bulk transport, for sale in town and city markets. The profits were either consumed there or directed to reinvestment in acreage where a ready market for the product was accessible. By this reasoning we would conclude that the ecological relationship between productivity and landownership concentration should be sought not at the level of the village or the county, but at the level of the marketing region.

Tawney (1932) has provided a vivid description of the physical and social state of transportation in China of this period.

> Except for certain limited areas, railway and motor traffic are insignificant, and, as far as the mass of peasants are concerned, might as well not exist. Apart from water, the usual means of transport are carts, mules and donkeys, especially in the north; wheelbarrows of a size which almost make them into carts propelled by men; and the shoulders of human beings. Bad communications and primitive methods make the cost of moving crops far afield almost prohibitive. ... [W]heat has been known to sell in Szechwan at barely more than one-tenth of its price on the eastern coast: in parts of the country the expense of moving it fifty miles exceeds its price in the place where it is grown. (Tawney 1932, pp. 55-56)
>
> Horses, in many parts of the country, are hardly employed; nor are the roads of a kind to permit regular traffic by cart. Hence, while the cost of transport is so crushing as to cripple both agriculture and manufacturing industry, human

> labour continues to be employed to carry it on, because, in the conditions of today, there is nothing which is cheaper. (Tawney 1932, p. 120)

The conditions that prevailed in most of the world until a few decades ago, that is, before railroads and trucks replaced human and animal transport, have not been much researched in recent literature. However, some social geographers have followed in the footsteps of the 19th century gentleman-farmer J.L. von Thunen (1926) who analyzed selection of crops in terms of distance to the farmstead and transport to markets. In Rural Settlement and Land Use, 1962, Michael Chisholm has compared and measured villages and cropping in samples from Europe, Africa, and Asia and concluded

> A point which emerges from the preceding discussion ... is the frequency with which the same orders of magnitude keep on recurring among peoples of widely different technical achievements and inhabiting areas with markedly different physical characteristics. Any distance up to about a kilometre from the dwelling is of such little moment for any but specialized systems of irrigation and garden farming that little adjustment is called for in either the pattern of settlement or of land use. Beyond about 1 kilometre, the costs of movement become sufficiently great to warrant some kind of response; at a distance of 3-4 kilometres the costs of cultivation necessitate a *radical* modification of the system of cultivation of settlement ... (Chisholm 1962, p. 148.)

The inexorable hindrance of distance applied not just to the scale of villages, and not just to China, of course. As Tawney noted, the friction of transport stymied the development of specialization in agriculture and usually required that each marketing community be self-sufficient in basic staples. Even crop failure in a village might not draw forth supplies of grain from nearby villages with surplus. The low level of subsistence also meant a predominance of basic staples. This is reflected in the Buck data, where foods account for 93.0% (88.8% grains, beans, and tubers; 1.9% fruits and vegetables) of the value of all agricultural production in China as a whole, and fibers for 3.8%. Livestock was minimal, and even in the North, where transport relied more heavily on pack animals, only about 6% of agricultural produce served as fodder (this figure is my preliminary estimate from Buck tables, Statistics volume, pp. 174, 229). Foods accounted for no less than 89.8% of production in any region (Buck 1964, 282).

The major river systems of China provided a conduit for a predominantly one-way flow: The outflow of agricultural rents and profits, and their concentration for the provisioning of major cities. The basin of a major river is most often the suitable territorial unit for an analysis of social structural inequality, and the appropriate analytic level for regional comparisons.

5.3 How to Deal with the Empirical Data: The Buck Survey Revisited

Making Comparisons between Regions:
Ecological Regions versus Marketing Regions

Buck's division of China into eight ecological regions was based on cropping patterns, which is of central relevance for productivity. But for the measurement of landownership concentration, marketing macroregions, as defined, for example, by Skinner for China — with regions set according to the major river basins and canal transport — is to be preferred. The core/periphery distinction that Skinner employs is that population is denser in the core areas surrounding transport nodes, and relatively more dispersed in the outlying areas, where generally there are interregional boundaries formed by hills or swamps. Fortunately, Buck's and Skinner's divisions partially coincide, permitting us to make comparisons of ecologically defined macro-regions that are for the most part also marketing macro-regions. Moreover, I have divided the two largest of Buck's cropping regions into smaller units that also roughly follow river systems.

Buck's regions are shown overlaid on the provincial boundaries and major rivers of China in Map 1 and Map 2, which are to be found just after the list of datasets in this dissertation, and before the Introduction. Dataset 5.3.1 (Table) describes the survey sample, with recalculated values for average farm size and land per capita. Here, as in the rest of this thesis, I have retained the area names and romanization of place names as used by Buck. I have subdivided Buck's Winter Wheat-Kaoliang Area, in northeast China, into North and South sections, because conditions of population density differ greatly between them. I have subdivided Buck's Yangtze Rice-Wheat Area into East and West, separating the coastal provinces of Kiangsu and Chekiang from the inland provinces; this roughly parallels Skinner's boundaries for Middle and Lower Yangtze.[42]

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[42]Skinner (1977:214) divides China into eight physiographic macro-regions following river basins to define regional economies, and also indicates regional cores of population density and marketing activity. To roughly compare Buck's and Skinner's regions: Skinner's Northwest China region includes the Winter Wheat-Millet Area of Buck (as its central area), and the Spring Wheat Area (as its peripheral area). Skinner's North China region encompasses the Winter Wheat-Kaoliang Area, and also overflows slightly into the Winter Wheat-Millet and Yangtze Rice-Wheat Areas. My division of the Winter Wheat-Kaoliang Area into North and South sections leaves regional cores within each.

Skinner's Upper Yangtze region is more or less equivalent to the Szechwan Rice Area; the Yun-Kwei region to the Southwest Rice Area; the Lingnan region to the Double-Cropping Rice Area. The rest is more complex. Buck's Rice Tea Area spans most of Skinner's Southeast Coast (Fukien), and the southern portion of the Middle Yangtze region (Kiangsi, Hunan). Buck's Yangtze Rice-Wheat Area (38 localities sampled) is mostly Skinner's Lower Yangtze (about 28 localities), and the part of Skinner's Middle Yangtze region north of the river (8 localities). Population density and percent of land rented in these eight localities are very close to those for the Lower Yangtze delta. My division of the Yangtze Rice-Wheat Area into East (22 localities, Kiangsu and Chekiang) and West (16) roughly parallels, but is somewhat to the east of, Skinner's boundary between Lower and Middle Yangtze marketing regions.

It may be kept in mind that in terms of marketing regions the densely populated Winter Wheat-Millet Area includes the core, and the Spring Wheat Area is the periphery, of a Northwest China marketing system, in Skinner's scheme. In the Spring Wheat area, I have excluded one locality, Paotow on the Yellow River, in which the sample is entirely out of the range of the characteristics of other localities there, and is entirely composed of oversize farms of extraordinary productivity.[43].

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[43]The locality Paotow has been excluded from calculations on the Spring Wheat Area, because it is so atypical of the area. Paotow (in Suiyuan province at that time) is located a few miles from the Yellow River and at the end of a railway line that runs to Peking (now Beijing). In this region of extremely low productivity, Paotow was one locality of seemingly "capitalist" agriculture. All farms there were of relatively vast size, averaging 5.68 ha., and producing more than 480 kg. per capita for household members. Production per hectare in this locality was 2184 kg., four times the average of the other twelve localities in the Spring Wheat Area (512 kg.), probably due to irrigation. Labor relations also appear "capitalistic"; labor is utilized but not provided a stable livelihood. At the very least, 29% of labor was performed by hired labor in Paotow, but only 3% of farms had adult male year laborers. Other figures for Paotow are: Household size, 4.8; persons per cropland ha., 0.85; product per capita, 2580 kg.; rented land, 1.8%.

Dataset 5.3.1. A Summary Description of the Buck Survey of 16,786 Farms in 168 Localities, China, 1929-33

Area, Provinces in Area	N of Localities	N of Farms	Population	Cropland, Hectares	Persons/ Cropland
NORTH CHINA					
Spring Wheat Area	13	1334	8721	4073.3	2.14
Kansu, NW Shansi, NW Shensi, Suiyuan, Tsinghai, Ningsia					
without Paotow sample	12	1233	8235	3499.5	2.35
Winter Wheat-Millet Area	20	2025	12543	3204.7	3.92
W Honan, Kansu, Shansi, Shensi					
Winter Wheat-Kaoliang Area	38	3777	25344	8037.7	3.15
North: Hopeh, Liaoning	11	1080	7814	3371.3	2.32
South: Honan, Shantung, N Anhwei	27	2697	17530	4666.4	3.76
SOUTH CHINA					
Yangtze Rice-Wheat Area	38	3679	21752	5116.3	4.26
East: N Chekiang, Kiangsu	22	2123	12170	3063.4	3.97
West: Anhwei, Hupeh, other	16	1556	9582	2052.9	4.67
Rice-Tea Area	27	2745	15089	2551.1	5.92
Chekiang, N Fukien, Hunan, Kiangsi					
Double Cropping Rice Area	12	1203	7091	1070.7	6.62
S Fukien, Kwangsi, Kwangtung					
Szechwan Rice Area	8	802	5649	1051.5	5.38
Szechwan					
Southwestern Rice Area	12	1221	7613	1091.1	6.99
Kweichow, Yunnan					
ALL CHINA — 22 provinces	168	16786			

The Productivity of the Land and its Measurement

Buck does not directly provide any statistics on the value of the product per land area, only indices of crop yields. However, with some ingenuity and patient searching of the Statistics volume it is possible to solve many omissions in the original organization of the data. In each locality of Buck's survey, about 100 farms were surveyed. In compiling the data in each locality, the farms were categorized into four to seven size groups, ranging from "very small" to "very very very large", depending on relative size

according to the range in the locality. Each farm size group contains from a few to up to 50 farms, but averages about 20. Buck's tables by size of farm refer to these farm size groups in each locality.

Productivity of land was calculated on the basis of Buck's statistics for production per man-equivalent (p. 302), and man-equivalent per farm (p. 297) on different sizes of farm. These two multiplied give the total production of the farm, and this divided by the size of the farm (p. 291) gives production per hectare in kilograms of grain-equivalent. Kilograms of grain-equivalent includes not just grain, but also beans, tubers, fruits and vegetables, opium, cotton, and so forth, converted into grain-equivalents at its caloric value, or, for higher-priced foods and cash crops, its cash value in grain at the locality of production. For a precise compilation to the level of regions, the locality and farm size-group data must be averaged with weighting by the amount of land in each farm size group and locality. Otherwise large farms are not given representation in the final number that is proportionate to the amount of land they cover. This is 95% of the result and will serve most purposes.

However, I have added several refinements that render measurement of productivity per land area even more precise. These refinements also slightly affect the measurement of the landownership distribution, since land has been measured by its product. These adjustments are listed below.

1. I adjust production to that for the average year. The production reported in Buck is production for the current year, including all crops grown in the year, though not animal raising, which is minor. However, he also rates the survey year production as a percent of normal production in each locality (p. 208). The first step is to adjust production to normal level in each locality. This makes a considerable difference only for two or three localities that suffered severe crop failure.

2. I subtract nonproductive land from the farm size; the remainder is the productive area. This can be done by means of a table of percent of the farm size in productive use by size of farm (p. 65). Because small farms have a higher percentage of land in farmstead use, this adjustment gives a more accurate accounting of the productive cropland for each farm size group, and in the outcome increases the measure of inequality of ownership by 1% to 2%.

3. I subtract the effect of labor intensification from the productivity of the cropland. The point of this is to isolate the value of the land in a measure of inequality from the effects of intensification. Computationally, I divide productivity for each farm size group by the indices for double-cropping (p. 296) and for crop yields (p. 295) by size of farm, to subtract as much as possible the effects of labor intensification. This is often a downward adjustment on the magnitude of 5% to 8% for very small farms, where labor intensification is most in evidence. After this

> adjustment, productivity should ideally reflect the fertility and value of the land alone. But this adjustment cannot undo the effects of choice of labor-intensive cash crops, so the production value of land on small farms may still be overstated.[44]

These are the adjustments that result in the figures for product per hectare and product per capita used over most of this thesis. However, in some places we wish to gauge, for example, how far the land-short population fall short from subsistence on their land, and if we are making fine measurements it may be worthwhile to reconsider how much they may gain from intensification. This is more significant for Part Three of this thesis.

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[44] In further comment on this third point, all the farm size groups in one locality cannot be assumed to hold land of the same quality, nor should they be treated as if they did; their production per hectare often varies by 50% or more, sometimes to the advantage of small farms and sometimes to the advantage of large. Labor input is usually higher on small farms, but it cannot be concluded from this that yields must be higher; in fact in the North the smallest farms seems to occupy acreage of such poor quality that yields often fall short of those on larger farms. It is a common phenomenon that small farms are starved for inputs that require cash outlay, such as fertilizer, but also suffer from qualities that are inherent to the land, such as lack of access to reliable irrigation.

Among localities strewn over a region, productivity per land area is even more variable (more so in the far North and Northwest, comparatively less in the South). It often varies by a magnitude of 3 to 5 times. These are the reasons it is less valid to count landownership by its surface in a sociological exercise. In aggregations for a region, which are so large that variations cancel each other out, whether the surface or the product of the land is counted in each locality makes little difference to the measure of product per hectare. But for farm size groups, measurement of the land by its product results in a much more accurate gauge of product per capita, and of inequality in resources, because of unequal endowments of land quality.

5.4 A Broad Interpretation of the Relationship between Productivity and the Extent of Land Farmed by Tenants and Hired Labor

The Social Meaning of Land Productivity

For the moment I will step back to a theoretical perspective and consider the import of the physical layout of food production for social organization in a preindustrial society. There is a considerable body of anthropological inquiry on this topic, but very little concrete study of it among economists.

It is not economists now, but rather cultural-materialist anthropologists like Marvin Harris and Marshall Sahlins, who have reflected that hierarchies have been built up, and appropriation of the fruits of the labor of an underclass has increased, as human societies have progressively developed the technical means to exploit their environment and produce a storable and transportable surplus. This is the perspective from millennia of social evolution. The innovations of peasant societies over preceding tribal societies were private ownership of land, class stratification and state institutions, coercive extraction of taxes, rent, and so on, and state-protected markets and media of exchange. Although the producers still live mainly by their own labor on the land, peasants must sweat more for their livelihood, compared to, say, swidden horticulturists. There are both ecological and social reasons for labor intensification.

Ester Boserup has contributed to this perspective specifically in respect to the intensification of agriculture under population pressure. That is, growth of population engenders evolution of agricultural practice toward technology that is more intensive and productive in calories per land area, but less efficient in output per labor hour.

The quantum leap in labor input occurs in the transition from shifting and long-fallow agriculture to yearly cultivation on the same land. Soil preparation, manuring, and weeding become onerous necessities for maintenance of productivity. The tasks of gathering fuel and feeding animals likewise require much more labor as fallow fields, grasslands, and forests are reduced. Several stages of transition to labor-intensive farming techniques probably occurred very long ago in China.

> After the Chin unification (220 B.C.), private ownership and free transactions of land were legalized on a nation-wide scale and remained so until the adoption of the so-called Land Equalization Law (chun-tien fa) in some parts of the nation in

> 485. In this period both managerial landlordism and tenant farming existed side by side. ...
>
> [T]he 7th and 8th century marked a crucial turning point for both the land institution and the tax system in China. Prior to that time ... there was enough farmland for people to till under the prevailing technology. The normal acreage tilled by an able-bodied male adult, which was determined primarily by his working capacity, remained fairly stable throughout. After the 7th century, however, the amount of arable land became the truly limiting factor, which determined the average area to be farmed by each peasant. There was a secular trend of declining farm size ever since.
>
> Prior to 780, the major component of the complex tax system had always been a poll tax variety. ... The focal point of taxation was shifted from persons to land, because by then a person having labor but no land might not possess adequate ability to pay tax. (Kang Chao, 1982, 279-280)

This shift in taxation is an important indication that land resources were dwindling relative to population, and access to land could not be assumed for an able-bodied worker. The response to shortage of land is naturally intensification of land use. As population density increases, so too, to a point, does surplus per land area. Boserup's conclusion is that surplus *per land area* is the crucial factor in the development of division of labor, town centers, and other features of civilization and social stratification. A surplus cannot be drawn from beyond a very limited radius except with an extensive system of water transport. With preindustrial technologies the cost and difficulties of transport are the major obstacles to the provisioning of towns.

A related aspect of population density crucial to social hierarchy is the facilitation of political control:

> When population is sparse and fertile land abundant and uncontrolled, a social hierarchy can be maintained only by direct, personal control over the members of the lower class. ... When population becomes so dense that the land can be controlled, it becomes unnecessary to keep the lower class in personal bondage; it is sufficient to deprive the working classes of the right to be independent cultivators (Boserup, 1965, 73).

Boserup ascribes causation for social stratification to population pressure only in very general terms, and does not specify the mechanisms by which a surplus may be concentrated to support a ceremonial or ruling class.

Intensification of cultivation has been proceeding for millennia in China. Early ripening varieties of rice, facilitating multiple-cropping, spread through Southern China in the twelfth and thirteenth centuries. The introduction and slow diffusion of New World crops, that is, potatoes, yam, and corn, expanded cultivation on marginal lands,

hillsides, and sandy soils after the seventeenth century (Rawski, 1972). By the early twentieth century population was dense in almost all areas in relation to resources. Even in North China where population pressure appears less crushing due to lower population densities, dryfarming cultivation must be described as intensive (Philip. Huang, personal communication 1982). Only some uncultivated arable land, of uncertain economic feasibility for farming, remained in the far North and Northwest in the 1930's, and somewhat more in the Southwest (7.4% of farm area for the Southwest Rice Area, according to Buck, 1964, 172); elsewhere it was negligible.

Multiple-cropping increases annual yield per land surface, at the cost of multiplied labor input. In Chinese wet paddy rice cultivation, the rice is grown to about 5-inch sprout size in a specially prepared seed bed,and then transplanted laboriously, sprout by sprout, to flooded fields that have been meticulously terraced and leveled. Transplanting allows more crops per year by reducing the period the rice must occupy the main fields. The water level in each field is regulated by means of a complex of narrow embankments around each small land parcel, cut through at intervals by flumes to drain a constant trickle of water down to the succeeding level. The creation and maintenance of the terraces are themselves a considerable investment of human energy.

According to Boserup's analysis of population density and agricultural production, increasing population density generally provides a growing surplus per land area. But Boserup also notes that at some historical point the increment of population contributes no more to production than it requires in subsistence — or possibly less, such that surplus decreases as population density increases. Exhaustion of soil and natural resources also contributes to such an outcome. I suspect that the Double-Cropping Rice Area and the Winter Wheat-Millet Area reflect such conditions. There is, then, a natural limit to the possibilities of surplus extraction, a limit imposed by the ecology and the available technology.

The Potential Surplus

From the Boserup perspective, it is not the product per land surface or the product per capita that sets the conditions for social stratification, but instead the surplus per land surface at a particular point in time. We might consider that the surplus could be measured as a biological potential, as well as by measurements of transported grain. In

the former, we would be measuring the "potential" surplus, because it is not necessarily the case that all of the surplus is drained from the rural sector. Within the rural sector there are both wealthy and poor, exploiters and exploited. A considerable portion of the fruits of exploitation are consumed within the rural sector. In between are the "middle peasants", who cannot be considered the direct exploiters of others' labor, but who are privileged by ownership that allows them a relatively acceptable standard of living. So the total production less the total consumption in the rural sector falls short of the surplus actually produced by all peasants.

Because we do not have much data for 1930's China on the amount of grain that leaves the rural sector (although in Section 6.2 an estimate will be made from marketing data), we cannot measure the extracted surplus directly. It would of course be a very difficult task, even for a researcher on the spot at a market town, to figure the net effect of exchanges, whether the foodstuff is exchanged among peasants, or leaves the area as rents and taxes, or is exchanged for necessary imported foods and goods. But from the Buck farm survey we do know annual production of grain-equivalent, and there are nutrition and other studies that indicate the annual grain per capita necessary for the subsistence of a self-reproducing population. The difference between the two is the "potential" surplus; obviously not all of the potential surplus is actually available for extraction or exchange, because those who can eat more than the minimum. However, there is also an advantage in this measure in that it encompasses both the surplus that is consumed locally by rich peasants/managerial farmers, and extractions of absentee landlords.

Dataset 5.4.1 shows the annual potential surplus per hectare for ten areas of China that has been calculated from the Buck survey. The columns are product per hectare of cropland, product per capita, persons per hectare of cropland, minimum subsistence needs per hectare at the given density of agricultural population, and finally "potential surplus", the difference between production and subsistence.

Annual subsistence needs for a self-reproducing population of men, women and children were estimated at 220 kilograms grain-equivalent, based largely on Clark and Haswell's 1964 study of subsistence agriculture (which used both Indian data and Buck's nutritional studies). Indian populations were found to survive on as little as 180 kilograms of grain per capita; the 220 kilograms grain-equivalent figure makes some small additional allowance for non-grain foods and non-food expenditures, more or less as shown also in Buck's surveys on expenditures.

Dataset 5.4.1 Basic Data on Product per Hectare, Product per Capita,Population Density, and Surplus per Hectare

Area	Product/ Hectare	Product/ Capita	Persons/ Cropland, Hectares	Subsist- ence Needs /Ha.@220	Potential Surplus/ Hectare
NORTH CHINA					
Spring Wheat	512.1	217.6	2.35	517.7	-5.6
Winter-Wheat Millet	1117.8	285.6	3.92	861.0	256.8
Winter-Wheat Kaoliang	1383.0	438.6	3.15	693.0	690.0
North	1385.6	597.8	2.32	509.9	875.7
South	1381.1	367.6	3.76	826.5	554.6
SOUTH CHINA					
Yangtze Rice-Wheat	2457.0	577.9	4.26	937.2	1519.8
East	2178.8	548.5	3.97	873.9	1304.9
West	2872.1	615.3	4.67	1026.9	1845.2
Rice-Tea	2731.3	461.8	5.92	1301.2	1430.1
Double-Cropping Rice	3219.3	486.1	6.62	1456.9	1762.4
Szechwan Rice	3888.5	723.8	5.38	1182.0	2706.5
Southwestern Rice	4224.0	605.4	6.99	1534.9	2689.1

It can be seen by inspection that the agricultural productivity per hectare increases from north to south: from the arid, hilly far northwest of the Spring Wheat Area, to the plains of the Winter Wheat-Kaoliang Area, the heartland of North China, to the warmer and well-watered Yangtze River Valley, and on to the even moister and warmer south and southwest. This agricultural productivity follows closely on the length of the growing season and the amount of precipitation, which can be compared in Dataset 5.4.2 (Table).

The relationship between product per hectare and product per capita is also surprisingly regular, with the exception of the Winter Wheat-Kaoliang Area, North — an area that was largely reserved for Manchu bannermen before 1911, and, though subject to huge migrations and opening of new lands in the 1930's (Nakagone 1982; Franklin Ho 1931), still much less densely populated than the plains to the south. This relationship is charted in Dataset 5.4.3 (Figure). The linear correlation between product per hectare and product per capita, excluding the Winter Wheat-Kaoliang Area, North, is $r^2 = 0.78$, a significant correlation; if product per capita is matched to the square root of the product per hectare (matching the decreasing slope), then the correlation is 0.80. It is a positive relationship, with some hint that it curves slightly downward at the upper end.

Dataset 5.4.2. Growing Season, Annual Precipitation, Multiple Cropping, and Product per Hectare

Area	Meteoro-logical Stations	Days Growing Season	Annual Rainfall, inches	Index of Multiple Cropping	Product per Ha., Kg. Grain-Equi.
NORTH CHINA					
Spring Wheat	5	196	14.8	107	512.1
Winter-Wheat Millet	1	231	18.6	118	1117.8
Winter-Wheat Kaoliang	15	241	22.2	139	1383.0
North	5	225	20.0	126	1385.6
South	9	247	24.4	144	1381.1
SOUTH CHINA					
Yangtze Rice-Wheat	11	293	37.1	165	2457.0
East	3	295	37.8	166	2178.8
West	8	292	36.4	163	2872.1
Rice-Tea	4	308	53.9	169	2731.3
Double-Cropping Rice	5	365	59.7	176	3219.3
Szechwan Rice	5	334	38.2	167	3888.5
Southwestern Rice	4	360	49.1	152	4224.0

Sources: Buck, Statistics volume pp. 7-9; Atlas p. 28 and p. 296.

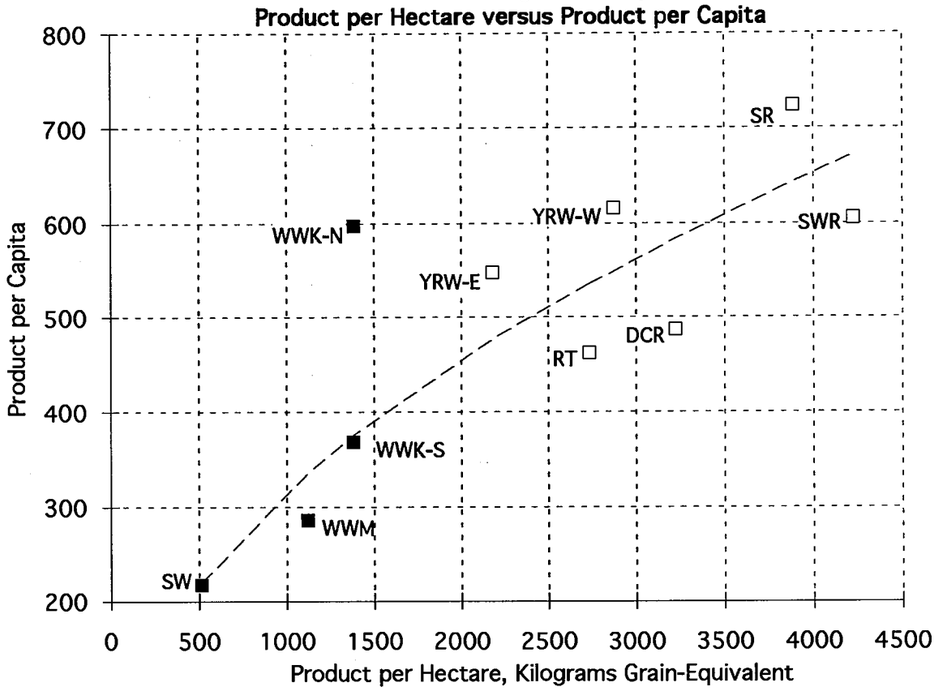
Note: Growing season and rainfall figures are simple averages of station observations.This might tend to confirm Frances Bray's view on rice economies (1986), that intensification need not lead to lower product per capita overall, as implied by marginal productivity ruminations of neoclassical economists. (The marginal productivity argument is still valid for the microeconomics within areas: applying the same labor to more land will yield greater returns, and vice versa for less land.)

The slightly decreasing slope of the curve might indicate, however, that intensification still meets some limits. Most importantly, its regularity suggests that population density has everywhere (except in Winter Wheat-Kaoliang, North) nearly reached the carrying capacity of the land at current technology.[45]

The fact that product per capita increases together with product per hectare suggests, rather, that a factor other than diminishing returns to labor is constricting consumption

[45] It is possible that the devastating rebellions and wars that decimated the populations of the Yangtze River Valley and the Szechwan Basin in the nineteenth century have still left their mark in the elevation of product per capita there, but that is only a speculation from the 1930s data seen here.

Dataset 5.4.3. Interregional Comparison of Product per Hectare versus Product per Capita



and population growth[46]. It is rather more likely that the removal of the surplus from the producers prevents over-reproduction of the producers. Part One of this thesis proposed that fertile women were drawn up the social hierarchy along with the surplus.

Thinking again broadly about the relationship between product per capita and product per hectare, increased population density probably also brings forth greater product per hectare in a symbiotic relationship of man with the land, i.e. more application of manure as well as more intense cultivation facilitated by the proximity of the fields. In this regard a generalized estimate by Chisholm (1962, p. 125) of the production of land in terms of distance from settlements may be relevant. This estimate is founded in data from diverse environments: Finland, the Netherlands, and Pakistan.

Chisholm 1962, Table 16. Estimated Effect of Distance between Settlements upon the Average Net Product per Hectare

Distance between Settlements, km.	Average Distance to Cultivated Land, km.	Relative Net Average Product per Hectare*
0.5	0.18	94
1.0	0.35	90
1.5	0.53	85
2.0	0.70	80
3.0	1.10	72
4.0	1.40	66
6.0	2.11	55
8.0	2.81	47

* relative to 100, maximum production at zero distance to land.

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46 This relationship is also significant in thinking again on the Malthusian model presented by Kang Chao in Man and Land in China (1986) and by others using neo-classical analyses of marginal productivity, such as Wiens (1982). The agricultural populations of all areas except the Spring Wheat Area — just barely at subsistence — produce at an average well above subsistence, even two or three times necessary subsistence for the resident farm population. Can it be argued, in concrete terms, that the marginal product of labor is below subsistence? The answer to this would require a lengthy analysis, which is possible from the computerized Buck data; I have made a few forays into this question with the farm size data. I suspect that the return to additional labor input would be found to fall below subsistence only on the smaller farms, and the fact that many farms are so small is an artifact of the gross maldistribution of land. So landownership concentration is the central issue, and the marginal product of labor is a marginal issue, even though it is the starting point of most neoclassical analysis of agricultural economics.

If Chisholm is correct, then more closely packed villages should produce a much higher average product per hectare, due to some efficiencies of travel and transport as well as possibly the necessity of subsistence.

Having dealt with some general issues as well as with the measurements of productivity in the interregional comparison, we can proceed to measurements of the extent of land on which the labor of others' is exploited, another step towards the project of relating the two systematically.

The Proportion of Land on Which the Labor of Others' is Exploited

The portion of all land on farms that is rented land is a relatively straightforward concept. The source data in the Buck survey is clear; percent of land rented is given for each size of farm group within each locality surveyed. For the purposes of this study it is only necessary to re-evaluate the land in terms of its production, and then to carry through a calculation that amalgamates all rented land and all owned land to the level of the area: that is, a weighted average rather than the simple averages across localities carried out for the Buck survey summarization. It is computationally time-consuming, but conceptually easy. The result is reported in the first column of Dataset 5.4.4 .

There is a wide range in this figure for percent of land rented, with a general increase as the potential surplus per hectare increases, up to a high point of 57.6% of all land in the Szechwan Rice Area. However, there is no simple relationship to the average surplus. Even in the Spring Wheat Area, where there is no surplus on the average, 9.5% of land is rented land. This no doubt reflects the fact that even with a very low level of production, some few very large owners can still afford to live on rents.

Land farmed by hired labor is not so easily gauged, first because it is not totally discrete from land farmed by family labor. Small farms commonly both hire out and hire in labor, because some farm tasks are best done in cooperative teams, because of seasonal labor peaks, or because smallholders need to seek outside income. Only for large farms is it usually clear that hired labor is a permanent fixture, especially where there are laborers hired by the year, which are almost exclusively adult males in the data (Buck 1937, Statistics Vol, p. 305; hired and family labor is broken down by men, women, and children). Even if these farms account for only a few percent of the number of farms,

they cover a larger share of total land. There are two measures of hired labor in the Buck survey, percent of farms with adult male laborers hired by the year, and percent of farm labor performed by hired labor. Both of these measures are available only for localities as a whole, not by farm size group. The locality figures have been amalgamated by weighted average to produce the area figures, given also in Dataset 5.4.4. These two measures of hired labor are in substantial agreement with each other (correlation 0.90) in regional pattern, and even in absolute number. The two measures are also consistent with population data showing numbers of non-resident adult males not matched with females; I presume the men to be mostly hired laborers (see related Datasets 2.10.1 C and 6.5.3 A and B).

The second issue is that the use of hired labor is influenced by the price of hired labor as well as by the propensity of large landowners to escape the physical drudgery of farm work[47]. As seen in the fourth and fifth columns of Dataset 5.4.4, cash wages differed considerably from region to region, though they may not have differed as much in purchasing power. Wages seemed to have followed grain prices, which were lower in the remote interior, and to have had little relationship to productivity; for example, productivity is highest in Szechwan, but wages are low there. In addition to cash wages, year laborers were provided food and board that was valued at usually from one to one-and-a-half times the cash wage (see Statistics volume p. 328).

Although cash cropping does not seem to account for more than 8% of crop area in any region, and usually much less, there is otherwise a pattern of more extensive growing of tobacco and opium in remote areas, namely the Spring Wheat and the Southwestern Rice Areas, which differ greatly in climate; perhaps the surplus is easier to export in this form. But there is no particular sign that hired labor is expanded because of these crops.

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47 Considering both the number of large farms and the price of labor, the only anomaly in the level of use of hired labor seems to be in the Rice-Tea Area, which uses much more than expected, especially given the high price of labor (a more detailed analysis of this is in Arrigo 1986, pp. 308-9 and Figure 6). Comparing crop data and hired labor use for localities, elevated use of hired labor appears to coincide with dedication of up to 30% of land in a few localities of the Rice-Tea Area to cash crops, some for tea and even more for a crop identified by Buck as astragalus sinensis (in Chinese *tzu yun ing*, "purple cloud extract"), which is milk-vetch, a fodder crop. Perhaps this is for animal husbandry supplying urban meat markets.

Dataset 5.4.4. Rented Land and Measures of the Use of Hired Labor

Area	Rented Land, Units/100	Farms w/ Male Year-Laborers**	Farm Labor Done by Hired Labor	Total Wages for Year Labor* Cash	Grain-Eq.	Day Labor
NORTH CHINA				Ch $	wheat	Ch$
Spring Wheat	9.5	18.2%	14.0%	$32	563	$0.21
Winter-Wheat Millet	15.2	14.5%	13.7%	$37	666	$0.25
Winter-Wheat Kaoliang	12.0	20.4%	21.1%	$35	685	$0.25
North	9.8	30.8%	25.2%	$46	900	$0.29
South	13.7	16.2%	18.1%	$31	607	$0.24
SOUTH CHINA				Ch $	rice	Ch$
Yangtze Rice-Wheat	37.2	18.8%	15.8%	$39	1187	$0.25
East	30.6	15.2%	15.4%	$43	1309	$0.26
West	44.6	23.6%	16.3%	$34	1034	$0.23
Rice-Tea	48.4	14.1%	17.5%	$49	1690	$0.27
Double-Cropping Rice	54.9	8.5%	7.5%	$47	1299	$0.29
Szechwan Rice	57.6	18.9%	24.5%	$22	1175	$0.14
Southwestern Rice	29.5	17.2%	23.0%	$24	959	$0.18

Source: Data on labor calculated from Buck, 1937, Statistics Vol. pp. 303, 305, 328.

* Wages include both cash payment and board. Total wages given here include value of both. Grain-equivalent for total wages at local prices given in Buck 1937, Summary Vol. p. 306.

** The numbers given in this column are for adult male laborers. Figures for percent of farms having year laborers indicate adult male laborers in the rest of this article, as well. Buck's regional averages for percent of farms with hired laborers (p. 303) are:

	Men	Women	Children	All
North China	17.0	0.3	2.5	18.0
South China	12.7	0.4	4.8	16.0

From the totals, there are some farms that have both men and children laborers; women are a negligible portion. It is not surprising that children are a greater presence in labor in the more intensely-cultivated South.

Despite these irregularities and uncertainties, we might still use the percent of labor performed by hired labor as a quick-and-dirty measurement and proxy for the percent of land farmed by hired labor. Adding this to the percent of land that is rented land gives total proportion of land on which the labor of others is exploited. We might be concerned about double-counting where the two overlap, i.e. rented land on which hired labor is also used, but from data on large farms I do not think this could be more than a percent or two, with the possible exception of the Szechwan Rice Area, where both rented land

and hired labor are extensive. Even with this rough and direct measure, the correlations between land farmed by non-owner and our productivity measures are as follows:

Correlation between Percent of Land on Which Others' Labor is Exploited, and

Product per Capita,	$r^2 = 0.750$	probability of error = .02
Potential Surplus per Ha.,	$r^2 = 0.865$	probability of error = .01
Product per Ha.,	$r^2 = 0.865$	probability of error = .01

That is, these are all positive and significant relationships. There is, however, not such a regular relationship if only one part of the two components of Land on Which Others' Labor is Exploited is considered:

Correlation between:	Rented Land	Hired Labor
Product per Capita,	$r^2 = 0.589$	$r^2 = 0.572$
Potential Surplus per Ha,	$r^2 = 0.764$	($r^2 = 0.366$)
Product per Ha.,	$r^2 = 0.799$	($r^2 = 0.248$)

With ten data points, a correlation of 0.564 or higher is necessary to meet significance with possibility of error under 0.05. The two numbers in parenthesis are not statistically significant; the variables are not shown to co-vary. The numbers still, however, contain information. The land tenure pattern generated by Model Two in Dataset 4.3.1 B predicted that land farmed by hired labor would remain nearly constant as productivity increased; meanwhile, rented land increased. If one variable of the two remains constant, there is no correlation. Linear correlation is only a rough measure of relationships, but these numbers — in particular the lack of correlation for hired labor — confirm the prediction.

One point in this exercise on correlations is that the relationship between land tenure and productivity is only clear if all the elements of the land/labor relationship are combined. The correlation for the combination is considerably higher than for either separately. Likewise, because the largest portion of rent collection is by absentee landlords, rural inequality is not separate from urban/rural inequality; in a preindustrial or predominantly agrarian society both are encompassed by their part in the landownership distribution.

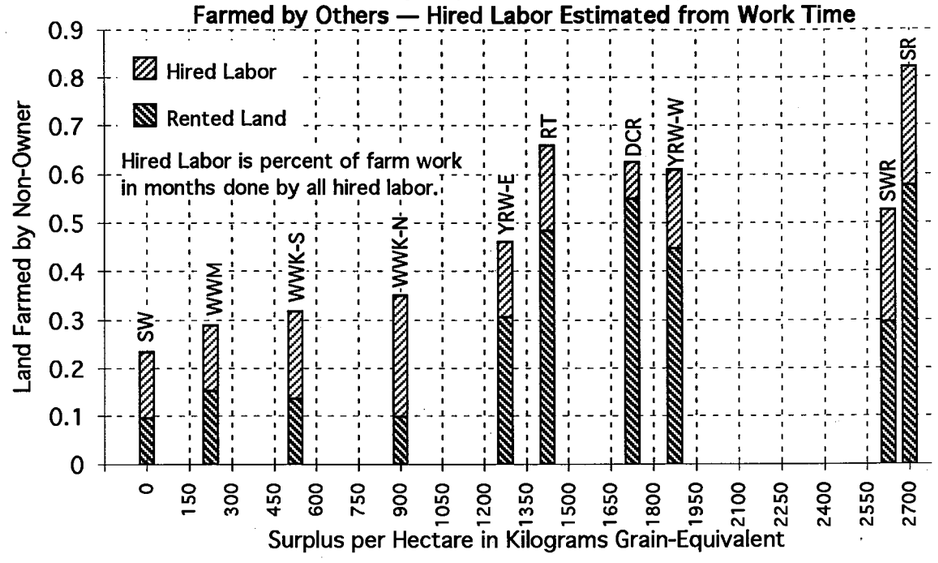
Product per Capita is not as reliable a predictor of Land on Which Others' Labor is Exploited as are the two measures dealing with surface area, Product per Hectare and Surplus per Hectare. This is an outcome of another aspect of preindustrial society that

has been discussed at length in Section 4.4 and Section 5.2: the friction of transport. The lower the productivity of the land — no matter what the productivity of labor — the more laborious must be the process of capturing and concentrating its surplus. So the portion of the Product per Capita that should be subject to extraction is much attenuated by geographical drag. As we have seen in Dataset 5.4.3 (Figure), however, Product per Capita tends to increase together with Product per Hectare in this interregional comparison of areas that are close to the limits of carrying capacity. The combination of both product per land area and product per head of population in the measure of potential surplus per land area combines the effects of both.

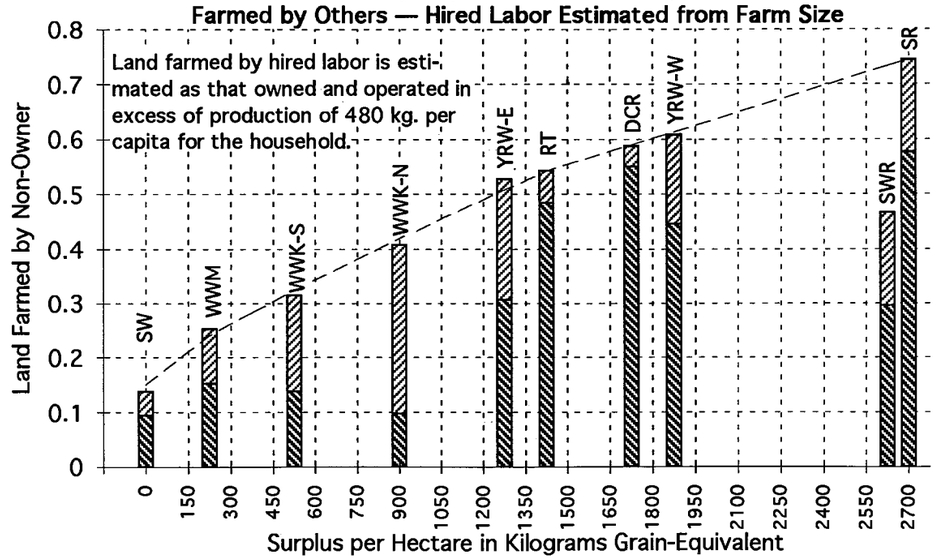
Dataset 5.4.5 (Figure) charts Surplus over Subsistence per Hectare on the horizontal axis, and Land Farmed by Non-Owner on the vertical axis. The shading of the figure is the same as in Model Two, Dataset 4.3.1 B, which proposed a pattern of landowners' use of tenants and hired labor with increasing product per capita: rented land is indicated by left-leaning heavy hatches, and land farmed by hired labor is indicated by right-leaning light hatches. As in Dataset 4.3.1 B, the data columns suggest a positive curve with slightly decreasing slope. However, there is some irregularity in the data columns, first of all a somewhat higher-than-expected column for the Rice-Tea Area, and a column for the Southwestern Rice Area that falls very much short of the expectation. There is in particular more hired labor than expected in the Rice-Tea Area, for unknown reasons. The divergence in the Southwestern Rice Area may be accounted for by the geographical fact that the Southwestern Rice Area is composed of densely-populated, fertile mountain valleys that are, however, widely dispersed (this will be quantified in the next section with data on population density on the cropland and population density over the gross area); and it is the only area without navigable rivers. That is, although the surplus is high, it cannot be easily exported, and that could tend to inhibit investment in land to be farmed by hired labor or tenants.

If we could find an approximation for land farmed by hired labor that is not sensitive to effects such as the price of labor, it might facilitate a closer match with Model Two. For example, since the Model has proposed that owners of land producing more than a certain "sufficiency threshold", or income per capita for the household, will on the average seek to substitute hired for family labor, we can look to the portion of all land that held on the largest farms in each area. The sufficiency threshold is pegged to a level of ownership for managerial farmers; the sufficiency threshold of ownership for those landlords renting out the land should be the same or higher, because rents usually yield less than

Dataset 5.4.5. Surplus per Hectare and Proportion of Land Farmed by Others — Hired Labor Estimated from Work Time



Dataset 5.4.8 Surplus per Hectare and Proportion of Land Farmed by Others — Hired Labor Estimated from Farm Size



farm profits; but at any rate it would not be lower, so rented land plus this approximation of land farmed by hired labor should encompass the largest landowners down to those holding the amount of land affording the sufficiency point.

Dataset 5.4.6 (Table) looks closely at the farms size groups that own land producing over 480 kilograms of grain-equivalent per capita. This was the figure chosen for the "sufficiency threshold" early in this research; it is based in empirical observations that will be presented in detail in Chapter 7. Actually any figure in the range of 420 to 500 kilograms is plausible and usable, and the precise one chosen will not affect interregional comparisons. The bulk of landownership with which we are concerned is far above that range, i.e. it is the really large owners that account for most of the rented and and hired labor, not those on the boundary of the transition.

Dataset 5.4.6 Estimate of Land Farmed by Hired Labor: Land Owned and Operated by Rich Farmer Households in Excess of that Providing 480 Kg. per Capita

	For Farm Households Owning Land Producing Over 480 Kg./Capita:					
			Units/100 of All Land			
Area	Percent of All Farms	Percent of Population	Farmed	Owned	Producing 480 Kg.	Owned & Farmed > 480 Kg.
NORTH CHINA						
Spring Wheat	3.6%	3.6%	12.1	12.1	7.9	4.2
Winter-Wheat Millet	6.1%	7.5%	22.6	22.5	12.6	9.9
Winter-Wheat Kaoliang	22.7%	28.4%	54.6	54.0	31.1	23.4
North	39.4%	48.3%	69.3	68.9	38.7	31.0
South	16.6%	19.7%	43.9	43.3	25.7	17.8
SOUTH CHINA						
Yangtze Rice-Wheat	25.5%	29.9%	47.2	44.3	24.8	19.5
East	25.6%	31.1%	51.4	49.2	27.2	22.0
West	25.2%	27.8%	42.1	37.8	21.7	16.2
Rice-Tea	10.5%	13.6%	21.7	19.9	14.1	5.8
Double-Cropping Rice	11.3%	12.6%	16.4	16.2	12.4	3.8
Szechwan Rice	15.9%	20.9%	33.5	30.8	13.9	16.8
Southwestern Rice	34.0%	38.4%	50.2	47.5	30.4	17.1

NOTE: This data has been generated from the compiled farm size groups of all localities in an area, ranked by product per capita for the household. The approximate portion of land needed to produce a per capita income of 480 kg. grain-equivalent is given in the fifth column. This is estimated as: percent of population (col. 2) x [480 / (product per capita in area)]. The last column here is total land owned minus that needed to produce 480 kg., except that the number is slightly higher due to refinements that take account of the fact that there are a few tenants and part-owners among these farms (for details see Arrigo 1986, pp. 318-321).

The first column of Dataset 5.4.6 is the percent of farms owning land producing over 480 kg. per capita for the household, calculated on the basis of farm size groups for all localities. These farms account for a little more of the population than their numbers of farms, because family size is generally larger on large farms. The percent of all land that they farm and that they own is given in columns three and four; they own at least 90% of their land, so rented land farmed by hired labor could not be significant on these farms. The estimate of amount of land worked by hired labor on these farms is simplified as just the area of land they own in excess of that producing 480 kg. per capita, which is given in the last column of Dataset 5.4.6.

The validity of this measure may be judged somewhat by comparing it to the percent of farms having adult male laborers hired by the year, listed in the second column of Dataset 5.4.4 (Table). The figures vary largely in tandem; the correlation between the two is 0.735. A major difference is in the impoverished northwest Spring Wheat and Winter Wheat-Millet Areas, where a large portion of the population was desperately short of subsistence and wages were very low in real terms, so it is not surprising that use of hired labor much exceeded that expected from the area of farms producing 480 kg. per capita or more.

The result of adding rented land to this estimate of land farmed by hired labor, which is based solely in the product of the land (the same as land size, since land has been valued by its product), is a new measure of the proportion of land on which the labor of others is exploited, which is listed in Dataset 5.4.7 (Table) for the convenience of the reader, although the two components have been given in previous tables.

This measure is graphed against surplus per hectare in Dataset 5.4.8, which has been placed above on the same page with 5.4.5 for ease of comparison. The columns of data form a virtually smooth curve, except for the continuing large anomaly of the Southwestern Rice Area, where exploited land falls far short of the trend of the curve. The best match of this curve is

$$y = 14.26 + 0.54 * \text{square root of } x + 0.0124\,x, \quad \text{where}$$

y = Land on Which Others' Labor is Exploited, and

x = Potential Surplus per Hectare.

Dataset 5.4.7 Rented Land, Hired Labor (Estimated as Land Owned and Operated Over 480 Kg.), and Total Land on Which Others' Labor is Exploited

Area	Rented Land, Units/100	Hired Labor: Land Owned Over 480 Kg.	Total Land Farmed by Non-Owner
NORTH CHINA			
Spring Wheat	9.5	4.2	13.7
Winter-Wheat Millet	15.2	9.9	25.1
Winter-Wheat Kaoliang	12.0	23.4	35.4
North	9.8	31.0	40.8
South	13.7	17.8	31.5
SOUTH CHINA			
Yangtze Rice-Wheat	37.2	19.5	56.7
East	30.6	22.0	52.6
West	44.6	16.2	60.8
Rice-Tea	48.4	5.8	54.2
Double-Cropping Rice	54.9	3.8	58.7
Szechwan Rice	57.6	16.8	74.4
Southwestern Rice	29.5	17.1	46.6

This empirical curve is steeper than the curve generated from Model Two for Dataset 4.3.1 B; it is much lower on the left side of the surplus per hectare scale, where productivity is low. Dataset 4.3.1 B was constructed with a more inclusive estimate of land given over to hired labor by managerial farmers: a sufficiency threshold of 440 kg., and a more complicated calculation that included land under the 440 watermark, just as long as total income reached 440, i.e. a gradual transition from middle peasant to managerial farmer status. This computation cannot easily be applied to the real data. Also in the model a constant 40% rate of rent was applied, but in actuality there are likely to be much lower rents and profits on farm management where the product is so low, which would systematically make the curve steeper. These differences are not as significant for the moment as the similarities: that empirical data shows a relationship with a positive curve of slightly decreasing slope, and that rented land increases over this curve while land farmed by hired labor does not. After a theory for the determination of the rate of rent is presented in Part Three, this comparison will be repeated with greater sophistication.

Some of the issue, however, is not in measurement but in interpretation. A provocative question that has been raised about the results of this research by an agricultural

economist is whether the productivity of the land is the result of the intensification of cultivation under exploitative conditions, implying that concentration of ownership forces multiple-cropping and labor-intensive techniques, particularly on rented land, as tenants struggle both to subsist and to pay rents; and that this is the source of a relationship between agricultural productivity and proportion of land on which the labor of others is exploited. If this were the case, concentration of landownership could be socially and historically determined in any particular context, and the level of productivity would follow. While the framework of this thesis affirms the centrality of relations of exploitation, there is an underlying assumption of the economist's view that must be dealt with more explicitly, to wit: Production may be rendered almost as elastic as labor input by means of cultivation of high-value labor-intensive crops.

A rebuttal of this argument is that the poor state of transport, low level of specialization, and basic requirements of local self-sufficiency, as discussed before, left limited scope for the expansion of labor-intensive cash cropping by means of crops such as tobacco, opium, and cotton that require two to five times as much labor per hectare as grains while yielding several times the value. On a regionwide basis, such cropping could not substantially supplant subsistence grains. Tobacco and opium occupied considerable acreage in peripheral areas, both Northwest and Southwest (up to 13% in the latter), but cropping of labor-intensive staples, particularly tubers (two to four times the labor input, limited portability of the product because the weight is about four times that of grain with an equivalent caloric value), was more typical of impoverished localities than was cash cropping (Arrigo, unpublished 1985 analysis of Buck data on crops in North China). Under these conditions, labor intensification through cash-cropping did not provide a majority of the surplus, nor could it provide an inexhaustible route for enhancing the value of agricultural production.

On the other hand, multiple-cropping ranges from an index of 107 to 176 for the various areas, that is, two crops a year for most cultivated land in the Double-Cropping Rice Area, and even three crops in some localities. Multiple-cropping is a powerful and prevalent means of intensifying labor and increasing production; it also depends greatly on climatic conditions.

This thesis offers an ecological view of exploitation, that even though exploitative forces (and resistance to them as well) are always at work, they are constrained by conditions of environment and available technology. So the climatic conditions set out in Dataset

5.4.2 are indeed determinants in the interregional variation, in that they set boundaries limiting feasible intensification with the given technology and difficult transport..

The rationale I propose to explain the relationship between the surplus per land area and the extent of land on which the labor of others is exploited is not a unilinear causation from either factor to the other. Productivity and land/labor relations are mutually reinforcing aspects of the same social system. In an evolutionary perspective, the growth of population stimulates the development of division of labor, social differentiation and stratification; the concentration of ownership, reflecting the coercive powers of the dominant classes, forces peasant producers to intensify their toil, to try to meet subsistence while surrendering rents, taxes, profits, and interest.

5.5 Population Density and the Prevalence of Rented Land

Greater Population Density and More Rented Land:
The Overview through Interregional Comparison

Several factors within a particular environment determine what proportion of land in a region will be contracted out to tenants by large landowners. First of all, more landowners can afford to be absentee landlords at a higher product per capita, just because of the effect of an increasing product per capita on a constant landownership distribution. We have seen that for interregional comparisons in China product per capita is usually higher where product per hectare is higher — which is the outcome of long-term intensification to the point of ecological feasibility, I have argued, though it is not a necessary association. Higher product per capita is overall associated with higher population density. But conceptually, and also in analyzing the empirical data, we can differentiate the effects of product per capita from those of population density. This differentiation was made in the just-so story of Lin Village, before and after decrease in productivity, and before and after transport impediments (Sections 4.3-4.4).

Higher population density is usually accompanied by ease of marketing, division of labor, and development of commerce. An increasing specialization of labor is suggested for the densely populated South, for example, in that farmers in South China spend less time in non-farm work, 16.9%, than do farmers in North China, 24.3% (Buck Statistics volume, p. 305, last column). Shorter distances to market towns facilitate trade as well as the transport of an extracted surplus to provision population concentrations (Chisholm 1962, Ch. 5). This analysis will be developed much further in Chapter 6. As proposed in Section 4.4, population density lowers the threshold for absentee landlord status by minimizing transport costs, and thus primes the conditions for prevalence of rented land.

Finally, population density and commercial activity may be stimulated on a localized geographical scale because of inflow of surplus and elites from outlying areas. To use the terms of neoclassical economics, population density raises rents because of "demand for land", and wages to labor may be higher where economic activity abounds, due to "opportunity costs". Whether or not these terms adequately describe the causation, it

does appear that rented land predominates where population is denser, regardless of the product per capita.

In this Section 5.5 I hope to separate out the effect of population density — ergo, the effect of the friction of transport — from that of productivity as much as possible in a brief exercise. Because we have not yet dealt with rates of rent and other factors, it is not possible to do this yet on a theoretical level. However, the effect of population density can be demonstrated in the empirical data.

In Dataset 5.4.1 (Table) the numbers of persons per hectare of cropland for each area as found within the Buck survey were already reported. However, transport and collection of the surplus is dependent not only on density within the cropland, but on other geographical conditions, such as the availability of water transport, intervening obstacles such as hilly or marshy regions, and so on. These conditions cannot be readily quantified, but at the least one piece of evidence can be applied from the Buck data: the amount of cropland in the gross area. Dataset 5.5.1 (Table) gives data separately for population density on cropland and on the gross area; these are given in inverse form, as cropland per person, and gross area per cropland.

Dataset 5.5.1 Population Density and the Prevalence of Rented Land

Area	Rented Land, Units/100	Rented Land/ Farmed by Non-Owner	Crop-land per Person	Gross Area per Cropland by: Land Data	Population Data N of Localities	
NORTH CHINA						
Spring Wheat	9.5	34%	0.426	8.3	8	13.5
Winter-Wheat Millet	15.2	51%	0.255	3.1	17	5.7
Winter-Wheat Kaoliang	12.0	37%	0.317	1.6	27	1.8
North	9.8	24%	0.431	1.5	8	1.2
South	13.7	46%	0.266	1.8	19	2.7
SOUTH CHINA						
Yangtze Rice-Wheat	37.2	66%	0.235	2.5	14	1.4
East	30.6	67%	0.252	2.8	6	1.6
West	44.6	65%	0.214	2.1	8	1.2
Rice-Tea	48.4	77%	0.169	3.6	19	2.2
Double-Cropping Rice	54.9	87%	0.151	4.7	6	4.6
Szechwan Rice	57.6	75%	0.186	1.4	4	4.2
Southwestern Rice	29.5	63%	0.143	7.5	11	17.9

Gross area per cropland means, for the Spring Wheat Area, for example, that there is on the average only one hectare of cropland in 14 hectares of gross area. There are two sources of data on cropland density cited in the Buck survey; both are listed in Dataset 5.5.1, for the sake of comparison.[48] However, the second, in the last column, seems to be based on more detailed data and also differentiates the areas more, and so that is the one I will use here.

In Dataset 5.5.2 (Figure) the ten areas of the Buck survey are plotted on a graph of the two kinds of density, population density on the cropland, and cropland density over the gross area. The field is cut into four quadrants by a high and low division on each axis. Seven of the ten areas fall into the high population density, high cropland density quadrant, although it must not be neglected that there is still a considerable variation within that quadrant. That variation is, however, dwarfed by the gap with the areas in the other three quadrants. The Winter Wheat-Kaoliang Area, North, has low population density although the area is almost entirely cropland; remember it enjoys a generous product per capita of almost 600 kg., and is the region of newly opening lands. The Spring Wheat Area is low on both counts, suggesting the difficult environment known from its production to be just barely subsistence. The Southwestern Rice Area has very

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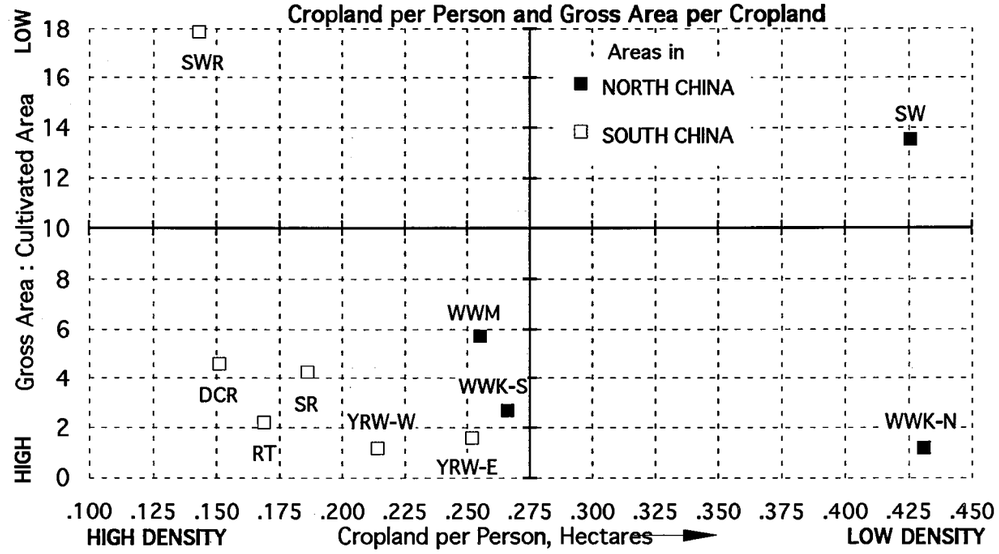
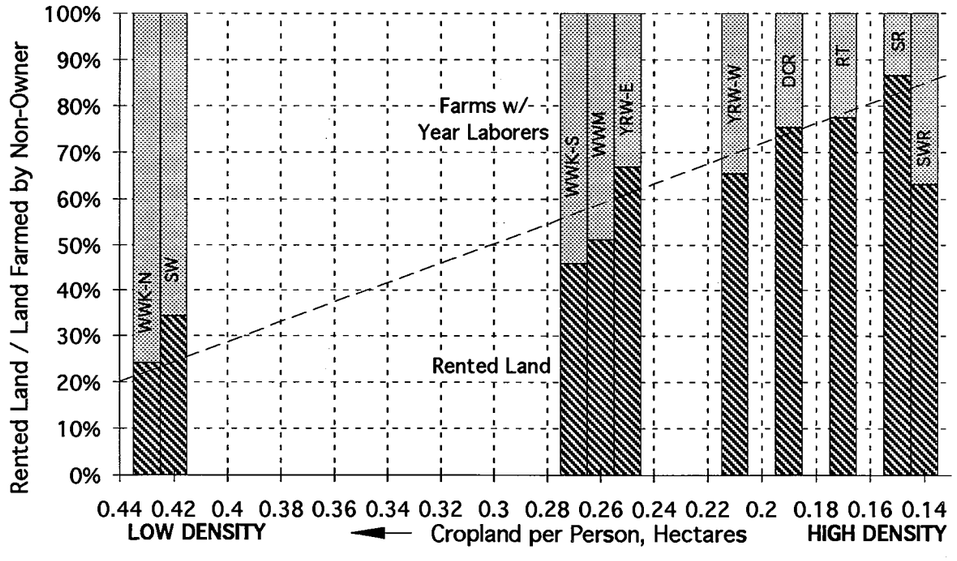
48 Several different estimates for cropland as a portion of the gross area can be extracted from the *Statistics* volume; all depend on government statistics of the period, by *xian* (county), because Buck did not measure the gross area. In the counties of the localities he studied, Buck estimated that from 11% to 43% of cultivated land was not reported in the government statistics. This is, for the worst case, the Szechwan Rice Area, Buck estimated that there was actually 75% more cultivated land than listed by the Directorate of Statistics of the National Government (p. 30). In Dataset 5.5.1, the first estimate under the heading "Gross Area" is from Buck's adjusted data for the counties where samples were taken, i.e. an estimate from land area. The second estimate is based on (a) number of persons per square mile of gross area, relative to (b) number of persons per square mile of crop area (p. 423). Buck got the former piece of information from local county records; the latter is from his own farm survey. Unfortunately, the former information was not provided for all the counties sampled; I had to apply the average for those available to all the localities in an area.

Perhaps because the local government data are more accurate than the national government data, or perhaps because in the technology of that period persons were more easily enumerated than land surfaces, the estimate by population results in a more orderly statistical relationship than the estimate by land, and I will apply it here and in further analysis of population density in Part Three. The estimate by population indicates a much higher density of cropland in the Yangtze Rice-Wheat and Rice Tea Areas, and a much lower density in the Southwestern Rice Area, which provides some explanation for differences between them although all have highly-productive intensive cropping.

Dataset 5.5.2 Population Density: Areas Graphed by Cropland per Person and Gross Area per Cropland



Dataset 5.5.3 Population Density and the Relative Prevalence of Rented Land



high density of population on cropland, and extremely low density of cropland, an unusual combination. It has a large surplus, but it is not easily exported. This area falls off the regression line in graphs where all the others conform.

To judge the prevalence of rented land in relation to ease of transport, it is not enough to just plot percent of rented land against population density, because we would have to control for the effects of productivity at the same time. We already know from graphs and correlations presented above that rented land and productivity increase together. We have seen, however, that the effects of productivity (in its pure form, product per capita) are not linear, even in theory. Moreover, for a prediction through Model Two on the amount of rented land expected, with which to make a valid comparison and show deviation due to population density, we would need more real-world information, specifically rates of rent and concrete information on sufficiency thresholds for absentee landlords, neither of which we have at present.

An alternative is to merely show that rented land is a bigger slice of land farmed with the labor of others, the denser the population. This is done in Dataset 5.5.3. Here the y-axis is the scale for two segments that add up to 100%: rented land, and the percent of farms which have male laborers hired by the year. These are simple, rough measurements. The percent of farms with year laborers is not quite the same definition as land farmed with hired labor, but it is probably close. For one, as can be reviewed in Dataset 5.4.4 (Table), the figures for percent of farms with year laborers are fairly close to those for percent of farm labor performed by hired labor; but year labor reflects the presence of large managerial farmers with more certainty. For another, although those farms are probably farms of at least double the average size, still family labor probably does half the work overall, so percent of farms with year laborers may be not very far from percent of land farmed by year laborers.

The progression of rented land with population density on the cropland is quite regular in Dataset 5.5.3. In fact it has a foolproof correlation of -0.91 (the scale of cropland per person gets smaller with population density). The linear regression is the light dashed line that transects the columns of data diagonally. Conceptually it is not so foolproof, because we do not know if we have been able to fully negate the effects of productivity compounded in the data by using "proportion of rented land in land farmed by non-owner" rather than "rented land" itself.

How Population Density Works in Determining Land Tenure Patterns: A Test Comparison of Two Areas

However, we can make a test case by comparing two areas with the same product per capita but very different population densities. The figures compiled in Dataset 5.5.4 describe the Winter Wheat-Kaoliang Area, North, and the Yangtze Rice-Wheat Area, West. These are all figures that have been seen before in the tables, except for the last line, the approximate rate of rent on agricultural land, which will be introduced in Part Three.

The two areas are heartland areas of China, North and South respectively. In the center of the Winter Wheat-Kaoliang Area, North is the "northern capital", Peking under the Manchu dynasty (Peiping in the Republican period, since the capital was in the South; now it is again Beijing). As can be seen from the figure for Gross Area per Cropland, 1.2, in the 1930's it was a plain that was already almost entirely cultivated. The West part of the Yangtze Rice-Wheat Area is richer in agricultural resources than the East; though the East contains the great cities of Nanking and Shanghai, down river of and thus with access to all the vast surplus of the upriver middle Yangtze Valley, much of the area there south of the Hwai River is marshy. The West, instead, is the densely-populated rice bowl. There is little uncropped land.

The product per capita for the two areas, near to 600 kg. grain-equivalent, and the gross area per cropland are virtually the same. Only the product per hectare in YRW-W is double that of WWK-N, and the population density is double. These are fortuitously neat numbers.

I do not have a logical model for the magnitude of the effect of population density and the friction of transport, except that the square root of area measurements, which would be a linear distance, should be the measure to compare with other variables, and yields better correlations. The effect must be found empirically, by hit-and-miss.

The total proportion of land farmed with the labor of others is 40.6% in WWK-N and 68.2% in YRW-W, that is, nearly 1.7 times as great in YRW-W (let us use the abbreviations for brevity). As seen in the bottom two lines of the table, wages were higher and rents were lower in WWK-N. This is consistent with lower extraction of surplus, and lower numbers of landowners who can afford to exploit the labor of others. This aspect of the effect of distance has *not* been explicitly incorporated into Model Two,

although its impact can be seen in the data on surplus per hectare and land farmed by non-owner (Dataset 5.4.3, Figure), and it concurs with Boserup's cross-culture and cross-time generalizations. In addition to this, distance to market seems to cause a large shift towards managerial farming and away from letting out land to tenants. This comparison, overall, shows a huge impact of population density independent of that of product per capita.

Dataset 5.5.4 Comparison of Two Areas with Same Product per Capita but Different Population Density

Variables	Winter Wheat-Kaoliang Area, North	Yangtze Rice-Wheat Area, West	Ratio WWK-N : YRW-W
Product per Capita, Kg.	597.8	615.3	1 : 1
Product per Ha., Kg.	1386	2872	1 : 2
Cropland per Person, Ha.	0.431	0.214	1 : 0.5
Gross Area per Cropland	1.2	1.2	1 : 1
Rented Land, Units/100	9.8	44.6	1 : 4
% Farms w/ Year Laborers	30.8	23.6	1 : 0.75
Land Farmed by Non-Owner	40.6	68.2	1 : 1.7
Rented Land/ Land Farmed by Non-Owner	24%	65%	1 : 2.7
Cash Wages to Year Labor,Ch$	$46	$34	1 : 0.75
Approximate Rate of Rent	24%	30%	1 : 1.25

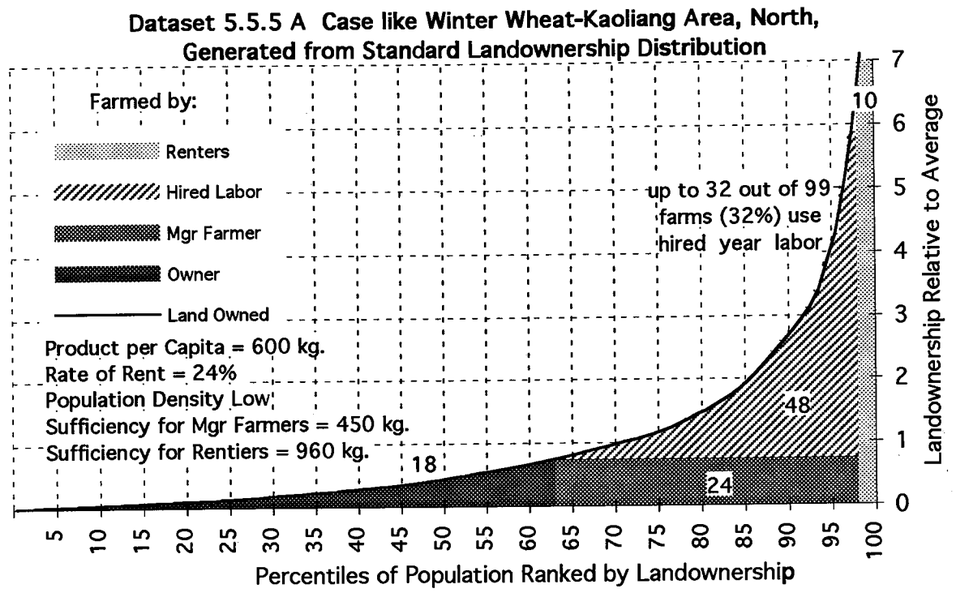
Reviewing again Dataset 5.5.3 concerning rented land as a proportion of land farmed by non-owner, we can see that WWK-N and YRW-W fall far apart on the scale of density, but are still more or less in line with the trend of the other areas. This would seem to confirm that the relationship shown in the figure is indeed predominantly caused by population density, not productivity. Some deviations from the regression line for other areas suggest some explanations: WWK-S and WWM have much lower product per capita than YRW-E, and so according to Model Two should have a lower proportion of rented land, as they do; SWR has such dispersed and inaccessible cropland that its intense cropping still does not support a centralized socio-economic hierarchy based on rents.[49]

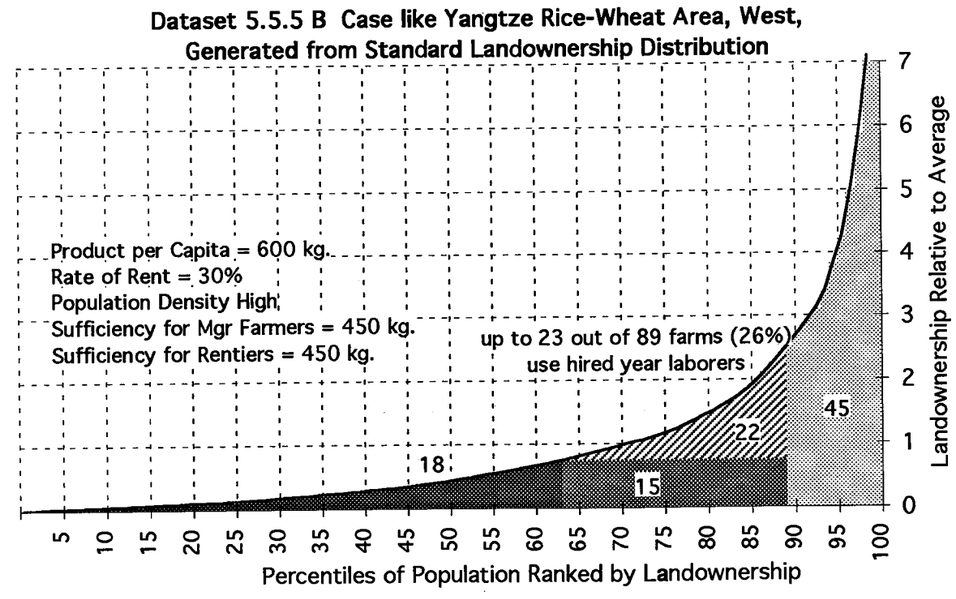
[49]Readers who may have challenged the construction of Dataset 5.5.3 may have noticed that if either of the other two approximations for land farmed by hired labor, "percent of labor farmed by hired labor" or "land owned and operated in excess of 480 kg. per capita", are used instead of "percent of farms with hired year laborers", then the correlation is still significant but not so neat. In particular, the amount of hired labor used in the impoverished areas of Spring Wheat and Winter Wheat-Millet far exceeds the amount that would be expected from the small numbers of farms reaping more than 480 kg. per capita. I believe that the desperation of a large portion of the population in these areas drives up rents over the surplus of the producers and drives down wages; this will be quantified in Part Three in the context of the full analysis of the rate of rent. In another perspective, this artifact shows the common sense of using the actual numbers for rented land and hired year laborers to figure their proportions in Dataset 5.5.3, because we cannot "control" for differences in rate of exploitation yet.

The consistency of rented land as a proportion of land farmed by non-owner in Dataset 5.5.3, and also of land farmed by other, as shown previously in Dataset 5.4.8 (Figure), may confirm underlying regularity of the landownership distribution. Let us perform another exercise with the WWK-N and YRW-W cases. We will see if the divergent patterns of land tenure can be produced from the same landownership distribution.

We begin with basically the same landownership distribution as used in the Chapter 4 just-so story of Lin Village, but one with finer gradations of ownership, especially at the upper end; this distribution was originally generated with a simulated model of partible inheritance. The product per capita is set at 600 kg. per capita. We apply to the landownership distribution at this level of productivity the rates of rent for WWK-N and YRW-W, 24% and 30% respectively, that were estimated from crop allocation data in the Buck survey. The sufficiency threshold for beginning to substitute hired labor for own labor is taken as 450 kg. (as mentioned before, any figure in the range of 420-500 can serve for interregional comparison). Then farms owning a little more than enough land to provide 450 kg. per capita for the household, which is only 0.75 times the average land per capita (450/600 = 0.75), can begin to be net users of hired labor. This is illustrated in Datasets 5.5.5 A and B (Figures).

For the case like YRW-W, where population is dense at nearly 4.7 persons per hectares of cropland, the 450 kg. sufficiency threshold also successfully predicts the amount of land rented out, as if there were negligible cost to transporting exported grain. In the model the point of transition to full landlord status is at 2.5 units of land (i.e. 2.5 times the average), which yields 2.5 x 600 x 30% = 450 kg. in annual rents per capita. The 11% of population owning more than that own in the aggregate 45 units of land. This is very close to the the 44.6% of land that is rented land in the Yangtze Rice-Wheat Area, West. For the case modelled like WWK-N, a sufficiency threshold of 960 kg. at 24% rent yields very nearly the same amount of rented land, roughly 10%, that is seen in the real data. The 960 kg. rentier threshold is a little more than double that for the YRW-W





case, and in the real Winter Wheat-Kaoliang Area, North, the population density is half that of YRW-W; this is the expected direction of the relationship, lower density and higher rentier threshold. (Though there is no reason to expect such a neatly proportional coincidence between population density and inferred sufficiency thresholds in all cases; remember the density of cropland over the gross area is the same for the two areas, but in other comparisons it may not be.)

Secondly, the exercise yields very comparable numbers for the percent of farms on which hired labor, in particular labor hired by the year, is likely to be employed. For the YRW-W case this is about 23-26% of farms in the rural sector, and for the WWK-N case it is 30-32% — that is, the number is probably a little smaller than the number of farms collecting 450 kg. per capita from their land, because no doubt if only a small fraction of hired labor were called for, daily or monthly rather than year labor would be engaged. However, as implied in the illustration, hired labor in WWK-N and other areas where it predominates probably tills a much greater proportion of all land than is seen in their numbers or in the previous figures for percent of labor performed by hired labor: hired labor is worked hard and applied slightly more extensively over the land on large farms.

This exercise shows the explanatory power of the Model Two. It also shows some residual problems of measurement: we are hard put to precisely define and model the extent of the use of hired labor, even though several possible measurements seem to match fairly well. In the Model Two illustration of land/labor relations, Dataset 4.4.2, a particular rate of profit on hired labor was assigned (the same as for tenants), and large landowners were presumed to put out much less effort on their own land as holdings increased, rather than just using hired labor for the excess, as long as they could maintain income at the sufficiency threshold. But in general we do not know the rate of profit on use of hired labor, and the Buck tabulations do not give use of labor by farm size group, only by locality, so the possible estimates are indirect. For the sake of avoiding computational complexity as well, in Datasets 5.4.6 through 5.4.8 land farmed with hired labor was estimated from the empirical farm size data as land owned beyond holdings providing "sufficiency". Here in Datasets 5.5.5 A and B use of that measure has been continued, and the difference between this and Dataset 4.4.2 can be seen clearly in the figures.

On another matter, the models depict precise points of transition from peasant to managerial farmer, and an even sharper transition, all or nothing, from managerial

farmer to rentier/absentee landlord. A criticism of the model is obvious: that no sharp transition like this is likely to exist in the real world with its multidimensional and random influences. No problem. As long as the sufficiency threshold applies on the average — like many probabilistic processes, there is likely to be variation around a point where the frequency is greatest — then in aggregate the transition is in effect. Similarly, large managerial farmers may make a gradual transition to rentier status by renting out part of their land and farming some, and the all-or-nothing transition of the model is a distorting simplification. That may be so, yet as long as the transition follows about the same pattern in all areas, the validity of the model is not undone, though it may be subject to refinement as more precise information becomes available. It is not likely that the largest rentiers, who account for the bulk of rented land, do themselves farm. In sum, the model is rather robust and may be stretched a ways without breaking; yet it can yield some surprisingly precise quantification.

As conclusion to Chapter 5, let me repeat that both the level of productivity and population density have been found to be strongly related to land tenure patterns in the Buck survey of farmers in 1930's China. The relationship cannot be understood analytically, however, without reference to the underlying landownership distribution. The most important finding in Chapter 5 is in Dataset 5.4.8. This shows the relationship of land farmed by other to surplus per land area: a positive curve of decreasing slope, like that predicted with increasing product per capita and a landownership distribution generated by partible inheritance, shown in Dataset 4.3.1 B. The form of land farmed by other, whether hired labor or tenants, also roughly matches the predicted proportions as well, with the addition of the effects of population density, as shown in Dataset 5.5.3. The comparison of two areas in greater specificity, Winter Wheat-Kaoliang, North, and Yangtze Rice-Wheat, West, further illustrates the conceptualization and utility of the model of landownership distribution and its relationship to the determination of land tenure patterns.

This empirical analysis is a suitable preamble for the following Chapter 6 which will set up a model of the relationship between the countryside and urban concentrations, a model involving both a parasitic siphoning of the agricultural surplus, and exchange with the countryside through the labor pools that serve urban needs.

Chapter 6 Urban/Rural Linkages and Population Processes: Marketing, Migration, Malthusian Constraints

6.0 Introduction: The Commercial Relations of an Agrarian Society

This thesis has analyzed the landownership distribution of agricultural land and the social relations of production and reproduction based on that skewed distribution. Chapter 5 explained the determination of land tenure patterns across the countryside; it also proposed that these land tenure patterns would affect the flow of agricultural product out of the countryside. This analysis has been based on farm survey data, but the conceptualization of this thesis goes beyond the farm sector. Chapter 6 carries forward the implications of surplus outflow from the countryside, including the indirect effects of its accumulation in the urban sector.

It is possible, of course, to posit urban/rural differentiation without an extractive flow from countryside to city. Such is the picture drawn by a foremost expert on geographic and social regional systems in China, G. William Skinner (see for example several chapters in G. William Skinner, ed., 1977, The City in Late Imperial China). This picture is explicit in his 1987 paper "The Historical Geography of Population Processes in China, Japan and France", which emphasizes the role of riverine systems in pre-industrial agrarian societies and provides a useful and authoritative summary description of core-periphery differentiation within these systems:

> These propositions (about core-periphery differentiation) may be summarized as follows. In terms of human ecology, the major dimensions of internal variation concern settlement size and the density of settlements per unit of area, varying from small and sparse in the far periphery to large and dense in the relatively urbanized inner core. In agriculture, internal differentiation may be summed up in terms of intensity, productivity, and commercialization. Agriculture was both more capital-intensive and more labor-intensive in the core than in the periphery, and yields tended to be higher. In addition, farming varied from highly commercialized in the inner core to largely subsistence in the far periphery. Transport, in a word, varied from relatively efficient in riverine cores to extremely inefficient in mountainous peripheries. Both costs per ton-km. and travel times steadily rose as one moved through regional space toward the periphery. As for the regional economy, in virtually all respects it climaxed in the inner core, where the density of economic transactions was highest, where markets of all kinds were most developed, where financial and wholesaling services were concentrated, and where industrial productivity was highest. Wages and land prices indexed place in the regional economy, i.e.,

> effective economic distance from the organizing and controlling institutions headquartered in the regional metropolises of the inner core. In general, economic opportunities increased as one moved from far periphery to inner core. Spatial variation in the economic division of labor was matched by similar variation in the social composition of the population. Elites of all kinds were concentrated in core areas, forming an ever smaller proportion of the population as one moved from urbanized cores to remote peripheries. The other end of the social scale was also overrepresented. What Lenski has dubbed the expendables of society — the vagabonds, beggars, deviants, and outcastes whose very reproduction was problematic — were bred by or attracted to cities and hence concentrated in core areas. The complex social differentiation of the regional core, functionally associated with the proportion of all households in the nonfarm sector, gave way to an increasingly homogeneous population of illiterate peasants as one moved into regional peripheries. As for the state apparatus, the deployment of bureaucratic resources reflected the relative salience of revenue concerns in the cores of regional economies and of defense concerns around the rims of regional systems.
>
> ...My major propositions here (about population processes) are that in agrarian societies generally 1) fertility varied from high in the periphery to low in the core, 2) mortality varied from low in the periphery to high in the core, 3) household size varied from high in the periphery to low in the core, and 4) the direction of net migration was from periphery to core. (Skinner 1987, pp. 12-13.)

Although this thesis has dealt in comparisons of large regions that are considered largely self-contained by Skinner, rather than in core-periphery comparisons, Skinner's summary is clearly salient for understanding the patterns that have been seen in relation to population density, and it concurs with his descriptions, while also providing a causative rationale. Skinner's total scheme is one of nested hierarchies of marketing systems which extend up to the national level.

In fact the framework of this thesis developed first in study under Skinner in the 1970's, though with the critique that his research slights exploitative class relations and the transfer of surplus over the core-periphery structure of river basins. This is seen, for example, in the 1987 paper (pp. 2-3). Skinner gives five reasons for core-periphery differentiation, which he bases mainly in the natural geographic form of river basins: 1) soil fertility is higher in lowland areas. 2) exploitation of peripheral forest cover for lumber and fuel, plus erosion, transferred fertility to the core. 3) irrigation was feasible in lowlands. 4) taxation extracted surplus everywhere, but also stimulated more intensive production in the cores. 5) the intensification of agriculture was stimulated by the markets of cities. These reasons emphasize variation in land productivity, which is certainly part of periphery-core differentiation, but they neglect

the features of social hierarchy that even more powerfully draw agricultural production and population towards the core: rents, profits, usury, taxes, and unequal trade.

Let me continue now with the perspective on urban/rural relations that will be developed in this chapter.

This thesis views the social relations of production in the countryside as the centerpiece of the whole social hierarchy. The overarching forms of rural extraction link hamlets surrounded by cultivated fields, market towns, and administrative and commercial urban centers. The peasants, if they have land, are basically self-sufficient; for some few necessary specialized products they can exchange among themselves, as in periodic markets. But the skewed landownership distribution, which is enforced by central government administration and military coercion if necessary, deprives them of land, compels service on others' land, and forces payment of rents and taxes.

There could be a question as to whether rented land reflects the maldistribution of landownership, and whether, or to what degree, it represents an urban-rural link. Sometimes a parcel of land is in a location inconvenient for a peasant to tend himself, and he rents it out. Widows and invalids may own land but lack the labor power to farm it. Some men own a tiny share of a field, but are too impoverished and overworked from wage labor to make the necessary inputs of seed, fertilizer, and labor; the land may be rented out. Does the "poor widow" syndrome account for any significant extent of rented land? Or land that is rented out may be owned by those who are wealthy but who reside in the rural sector, some perhaps managerial farmers who are already operating to their capacity. We should inquire into this before too blithely assuming that rented land indicates a flow of surplus out of the farm sector.

There are some sources from which to evaluate absentee landlordship. Oyama (1985) studied gazeteers from 1765 and 1824 concerning large landownership in the lower Yangtze delta:

> During the late Ming-early Qing most of the cultivated land in the Jiangnan delta region was concentrated in the hands of a small number of landowners who relied upon tenants to till it. ... Most of these large landowners were urban landlords, i.e., absentee landlords who resided in county capitals and market towns. ... [Zhao Xixiao, 1824] comments: "The people in Jiangnan have much landed property. Of these landowners, 40 or 50 percent reside in walled cities, 30 or 40 percent in market towns, while 10 or 20 percent are scattered in rural villages." (Oyama 1985, 103)

Even in the late Ming the lower Yangtze region was densely populated and commercialized, conditions conducive to absentee landlordship; fewer landlords may have been town-dwellers elsewhere. But concentration of landlords in towns and cities far predates the early Republican period, for which more data is available. A 1934 study of nearly 1000 families in Wuhing, Chekiang (The China Institute of Economic and Statistical Research, 1939; reprinted 1980) found that only 19.7% of land was rented land, but of this only 2.2% was owned by local landlords (i.e. 89% of rented land was owned by absentee landlords). By my analysis of the farmsize and ownership tables in this source, only 0.2% of the 2.2% belonged to those owning less than the average (i.e. the "poor widow" syndrome accounts for only 1% of rented land).

But we would hope to verify the prevalence of absentee landlordship with a larger-scale source. From the Nanking Government's Land Committee 1937 nation-wide survey of one and half million farms, apparently 61.5% of rented land was owned by absentee landlords (Esherick 1981, p. 393). This is considerable justification for simplifying and treating the category of landlords as absentee landlords, whose collection of rents must cross the rural/urban (or rural/town) divide.

In short, rents and taxes are the basis for population concentrations in towns and cities (for simplicity I will not distinguish between towns and cities in the rest of this discussion; by "city" I mean merely a concentration of non-farming population). This extraction stimulates a secondary circulation of the agricultural surplus, from elites to servants and craftsmen, that creates labor markets and may allow commercial profits. The secondary circulation does not negate the exploitation of the basic agrarian relations, though it somewhat counterbalances the deprivation resulting from that exploitation. The cities need the countryside, but the countryside is little benefited by the city. I call this conceptualization the "parasitic city model"[50].

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50 I will not elevate this "parasitic city model" to the level of the three main models that constitute the theoretical framework of this thesis, because it is not original, at least in concept, and because I will not attempt to substantiate it in materials beyond the survey at hand. The model has an ancestry harking back to the eighteenth century French Physiocrats, in particular the "Tableau Economique" scheme of Francois Quesnay (1694-1774). This was a schematic analysis of exchange between the rural and manufacturing sectors in France of the time, and, though it has fallen into disuse, it should still be useful for understanding a commercially-developed but pre-industrial agrarian society. This school of economics is put in historical perspective by Galbraith, 1987, Ch. 5.

Although non-agricultural production is significant even in an agrarian society, not until much later in a process of industrialization does it become separated from the countryside and concentrated into manufactories where industrial profits become the driving force in social relations. Such processes of urbanization and industrialization are also over the long run a process of deindustrialization of the hinterland, though for European history it was long not recognized as such because of the slow process of the shift with differences in technology (see Kriedte, Medick and Schlumbohm 1981 and Kriedte 1983), and in the last two centuries it has taken on a global dimension, as in England's forced de-industrialization of India.

The discussion here is not original, and it is not new. However, it takes on greater significance with the methods of quantifying social relations of production in the agrarian realm that have been developed in this research. With this quantification both extraction and reproduction processes can be projected with much greater specificity, and thence a more detailed comparison between theory and empirical data can be made.

A question may be raised as to whether China in the 1930's, the main subject of study here, represents an agrarian society as described above. The facts confirm that it was: peasants were the overwhelming mass of the society and they provided most of their own sustenance, producing for subsistence much more than for market. Buck's nutritional survey of 2,717 families showed that for North China only 22% of food by calorie value was purchased, and for South China 26% (Buck Statistics Vol., p. 69). Food purchases were mainly oil, animal products, and sugar. From government statistics covering all counties, totaling 75 million households, 84% of households in North China and 70% of households in South China were farm households (p. 416). The marketing study reported from interviewing knowledgeable observers that for North China 26% of the main crop was sold to middlemen immediately after harvest, and for South China 41% (p. 343). The South, and in particular the regions around major cities on navigable rivers and near the coast, was more commercialized, but the population was overwhelmingly composed of peasants. The predominance of peasant population has not substantially shifted to the present.

That is not to claim, however, that China was not undergoing rapid changes in long-distance transport and trade, relative to past centuries. There are recent books along this line by Brandt (1989) and by Faure (1989), as well as earlier ones by Myers, Perkins, and Rawski. We do not have to agree with Myers, Brandt and Faure, however,

that commercialization, or even higher productivity, necessarily brought higher wages and equalization of incomes; in fact the opposite may have been the experience for peasant cultivators (Huang 1985).

Liang (1980) used the Buck data to demonstrate that the building of railway systems in China in the early twentieth century stimulated increased agricultural output, largely through greater labor inputs (railways were accessible to some of the studied localities, not for transport to the local market, but for taking the agricultural product beyond the county seat). Liang (p. 28) summarizes Perkins to the effect that extraregional trade of farm products grew from 7-8% of total farm output in 1900-1910 to 13% in 1933 (Perkins, Agricultural Development, p. 119, 136, 289). But as will be described in the section on marketing in this chapter, modern transport had not yet deeply penetrated the countryside; human and animal labor was still the near-exclusive means of transport to the local market.

Given the preponderance of peasant population in 1937, the parasitic city model is quite appropriate even with growing commercialization. In fact the point of the parasitic city model elaboration in this chapter is to follow through the land tenure, labor market and demographic variations that are logically attendant on ease of access to markets. Although as before the analysis is based on interregional comparisons, the logic of this analysis can be projected onto historical change.

Section 6.1 of this chapter introduces the simplified class structure of the parasitic city model. Then it follows through a just-so comparison of two hypothetical villages that differ only in access to markets. The two stories begin with the same level of production and same landownership distribution, but the distance to market leads to different land tenure structures, different outflow of agricultural surplus, different urban and rural labor markets, and thence differences in demographic features such as sex ratios and birth rates. Basically, the model illustrates how population dispersion alone results in less surplus outflow, a proportionally smaller urban sector with more limited urban labor markets, and conversely more economic exchange internal to the rural sector in the form of hired agricultural labor, transportation, craft work, and personal services. A central question within this comparison is how the land-short population manages to meet subsistence under different conditions of land tenure and different labor markets reflecting the secondary circulation of the agricultural surplus. These differences are quantified through a grain-flow economy, of course one simplified by applying a few just-so rules.

The rest of the chapter is concerned with finding and organizing empirical evidence of variations like those operating in the parasitic city model. These are a far-flung range of phenomena that directly or indirectly link the agricultural and non-agricultural sectors, or that reflect non-agricultural exchange within the countryside.

Section 6.2 estimates the outflow of agricultural product from the rural sector by means of an analysis of marketing data for the ten agricultural regions, and then relates the outflow (as measured by harvest sales to middlemen) to the extent of rented land and, secondarily, land farmed by hired labor. The implication of this relationship is that rents and farm profits, manifestations of the skewed landownership distribution, largely determine the outflow. The small quantity of grain retained by the producers after the harvest sale indicates that this outflow is not a comfortable margin of surplus marketed voluntarily, but an extracted surplus. As theorized in Chapter 5, and as is integrated into the parasitic city model, greater population density leads to a greater proportion of rented land, which logically should lead to more massive quantities of rents leaving the rural sector. (Higher productivity of course also gives the potential for greater surplus extraction, as seen in Chapter 5, but we do not want to conflate that here with the effects of population density.) According to the parasitic city model, farm profits are more circulated within the rural economy than are rents, though they also lead to some exports. The findings are consistent with these proposals.

Section 6.3 examines non-agricultural income and some aspects of land/labor relations in more detail, specifically who takes in rented land, and where sideline occupations are more prevalent. The examination first takes up Farm Survey data on land productivity and land tenure that has been processed previously in this research, plus analysis of regional data on subsidiary occupations and percent of income from non-farm sources. The culmination of this part of the analysis is an estimate of income from land and from non-agricultural work for segments of the farm population, from land-poor to land-rich. The conclusion, in summary, is that most of rented land falls into the tenure of those who already have significant holdings, and sideline earnings in labor are poorly paid, so although these economic relations do allow the poor a small margin towards subsistence, they do not redress the effects of landownership inequality. Section 6.3 goes on to examine the Population Survey samples which reported on occupations of the farm household members. Here the regional comparisons show a greater number of workers occupied in trade and transportation, mostly part-time, in the regions where

population is dispersed over the gross area (regardless of density or productivity on cultivated land), as is consistent with the parasitic city model.

In Section 6.4 and later sections we delve further into the population data of the Buck survey that was collated by Frank W. Notestein. Section 6.4 analyzes the migration data, which contain considerable detail on occupation and destination of migration. The migration data, carefully read, impart a qualitative and descriptive sense of the intercourse between farm and non-farm sectors, which we can interpret in light of the effects of population density and productivity. The areas close to the lower stretches of the Yangtze River, traditionally the major artery of transport from the interior, show a heightened level of migration in and out of farm families as well as much employment in manufacturing, no doubt due to proximity to commerce and industry in the great cities of the lower Yangtze. The occupations of the migrants mostly parallel those of the population from which they are drawn, though they more predominantly specialize in full-time non-agricultural occupations. The regional patterning of migration develops the core-periphery implications of the parasitic city model, with those areas near an apparent urban concentration consuming the surplus (Shanghai) exhibiting a heightened pace of labor out-migration and loss of young adult males (as shown in Section 2.10).

The subsequent three sections of this chapter, again based on the Notestein archives, detail regional differences in demographic features. Although in many ways these sections continue the train of thought and analysis begun in Chapter 2, these demographic phenomena could not be understood in context until after the analysis of regional variation of the agricultural economy presented in Chapter 5. The parasitic city model further specifies why population density (acting though the intermediary links of land tenure relations and the urban labor markets fed by the agricultural surplus) is correlated with high adolescent sex ratios (males per 100 females) and a sudden drop in sex ratios in young adulthood — apparently a departure of young males for the urban sector, to labor or engage in commerce. Section 6.5 shows how the pattern of marriage for men was related to land tenure conditions and labor migration. This is a straightforward continuation of the theme (mainly Sections 2.3, 2.5, 2.9, and 2.10) that landownership directly governs marriage opportunities unless rented land loosens the constraints on access to land.

Section 6.6 discusses a more subtle issue, marriage markets for women and presents details of regional differences in age of marriage for women. Following on studies for Taiwan by Wolf and Huang (1980) and Chuang and Wolf (1995), it speculates on how

very high male-to-female sex ratios may have led to an obscure but not infrequent custom of raising child brides, in some very commercialized areas of China. Section 6.7 explains regional differences in birth rates in terms of estimated average income (farm product retained after harvest sale plus off-farm income in each region — not production, but what remains after extraction and secondary circulation), Malthusian restraints that are not merely the limits of nature, but also the cruelty of man.

The final Section 6.8 takes a leap of speculation to integrate many large-scale demographic observations about the historical processes of industrialization and urbanization; this could be seen as an extension of the parasitic city model. The integration of demographic theory is accompanied in Section 6.8 by some quantification, as usual in this thesis, based on hypothetical distributions of landed and industrial capital. As a continuation of the large issues sketched at the beginning of this introduction, it is appropriate to preview this here.

For agrarian society in general the owners of agricultural land reproduce more than the landless, and marriage for men is directly constrained by landownership, as modelled in Chapter 1. But the expansion of rented land, as with increased population density or improved transport, loosens that constraint (see high reproduction for East Central LO group, mostly tenants, in Dataset 2.9.2 A) and separates labor earnings from ownership income. We might say that a developing contradiction in the relations of production brings with it a contradiction in the relations of reproduction, one that prefigures early industrial society. The relationship of reproduction to landownership and land holdings without ownership has been thoroughly investigated in South Asian studies, and these findings will be reviewed here.

By the same progression of population density and agricultural outflow, secondary circulation increases; and thence potential markets for mass production and increasing core-periphery differentiation. The expansion of industrial capital creates labor markets that allow and stimulate reproduction by tenants and/or wage earners, and so the relationship between capital ownership and reproduction is inverted, to that familiar for early industrial society, where the capitalists boast that they are abstemious and deplore the lower orders breeding like rabbits.

Chapter 6, while proceeding on the logic of a timeless just-so story, lays the basis for an historical and geographical application of the theories presented in this thesis. This integration of the agricultural economy and population models substantially concludes

the discussion of demographic issues in this thesis. We will return to the agricultural economy in Chapter 7.

6.1 The Parasitic City Model and Implications for the Flow of the Surplus

Conceptualizing a Social Hierarchy Straddling Countryside and Town

The first purpose of the parasitic city model is to illustrate an interrelationship between the form of the social hierarchy in the countryside, and the flow of surplus to the urban sector. Put simply, the model proposes that the extent of rented land and the presence of absentee landlords in urban concentrations largely determines the flow of the surplus. If rented land is not prevalent and urban markets are far away — as seen in Chapter 5 on the determination of the land tenure structure, the two features tend to go together — then the agricultural surplus tends to remain and circulate in the countryside.

The balance of population between rural and urban sectors has implications for demographic processes. We have already seen strong relationships in the demographic data for farm households in Chapter 2, for example in the apparent loss of males at early adult age, especially in densely populated and commercialized regions. The parasitic city model makes explicit the rural-urban interactions that seem to underlie these relationships. There are two aspects of this.

First, the larger the portion of population in urban concentrations and the greater the division of labor between rural and urban sectors (i.e. "de-industrialization" or lack of sideline crafts in the countryside), the larger the urban labor market that is replenished by permanent and temporary migration from rural households, which benefit from remittances from the migrants. Likewise, a labor force that might have remained in the rural sector as poorly-paid agricultural hirelings or transport coolies is drained off. So in demographic terms, a high pre-marriage age ratio of males to females gives way to a low post-marriage age ratio (see Dataset 2.10.1 A, B, C). This is the pattern that predominates, in general, where regional population overall is dense and transport is facilitated by rivers and canals. An analytic modification to this geographic generalization may be made: urban concentrations that are situated on major rivers may flourish on an agricultural surplus that is shipped from far upriver, even though the immediate hinterland is not fertile enough to support a dense population.

Second, in the opposite case, where the agricultural surplus is not easily transported to urban population concentrations, there is a tendency for large landowners to remain in the countryside and to put their land out to hired labor rather than to tenants (see Dataset 5.5.3), and this expands the rural labor market for adult male labor. As a further effect, the fact that the large landowners in such areas are more likely to remain in the rural sector, and thus expend a greater portion of their farm profits on services and crafts produced in the rural sector, also expands the rural market for labor, albeit labor that may be poorly paid because of its lack of alternative opportunities. The demographic consequence is a male-to-female sex ratio that only decreases slightly from adolescence to adulthood.

There is a further utility for the parasitic city model. It makes explicit the interconnectedness of agricultural and non-agricultural production in providing the livelihood of the large portion of the population that is land-short. That is, given the maldistribution of land, commonly 40-60% of the populace does not own enough land to afford subsistence. Where rented land is prevalent, taking in rented land may fill the deficit, but even that is not certain: farmers with significant holdings of their own have the advantage in getting control of rented land, and the most impoverished may not be able to attain tenancy.[51] It may be generalized from this that at least a quarter of the farm population is heavily dependent on subsidiary occupations such as agricultural labor, transport labor and hiring-out as servants; peddling and petty commerce that is virtually transport labor; producing crafts and processing agricultural products either on their own farmsteads or at small mills owned by richer farmers; or migrating seasonally to labor in towns and cities. This secondary circulation of the agricultural product (in effect food subsistence gleaned through further labor and exchange outside the farm, in contrast to the farm which provides primary, direct sustenance from

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51 This can be seen below in Dataset 6.3.4 A and B, which chart land owned against land rented, for North and South China respectively. In most areas large landowners seem to rent in as much land as small landowners, though averaging of tenants and owners in the source data on farm size groups does not allow a definitive answer. To briefly cite 1938 fieldwork in Yunnan by the authoritative Fei Hsiao-tung, "These figures demonstrate that the holders of relatively large properties, as well as the landless and the small owners, tend to expand the amount of land under their management through renting rather than through purchasing land. ... This table shows clearly that those who rent land are not necessarily landless or even poor people; the rich rent land too." (Fei 1949, p. 77)

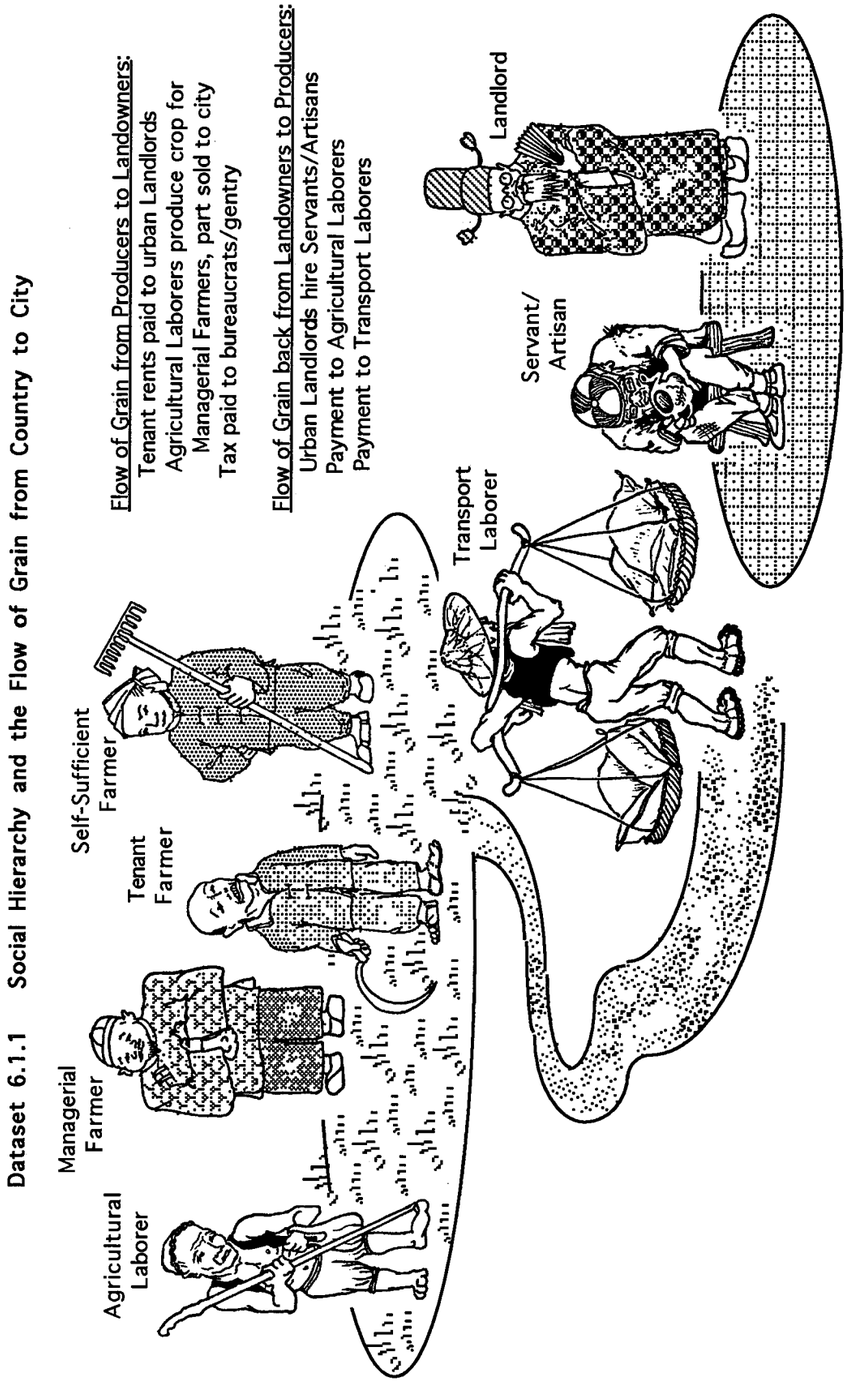
An analysis of which sector of farmers gains control of most rented land, and under what conditions, will be presented in Part Three.

labor) is all the more central to their survival where the overall level of production in the region is so low that average product per capita barely surpasses minimum subsistence, as in the impoverished northwest, and yet most of the product is reaped by large landowners. Here in particular the parasitic city model is a useful concept for thinking about labor markets and labor service conditions in the exchange between social classes.

Dataset 6.1.1 is a cartoon schematic of the land/labor relations and the market exchange in which major agricultural products are transferred. Grain takes the place of money in this scheme, as elsewhere in this thesis, because money is only a nominal medium whereas grain is both production and subsistence, the heart of the matter. At first thought, this should be a very simple diagram, but step by step the picture becomes more complex, even though it is only a logical spinning out of the obvious. There are only two scenes in the diagram, the rural sector and the market town, though a wider network of tributary relations — taxation — and exchange is implied.

Landlords in the town collect rents in kind on the land they own in the village. The grain is transported; if the distance is far or the terrain rugged, there may be significant payment to coolie labor. The landlords directly consume a large portion of their rents as edibles, or perhaps exchange it for delicacies of greater value than the average inhabitant eats, and so can consume a prodigious value in grain-equivalent. Of the rest of the rents, a portion pays for services — maids, concubines, rickshaw boys, guards — and a portion is sold for manufactured goods or specialty products. The manufactures such as richly-embroidered clothing and carved lacquered furniture may very well be produced to order in artisan shops in the town. Porcelain and silk brocade may come from farther afield, from areas that specialize in those products, also craft production in the place of origin; and the town may also have its own specialization for exports. The local artisan shops pay labor that is at least partly migrant from the countryside.

Since the landlords have no hand in production on the land they enjoy much less of its product, and in fact may have less income than big owners in the countryside farming with hired labor. However, they may well enjoy mercantile and bureaucratic incomes that are independent of their landed endowments; this is not part of the model.



Dataset 6.1.1 Social Hierarchy and the Flow of Grain from Country to City

The managerial farmers at the least supervise labor; the smaller ones may apply a substantial exertion themselves. At any rate, hired labor is generally relatively cheap, taking a much smaller portion of the crop than would tenants.[52] Of course like all farmers the managerial farmers have to invest in equipment, animals, seed and other stock, but on a bigger scale than most, and this may involve layouts that support labor indirectly. Of the farm profits remaining after payment to hired labor and a generous consumption of the fruits of the farm, managerial farmers spend some for craft goods produced locally, say baskets and cloth, and export some to the town to pay for luxury goods. After that they may still have substantial savings to reinvest in land, or to advance loans during the spring hunger at usurious rates, but that is not incorporated into the model.

A certain portion of farmers are self-sufficient on their own land, which provides virtually all their food. They may even grow and spin and weave their own cotton. They sell some of the product in order to purchase edible oils and manufactured goods, but this quantity is small compared to the expenditures of the managerial farmers. We will not be concerned with it. The self-sufficient farmers are likely to seek an income higher than sparse subsistence by renting in land, however, and in this respect they enter into the land/labor equation.

In almost all areas at least 45%, but even up to 60%, of farmholders do not own enough land to support their families on, given that three-quarters of the population own only one-quarter of all the land. If full-time agricultural laborers who do not have their own farms are also considered, then the number of land-short and landless is 50% to 70% of all population. This large number makes ends meet mostly through renting-in land and hiring out labor. However, they also recoup part of the lost production of their hands on others' land by exchanging additional labor for grain: labor in crafts and services in the rural sector, or even labor in transport and in services and manufacture in the urban sector. This latter may be the work of a family member who is sent off to work as an apprentice in a shop in the town, sleeping on his work table at night and sending home his meager cash earnings. It may be seasonal migration of the head of household to follow the harvest northward, or to transport and peddle local products from a wheelbarrow in

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52 To again quote Fei's 1938 fieldwork in Yunnan, "These figures confirm the villagers' observations that an owner will find managing his farm much more profitable than renting it out." (Fei & Chang 1949, p. 75). The relative profitability of renting out and farming with hired labor has been discussed in Chapter 5, with longer citations from Fei.

the agricultural off-season. Within the village, women may make a substantial contribution to household finances by spinning, weaving, and embroidering, and raising silkworms, chickens, and pigs for sale. In this realm it may be difficult to distinguish production for exchange among peasants from production that draws grain from the hoard of landlords; but conceptually we can make the distinction.

The just-so story of the parasitic city is just the extension of the obvious, with simplifications that make the social structure easier to envision and model. But as we move to quantification of the model, its utility will become apparent.

Quantifying the Grain Economy

The parasitic city model is a simplified abstraction of a rural/urban grain flow economy. Some of the artifices in its construction have no specific references to empirical data, but are necessary simplifications. However, the grain economy's starting point is the landownership distribution and its outcome in land tenure conditions, and these have been based on empirical observations, as has been discussed in Chapter 5. To this land tenure pattern are applied plausible figures for the division of agricultural production between producer (renter or hired labor) and landowner. This is the first cut on the grain flow economy. Given that the rentier population is set to be urban-dwelling in this model, it is also the main determinant of the flow out of the rural sector. The difference in this flow as it proceeds from the rural land tenure structure is a central lesson of the model. But there is still more to be seen when numbers are set to the model, and we can see the order of magnitude of the secondary circulation of the agricultural product.

Let us set up the familiar just-so story. There are two villages, *Yuan Cun* or "Plains Village", and *Fong Cun* or "Mountain Peak Village", which, as their names suggest, are situated on a fertile plain and on a stony mountain ridge, respectively. The former is densely populated, and within easy water transport of a market town. The latter is sparsely populated, though the moist mountain clime yields a decent crop in scattered hollows; the porterage over the hills to market is difficult. Each village has one hundred hectares of cultivated land, and each hectare yields 2000 kg. of food, mainly grain and staples, i.e. two metric tons per hectare after covering seed, fertilizer, draft animal feed and other non-labor production expenditures.

There are one hundred agricultural households in each village, households that own land and/or operate their own farmsteads; except that the rentier landlords spend all their time in urban pursuits, leaving only a few grizzled grannies to burn incense on the ancestral altars and to cradle the bare-bottomed grandchildren who are too little to begin studying the classics. Each household has five members, so average product per capita is 400 kilograms. The population and land numbers have also been rounded for simplicity. Let us walk through the distribution of population among social classes that is laid out in Dataset 6.1.2 A.

Given the usual landownership distribution created by repeated partible inheritance, and a set level of "sufficiency" as an income of 450 kilograms or more, 25 households in each village have land producing at least that level of prosperity. In each village the 25 rich households own in the aggregate 72 hectares of land, the lion's share of the arable. The rich are those who can afford to forego some or all of the physical labor necessary for cultivating their land and still enjoy a plentiful bounty of 450 kilograms per capita for the family. (The "sufficiency" boundary could be a little higher or a little lower in empirical analysis of different areas, but that need not concern us now.)

In each village there are twenty self-sufficient farmers who neither hire in nor hire out substantial amounts of labor; owning 15 hectares of land in the aggregate, they are able to grow enough grain on their own land to provide 300 kg./capita for their families. Even with this income somewhat above bare subsistence, they aspire to reach a comfortable sufficiency and save for future expansion, and they compete for rented land.

The remainder of the families, 55 in each village, lack enough land to provide minimum subsistence at 220 kg./capita. The 55 families own 10 hectares of land in the aggregate, and that only affords an average of 73 kilograms for each "mouth", as Chinese would say — only enough to feed them for four months after the harvest.

It is inevitable that these families must scramble for a living, either as tenant farmers or as agricultural labor or in other more difficult labors. The rate of rent on arable

land is 40% of the harvest, if tenure can be secured from a landlord; even more exploited than a tenant, an agricultural laborer gives up 60% of the fruit of his sweat.[53]

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[53] Although there is no direct information in Buck 1937 either on rents or on profits on use of farm labor, it is possible to make estimates for these by round-about calculations. Rents will be discussed in detail in Part 3. Let us note, for now, that 40% rent is a common figure. However, rent is usually higher where population is dense and markets are nearby. It would be closer to real conditions of variation if rent in Plains Village were 45%, and in rent in Mountain Peak Village 35%. This would also exacerbate the difference between them in grain outflow, and emphasize the point of difference in outcome of land tenure patterns. For simplicity, however, I have set the rate of rent the same for both villages. A general figure for profit on use of hired labor was arrived at as follows:

The likely capacity for production by a hired year laborer may be taken to approximate the production per man-equivalent in kilograms of grain-equivalent on very large farms (Buck 1937 Statistics Vol., p. 302). However, man-equivalent included both owners and laborers, and it is likely that laborers were pressed to greater exertion. The production is, moreover, gross production. Buck 1937 has no detailed accounting of other expenses, but Buck 1931 (p. 86), does; from this we can see that labor was the main input, but cash expenses for seed, fertilizer, taxes, tools, and buildings amounted to about 9% and 12% of the value of farm production in North and East Central China, the latter being more intensive rice farming.

Buck 1937 (Statistics Vol., p. 328) gives wages for day, month and year laborers in terms of the cash value of board (food) and other goods provided, plus cash payment. In the summary volume, p. 306, he provides the grain-equivalent of the total payment to year laborers, converted through farmers' sale prices of rice and wheat in each locality, as has been listed in Dataset 5.4.4. His simple average of locality data is 661 kilograms of wheat for the North, and for the South 1305 kilograms of rice, or 1143 of wheat, a considerable regional gap.

This may be compared with calculations made by Brandt (1989, p. 113-115) from 1932 wage data collected by Chinese researchers, converting cash payments into grain. The cash payment averaged over 17 provinces (listed in Brandt's Table 5.2) was the equivalent of 9.87 piculs (1 picul = 110 lbs. = 50 kg.), or about 495 kg. He estimates subsistence per adult male at 3-4 piculs grain consumption, or 150-200 kg. per year, plus other food and miscellaneous, totaling, he says, to the value of about double that, or 300-400 kg...The total of the wage then would be about 800-900 kg.

The outcome of estimations based on the Buck data is:

	North China	South China
Production per man-equivalent on very large farms in kg. grain-equiv.	1858	2261
Production costs: seed, fertilizer, tools, buildings, taxes, livestock	9%	12%
Net production per man-equiv.	1690	1990
Total of cash and kind payment to year laborers in terms of kg. grain-equiv.	661	1224
Wages as percent of net production	39%	61%

Since most hired year labor was in areas with relatively low wages, the North and the Southwest, and also considering Brandt's figures, the lower number is probably more applicable: a general figure of 40% hired labor / 60% landowner split of the net receipts on land farmed with hired labor will be used in the example.

Dataset 6.1.2 A The Parasitic City Model: Land Tenure and Urban/Rural Social Hierarchy under Conditions of Dense or Dispersed Population

Set Conditions: 100 hectares of cultivated land, each producing 2000 kg. grain. 100 families (each 5 persons) owning land and/or operating farms. Skewed distribution of ownership, same for both villages. Rate of rent, 40%; profit on farming with hired labor, 60%. Transport cost is 10% for easy transportation, 40% for difficult. Landlords and Managerial Farmers consume 330 kg./capita for food; they spend remaining income for servants and artisans' products. Others consume 220 kg. minimum for food.

	DENSE POPULATION (Easy Transport) "Plains Village"		DISPERSED POPULATION (Difficult Transport) "Mountain Peak Village"	
Social Class	N of Families	Total Land (Ha.) Owned/Farmed	N of Families	Total Land (Ha.) Owned/Farmed
RURAL SECTOR				
Owner and Farmer Population:				
Landlords (absent)	(8)	40 ha. owned, all rented out.	(2)	16 ha. owned, all rented out.
Managerial Farmers	17	32 ha. owned, of that 15 ha. farm w/hired labor.	23	56 ha. owned, of that 39 ha. farm w/hired.
Self-Sufficient Farmers	20	18 ha. owned, 10 ha. rented in.	20	18 ha. owned, 4 ha. rented in.
Land-Short Farmers	55	10 ha. owned, 30 ha. rented in, 7.5 ha. farm as hired labor.	55	10 ha. owned, 12 ha. rented in, 19.5 farm as hired.
"Invisible" Population:				
Agri. Year Laborers	8	7.5 ha. farm as yr. labor	20	19.5 farm as yr.labor
Transport Laborers	2	none	6	none
All Rural Population:	102	100 ha. total	124	100 ha. total
URBAN SECTOR				
Landlords	8		2	
Servants/Artisans	24		15	
All Urban Population:	32		17	
All Population:	134		141	
% Urban	24%		12%	

VILLAGE DEMOGRAPHIC FEATURES — calculated from above population under conditions:

Set Conditions: Rural households reproduce for urban labor market, but agricultural laborers are extension of rural households. Wives and children of half of landlords remain in rural sector. Zero population growth; no class differentials of reproduction in this model.

N of reproducing wives	98	105
% of adult men unmarried	8%	16%
Adolescent sex ratio	122:98 = 124.5 M/100 F	120:105 = 114.3 M/100 F
Adult sex ratio	100:98 = 102.0 M/100 F	124:105 = 118.1 M/100 F

Dataset 6.1.2 B The Parasitic City Model: Grain Flow and Urban/Rural Social Hierarchy under Conditions of Dense or Dispersed Population

Production and Grain Flow by Social Class	DENSE POPULATION "Plains Village" Metric Tons	Kg. Grain / Capita	DISPERSED POPULATION "Mountain Peak Village" Metric Tons	Kg. Grain / Capita
RURAL SECTOR				
Total Product: 100 ha. x 2 tons/ha.	200.0	400	200.0	400
Landlords				
Production on owned rented land	80.0	2000	32.0	3200
Retained by renters	48.0		19.2	
Rents due to Landlords	32.0	800	12.8	1280
Cost to transport rent grain	3.2		5.1	
Net shipment to landlords	28.8	720	7.7	765
Managerial Farmers				
Production on owned land	64.0	755	112.0	975
Paid to hired labor	12.0		31.2	
Net profit on farm production	52.0	610	80.8	700
Food consumed by Mgr. Farmers	28.1	330	38.0	330
Remainder	24.0	280	42.9	370
Purchase rural crafts/services	12.0		21.4	
Export to buy luxuries	12.0		21.4	
Transport cost paid to laborers	1.2		8.6	
Purchase urban artisan products	10.8		12.9	
Self-Sufficient Farmers				
Production on owned land	36.0	360	36.0	360
Retained on rented land	12.0	120	4.8	50
Total Income	48.0	480	40.8	410
Land-Short Farmers				
Production on owned land	20.0	73	20.0	73
Retained on rented land	36.0	131	14.4	52
Rural Craft/Service	12.0	44	21.4	78
Wages from agricultural labor	6.0	22	15.6	57
Wages from transport labor	2.2	8	6.8	25
Total Income	76.2	278	78.3	285
Full-Time Wage Laborers				
Agricultural Year Laborers	6.0	220	15.6	220
Transport Laborers	2.2	220	6.8	220
URBAN SECTOR				
Landlords				
Rents received by Landlords	28.8	720	7.7	765
Food consumed by Landlords	13.2	330	3.3	330
Landlords purchase services/crafts	15.6	390	4.4	435
Servants/Artisans				
Received from Landlords	15.6	130	4.4	55
Received from Managerial Farmers	10.8	90	12.9	165
Total Income	26.4	220	17.2	220
TOTAL GRAIN FLOW TO URBAN SECTOR	39.6		20.5	

There are also differences between Plains Village and Mountain Peak Village, notably in the disposition of the villages' wealthy households. Due to the proximity of the market town for Plains Village, the eight biggest landowners, who can collect 500 kg./capita or more for their families just as rentiers, have taken up town residence. Transport only takes 10% of the load when their rents are shipped to town. But for Mountain Peak Village, the laborers who carry the grain over the mountain pass in heavy basket loads must be paid the equivalent of 40% of the weight transported. Only the two biggest landowners there take up the life of absentee rentiers. So in Plains Village 40 hectares of land are rented land, but in Mountain Peak Village only 16 hectares are rented out.

In Plains Village the next 17 biggest landowners among the rich families have too much land to farm it all with family labor (not just the labor of the male head, but also that of sons, and perhaps wives and daughters), and enough income to want some respite from excessive labor, so of the 32 hectares they own in the aggregate, they hire labor to farm the equivalent of 15 hectares. They are the "managerial farmers". Half of this labor is seasonal labor, for which they hire some poor neighbors. Half of this labor is performed by laborers who are contracted by the year from far-away villages, and seven men and a boy are needed to cover 7.5 hectares. Each hired man tills one hectare producing 2000 kilograms (which is more labor than the landowner exerts individually), and is paid the equivalent of 800 kg. (40%) in cash wages and board. This is more than enough for an individual, allowing some savings and remittances, but not enough to support a wife and family, and so the hired year laborers are *guang gun*, "bare stick" bachelors, or they marry late after returning to their own villages.

In Mountain Peak Village six would-be absentee landlords are marooned in the village because of the forelorn remoteness of the place. While wanting to garner the most profit from their land, they wish to avoid any labor beyond supervision, and they use hired labor for all their land, 24 hectares. So together with the 17 managerial farmers who do some of their own farming, there are 39 hectares farmed by hired labor, and half of that done by 20 year laborers.

Now we have all five social classes originally depicted on the graduated curve of the rural landownership distribution: landlords, managerial farmers, middle (or self-sufficient) farmers, poor (or land-short or tenant) farmers, and agricultural laborers. Of these, the agricultural laborers could be said to be "invisible" population, because

they do not have their own households, and in social status and in surveys they seem to disappear.

We need two more social classes to complete the basic parasitic city paradigm: transport labor and urban servants or artisans, that is, the two functions of transporting the surplus, and of producing specialized services and goods for the consumption of the landowning classes. These are illustrated in cartoon figures in Dataset 6.1.1 as a young coolie carrying two large baskets on a pole, and an old man hunched over an ornate teapot. Transport coolies and servants/artisans barely earn a family subsistence wage, 1100 kg. for five persons. Their numbers are determined by the quantity of the flow of grain to the town, not by the landownership distribution and relations of production in the countryside. But full-time transport labor is depicted here as living in the countryside as well, where subsistence is less costly.

To know their numbers in this example we must follow through the grain economy with a few simple made-up rules. The details are laid out in Dataset 6.1.2 B. There is no way to know how close the example is to real cases, but the order of magnitude and the relative size of the numbers in the two cases are relevant to our understanding of regional variation. The rules are that landlords and managerial farmers consume 330 kg./capita for their families in food, and apply the remainder to services and luxuries. For the landlords, all of that expenditure is in the urban sector. For managerial farmers, half of income remaining after food consumption is spent in the rural sector, and half is exported for the purchase of town-produced specialty items. Rent shipments to landlords and grain exports by managerial farmers incur transportation costs. Half of transport work is done as a sideline by the poor farmer population, so there are only a few full-time transport laborers.

The outcome of this grain flow economy is 24 servants/artisans in the market town near Plains Village, and 15 in the market town a ways down the slope from Mountain Peak Village. Two full-time coolies serve the former, and six the latter — less product is exported from Mountain Peak Village, but it takes much more labor to move it. As can be seen at the bottom line of Dataset 6.1.2 B, 39.6 metric tons of grain leaves Plains Village for the town annually, but only about half of that, 20.5 tons, leaves Mountain Peak Village. This is out of a total production of 200 metric tons in each village. Plains Village and its parasitic city, taken together, have 24% urban population. Mountain Peak Village together with its associated parasitic city is only 12% urban-dwelling.

The final significant point to be seen in Dataset 6.1.2 B is how the land-short households probably piece together their subsistence from different subsidiary occupations, though nothing can be certain for them except the product of their own land. The figures for total metric tons are translated into kilograms per capita on every line of this section of the table, to make the contribution to subsistence clear. For the poor farmers in Plains Village, land rented-in can bring them very close to independent subsistence, or up to it if they could snatch a little more rented land away from the middle farmers. But there is no such possibility for the poor farmers of Mountain Peak Village. They depend heavily on income from rural crafts and services rendered to the managerial farmers, an almost feudal social relationship, and secondarily on wages as agricultural laborers for the same managerial farmers. They would be much threatened by an increase in imported goods. In both Plains Village and Mountain Peak Village the land-short population remains above subsistence if all goes well, but it is clear they are vulnerable, and also most in need of remittances from family members working in the urban sector.

Some more demographic observations can be drawn from Dataset 6.1.2 A, if we accept further simplifying abstractions: The generations move in lock-step, clearly differentiated, and for adults we are only concerned with working and reproductive-age adults, say 18-40. Let us say moreover that half of the wives and sub-adult children of landlords remain in the villages, and that the urban population of servants and artisans is mostly male and not self-reproducing, even if some maid-servants (not accounted for in this example) are also employed in wealthy homes. This population must continually be renewed by young migrants from the countryside. Farm families, especially the poor ones, design their reproduction to fill labor markets.[54] The market for agricultural year laborers, so poorly paid that they themselves hardly reproduce, does not elicit such a reproductive response; these may be seen as temporary migrants from other poor families. We will not make any other specific allowance here, though, for class differentials of reproduction.

The numerical outcome is that there are 98 wives of household heads (including wives of transport laborers and half the wives of landlords), the reproducing females, in Plains Village, and 105 in Mountain Peak Village. Then for Plains Village the sex ratio of adolescents may be about 124 males per 100 females (by numbers 122 to 98),

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54 Examples of peasant families designing the number and gender of their children are described in detail in some studies on Japan, such as Skinner (1984) and Smith (1977).

reflecting the male labor produced for the urban market, and the sex ratio of working-age adults only about 102 M/100F (100:98), because the rich men are away for bureaucratic and commerical ventures, while few agricultural laborers migrate in.

In Mountain Peak Village, the adolescent sex ratio is a somewhat lower than in Plains Village because there is less labor demand in the town sector, i.e. 114 M/100F (120:105), and the young adult sex ratio is considerably higher than in Plains Village due to the large numbers of unmarried year laborers, 118 M/100F (124:105).

Last, the birth rate per woman is slightly higher in Plains Village, with 98 women producing 220 surviving children (2.25 children per woman) at zero population growth; in Mountain Peak Village 105 women produce 225 children (2.15 children per woman).

All of these differences between Plains Village and Mountain Peak Village have come about just because of a difference in population density and ease in transport of the agricultural product. The average product per capita for landed families in the two villages was set to be the same in this just-so story. We can also see through this example a very straightforward reason for why regional sex ratios for the pre-marriage age farm population vary positively with gross population density of the region (more related to marketing), while marriage-age sex ratios vary negatively with population density on cultivated land (more related to land tenure conditions), both of which were shown previously in Dataset 2.10.1.

By the thinking of the parasitic city model, the greater the surplus extraction from the countryside, the greater must be the size of the urban labor markets relative to the agricultural sector. If not merely population density, but also level of production per capita varied — product per capita is usually higher where population is denser, we saw before in Chapter 5 —, the example would show even greater contrasts between the two villages, and more "urbanization" for Plains Village. Although this deduction concerning the relative size of the non-farm (town and city) sector cannot be verified from the farm survey material at hand, it fills in the missing piece of the puzzle and explains the demographic variation for the farm households.

If we also consider class differentials of reproduction operating within the countryside, as proposed in Chapter 1, then population density may be seen as over-determining the high pre-marriage age sex ratios through another route of causation. As can be

explained either through the theory to be presented in Part Three or through neo-classical marginal economics reasoning, the rate of rent is generally higher where population is denser, even at the same level of productivity. So actually the rate of rent should be higher in Plains Village than in Mountain Peak Village, the contrast in land tenure structure even more marked, and the difference in volume of grain flow to the urban sector even greater. Moreover, there should be a greater polarization between fast-reproducing and barely-reproducing portions of the population in the area with denser population, given higher rates of surplus extraction and higher class differentials of reproduction. The greater the proportion of "rich" population that is present and practicing female infanticide, stemming just from their own micro-logic of reducing dowry obligations, the higher should be the adolescent sex ratio, even beyond that sex imbalance due to labor market pull.

This has been an extended just-so story that is intended to integrate land tenure patterns with demographic patterns, and show the logic for their association. It is not possible to resolve all questions of previously-observed demographic patterns, such as the complicating effect of slightly lowered rates of reproduction for landlords (see Section 6.8), but still we have moved forward in relating demographic patterns and agricultural economy.

6.2 The Outflow of Agricultural Product from the Countryside: Analysis of Marketing Data

The parasitic city model suggests that landownership inequality in agricultural land and the particular conditions of productivity and land tenure relations determine the portion of agricultural production that is siphoned off to an urban or non-farm sector. Rents paid to absentee landlords are depicted as the major source of the flow of agricultural produce, because all of their consumption is carried out away from the locale of production. However, insofar as large farmers or managerial farmers remain in the countryside but market a portion of their production that is beyond their desired consumption in food, and enjoy luxury goods imported from beyond their immediate area, they also contribute to the flow. This is the picture I have presented in Section 6.1.

Can this be verified in empirical observation? My model proposes an urban/rural boundary and the population data analysis suggests interaction between the two sectors, but this research has not taken on all the specifics.[55] That would be a whole other research project beyond the realm of what is available in the data sources examined here. However, if we can narrow the question to just what quantity of crops leaves the producers in the agricultural sector, and not be concerned with where it may be directed to feed non-agricultural populations, then some of the limited Buck data on marketing can be applied.

The Buck survey did not address detailed questions on marketing to the farmers surveyed, but it did inquire into general conditions in most localities where research was carried out. This inquiry was made of three informants who were considered knowledgeable, and the three responses averaged. This is how the survey reported numbers for percent of the crop sold immediately after harvest, where it was sold (same

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55 There are several reasons why it is not easy to segregate rural agricultural producers and town or city consumers in Chinese data, and thence estimate surplus and deficit in each and/or flow of grain between them. The administrative regions of major cities commonly encompass a surrounding belt of dense cultivation. And the Chinese countryside is often so densely populated that it has considerable specialization of labor and non-agricultural population interspersed with farm population. So I have not attempted to deal with this boundary empirically on the urban side, but have set the concept of the rural/urban sector boundary as a device to deal with the apparent outflow of grain and labor seen within the data at hand.

or nearby village, local market town, city within the county, or city outside the county), and to whom it was sold (consumers, other farmers, or middlemen). All of this information is contained in Chapter IX, "Marketing", of the Statistics Volume, Table 1, p. 343. In addition, the informants reported on distance to markets, means and cost of transportation per ton-mile, and roughly how many man-days of labor were expended per farm for the marketing effort. Most of the means of transportation involved human and animal power; truck or steamboat was available for transport to the local market town in only three of 131 localities, so clearly these are pre-industrial conditions.

The percentages and figures given for crop sales do not form a recognizable pattern until they are integrated with absolute numbers on production. This is what has been done in Dataset 6.2.1. As discussed before, the published tables of the Buck survey provide figures for production (in "grain-equivalent") per farm laborer (in "man-equivalent"), but not per capita or per land area. However, these latter have been calculated in the course of this research and used in previous chapters.

Let me explain Dataset 6.2.1 step by step. The marketing information was not collected for all localities; there was information collected in 151 localities out of the 168 localities covered by the Farm Survey. So Dataset 6.2.1 only covers those 151 localities, and the averages for product per capita and land tenure conditions as well have been recalculated according to the selected localities in each area. The averages given in Dataset 6.2.1 are not simple averages of the datum for each locality; the locality figures are weighted by the total production of the farms surveyed in each locality, to make marketing and production data more comparable, and to apply the same procedures as used elsewhere in this research where volumes of production are involved. So my weighted area averages for percent of crop sold immediately after harvest are not the same as the simple area averages in the Statistics Vol., p. 343.[56]

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56 For the North this is a difference of only two or three percentage points, but for the areas with the most rented land the weighted average yields a much higher figure than the simple average, because the more productive localities have more rented land — and rented land seems to be strongly related to percent of crop sold immediately. For example:

		Percent of Crop Sold Immediately After Harvest:	
Area	Rented Land*	Simple Average Statistics, p. 343	Weighted by Total Locality Production
Winter Wheat-Millet	14%	53%	50%
Yangtze Rice-Wheat	45%	62%	60%
Double-Cropping Rice	62%	64%	77%

* Only localities in area having marketing information are included.

The same kind of averaging is applied to produce the figures for extent of land that is rented land. Land farmed by hired labor is taken to be the same as percent of farm work performed by hired labor, and here just the figure for all the localities was used, as seen before in Dataset 5.4.4, since this is believed to play less of a role in surplus export.

The lower section of Dataset 6.2.1 applies to the average product per capita, for each area, the percent of crop sold immediately after harvest, and the percent of sold crop that is sold to middlemen. The result, in the middle three columns, is the kilograms of grain-equivalent per capita that is sold immediately after harvest, the kilograms sold to middlemen, and the kilograms of crop per capita that remain after the harvest sale. This application is obviously a very rough numerical procedure, given the hearsay source of marketing information and the fact that farms of all sizes are averaged together, but still a pattern emerges.

The pattern is that the quantity of crops sold to middlemen (in kilograms of grain-equivalent per capita) is very closely and positively related to the extent of land farmed by other than owner. Expressing land farmed by others in terms of its product per capita for the whole population (i.e. multiply percent of land farmed by others by average product per capita) adds only a bit to the level of correlation, but it also gives this measure a concrete dimension. There are many significant correlations to be found in these numbers, including with the crop sold immediately after harvest, but the highest is for the crop kilograms sold to middlemen versus product of rented land, a significant linear correlation of 0.933. However, some areas of North China, especially Winter Wheat-Kaoliang, North, where we know there is much hired labor and highly productive estates, fall a ways below a linear regression line for product on rented land, and this suggests that rented land is not the only source of grain outflow. A measure of land farmed by others that includes all rented land plus half of the estimated land farmed by hired labor yields a more regular relationship, as shown in Dataset 6.2.2.[57] This

[57] Percent of land farmed by hired labor here was based on percent of farm labor performed by hired labor, as given before in Dataset 5.4.4, which is a measure that reflects the actual conditions of use of hired labor, including level of wages, rather than the standardized "sufficiency threshold".

The main effect of adding in half of the estimated land farmed by hired labor is to bring three of the four northern areas, especially the Winter Wheat-Kaoliang Area, North, more into line. As demonstrated in Chapter 5 (see Datasets 5.5.3 and 5.5.4), low population density in the North, and especially in that area, serves to bend large landholdings towards estates farmed with

measure also yields a high linear correlation of 0.913. However, we need not assume that this relationship should be linear.

The dotted line in the figure, roughly connecting the upper data points, suggests that it is regular but not linear. On the left the slope is low for the areas of the North, meaning that although there is hardly any surplus for most of the population, extraction is high relative to the product of the land. Then it rises rapidly in the middle for fairly fertile areas that are however not at maximum population density on cultivated land (they suffer less extraction relative to production on others' land). The slope levels out again on the right for two areas with high productivity and high population density on cultivated land, the last of which, the Double-Cropping Rice Area, has the highest density and highest rate of rent, as we shall see in Part 3. The relationship between the extent of land on which labor is exploited, and extraction of production from the producers, is an important one, and the inflections seen are worth thinking about in terms of levels of production and rates of rent. However, we are not yet equipped to pursue this line of thinking until Part 3.

In concrete terms, the figure Dataset 6.2.2 seems to show that the product of land farmed by others is nearly equivalent to the product that is sold to middlemen, when both are averaged over the whole population — an amazingly high quantity of grain shipped out. The product sold to middlemen no doubt encompasses both rents on tenanted land and the surplus production of managerial farmers, produced largely by hired labor. It is not explicit in the original table whether crops sold immediately after harvest included rent payments to landlords, either in kind or cash, but the high numbers imply that most rent payments must be included. Especially for the Double-Cropping Rice Area, the immense volume of sales immediately after harvest leaves the producers far below the subsistence benchmark of 220 kg. for the year, and it seems that such voluminous forced extraction could only come about through the obligation of rent payments.

hired labor and away from dispersion in tenant farms. The fact that large owners using hired labor themselves live in the countryside means they also consume large quantities of their own product in the countryside, and so it is not surprising that adding in only about half of land farmed by hired labor gives the best relationship with grain sold to middlemen. This is also the way the just-so story was set up in Section 6.1.

The Szechwan Rice Area, with hired labor added, much exceeds the expected relationship; that is probably due to use of hired labor on the extensive rented land there, and so some "land farmed by others" has been double-counted.

Dataset 6.2.1 Estimates on Marketing of Crop from Three Informants in Each of 151 Localities: Absolute Quantity of Crop Sold and Retained.

Area	N of Farm Survey Localities	% Crop Sold Immediately After Harvest	% of Marketed Crop Sold to Middlemen*	Rented Land**	Farm Labor Done by Hired Labor
NORTH CHINA					
Spring Wheat (no Paotow)	9	46%	44%	12.5%	14.0%
Winter-Wheat Millet	20	50%	63%	14.3%	13.7%
Winter-Wheat Kaoliang	32	49%	52%	10.1%	21.1%
North	8	38%	57%	4.6%	25.2%
South	24	57%	49%	13.8%	18.1%
SOUTH CHINA					
Yangtze Rice-Wheat	29	60%	82%	45.2%	15.8%
East	16	46%	86%	38.0%	15.4%
West	13	72%	81%	51.1%	16.3%
Rice-Tea	26	59%	68%	44.6%	17.5%
Double-Cropping Rice	13	77%	97%	62.3%	7.5%
Szechwan Rice	11	68%	53%	42.2%	24.5%
Southwestern Rice	11	54%	55%	25.6%	23.0%

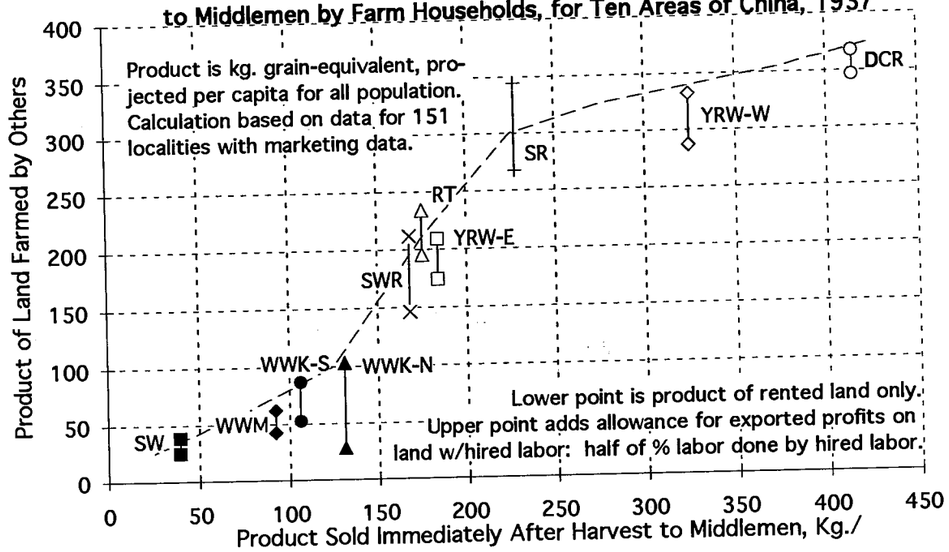
Area	Product**/ Capita in Kg. Grain-Equiv.	Crop Sold Immediately After Harvest	Crop Sold to Middlemen	Crop Not Sold	Man-Work Days to Market 1000 Kg.
NORTH CHINA					
Spring Wheat	194	89	39	104	11.8
Winter-Wheat Millet	293	148	92	145	15.2
Winter-Wheat Kaoliang	444	219	113	225	8.2
North	602	228	131	374	5.5
South	379	215	106	164	10.1
SOUTH CHINA					
Yangtze Rice-Wheat	509	305	251	204	3.2
East	457	208	178	249	2.8
West	561	402	325	159	3.8
Rice-Tea	438	256	175	182	4.1
Double-Cropping Rice	557	427	415	130	3.3
Szechwan Rice	633	429	227	204	12.7
Southwestern Rice	570	306	168	264	13.9

* Data is given for sale to "middlemen", "other farmers", and "consumers"; total is 100%.

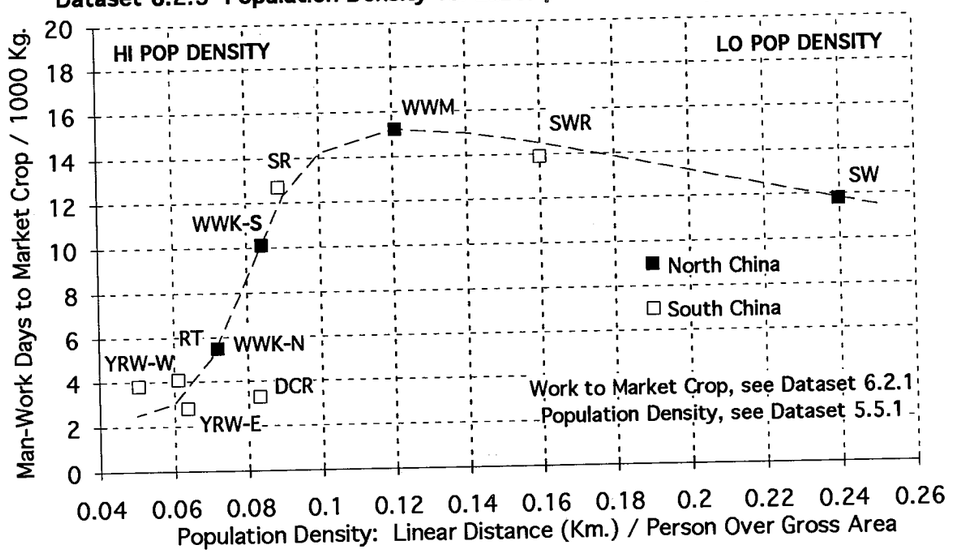
** Calculated specifically for 151 localities where marketing data collected.
Farm Labor Done by Hired Labor is for all 168 localities, same as in Dataset 5.4.4.

Source on crop sales and man-work days to market: Buck 1937 Statistics Vol. p. 343.

Dataset 6.2.2 Product of Land Farmed by Others, and Sale of Crop to Middlemen by Farm Households, for Ten Areas of China, 1937



Dataset 6.2.3 Population Density vs. Labor per Ton of Crops Marketed



There seems to be a close relationship between the exploitation of labor — made possible by the unequal ownership of the means of production —, and the surplus that leaves the producers. There is no such relationship with the level of production per capita or production per hectare per se; the social relations of production, as seen in the extent of land farmed by others, is an inescapable intermediate element between the technical process and the social distribution of wealth. This may be seen as a confirmation of the Marxist framework applied in this research.

In looking at this figure, however, the close correspondence in absolute kilograms of grain-equivalent estimated here should not be overinterpreted, because the figure does not mean that all product of land farmed by others is sold to middlemen; the relationship is more diffuse than that. Tenants and agricultural laborers certainly consumed a portion of the fruits of their labor; and self-sufficient farmers who did not exploit others' labor sold some of their crop for cash purchases. In addition, payment of land taxes, reflecting state-level relations of domination over the producers, forced some sale by all landowners. There was taxation of goods transported as well; tax was 7.5% of the cost of marketing farm products in the North, and 14.6% in the South (Statistics Vol. p. 348).

A further caveat should be added in noting such a high volume of sales: the informants for the marketing data no doubt were reporting their impression of sale of the main seasons' crops. This leaves out side production and between-main season production that has, however, been carefully added up for the survey's measure of total production in kilograms of grain-equivalent. So, when applied to all production, the percentage of the crop sold immediately after harvest may be an overestimate, though a slight one, I believe.

All in all, it can only be a surprise that the producers were left with so little of the crop after the harvest sale. Especially considering that rich and poor farmers were averaged in this data, the conclusion must be that a large portion of the producers were under stress, even where production was two or more times the necessary subsistence of 220 kg. per capita. Since grain prices are lowest immediately after harvest, sales that leave the producers below the stocks necessary for the year suggest sale by duress. Finally, a very large portion of farmers must need to make up large shortfalls from subsistence through work as agricultural labor, migrant labor, or in handicrafts. This is significant for the next section of data analysis, dealing with subsidiary occupations and the income derived from them.

Before moving to the discussion of subsidiary occupations, please note the last column in the bottom section of Dataset 6.2.1, which gives the result of considering the number of man-work days required to market the crop per farm (given in the Statistics Volume, p. 343) in light of the estimated volume of the crop marketed. This result is the number of man-work days to market a metric ton (1000 kg.) of grain-equivalent, calculated for each area. The labor involved in marketing is perhaps more significant than physical distance.

The data in Buck's chapter on marketing show clearly that it was not easy to transport the agricultural surplus. As can be seen in Buck 1939, Statistics Vol., p. 344, Table 2, "Distance for Transporting Agricultural Products from the Farm to Local Market by Various Transportation Methods", only four out of 131 localities studied had access to the local market by mechanical transport, i.e. steamboat or truck. Only two out of 51 localities in the North had water transport, though water transport was fairly common for the South, being available for 23 out of 80 localities. Human labor, mostly without even the aid of wheelbarrows, was more prevalent than the use of animal labor for transport; transport in 50 out of 131 localities was by human labor alone. Transport distance to the local market by human labor averaged 4.9 miles in the North and 6.2 miles in the South; the North used more animal power overall, especially camels, mules and donkeys for long distance transport, so the average distance for human transport could be shorter than in the South.

Comparing average population density and marketing labor, it is found that the number of work days needed to market a metric ton of agricultural product was generally higher in the areas with a sparser population over the gross area, as might be anticipated; but that is not the whole story. The "gross area" includes both cultivated and non-cultivated land, both fertile valleys and the hills in between that must be traversed on the way to the market town. It can be seen in the last bottom column of Dataset 6.2.1 that the low density Northwest (SW, WWM areas) and Southwest (SR, SWR areas) both have much higher numbers (twelve or more work days to market a metric ton) than the high density, river-traversed Yangtze Valley and South (four or less days for YRW, RT and DCR areas). The North Plains (WWK areas) fall in between. Aside from this, the overall positive relationship between population density and average marketing labor is not strictly linear, however. Let us look at this data graphically, in Dataset 6.2.3.

In Dataset 6.2.3 the horizontal axis is a measure of population density, "linear distance (km.) per person over the gross area", calculated from Dataset 5.5.1.[58] That is, if all of the population were spaced evenly over the whole area, not just the crop land, the linear distance would be the distance between any two individuals. It makes sense that a linear measure would be more appropriate to compare with marketing labor that an area measure.

The vertical axis is "man-work days to market crop, per 1000 kilograms of grain-equivalent".[59] The data points for the ten areas, both North and South, can be connected rather regularly, though not in a straight line. Even the lower marketing effort figure for the Double-Cropping Rice Area does not seem to be an anomaly, because so much of the crop there is handed over in rents, much more than in any other area. Although marketing effort increases rapidly with increasing population dispersion at first, after about 12 man days/1000 kg. it reaches a plateau, levelling off and even slightly decreasing for areas with the sparsest population. The implication is that where population was dispersed more grain was sold locally and less in central market places. It can be seen in comparison of the Szechwan Rice and Southwestern Rice Areas, in particular, that with sparser population for the latter there was less marketing to distant markets and more sale within the same or nearby villages (Buck 1937, Statistics Vol., p. 343). Overall this pattern in marketing effort suggests that there was increasing isolation from external commerce with increasing population dispersion. This would be consistent with the geographical analysis of Chapter 5 and also with the parasitic cities model.

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58 The data in Dataset 5.5.1 is derived from that cited by Buck from government county statistics for the whole region, not just those localities in the region represented in the marketing data, but the results still seem appropriate. Process this data as follows: Cropland/Person x Gross Area/Cropland, = Gross Area/Person. Divide by 100 (100 Ha. = 1 sq. km.), then take square root. This is distance from one person to next if all population were spaced evenly over gross area.

59 We cannot know if that is all bulk staples, but certainly bulk staples were over 80% of production. Shipping high-value goods apparently did not resolve the transport problem. According to Buck 1937, Statistics Vol., p. 346 (see notes at bottom), the charge per ton-mile for transporting opium and silk was over 400 times that for bulk goods.

6.3 Land/Labor Relations and Subsidiary Occupations in Empirical Data: Circulation of the Surplus

The grain flow economy model has integrated two issues, first the division of the product on land on which labor is exploited — between tenant and landlord or between managerial farmer and hired labor —, and second the expenditure of the extracted surplus on goods and services, which returns some of the surplus to the producers in exchange for their further labor. Obviously this second process can equalize incomes somewhat, though it does not redress the underlying structure of inequality. There may be some interaction between the two issues: in some cases the level of exploitation may be insupportable unless most of the extraction is returned to the producers in the process of circulation. The model of the grain economy gives us some practical orders of magnitude for the outcome of these processes.

Although I do not have a quantitative model to apply here, this general pattern of secondary circulation of agricultural product can be confirmed by examination of data on subsidiary occupations for the farm households and on income from subsidiary occupations that is contained in the Farm Survey. However, sideline production and off-farm labor generally did not provide as much return to labor as agricultural work on the family farm. This is seen in the data analysis of Roll (1980, pp. 23-31) and of Brandt for handicraft textiles (Brandt 1989, p. 128), for example. Fei Hsiao-Tung's description of a rural industry in Yunnan in 1938, basket-making, makes a poignant picture.

> We have seen above that two-thirds of the households in Yits'un cannot make their living solely from the land. We have also described other sources of income, such as domestic animals, the ferry, and trading in the markets, and reached the conclusion that, though these occupations help in the life of the people, the amount of help derived is small. Now we can proceed to the main subject of this part of our study: rural industry. ...
>
> ...During the winter and spring, there are more than three or four months when there is actually nothing to be done on the farms. Labor cannot be saved; if it is not used, it will be wasted ... An industry which is adapted to using the slack period of agriculture and to getting some supplementary income for the family must be one on a small scale. Nor is there likely to be, among poor folk, a large amount of capital available for investing in tools. Therefore, labor and skill are the main elements in this sort of industry. Moreover, it will not be able to use a large amount of material which has to be transported from afar. ...
>
> ...From our point of view, we might imagine that with such a wide range in profits the people would choose to make those articles which give the biggest

> profit. This is not the case, however. ... The reason is that for such articles as the big rice-containers, which give the greatest profit, there is less demand. If the people make these large baskets and carry them to the market center, they may return without having disposed of them. Small articles, such as the scoop (a shallow basket about 18 inches across for carrying soil, etc), are easily sold. These scoops were especially in demand during the building of the Burma Road.
>
> The work of making baskets is not so hard as working in the fields, but the working hours are longer than in the fields. Farm work rarely exceeds eight hours a day; but in basketmaking, men may go on for more than twelve hours. As early as seven o'clock in the morning, when the fog still hangs over the valley, groups of villagers are already to be found at the public ground, settled down to their basketmaking. And when the sun drops down behind the western mountains and shadows fall on the village, these dark figures still sit in the twilight, hard at work. Sometimes they continue to work even in the moonlight or by the light of small oil lamps. Are they so busy because they are so anxious to earn money, or is it because they must do so in order to get the necessary supplementary income in order to survive? (Fei 1949, pp. 173-175)

It is not surprising that the conclusion of this analysis, below, is that the redistributive effect of secondary circulation was rather slim, and in fact somewhat less than was applied in the parasitic city model.

Income from Subsidiary Occupations: Redistributive Effect?

For the first cut at the empirical data, let us take up a simple set of numbers, the percent of the farm households in Buck's 1937 Farm Survey that had certain subsidiary occupations, in Dataset 6.3.1 (Table). At the end of this section we will examine more detailed occupational data from the Population Survey, but for now we are working towards an understanding of the effect of non-agricultural work in redistributing income, and for that we need the Farm Survey data on production and farm size groups.

These are Buck's figures for simple averages of percents in the localities surveyed in each of his eight agricultural areas. Since there were close to 100 farms in each locality sample, a weighted sample would not change these figures significantly. (I have not made separate averages here for the two large areas, Winter Wheat-Kaoliang and Yangtze Rice-Wheat, that I have divided elsewhere for more detailed analyses.)

As general background to this table, we may note that Buck found that 24% of work time (which does not encompass domestic work) in the farm households was devoted to subsidiary occupations in the North, and 17% in the South (Buck 1937, p. 290); this is consistent with a longer agricultural slack season in the North, as well as a higher level

of commercialization and urbanization in the South (with greater division of labor between rural and urban sectors). The sexual division of labor for subsidiary work was not far different from that for farm work, though women played a relatively greater role in subsidiary work, especially spinning and weaving, in the North and in the two interior southwest areas, and women and children in the Double-Cropping Rice Area (where men often went abroad to labor) did over a third of farm work. The summary figures for this are (from p. 293, 297):

Percent of Work Performed by:		Men	Women	Children
North China	Farm Work	86%	9%	5%
	Subsidiary Work	80%	15%	5%
South China	Farm Work	76%	16%	8%
	Subsidiary Work	77%	17%	6%

As shown in Dataset 6.3.1, the major categories of subsidiary occupations were Farm Labor (hired on others' farms), Unskilled Labor, Skilled Labor, Home Industry, and Merchant, the last of which I assume encompasses any kind of petty sales or peddling, since the numbers are so high. Buck's category of Professional Occupations does not state what is included in it (only doctors and teachers are mentioned in passing in Buck 1937, p. 298), so I have amalgamated in this category the small numbers of Scholars, Officials, Soldiers and Others. No doubt many households had two or more subsidiary occupations, so it makes no sense to add up these percentages; however, the numbers indicate a probable majority of households in remunerative activities outside farming.

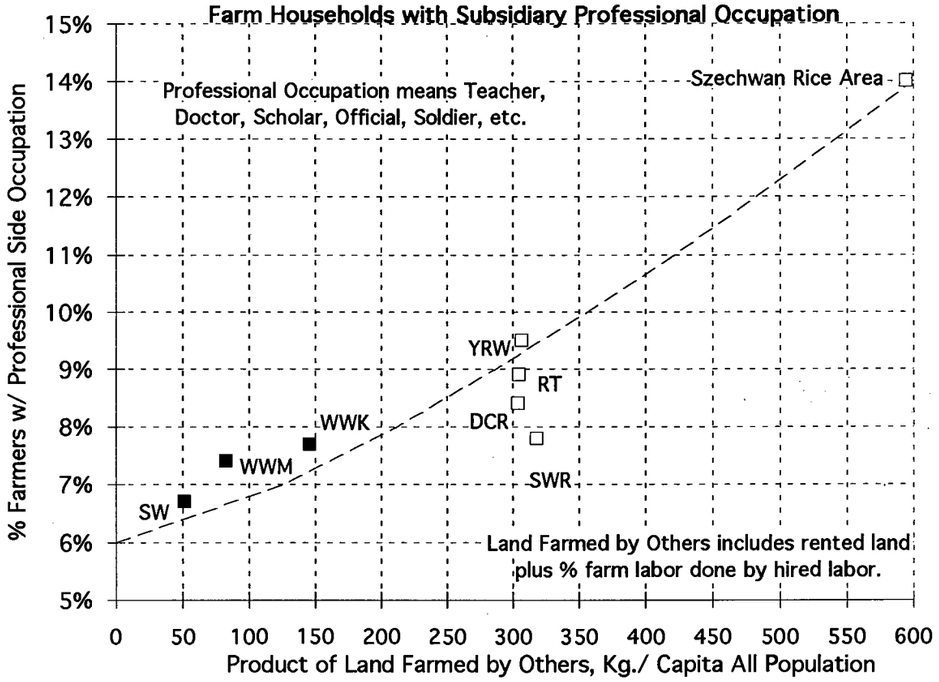
Dataset 6.3.1 Subsidiary Work and Income from Other than Farm Work on Own Farm, Buck 1937 Farm Survey

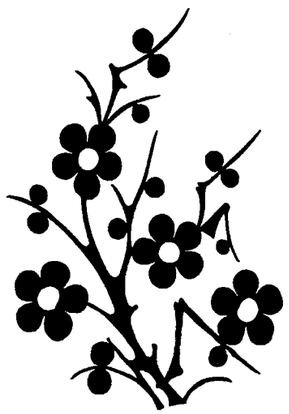
	Percent of Farm Households with Occupation:						% Income
Area	Farm Labor	Skilled Labor	Unskilled Labor	Home Industry	Mer-chant	Profes-sional*	Not from Own Farm
NORTH CHINA							
Spring Wheat	24.2	3.7	18.0	5.5	22.3	6.7	19.2%
Winter Wheat-Millet	17.8	6.1	19.3	37.9	22.5	7.4	15.1%
Winter Wheat Kaoliang	13.9	7.4	6.9	20.8	19.7	7.7	14.5%
SOUTH CHINA							
Yangtze Rice-Wheat	13.1	7.7	7.4	24.2	9.4	9.5	12.7%
Rice-Tea	12.8	11.1	8.4	13.7	11.2	8.9	12.7%
Double-Cropping Rice	3.4	3.9	5.2	16.7	12.3	8.4	12.1%
Szechwan Rice	14.2	7.0	8.4	34.9	22.2	14.0	21.3%
Southwestern Rice	12.8	2.8	16.5	23.8	10.3	7.8	9.4%

* Total of Professional Occupations, Scholar, Official, Soldier, and Other, which are 4.5%, 2.2%, 0.9%, 0.8% and 0.1% respectively in Buck's average for all China.

Source: Buck 1937, Statistics p. 309-310. Simple averages of locality data.

Dataset 6.3.2 Product of Land Farmed by Others, and Percent of Farm Households with Subsidiary Professional Occupation





In reflecting on the regional differences shown in Dataset 6.3.1, it should be kept in mind that the survey covered farm households, not all population or even all rural population.

So, for example, low figures for Merchants in the more commercialized areas, Yangtze Rice-Wheat, Rice Tea, and Double-Cropping Rice, do not mean that there were few merchants overall in the region, but rather that there was less overlap with the farm households, quite likely due to specialization of occupation and/or the demands of intensive farming.

Other notable figures in this table are the high numbers of skilled labor in, first, the Rice-Tea Area, which contains the provinces on the south side of the lower Yangtze River, and second the Yangtze Wheat-Rice Area, the provinces on the north side. China's major commercial and industrial cities have for centuries been clustered along the lower Yangtze, which can gather the surplus of the broad river basin all the way up to Szechwan, and by the 1930's Shanghai had reached prominence as an international port and manufacturing center. We cannot know whether the men in these farm households were travelling to industrial work in the off-season, or to other commercial opportunities, but the same pattern of increased outside work for these two areas is indicated in the Population Survey occupation and migration data to be reviewed below.

The opposite is shown in the dry and windswept northwest (Spring Wheat and Winter Wheat-Millet), where skilled labor employment was minimal. The short growing season and scattered population set the conditions for less specialization of occupation, and farm households were hard pressed by subsistence needs to work in agricultural labor, petty trade, and home industries. There the numbers of farm households with "merchant" side occupations were highest; the same for unskilled labor.

In the northwest areas there was as well much more participation in hired farm labor than would be expected from the slim surplus on even large farms there (see the contrast between Dataset 5.4.4 and Dataset 5.4.6 for Spring Wheat and Winter Wheat-Millet Areas). Dataset 6.3.1 shows that, in addition to the surprising numbers of farms with year laborers there, there were also large numbers of smallholders working as part-time hired laborers. This could only be possible if landowners chose leisure over income at a level of "sufficiency" much lower than elsewhere, and wages were very low. This is what I have meant by a society in which the surplus is so low that if the populace is to survive it must be almost entirely re-circulated within the rural sector, i.e.

landowners can easily enjoy leisure and personal services in the countryside, but not much in specialized luxuries imported from other regions. In contrast to this poverty, it seems the large and agriculturally productive estates in the Winter Wheat-Kaoliang and Yangtze Wheat-Rice Areas supported numerous year laborers at a higher wage (see again Dataset 5.4.4), and fewer smallholders worked on the side as hired labor.

The parasitic city model is upheld in that even the rich but remote Szechwan Rice Area had large numbers in farm labor, home industry, and merchant trade. Szechwan, in the interior, seems to have been an agriculturally rich but less commercialized area, with less rural/urban division of labor, and conversely more economic exchange internal to the rural sector. From this example, the causation for extensive economic exchange internal to the rural sector has more to do with population density and market accessibility than with level of productivity.

It seems curious for Szechwan as well that there is such a high percentage of farm households with professional occupations. With the general background of Chinese society in this period, we should probably understand "teachers and doctors" to be mostly self-employed small-scale practitioners of traditional Chinese medicine, and home teachers (often scholars failed in the bureaucratic examinations) contracted by clans to train their younger generation. This is closer to service occupations, but services that require specialized knowledge.[60]

Viewing the prevalence of such work as an indication of overall prosperity and of the existence of a class of landowners able to support such services leads to an interregional comparison as follows. The presence of this class of landowners and the extent of their claim on the surplus is reflected in the land farmed by other than owner. The product of this land may be assigned an absolute value about the same as was done before for marketed product in Dataset 6.2.2. We multiply the product per capita for the area by

---

60 As can be concluded from Datasets 6.3.8 A,B,C below, most of these better-paying side occupations were probably held in households with landholdings below "sufficiency", but medium-high farm income sufficient to provide stability of living environment and some margin for education and investment in the paraphernalia of the trade.

Even today the centers of older towns in Taiwan are crowded with small pharmacies and clinics in which doctors dispense personalistic medicine; and practitioners of pressure-point massage, chiropracty, midwifery and geomancy operate out of home-fronts. These services are easily accessible for purchase and are labor-intensive, but they are paid respectably, and the practitioners may achieve a high income if they work long hours.

the percent of land that is farmed by others (rented land plus land farmed by hired labor, equated to percent of farm labor performed by hired labor; source numbers were presented in Datasets 5.4.4 and 5.4.7) . It is charted against the percent of households with professional subsidiary occupations in Dataset 6.3.2. It is the high level of professional occupations in the fertile Szechwan Rice Area that gives this match a high positive linear correlation of 0.905.

In sum, there are more side-occupations in professional services where land farmed by others (and potential extraction of surplus) is higher in absolute terms, although this measure may be a proxy for the effects of population density and productivity, not direct causation. I have joined the points in Dataset 6.3.2 with a curve of slightly increasing slope, which matches the data better than the linear regression; it would not be surprising if consumption of luxury services increased at a faster rate than absolute income. This is another piece of evidence that a secondary circulation of the surplus can be seen in operation in the interregional comparisons.

The main point of this examination of side occupations in Dataset 6.3.1, however, is one made in the parasitic city model: population density (i.e. accessibility of population concentrations and markets) governs the outflow of the agricultural surplus and thence the occupational structure. This subsection has provided a preliminary picture of regional patterns that will be investigated more thoroughly in the last subsection of Section 6.3, through Population Survey data on occupations of individual farm household members.

How Much Income from Subsidiary Occupations?

Let us turn to the quantification of income from off-farm sources. The last column in Dataset 6.3.1 above gave the area average for percent of net income that was derived from subsidiary occupations, the only statistic available for evaluating their monetary outcome. Not surprisingly, this is high for the two northwest areas (Spring Wheat and Winter Wheat-Millet Areas), where farm production was so low.

These numbers provide rough regional contrasts, but it is possible to take the analysis much farther because the Buck 1937 Statistics Volume, p. 311, provides percent non-farm income for the same farm size groups as elsewhere in the volume. ("Non-farm income" includes hiring-out for agricultural labor and crafts produced within the

household, but excludes agricultural production on own farm.) This allows matching up this information with farm size and productivity numbers that have been processed in the assessment of landownership inequality in this research. The intent of this analysis is to find the relationship between position in the landownership structure and participation in subsidiary occupations — or at least its result in non-farm income, since, unfortunately, the data does not separate out labor from professional occupations. We can at the same time look at the land/labor relationship in the renting-in of land by tenants. In fact we must look at the rental relationships at the same time, or it is not possible to estimate the shortfall from subsistence for the land-short.

This quasi-class analysis brings us closer to the two sides of the hypothetical grain economy depicted in the parasitic city model, which juxtaposed the collectors of surplus and the suppliers of labor. But of course in the interregional comparison of this data we are looking at not only social structural processes, but social structural processes as they vary from region to region.

Dataset 6.3.3 is a long table, and following that table there will be numerous figures that serve to summarize and highlight the patterns to be found in the table. The organization and compilation of the data is based on ranking the farm size groups in each area by product per capita, and then cutting the ranking into five sections, each with about the same number of farms.[61] The quintiles are labelled with Roman numerals, "I" representing the largest farms and "V" the smallest. The product per capita in kilograms of grain equivalent is the same as has been used throughout this research, except that for this table the measure of production has not been adjusted to control for the effects of multiple cropping and intensification, as was done elsewhere where isolating the productive value of the land itself was the goal, to quantify land maldistribution. Here we are seeking to estimate actual income. So the values for production are a little higher in some places.

Let me detail the process of the data analysis a little more. In this analysis I first ranked the farm size groups by product per capita from owned land only, to get as close as possible to the patterns stemming from the landownership distribution. But since a

61 The numbers did not work out to precisely one-fifth in each quintile, because there are usually 10-30 farms in a farm size group, and the cut in the ranking rarely falls exactly at the end of a group, but a group is not divided between quintiles. This makes little difference in the result, however, because the calculations are all rendered per farm or per capita.

farm size group could conceivably be polarized between full owners and full tenants, and show 50% of land rented-in, or could be all part-owners with the same land statistics, there is no direct way to untangle ownership.

In the North this is less of a problem because there is little rented land and there is a clear tendency for small farms to have a somewhat higher proportion of rented land in their area. It is clear that the smallest farms in the North are those that receive the highest portion of income from subsidiary occupations, i.e. family members must serve as hired labor to make up the shortfall from subsistence, which shortfall is shown clearly in their product per capita on owned land, the first column of Dataset 6.3.3.

But for most of the South this ranking provides no definite pattern in non-farm income, because rented land provides much income and potentially full employment. So for the South I redid the ranking according to product per capita from owned and rented land, i.e. the whole farm, although we do not know what is the net income after the obligations of rent payment. Then a clear pattern emerges, that the smallest farms are those that depend the most on non-farm income.

Let me explain the layout of Dataset 6.3.3 before going on to present the results in detail. The first column is product per capita on owned land, in kilograms of grain equivalent. To make it easier to envision the meaning of these numbers for human subsistence, in the second column I have divided the product per capita by 220 kg., a standard for minimum subsistence of a self-reproducing population of men, women, and children, to produce a measure of "Subsistence Units". The third column gives the product per capita for the household on rented land, also in Subsistence Units. Certainly a substantial portion but not all of this product of rented land is income. The fourth column gives percent of land that is rented, often showing a higher percent of rented land on small farms. However, measuring rented land in Subsistence Units provides a more accurate conceptualization of the distribution of rented land among the quintiles, both because farm size differs greatly in absolute area and because the small farms usually have poorer land. So the first four columns describe the sources of subsistence under direct management of the producer, i.e. owned land and rented land.

But does landholding determine earnings from land? Don't smallholders gain from greater labor input? Intensification of cultivation is often proposed as one means to overcome shortage of land, and the next two columns titled "Labor on Own Land", dealing with multiple cropping and unadjusted product per hectare, are intended to shed some

Dataset 6.3.3 A North China: Farm Subsistence, Subsidiary Income and Leisure for Quintiles of Farms — Farm Size Groups Ranked by Product per Capita from Owned Land

	PRODUCT PER CAPITA ON OWNED AND RENTED LAND				LABOR ON OWN FARM		OTHER LABOR	
	Owned Product in Kilograms Grain-Equiv.	Owned Product in Subsistence Units (@220)	Est. Product on Rented Land, Subs. Units	Percent of Farm Area Rented	Multiple Cropping Index	Product/Ha. in Kg. Grain-Equivalent	% Non-Farm Net Income in All Income	Idle Months in Year per Man
SPRING WHEAT AREA — 1334 Farms								
I *	401	1.82	0.06	3%	100.0	800	11.3%	1.84
II	220	1.00	0.11	10%	103.2	707	9.4%	1.66
III	169	0.77	0.10	12%	107.3	682	12.3%	1.61
IV	114	0.52	0.10	16%	111.1	794	20.4%	1.45
V	49	0.22	0.04	16%	116.5	620	43.5%	1.78
WINTER WHEAT-MILLET AREA — 2025 Farms								
I	547	2.49	0.12	5%	129.3	1866	10.9%	1.75
II	259	1.18	0.26	18%	130.7	1069	10.6%	1.80
III	167	0.76	0.35	32%	124.0	1109	8.1%	1.57
IV	132	0.60	0.15	20%	138.2	1119	12.7%	2.29
V	77	0.35	0.17	33%	131.8	1084	35.6%	1.94
WINTER WHEAT-KAOLIANG AREA, NORTH — 1080 Farms								
I	1028	4.67	0.23	5%	130.1	1500	5.1%	2.63
II	554	2.52	0.21	8%	138.6	1648	6.6%	2.21
III	373	1.70	0.48	22%	131.2	1566	8.6%	1.49
IV	276	1.25	0.12	8%	128.4	1519	14.6%	1.59
V	217	0.99	0.21	18%	152.8	1779	24.4%	1.68
WINTER WHEAT-KAOLIANG AREA, SOUTH — 2697 Farms								
I	787	3.58	0.47	12%	161.4	2377	8.0%	1.50
II	349	1.58	0.21	12%	157.7	2389	11.8%	1.79
III	222	1.01	0.14	12%	143.2	1653	15.3%	1.75
IV	165	0.75	0.12	14%	163.6	1848	18.4%	2.20
V	89	0.40	0.33	45%	165.8	1299	26.4%	2.00
* First Quintile excluding locality with atypically large farms, Paotow.					If including Paotow:			
	1111	5.05	0.16	3%	100.0	1334	11.3%	2.08

Dataset 6.3.3 B South China: Farm Subsistence, Subsidiary Income and Leisure for Quintiles of Farms — Farm Size Groups Ranked by Product per Capita from Owned and Rented Land

	PRODUCT PER CAPITA ON OWNED AND RENTED LAND				LABOR ON OWN FARM		OTHER LABOR	
	Owned Product in Kilograms Grain-Equiv.	Owned Product in Subsistence Units (@220)	Product on Rented Land, Subs. Units	Percent of Product from Rented Land	Multiple Cropping Index	Product/Ha. in Kg. Grain-Equivalent	% Non-Farm Net Income in All Income	Idle Months in Year per Man
YANGTZE RICE-WHEAT AREA, EAST — 2123 Farms								
I	722	3.28	1.47	31%	168	3609	3.5%	1.75
II	383	1.74	1.06	38%	163	2660	6.6%	0.80
III	291	1.32	0.52	28%	175	2854	10.6%	1.30
IV	174	0.79	0.38	32%	152	1734	14.7%	1.34
V	58	0.26	0.20	43%	154	1183	34.0%	1.05
YANGTZE RICE-WHEAT AREA, WEST — 1556 Farms								
I	738	3.35	1.75	34%	137	4003	4.2%	1.57
II	390	1.77	1.24	41%	165	3607	15.0%	1.74
III	242	1.10	1.10	50%	173	3359	10.2%	1.31
IV	177	0.80	0.81	50%	157	2915	9.0%	2.21
V	91	0.42	0.48	54%	176	2187	15.4%	2.60
RICE-TEA AREA — 1203 Farms								
I	349	1.59	2.33	59%	178	3988	3.8%	1.18
II	244	1.11	1.15	51%	174	2889	9.9%	1.27
III	215	0.98	0.62	39%	172	2747	12.5%	1.61
IV	164	0.75	0.51	41%	171	2647	17.9%	1.43
V	114	0.52	0.27	34%	143	2346	25.0%	1.00
DOUBLE-CROPPING RICE AREA — 1203 Farms								
I	234	1.06	2.96	74%	191	4050	7.5%	2.00
II	241	1.10	1.24	53%	179	3171	12.7%	1.03
III	195	0.89	1.06	55%	175	2568	7.1%	1.73
IV	188	0.86	0.60	41%	176	4044	15.9%	2.37
V	164	0.75	0.30	29%	160	3374	16.4%	1.02

Dataset 6.3.3 B, continued. South China.

	PRODUCT PER CAPITA ON OWNED AND RENTED LAND				LABOR ON OWN FARM		OTHER LABOR	
	Owned Product in Kilograms Grain-Equiv.	Owned Product in Subsistence Units (@220)	Product on Rented Land, Subs. Units	Percent of Product from Rented Land	Multiple Cropping Index	Product/Ha. in Kg. Grain-Equivalent	% Non-Farm Net Income in All Income	Idle Months in Year per Man
SZECHWAN RICE AREA — 802 Farms								
I	588	2.67	3.56	57%	176	5148	8.8%	0.21
II	210	0.95	2.03	68%	170	5050	17.8%	0.58
III	189	0.86	1.08	56%	160	4114	14.6%	0.21
IV	177	0.80	0.33	29%	170	2863	28.6%	1.08
V	93	0.42	0.26	38%	177	1950	31.8%	0.81
SOUTHWESTERN RICE AREA — 1221 Farms								
I	701	3.19	1.36	30%	156	4848	5.9%	1.85
II	378	1.72	1.24	42%	146	6044	6.4%	1.92
III	391	1.78	0.61	25%	149	5626	6.3%	1.79
IV	295	1.34	0.53	28%	152	6123	10.0%	2.00
V	238	1.08	0.23	18%	159	4881	17.0%	1.44

SOURCE: Buck 1937, Statistics Volume, p. 307 for Idle Months per Able-Bodied Man, p. 311 for Non-Farm Income, by Size of Farm.
NOTES: Localities where no information on non-farm income was given were excluded from data collation for this table, except in the calculation of rented land. Rented land for North China was based simply on land area, not its product as elsewhere in this thesis. Product per hectare here is not adjusted for multiple cropping variation or other, as applied when measuring landownership inequality.

NORTH CHINA — AVERAGE OF FOUR AREAS, FARM SIZE GROUPS RANKED BY PRODUCT OF LAND OWNED								
I	691	3.14	0.22	7%	130	1636	8.8%	1.93
II	346	1.57	0.20	11%	133	1453	9.6%	1.86
III	233	1.06	0.27	20%	126	1253	11.0%	1.61
IV	172	0.78	0.12	13%	135	1320	16.5%	1.89
V	108	0.49	0.19	28%	142	1196	32.5%	1.85
SOUTH CHINA — AVERAGE OF SIX AREAS, FARM SIZE GROUPS RANKED BY PRODUCT OF LAND FARMED								
I	555	2.52	2.24	48%	168	4274	5.6%	1.43
II	308	1.40	1.33	49%	166	3904	11.4%	1.22
III	254	1.15	0.83	42%	167	3545	10.2%	1.33
IV	196	0.89	0.53	37%	163	3388	16.0%	1.74
V	126	0.57	0.29	36%	161	2654	23.3%	1.32

light on the income-producing effects of intensification. The effects of labor intensification and of land quality are conflated in the measures of production, however. I will make some general judgments from this and other data analysis: There is some intensification of labor on small farms, but it seems that small farms generally own the poorer land, probably hilly and with less access to irrigation and other inputs as well, and the resulting product per hectare is substantially lower. For example, for North China, there is on average no more than 3% difference between the largest and the smallest deciles of farms in intensity of multiple cropping (based on an index relative to the average for each locality), while production per cultivated hectare on the smallest farms is 25% less than on the largest, even with a slightly greater effort of multiple cropping.

This difference is as much due to geographical differentiation as to economic differentiation within the locality. The more fertile localities tend to be occupied by larger farms with land affording more multiple cropping. Where rented land predominates, as in much of the South, it is generally the rented land that is most productive and most intensely cultivated, although it may be held on large tenant or part-owner farms. This pattern is not surprising, in that payment of rent forces extraction of surplus and intensification. The extreme example of this is in the Szechwan Rice Area in the county around Chungking. The outcome, both for North and South, is that the best and most intensifiable land is not available to smallholders. Overall, intense cultivation of a small owned plot does not provide a remedy for land deprivation.

The last two columns of the table, under the rubric "Other Labor", give quintile averages for percent of income provided by subsidiary occupations, and for idle months in the year per able-bodied male. Working months include both farm and subsidiary occupations. The subsidiary occupations indicate additional exertion, while the idle months are an indication of leisure or of unemployment.

The first page of the table, Dataset 6.3.3 A, gives the data for the ranked farm size groups in quintiles for the four northern areas. Dataset 6.3.3 B, two pages, provides the same for the six areas of South China. Also on the last page are averages across the areas for North and South China (averaging the first quintile of each area, and so on), just in case the reader would like to see a smoother generalization of the data. But this averaging also obscures much of what can be seen in this data in relation to the absolute

value for subsistence from owned and rented land. This will be explored in a series of charts.

A caution before we proceed: the mapping of the data in charts does not provide neat answers; we cannot expect too much in accuracy for all the measures, due to the ambiguity of owned and rented land combined in farm size groups, or from the skimpy coverage of just five points of data along a continuum. However, a number of observations can be made that in concert are perhaps persuasive.

Owned Land versus Rented Land

Dataset 6.3.4 A and B, for the crop areas of the North (dark data points) and for most of the crop areas of South (light data points) respectively, plot product per capita from owned land versus product per capita on rented land, as if we were asking "how much rented land does the farmer want, and how much can he get?" (Do not overlook the very different horizontal and vertical scales of the two charts; the North has a wide range of farm size and little rented land. The source numbers for the South are not those in Dataset 6.3.3, where the quintiles are based on a ranking of owned and rented land.) In absolute terms of product, rented land is distributed widely over the range of landownership; in fact, landownership generally seems to confer an advantage in gaining control of rented land, a point made before in Dataset 2.10.3. The drive to control rented land should be understood from the perspective that expansion of landholdings allows full utilization of labor and greater income for the household, even though a large part of the product must be paid to a landlord.

The exception is seen in the Double-Cropping Rice Area, where rents are highest, and only those forced by necessity rent in so much land. The outcome of this in farm size is that some of those who own the least land farm the biggest holdings, with the result that when farms are ranked by owned and rented land, as in Dataset 6.3.3 B, rented land turns out to be three-quarters of farm area for the first quintile.

Although the lines for the different areas are unruly, especially in the North, it can be observed more often than not that there is an increase in the amount of land taken in in the center range of ownership, say between 180 kg. and 300 kg, and then the absolute amount, as well as the proportion, drops off after that, perhaps a slowing of effort as the income of more owned land is in hand. However, five of the eight areas on the charts also show a sharp rise in rented land for the smallest, most desperate owners. This does not

mean that there is necessarily no such increase for the other areas, only that it does not dominate the bottom quintile of the farms. It can only be guessed, for now, whatever rental conditions apply here.[62]

The irregularity of the curves in itself is of some interest. Consider a ranking according to area-wide product per capita, comparing the point in the mid-range at which rented-in land probably peaks, for the seven areas where it does:

		Product at Transition Point		
Area	Area Product per Capita	Owned Land	Rented Land	Both Owned Rented Land
SW	220	220	25	245
WWM	285	170	150	320
RT	460	180	280	460
DCR	490	185	225	410
YRW-E	550	210	125	335
YRW-W	615	270	235	505
WWK-N	600	370	110	480

Despite irregularity, this partial ranking suggests that there is a level of income in product, say around 450 kg., at which further income is less desired. (Since only five data points were calculated for each region, the point of transition to less rented-in land is not particularly accurate, and could be improved, but that is a minor point. It is also influenced by the varying extent of rented land and the rate of rent in each area.) The main revision to this generalization is that area-wide conditions of scarcity can greatly depress the accepted level of "sufficiency". In particular we may suspect a depression in the expectation for living standards in the impoverished northwest, and/or a substitution of leisure for income at a very low level, seen both in failure to compete for rented land, and before in increased use of hired labor. Again, this is not surprising given the vast mass of nearly under-subsistence population in the northwest.

Aside from these comments, for now it is enough to observe that the most impoverished usually only obtain a small part of rented land, and that the pattern is variable from region to region. So the availability of rented land resolves alienation from the means of production only for some, and most of those remaining at the bottom of the heap must seek toilsome labor outside the farm. That is the next topic for examination.

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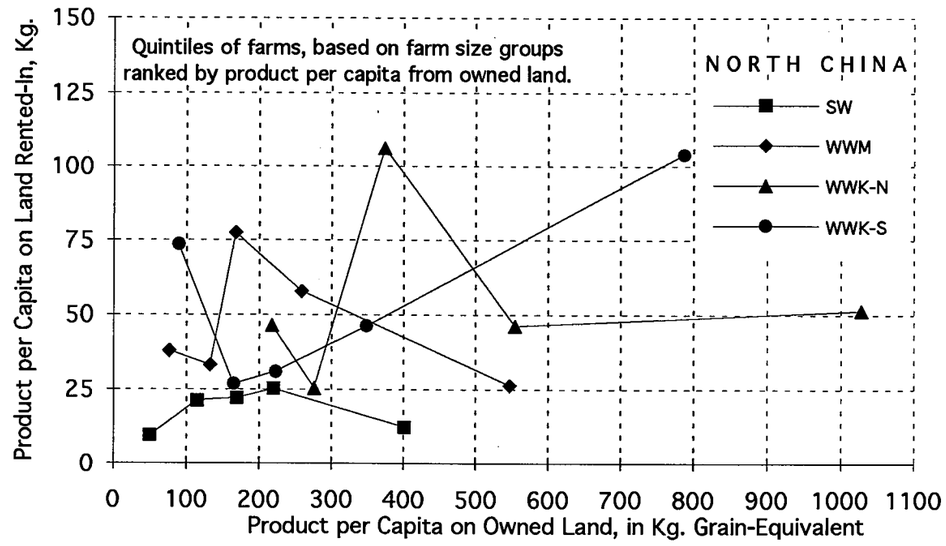
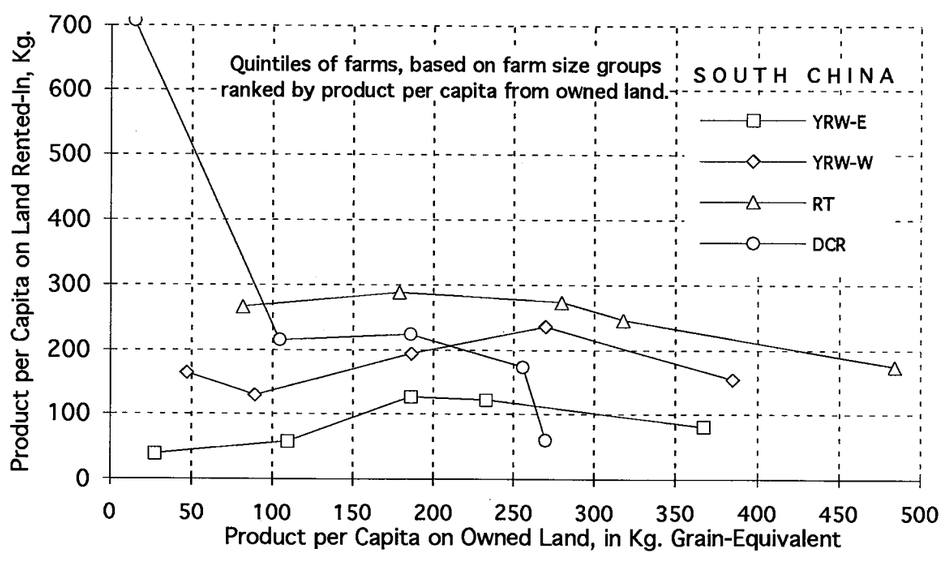
62 In a previous analysis of rental conditions based on detailed farm account in Buck's Chinese Farm Economy, 1931, I found that tenants in North China who had no farm capital at all paid up to 80% rent, while those who provided some of the capital paid 30-40%. (Arrigo ms. 1983).

Dataset 6.3.4 A Product per Capita from Land Owned and Land Rented-In



Dataset 6.3.4 B Product per Capita from Land Owned and Land Rented-In



The Relationship Between Landholdings and Income from Subsidiary Occupations

There is a clear relationship between lack of land and increased proportion of income from subsidiary occupations that can be seen in Datasets 6.3.5 A and B for North and South China respectively. Let us first examine the North figure. The non-farm proportion of income is much elevated for the bottom quintile, especially in the impoverished northwest, and it drops off very quickly as owned land approaches that necessary to provide basic subsistence at 220 kg. Perhaps that labor is very onerous and poorly paid; we saw in Dataset 6.3.1 that unskilled and agricultural labor figured large in those areas. Off-farm labor in the more prosperous Winter Wheat-Kaoliang Areas decreases at higher levels of income, and it substantially levels out by 350 kg.; higher occupations probably still provide part of income for richer farmers. However, even the poorest in Winter Wheat-Kaoliang, North have a much lower dependence on subsidiary occupations, since the bottom quintile can meet subsistence from the land it owns alone.

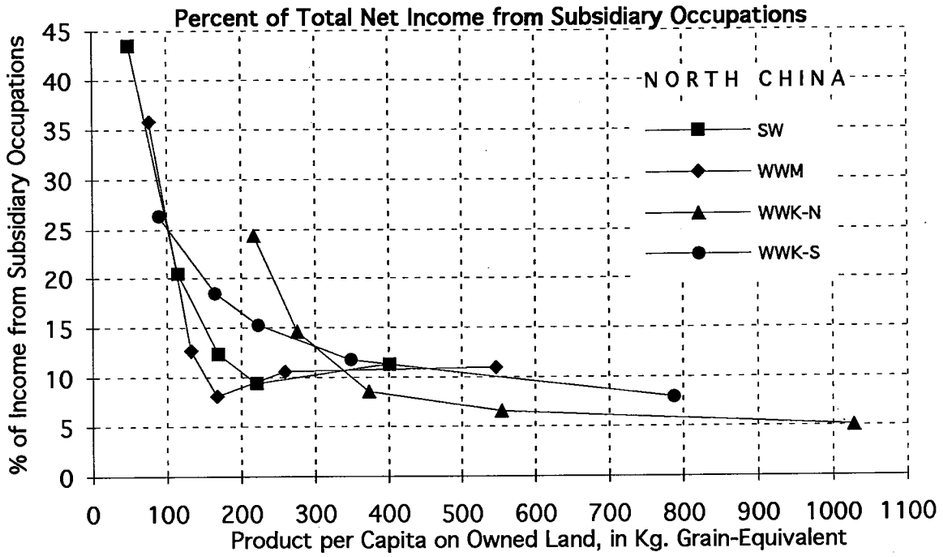
The same relationship holds for the six areas of South China, though percent of income from subsidiary occupations dips at a much higher absolute level of product from the farm, at about 420 kg., again suggesting a decrease in exertion at about the "sufficiency" threshold. In the South skilled labor and professional occupations were a more significant presence in the farm households (Dataset 6.3.1). We see here a noticeable rise in outside income for those in the mid-range of farm holdings. For the largest farms, however, the percent of this income (though probably not its absolute value) trails off again.

Farm Income and Idle Time

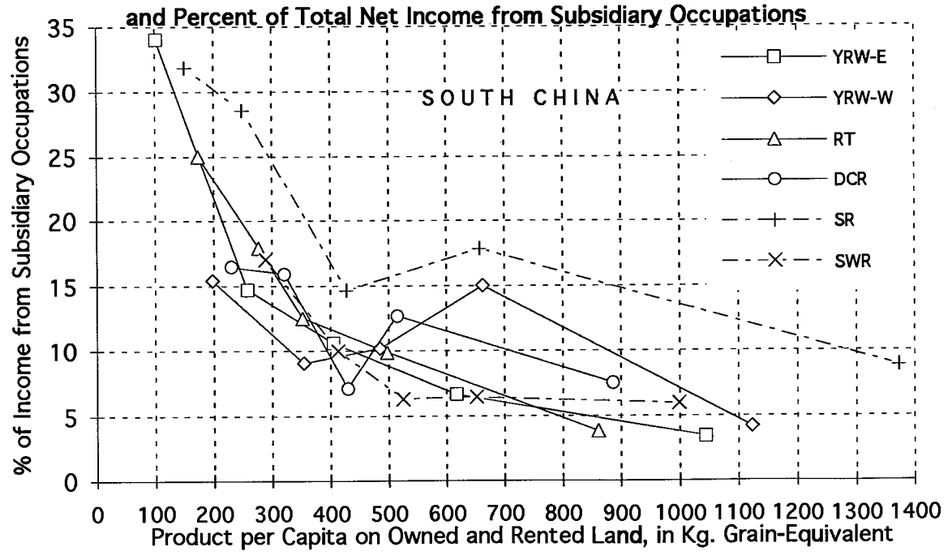
Next we examine idle months in the year per able-bodied man in Dataset 6.3.6. Most of the potential slack time is due to the agricultural cycle, and the growing season is of course shorter in the North than in the South. On this matter Buck says,

> The winter months of November, December, January and February are responsible for 80% of the idle time. ... Winter work is a problem for agriculture in all temperate zones, but it is greater in a type of agriculture where there is only a small animal industry as in China. The Chinese farmer has met the situation only in part by finding subsidiary work either on the farm or in cities. Migration of some members of the farm family to the cities where work is found as servants, rickshaw pullers, unskilled laborers and the like in the winter time is a very common occurrence, especially in the Rice Region. (Buck 1937, p. 295).

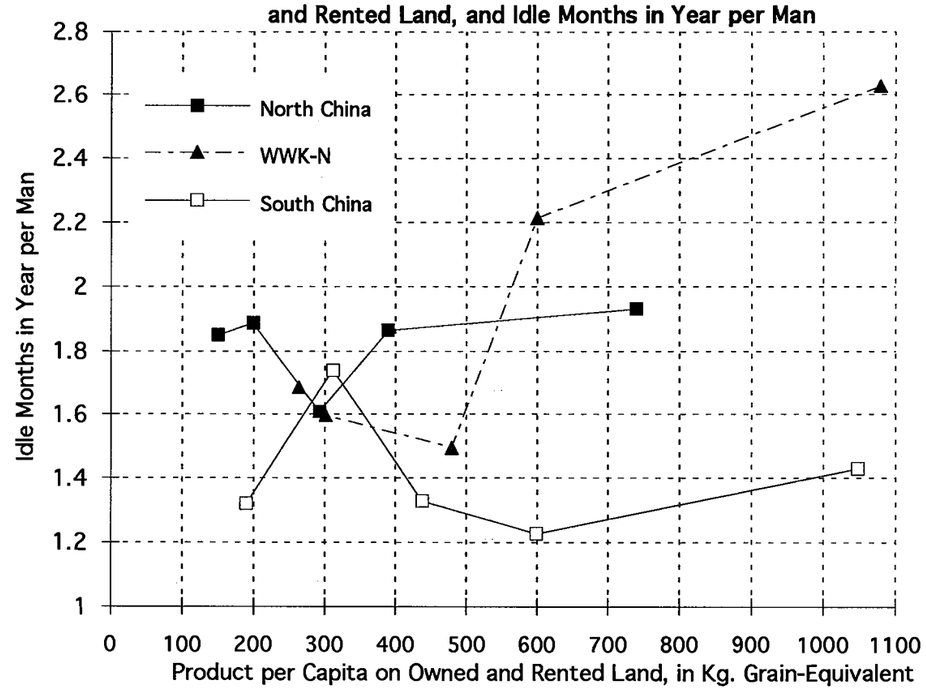
Dataset 6.3.5 A Product per Capita on Owned Land and Percent of Total Net Income from Subsidiary Occupations

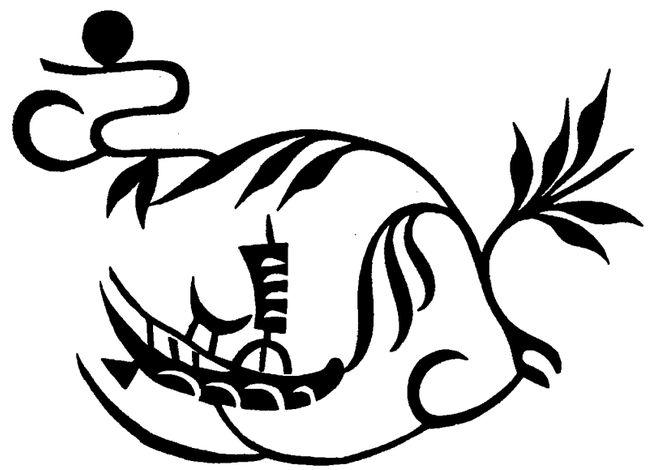


Dataset 6.3.5 B Product per Capita on Owned and Rented Land and Percent of Total Net Income from Subsidiary Occupations



Dataset 6.3.6 Product per Capita on Owned and Rented Land, and Idle Months in Year per Man





The question of variation in idle time by farm size is whether other activity is available, and whether it is sought. The source data for North and South China are the quintile averages given on the second page of Dataset 6.3.3 B. In addition to this the data are charted for the Winter Wheat-Kaoliang Area, North, which has a range comparable to that for the South. The lines connecting the points are jagged, with several turns, but some similarity can be seen between North and South. The inflection points for the South are at higher product per capita on owned and rented land, though since the South has much more rented land the income after rent that represents may not be such a gap. It is not surprising that leisure increases at product over 500 kg. in the North (especially as represented by WWK-N) and over 600 kg. in the South. The curves are fairly low in the regions of 300 or 400 kg. for the North, and 450-600 kg. for the South. For decreasing product per capita below that there is first a steep increase in idle time and then a drop for the smallest quintile; the first I take to be underemployment due to small farm size, and the latter, engagement in difficult subsidiary labor for those falling desperately short of subsistence.

Though it adds only a little to the information already presented, the following table confirms this pattern in the data for North China, this time with farm size groups for all four areas sorted and then cut into quintiles with nearly equal numbers of farms.

Dataset 6.3.7 North China: Product per Capita, Idle Months, and Non-Farm Income

Farm size groups of all North localities sorted by product per capita on owned land. 7136 farms, in five groups of about 1430 farms each. Calculated from Buck 1937.

	Product per Capita on Owned Land	Farm Size, Hectares	Product per Ha. in Kg. Grain-Equiv.	Man-Equivalents, All Labor	Idle Months per Able-Bodied Man	% Non-Farm Income
I	862	5.72	1764	3.21	1.90	9.2%
II	303	3.19	1385	2.65	1.82	9.6%
III	205	2.31	1141	2.24	1.81	13.1%
IV	145	1.47	1179	1.85	1.85	15.7%
V	72	0.93	883	1.29	1.72	30.1%

This treatment smooths out the inflection points for the four areas, while it covers a wide range of product per capita. The absolute difference in idle time appears small, but I believe it is indicative of much greater differences in work and life environment. As before, there is a little more leisure (i.e. underemployment) for the fourth quintile, which is somewhat short of subsistence, but the fifth quintile, owning land only affording a third of subsistence, is that which labors longest and obtains the highest

percent of income outside of farmwork. For the first quintile, averaging a very high 862 kg. per capita, leisure is probably voluntary as well as lengthy. We must also suspect that the figure for leisure of the large landowners is an underestimate, since the figure averages all man-equivalents, both family and hired labor.

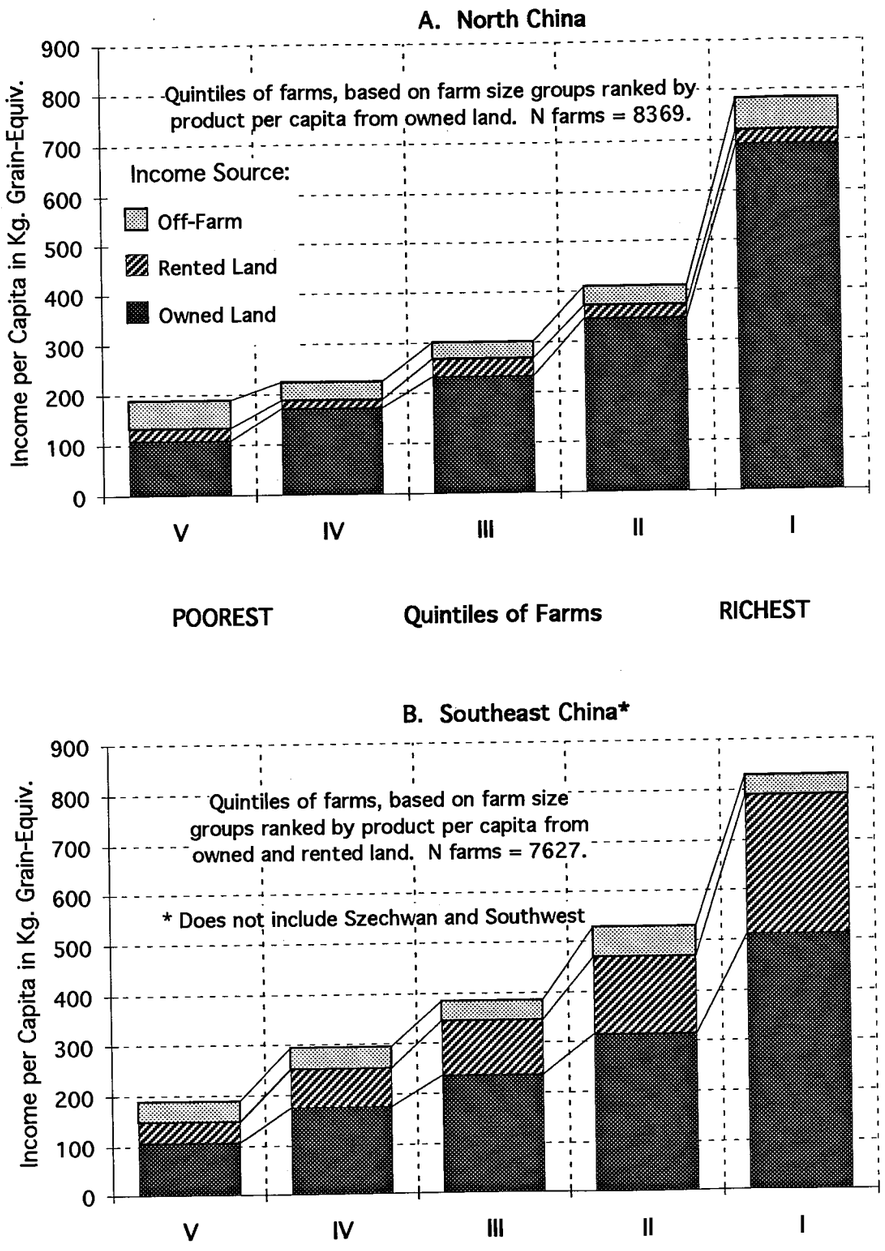
The Bottom Line: Income from Owned Land, Rented Land, and Subsidiary Occupations

Finally we might ask what is the total outcome for the economic groups, given relatively more work off the farm and in subsidiary occupations by the smallholders, and slightly more leisure for largeholders. It is possible to make a rough estimate of total income if we add a few assumptions to the data compiled for quintiles of farms in Dataset 6.3.3. We assign a 40% rent on rented land across the board, and subtract the estimated rent to arrive at net farm income.[63] Given the figure for non-farm income as percent of all income, we can estimate non-farm income and total income on the basis of net farm income, in the same terms of kilograms of grain-equivalent. This was done for each quintile of farms for each area. The results lead to virtually the same conclusion for all ten areas, and so I have summarized these by simple average of the areas in three charts, one for North China, one for the commercialized Southeast areas (Yangtze Rice-Wheat Area, East and West, Rice-Tea Area, and Double-Cropping Rice Area), and one for the Szechwan Rice Area, which has very high productivity and much rented land, but relatively low commercialization. These are Datasets 6.3.8 A, B, and C, which show the breakdown of total income per capita into income from owned land, from rented land, and from off-farm (or non-farm) labor for the five farm-size groupings, for North, South and Szechwan, respectively.

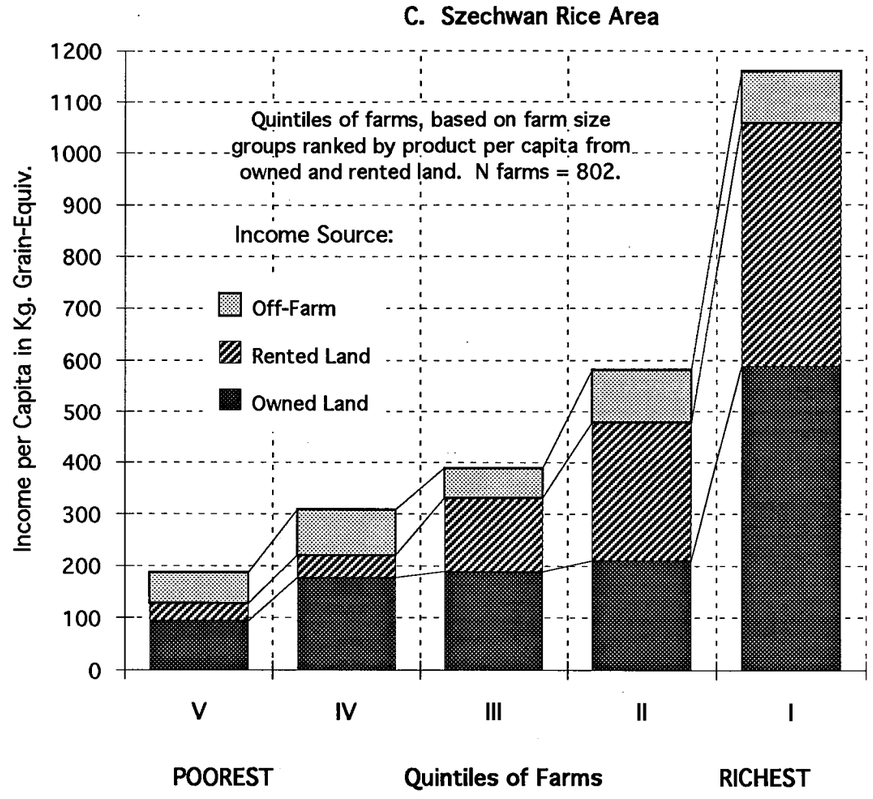
We can see clearly in these charts that landownership is the major determinant of income; and secondly control of rented land provides considerable income in the Southeast and in Szechwan. But it is also the larger landowners who appear to gain more rented land, in absolute terms. (Since large tenants and large landowners were averaged in the farm size groups and in the processing of the data, this conclusion should be considered tentative until further analysis in Part Three.) Non-farm income is spread rather evenly over the quintiles, though in the North both the first and the fifth

63 I have ignored costs of production, i.e. seed, fertilizer, animals, and tools, which were found to be 9% for North China and 12% for South China in the detailed accounting of Buck 1931, Chinese Farm Economy, because it is not clear how much of this is purchased off the farm, seed is often only 1-3% (Buck 1937), and the adjustment would likely lead to overcorrection.

Dataset 6.3.8 Income from Farm and Off-Farm Sources by Quintiles of Farms



Dataset 6.3.8 Income from Farm and Off-Farm Sources by Quintiles of Farms (continued)



quintiles have the most, and in the Southeast the second quintile has the most. The overwhelming conclusion is that rented land and non-farm income do very little to redress the inequality of landownership, although they do seem to afford the necessary margin of subsistence for the poor.

In all three figures the fifth and poorest quintile endures income of just under 200 kg. per capita. Perhaps my standard of 220 kg. per capita for subsistence for a self-reproducing population was set a little high; this level of income was met or surpassed by the fifth quintile only in the Southwestern Rice Area and the Winter Wheat Kaoliang Area, North, both areas where population was still expanding on the land in the early twentieth century. However, it is not beyond conception that the fifth quintile does not fully reproduce itself, and that is in keeping with my theory of the class relations of reproduction. As for the rest of the distribution, the North and the Szechwan Rice Area show a large gap in landownership and income between the rich first quintile and the other four — we know that hired year labor is prevalent in these areas —, while the South has a more gradual decline in income from first to fourth quintiles, i.e. a richer middle sector, largely due to the distribution of rented land. The North and South patterns are as expected from the analysis of land tenure in Chapter 5; rented land tends to even out farm size, even while it exacerbates outflow of the surplus.

Datasets 6.3.8 A, B, and C are simple figures, but they go a long way in refuting the assertions of free-market enthusiasts who equate commercialization with economic betterment. Consider a conclusion by Brandt for China in this period:

> ...In agriculture, farm households devoted an increasing percentage of their acreage to cotton and other cash crops in response to growing demand of the domestic manufacturing industry. In handicraft textiles, on the other hand, yarn imports and domestically manufactured yarn permitted households to do more weaving and to take advantage of the higher returns offered by new looms ...
>
> ...Markets in land, and to a lesser extent capital, enabled households to offset imbalances they faced in resource endowment and contributed to a high degree of efficiency in resource use, while product markets effectively conveyed to rural farm households the relative profitability of a host of farm and off-farm activities. Although the accelerated commercialization of agriculture introduced new uncertainties into the rural sector, in the long run this was more than offset by the gains that this redirection of economic activity toward the market offered. (Brandt 1989, p. 179).

This serendipity about the benefits of markets does not seem to be justified in light of the meager benefits of sideline production and labor off the farm seen in Dataset 6.3.8. In fact we saw in Section 6.2 that there was no certain correspondence between level of

production and security of subsistence even for the average of the whole population, much less for those at the bottom. Moreover the above analysis of income by quintiles of farms found that it was the region most cut off from external trade, the Southwestern Rice Area, that enjoyed greater equality and plentiful sustenance for all portions of its population, with a high income of almost 330 kg. per capita for the fifth quintile, and 940 kg. per capita for the first quintile of farms, while overall product per capita was about the same as for the more skewed Szechwan Rice Area.

No doubt commercialization created labor opportunities at the core of marketing regions, as we saw in the migration data for the Lower Yangtze and the Southeast Hills in particular, but this does not indicate that the whole region was increasing in prosperity, only that it was differentiating. Rather, improved transport may well have accelerated the outflow of agricultural surplus from peripheral areas, and urban specialization of production deprived the land-short of their handicraft markets, as many social investigators such as Chen Han-seng (1933, 1939) lamented at the time (see especially loss of home cotton spinning, Brandt 1989, p. 124-125, also Note 3 p. 181). This is the view from the parasitic city model. That increased industrial productivity would eventually right all this can be proposed as a possibility, but the free-market enthusiasts are at the least premature in declaring it a sure thing in this period (Huang 1991, p. 319).

This discussion so far has delved into the empirical data to investigate the regional variation in sideline occupations for farm households. A major issue is how the land-deprived may have made ends meet. This has led to first examination of the allocation of rented land and income from agricultural hired labor, the land/labor market relations that we have discussed throughout. The secondary circulation of the surplus — through craft production, labor in the rural and urban sectors, and personal services — provides some further income to the land-short, but the effect of this is relatively slight as a redistributive mechanism.

The Farm Economy in Core-Periphery Perspective, and the Occupational Structure of Farm Households

The Farm Survey provided considerable data on subsidiary occupations, most importantly the information on portion of net income provided by subsidiary occupation for each farm size group, which in the preceding presentation allowed an estimate of how

much subsidiary occupations redress the imbalance of landownership. Another source for occupation information is to be found within the Population Survey, and although this information covers only 49 localities, much fewer than the 168 localities of the Farm Survey, it provides valuable detail that can be linked to some of the population analysis as well as the general features of the farm economy.

The Data Source and Its Processing

Information on family composition, including absence and migrations of household members, was collected in nearly all localities of the Population Survey, but information on occupation was recorded in only 49 of the 101 localities. Where it was recorded, it covered both resident and non-resident household members of the farm households. This is a sizeable population of 19,741 families, though the coverage is spotty especially in the southern areas.

The survey on occupation considered everyone seven years of age and older to be of working age, and seemed to assign occupation assiduously to nearly everyone, even if only "domestic service" (household work), unless the person was ascertained to have been idle for twelve months of the year, which numbers were also recorded. This may well have been warranted given the early activity of children in farm households, but since this data provides no breakdown by age, there is no way to apply some weighting for different labor capacities, or to focus on mature age adults and exclude children and the elderly. A further shortcoming of the collection and compilation of this information is that it does not distinguish work performed on the household farm from work performed elsewhere, and this can only be guessed at from the occupational category, i.e. transport work must be off the farm, but agricultural work could be either.

The main concern of the survey's compilation on the question of occupation seems to have been the overlap of agricultural and non-agricultural occupations, which fortunately is useful for evaluating the shape of the economy in the rural sector and relating it to predictions of secondary circulation according to the parasitic city model. The data was summarized by individuals, not by families, and was reported[64] as numbers holding

64 The source documents for occupation information are Notestein archives, Machines Tables 15A for household members and 12A for migrants. The number of families and population involved in the sample must be found by adding up the population data in Machine Table 2, including only areas that were not missing from the sample; missing areas were listed on the bottom of 15A and 12A.

occupations that were 1) agriculture only, 2) agricultural and non-agricultural, 3) non-agricultural only, or 4) idle for twelve months. Within the second and third categories occupations were further broken down into trade, transportation, manufacturing, professional services, public service, fishery, mineral extraction, home industries, and domestic service. No mineral extraction workers were reported and few fishermen, so those categories have been largely deleted from the analysis.

This data affords some insight into the roles of men and women (of all ages) in the family economy. However, the point of my analysis of this data here is to find the patterns of economic relationships between the household and the larger economy, and for that reason I have disregarded the very large numbers reported for "domestic service only", which are 90% female. For the numbers in the category "agriculture and domestic service" in the original table, I have reassigned them to "agriculture only", which may well result in overstating the work of women in agriculture; but we can also see the household work in a farm household as an extension of the farm work, because women commonly cooked for and carried food to laborers in the fields, raised pigs and chickens, tended kitchen gardens, and other labor. While excluding "domestic service" and "idle" from percentages of occupations, I have still presented some figures on domestic service in the following tables. The numbers reported as engaged in "domestic service only" are separate from the issue of the larger numbers of women reported as "idle"; while these larger numbers no doubt reflect the devaluation and underreporting of women's work, they may also be an artifact of the comparative longevity of women, i.e. many more women than men still living in the households into retirement age.

The Form of the Data Presentation

The survey sample size is given in the first section of Dataset 6.3.9, which is the first cut of analysis, a breakdown for the total sample by sex and occupation. Following this, the presentation of the occupation data has three forms, each of which allows a particular angle of comparison:

The first, the simplest, just gives percentages of those occupied in agriculture only, agriculture and non-agriculture, agriculture only, or idle. Male and female are totalled separately, and domestic work is excluded. The number idle does not figure in later calculations of the distribution of occupations of those gainfully occupied.

The second combines the numbers of persons in part- and full-time work for each of the occupations, giving half-weight each to agriculture and non-agricultural occupations when both are present, in order to estimate roughly the relative weight of all the occupations in the household economy, while still totalling to the actual number of workers. The original survey seemed to limit subjects' responses to just agriculture and one other major occupation. The half/half division seems fairly justified in that data on work time (in Notestein archives, Machine Table 15B) shows that about 45% of working months were spent in non-agricultural work for those with both agricultural and non-agricultural occupations. The resulting numbers are presented as numbers of males or females engaged in the occupation per 100 families (though not controlled for family size), which facilitates comparisons both between areas and between sexes, and allows further calculations by the reader. Where percentages are also provided in the summary table for occupational composition of the whole population, in Dataset 6.3.9, male and female work is measured relative to work for both in all occupations, and so the percentages give an estimate of the relative contribution of each sex to the activity.

The third section of the tables takes numbers of those employed full-time (or only) in the occupation as a percentage of all work in it (those part-agriculture counted only as a half, as above), and thus sets a measure for how much separated it is from agriculture. Of course those working only in non-agricultural occupations in this data are still members of farm households, but this measure gives an idea of differentiation and social status of labor, and/or survival strategies of households. For example, those in professions rarely also participate in agricultural work. Unfortunately we cannot tell, except indirectly through the data for migrants, how much of this work is undertaken in a rural or town setting.

Dataset 6.3.9 gives an overview with the breakdown by sex and occupation for the whole population, and compares also the overall migrant population, for good measure.[65]

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65 In the source table for the "living population" of household members (Machine Table 15B), the numbers are specific by sex. There is no such breakdown by both occupation and sex in the tables for migrants, though it is clear the occupation numbers are from the same locality samples. It can be concluded from the broader compilation for migrants (such as Machine Table 11, including localities where occupation information was not collected) that most economic migrants were male, and what females there were in the migrant ennumeration were overwhelmingly women moving between households due to marriage (see Dataset 6.4.1 below). For all 9116 migrants ennumerated in the Population Survey, 3270 (36%) were female, and 3657 (40%) were non-resident at the time of survey (from Machine Table 13 on kinship position in family). There is some ambiguity as to whether "the living population" in the occupation tables includes those reported as migrant within the previous year, but from comparing total population numbers it seems that at least the resident migrants are included, and so it would probably not be correct to add the numbers of workers reported in migrants' occupations to those of the general population.

Dataset 6.3.10 provides the same information for each of the regions of the Population Survey, so it is a very dense table. The same is provided for migrants in Dataset 6.4.1 in the next section dealing specifically with migration. These are a lot of numbers to digest, but they can be boiled down to some fairly regular patterns of regional variation. Aside from the following discussion, the statistical relationships found in the regional comparisons are summarized in Dataset 6.3.11. Two charts showing the most important relationships follow that (Datasets 6.3.12 A and B).

The Patterns of Work Among Farm Households

The following outlines of the occupational structure can be seen in the summary table, Dataset 6.3.9. About one-third of males in farm households worked in activities outside of agriculture, but only about one-seventh of females, and most of that was home industries. That proportion of males with non-agricultural work may be seen as fairly high, given that age seven and up were counted among those working. The proportion was higher still for working family members reported as having travelled within the year prior to the survey, who numbered about one-tenth of male workers. Of migrants, 70% had non-agricultural occupations, and half were non-agricultural only.

The average household had 1.6 males and 0.6 females working in agriculture . As for other occupations, one out of five households, probably the richer ones, had a male member in "professional services" who was unlikely to participate in agricultural labors. On the other hand, one out of four households, doubtless the poorer ones, had a male member in trade, transportation or manufacturing, and this work was mostly carried on in addition to agriculture. Migrants had proportionally greater numbers in the occupations of trade and manufacturing, and in these occupations they were also much more likely to be full-time. Home industries occupied women in only 7 out of a hundred households on average, and so women's contribution to household labor, aside from the heavy labor of domestic work in a preindustrial environment, was only about one-third of men's.

This completes the general picture, so let us proceed to the regional analysis which provides more insight into the determinants of the occupational structure. Let us reflect for a minute on what those regional patterns might be.

The parasitic city model proposed, in short, that the extraction of a larger surplus from the rural sector would lead to a larger urban sector and greater differentiation of labor between rural and urban sectors. This would be accompanied by greater labor outflow from the rural sector in order to supply craft, industrial and service labor demand, and thence concomitant adjustments in demographic behavior to produce that labor, i.e. raising more boys than girls. Secondary circulation of the agricultural surplus through crafts and services within the countryside would be redirected, with rural "deindustrialization", towards urban production.

How might this be seen in the light of core-periphery analysis, à la G.W. Skinner? We are dealing in this data with cropping regions which for the most part encompass both core and periphery of a single marketing system. But the regional variation we have seen so far resembles core-periphery variation, with higher productivity and commercial activity generally following higher population density.

The parasitic city model explains that the rural social relations of production, based in conditions of productivity and population density, allow a certain balance of scale between rural and urban sectors that is governed by the quantity of surplus extracted. So if we are dealing with a region with higher productivity and population density overall, then the "core" will be larger in relation to the "periphery" than in a region with lower productivity and/or lower population density. And the average characteristics of the farm population also will look more like the archtypical "core", because the core and periphery are of course not totally discrete environments, but variations on a continuum.

On this continuum we can imagine virtually isolated farm communities in which nearly all production and consumption and even social differentiation is self-contained; villages specializing in agricultural production for an urban market and probably de-industrialized, but requiring long-distance migration in order to reach labor markets; and part-time farmers almost in the suburban hinterlands of cities, where the call of labor markets eclipses farmwork, and farm production turns away from subsistence and towards cash cropping or intensive gardening.

Dataset 6.3.9 Occupations of Farm Household Members and Migrants, from Population Survey of 19741 Households in 49 Localities.

A. Description of the Sample

	Total	Male	Female	Migrants
N of Population	115029	60566	54463	(same households)
N of Occupation Known	90660	48171	42489	5512
- N Domestic Service Only	26117	2619	23498	1578
- N Idle (12 months)	8340	3540	4800	44
N Gainfully Employed	56203	42012	14191	3890

B. Overlap of Agriculture and Non-Agricultural Occupations

	Total	Male	Female	Migrants
Agriculture only	63%	62%	63%	29%
Agri & Non-Agri	11%	14%	3%	21%
Non-Agri only	13%	15%	8%	49%
Idle (12 months)	13%	8%	25%	1%
All	100%	100%	100%	100%

C. Persons in Occupation per 100 Families and as Percent of Gainfully Occupied
(Person in Agri Only or Non-Agri Only counted as 1, Agri and Non-Agri as 1/2 to each.)

	Total	Male	Female	Migrants
Agriculture	222.9	160.7	62.2	7.9
Trade	14.7	14.2	0.5	4.0
Transportation	3.4	3.4	0.1	0.9
Manufacturing	7.8	7.6	0.2	3.2
Professional services	23.9	22.2	1.7	2.2
Public service	1.9	1.9	0.0	1.1
Home industries	9.1	2.0	7.1	0.3
Fishery	0.8	0.8	0.0	0.0
All Occupations	284.6	212.7	71.8	19.6
Members per 100 Families	582.7	306.8	275.9	
% Gainfully Occupied	49%	69%	26%	

	Total	Male	Female	Migrants
Agriculture	78%	56%	22%	40%
Trade	5%	5%	0%	21%
Transportation	1%	1%	0%	4%
Manufacturing	3%	3%	0%	17%
Professional services	8%	8%	1%	11%
Public service	1%	1%	0%	6%
Home industries	3%	1%	3%	1%
All Occupations	100%	75%	25%	100%

D. Persons in Occupation Only as Percent of All Persons in Occupation

	Total	Male	Female	Migrants
Agriculture	85%	81%	95%	57%
Trade	33%	32%	67%	66%
Transportation	18%	17%	- -	27%
Manufacturing	40%	40%	64%	78%
Professional services	89%	89%	96%	91%
Public service	70%	70%	- -	80%
Home industries	55%	22%	67%	63%

Source: Calculated from Notestein archives Machine Tables 15A, 12A and 2.

Dataset 6.3.10 Occupations of Farm Household Members by Region, from Population Survey of 19741 Households in 49 Localities.

A. Description of the Sample

Region	N of Localities	N of Families	N of Population Total	Male	Female	N Occupation Known* Male	Female
North Highlands	7	1938	11000	5965	5035	5209	4122
North Plain	13	8636	55884	29047	26837	21840	19866
Lower Yangtze	17	5553	28789	15169	13620	12428	11062
Southeast Hills	2	824	3720	2002	1718	1768	1448
South	5	1305	7888	4251	3637	3478	2951
Red Basin	4	1175	6291	3357	2934	2768	2419
Southwest (part)	1	310	1457	775	682	680	621

* Occupation known for nearly all household members over seven years of age.

Population Survey Region	Farm Survey Crop Area	All Workers Workers/100 Families Male	Female	Total	Family Members	Percent Occupied
North Highlands	WWh-Millet, Spring Wh	219.5	56.2	275.8	567.6	49%
North Plain	W Wh-Kaoliang,-Millet	222.7	74.4	297.0	647.1	46%
Lower Yangtze	Yangtze Rice-Wheat	194.6	73.8	268.4	518.4	52%
Southeast Hills	Rice Tea, eastern part	186.3	37.5	223.8	451.5	50%
South	Double-Cropping Rice	241.0	72.7	313.7	604.4	52%
Red Basin	Szechwan Rice	203.0	72.7	275.7	535.4	52%
Southwest (part)	Southwest Rice, other	205.5	148.7	354.2	470.0	75%

B. Overlap of Agriculture and Non-Agricultural Occupations

Region	Agri-culture only	Agri. & Non-Agri	Non-Agri only	Idle (12 months)	Total	Not Gainfully Occupied: Persons/100 Families Domestic Service	Idle
	Male	Male	Male	Male	Male	Male	Male
North Highlands	54%	14%	14%	10%	100%	56.1	26.0
North Plain	58%	14%	16%	7%	100%	30.0	17.3
Lower Yangtze	60%	14%	13%	8%	100%	20.1	17.5
Southeast Hills	49%	18%	21%	8%	100%	20.9	17.5
South	71%	13%	8%	8%	100%	31.8	22.1
Red Basin	60%	9%	17%	5%	100%	33.0	11.4
Southwest (part)	77%	16%	1%	1%	100%	54.8	2.3
	Female	Female	Female	Female	Female	Female	Female
North Highlands	25%	0%	2%	16%	100%	148.5	33.8
North Plain	29%	1%	3%	10%	100%	150.2	23.7
Lower Yangtze	30%	3%	4%	12%	100%	123.4	23.4
Southeast Hills	17%	0%	4%	10%	100%	134.5	17.0
South	40%	8%	23%	29%	100%	138.0	29.7
Red Basin	29%	1%	5%	11%	100%	136.5	22.1
Southwest (part)	74%	0%		1%	100%	101.3	2.9

Dataset 6.3.10, continued

C. Persons in Occupation per 100 Families
(Person in Agri Only or Non-Agri Only counted as 1, Agri and Non-Agri as 1/2 to each.)

Region	Agri-culture	Trade	Trans-port	Manufac-turing	Profes-sions	Public Service	Home Industry
	Male	Male	Male*	Male	Male	Male*	Male
North Highlands	163.0	23.5	6.4	4.1	19.2	2.5	0.8
North Plain	165.2	17.1	2.3	7.1	25.8	2.5	2.6
Lower Yangtze	149.3	7.3	3.9	8.3	20.7	0.9	2.0
Southeast Hills	123.2	11.7	0.7	23.9	24.0	2.1	0.4
South	202.4	12.3	2.7	3.9	17.8	0.5	1.1
Red Basin	151.2	15.1	6.6	8.0	17.2	3.3	1.4
Southwest (part)	185.2	11.3	0.0	0.8	2.3	0.8	1.0
	Female	Female		Female	Female	Fishery Male*	Female
North Highlands	52.9	0.0		0.0	2.8	0.0	0.5
North Plain	66.9	0.6		0.1	1.6	0.1	5.2
Lower Yangtze	62.3	0.5		0.4	1.4	2.2	9.0
Southeast Hills	29.9	0.3		1.1	3.0	0.4	3.2
South	45.6	0.0		0.4	2.0	0.3	24.7
Red Basin	60.6	1.4		0.2	1.8	0.1	8.7
Southwest (part)	148.4	0.2		0.0	0.0	4.2	0.2

* No more than one or two females in transport, fishery, or public service.

D. Agriculture Only or Non-Agricultural Only as Percent of All Persons in Occupation
(For count of all, persons in occupation counted as 1, whether full-time or part-time.)

Region	Agri-culture	Trade	Trans-port	Manufac-turing	Profes-sions	Public Service	Home Industry
	Male	Male	Male	Male	Male	Male	Male
North Highlands	80%	40%	15%	60%	89%	56%	15%
North Plain	81%	32%	15%	36%	88%	68%	24%
Lower Yangtze	81%	25%	15%	40%	90%	78%	19%
Southeast Hills	73%	29%	10%	48%	82%	79%	
South	85%	12%	8%	20%	94%	100%	4%
Red Basin	87%	58%	40%	50%	96%	90%	55%
Southwest (part)	83%	8%			17%	67%	20%
	Female	Female		Female	Female		Female
North Highlands	100%				98%		90%
North Plain	97%	82%		88%	96%		74%
Lower Yangtze	91%	39%		44%	96%		54%
Southeast Hills	98%	67%		100%	96%		96%
South	83%			57%	86%		74%
Red Basin	96%	88%		100%	95%		80%
Southwest (part)	100%						

Source: Calculated from Notestein archives Machine Tables 15A and 2.

Dataset 6.3.11 Analysis of Occupations of Farm Household Members: Statistical Correlations with Population Density and Population Structure

NOTES: Correlation for 7 data points 0.893 0.786 0.714
Significance, one-tailed test 0.01 0.025 0.05
Correlation is with Males in Occupation per 100 Households unless otherwise noted

OCCUPATIONS

	Agriculture (M&F)	Trade	Transport	Manufacturing	Professions	Public Service	Home Industries	Domestic Service*
POPULATION DENSITY VARIABLES								
Persons per Gross Area	-0.60	-0.73		0.68 F, 0.65 M				-0.89
Persons per Cultivated Area	0.44	-0.58	-0.57			-0.72	0.57 F, -0.48 M	-0.10
Gross Area : Cultivated Area	0.77*			-0.62	-0.81	-0.47		0.86
Gross Linear Distance per Person		0.77		-0.59				
POPULATION STRUCTURE VARIABLES								
Loss of Males	-0.48	-0.91	-0.44	0.74 F, 0.65 M				-0.81
Sex Ratio Age 5-19		-0.61	-0.61	0.62				-0.67
Sex Ratio Age 20-39	-0.55		0.92					
Migrant Occupations	0.15	0.58	0.84	0.97	0.51	0.84	0.47	0.73

* Still correlation of 0.75 if controlled for family size
** Apparently almost all work in own home, but not excluding hired work. Domestic service is not included in gainful occupation in this analysis.

REGION VALUES FOR POPULATION DENSITY AND POPULATION STRUCTURE VARIABLES

	POPULATION STRUCTURE				POPULATION DENSITY (est. from county data in Buck 1937)			
	Population Structure Calculated for Localities with Occupation Data			Population Survey, All				
	Sex Ratio M/100F Age 5-19	Sex Ratio M/100F Age 20-39	Decrease in Sex Ratio	Loss of Males* Age 20-39	Persons/ Gross Area (sq mi)	Persons/ Cultivated Area (sq mi)	Ratio Gross: Cult Area	Gross Linear Distance (km)**
NH	113.6	112.9	0.7	2.3%	128	958	7.5	.0549
NP	119.1	108.4	10.7	9.4%	388	966	2.5	.0315
LY	126.0	111.5	14.6	19.6%	951	1507	1.6	.0201
SE	138.8	107.4	31.4	19.7%	785	2072	2.6	.0222
SO	135.2	108.3	26.9	15.0%	406	2852	7.0	.0308
RB	129.3	115.4	13.9	12.5%	453	1425	3.1	.0292
SW	122.1	100.8	21.2	11.6%	215	2273	10.6	.0424

* Est. % males lost from rural sector from age 5-14 to age 20-39 cohort. See Dataset 2.10.1
**Gross Linear Distance per Person calculated from Persons per Sq. Mile of Gross Area here, as previously in Dataset 6.2.3. Translate square mile to square km.; take square root.

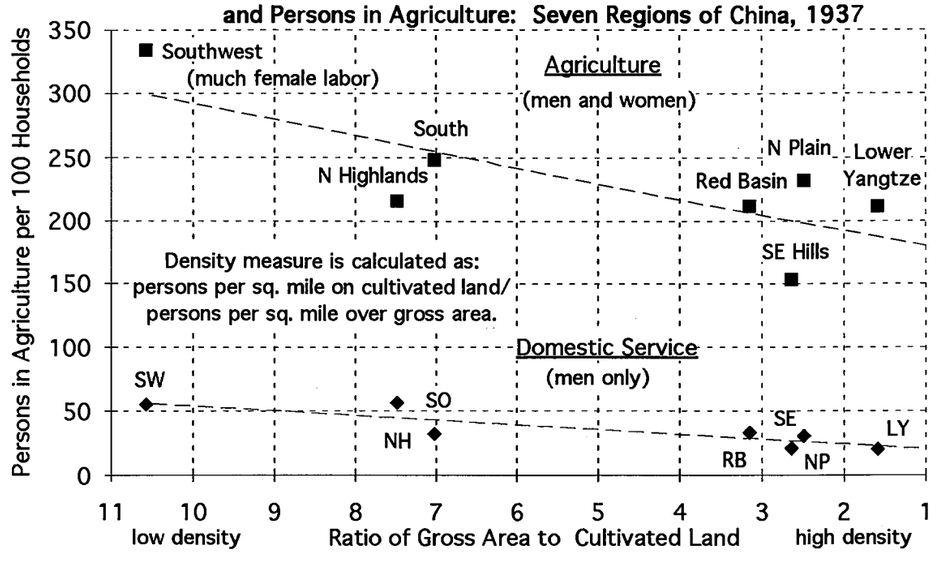
The second and third types are in fact in a symbiotic relationship, because it is the surplus flowing from the former that stimulates the commercialization of the latter.

Although it is not possible to place the localities of the regional samples within a stringent core-periphery analysis, it is possible to see a parallel in the constellation of features that co-vary among the regions. These are comparisons on the scale of the Great Wall of China; the survey sample may in some parts seem too small in size to stand up to it, but the patterns found are generally supported by the similar but less detailed subsidiary occupation breakdown from the Farm Survey, Dataset 6.3.1.

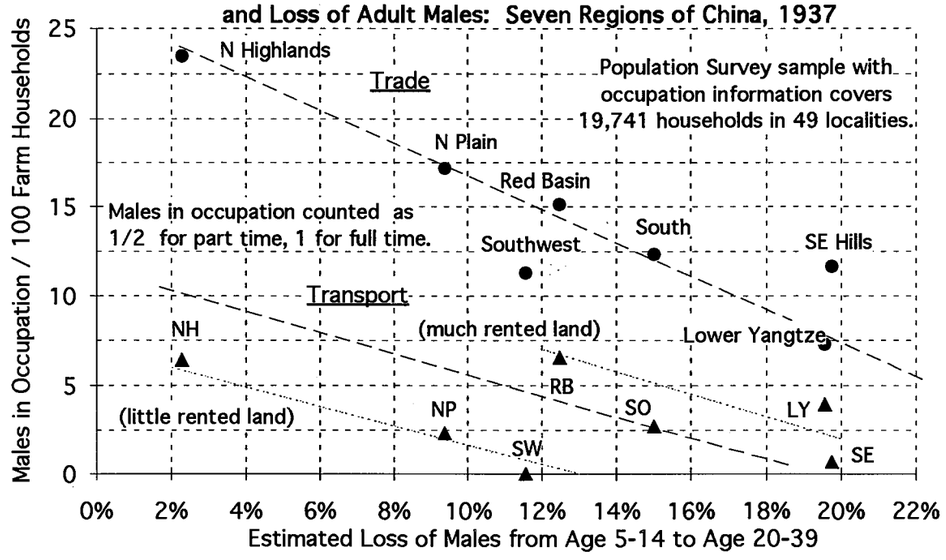
This is the broad and descriptive overview: The impoverished northwest (North Highlands in the Population Survey) is sparsely populated and has a large portion of male population in trade and transportation. The central and lower Yangtze Valley is agriculturally rich and supports great cities, but some of its outflow of surplus serves to quicken the pace of commercial activity at the river's mouth, which stimulates manufacturing employment and migration in the localities of the Southeast Hills sample, where we see high numbers in manufacturing and much migration. The Szechwan Basin at the head of the Yangtze River, richer still in agriculture and densely populated, is however too distant to support much rural/urban differentiation, and rather has much agricultural hired labor and rural manufacturing, like the North; it is no doubt bled of its large surplus on rented land through the river artery and contributes to urban concentrations farther down the river. The South (Fukien and Kwangtung) is very densely populated on crop land, but that is scattered along short rivers and between hilly ridges; there is agricultural specialization and relatively little manufacturing, except for women's home industries, likely silk for international trade.

This is a concrete and qualitative discussion, so the reader might feel his feet are on the ground rather than floating among numbers, but it is backed by statistical analysis, as can be perused in Dataset 6.3.11, which summarizes the correlations found in analyzing the regional occupation data of Dataset 6.3.10. The dimension we can see most clearly in relating the occupational structure to the agricultural economy is population density over the gross area, which has also been shown previously (Dataset 2.10.1) to relate to demographic patterns such as apparent loss of males from the farm households in young adulthood, this latter no doubt reflecting more directly the alternative employment opportunities outside the farm households. Some of these males may return at later ages, but that does not affect what we are measuring.

Dataset 6.3.12 A Population Density over Gross Area and Persons in Agriculture: Seven Regions of China, 1937



Dataset 6.3.12 B Side Occupations among Farm Households and Loss of Adult Males: Seven Regions of China, 1937



It is not surprising that different measures of population density should correlate somewhat differently with the occupational structure, because that structure is governed both by the local farm economy (affected by population density on cultivated land) and by distant labor markets (affected by distance to population concentrations and markets). Moreover, some of the population density measures are linear, and some are by area. For the reader's convenience and possible further investigation the population density measures are given at the bottom of Dataset 6.3.11. Do not neglect to note that the measures of population density have different polarizations, i.e. larger numbers may mean greater distance, or they may mean greater density.

Datasets 6.3.12 A and B chart several of the major relationships found in this data. The first takes a measure of density that is abstracted from population density on cultivated land: the ratio of gross area to cultivated land. The higher the number, the farther to the next patch of settlement, regardless of how dense that patch of settlement may be. This is a measure that should bear on concentration of exchange activity, as well as conditions of trade and transport.

Charted against this is the number of persons (both men and women) devoted to agriculture — some of which could be hired labor, which is generally more common, we have seen in Chapter 5 and Dataset 6.3.1, where population is dispersed and/or hardly above subsistence. The occupation survey does not separate out labor on own farm from hired labor, but the presence of hired labor can be compared interregionally through the Population Survey data on household composition, as follows, and the pattern is the same as we have seen before Dataset (5.4.4).

Dataset 6.3.13 Numbers of Hired Labor in Farm Households, from Compilation of Household Composition

		Household Members / 100 Household Heads		
Region	N of Heads	Hired Labor	Maid Servant	Both
North Highlands	1919	9.0	0.3	9.2
North Plain	14648	11.5	0.8	12.3
Lower Yangtze	10983	8.4	0.8	9.2
Southeast Hills	1525	6.2	0.9	7.0
South	1860	1.3	0.1	1.5
Red Basin	2420	5.5	1.2	6.8
Southwest Plateau	2621	6.3	0.3	6.6

Source: Calculated from Notestein archives Machine Table No. 14.
Hired laborers are male, maid servants are female.

There are, Skinner said in the quote given at the beginning of this chapter (Skinner 1987, pp. 12-13), larger families in peripheral areas[66], but that is only a very small part of the 0.77 correlation here. Whether productivity is high or low, more labor is devoted to agriculture in remote areas; but productivity does still play a small role, it seems, in that areas with lower productivity relative to others at the same gross density (North Highlands and Southeast Hills) fall a little below the regression line, i.e. have fewer persons in agriculture. An inward turning of production towards household activities in the more remote areas is also seen in men's participation in domestic labor; so I have put this on the same chart. Interestingly enough, this also suggests less differentiation of sex roles in the more remote agricultural economies, which is certainly the case on the Southwest Plateau, where large numbers of women farm.

It is no contradiction that the large numbers in agriculture in remote areas are accompanied by relatively large numbers in poorly-paid side occupations, unskilled labor, trade, and transportation. Let us return to the parasitic city model. The remote Mountain Peak Village has little rented land, many large estates, and few opportunities for urban employment, so the land-short must depend on performing labor within the countryside, whether in hired agricultural labor, crafts, or transportation, in order to make ends meet. That is, there is more overlap of agricultural and non-agricultural income strategies within the farm households, though many members are seen to be non-agricultural only (these are predominantly itinerants; see large numbers of full-time traders for North Highlands, North Plain, and Red Basin in Dataset 6.3.11 C and D).

The contrast to this, Plains Village, has more access to larger urban labor markets, and less opportunity for hired agricultural labor, crafts, and transport labor. Parallel to Plains Village, we see in the Southeast Hills data much more participation in manufacturing and much migration, both for men and for women, and somewhat less

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66 The correlation between family size and population density on the gross area is negative but not significant. It might appear more correct statistically to control the number of family members in occupation by the family size, but I believe that would lead to other distortions. Note that the SE Hills, which has a surprising small family size, also has the most migration — which implies that family size is not that small, only many more members are absent, temporarily or permanently, than are recorded in the numbers of migrants and non-residents.

It is not surprising, though, that in general family size should be larger where population is less dense. Denser population brings more rented land and more alternative employment opportunities, both of which make sons less dependent on inheritance of the patrimony.

trade and transportation work . In addition, our occupation data show more persons in professions in the more densely populated areas, particularly those central to the national economy, from the North Plains to the Southeast Hills; and professions are almost completely full-time.

Let us go back to the data. Dataset 6.3.12 B shows number of males in trade and in transportation versus the estimated loss of males from farm households that was calculated from Population Survey data for the analysis in Section 2.10.[67] In Dataset 2.10.1 we saw that loss of males after adolescence is closely related to population density over the gross area, implying the pull of labor markets, but of course that cannot be a purely one-dimensional factor. So the measure of loss of males here is used as a proxy for that pull; it is naturally a reciprocal to the number of men who remain in the rural sector in poorly paid coolie labor and quasi-transportation labor in trade such as peddling because they do not have better opportunities.

Traders in such numbers must indicate a more differentiated rural economy, with exchange of handicrafts and other home production internal to the rural population. The relationship of trade with loss of males is emphatically negative (correlation -0.91), and that with population dispersion (linear km., correlation 0.77) also significant and positive.

Transport, on the same chart, appears to fall below statistical significance, but I believe the chart says more than the numbers. It is logical that transport work would be more prevalent where agricultural product must be carried far. It is also logical that the work would be proportional to the amount of product carried, and here we see that the areas falling below the regression line have little rented land (relative to their productivity, at the least), and those above have much rented land, implying large quantities to be conveyed in rent payments. Finally, transport is highly related (correlation 0.922) to adult sex ratios, suggesting it reflects the same conditions as hired labor, which is the main apparent cause for high adult sex ratios in remote areas. More specifically, transport work for the farm household members is almost entirely a

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67 The measure "loss of males" is based on the differences in numbers between age 5-14 and age 20-39 cohorts. The same calculation cannot be done for the localities of the occupational survey separately, because the population data by locality is less detailed. The patterns of sex ratios (see Population Structure section of Dataset 6.3.11, change in sex ratios from age 5-19 to 20-39) suggest the area figure is close to what it would be for the occupation survey sample.

part-time occupation carried on together with agriculture. Like trade and hired agricultural labor, it reflects a lack of urban opportunities as well as a lack of rented land in remote areas.

There are a few other significant correlations to be examined in Dataset 6.3.11. The presence of manufacturing work, especially for females, is positively correlated to loss of males from the farm households. As can be seen by looking at the numbers of persons in manufacturing for each area, this is not an even progression, but a sudden concentration in the Lower Yangtze and especially the Southeast Hills localities, the latter having nearly five times the average number of males in manufacturing, and also a very high level of migrants, both male and female, with manufacturing occupations. Manufacturing is also positively related to the age 5-19 sex ratio (males per 100 females), though at less than statistical significance, which suggests that families shape their reproduction to meet labor markets. Trade and transport work do not seem to call forth the same response; the correlation there with the adolescent sex ratio is negative.

Finally we may consider the signs of elites among the farm households, persons in professions and public service. Household members in professions are clearly more numerous in the areas with denser population nodes (as seen in the ratio of gross area to cultivated area). Moreover, persons in professions are almost all full-time and not active in agricultural work. This suggests what Skinner said about the distribution of elites in the core-periphery scheme, that they are more numerous near the core. Interestingly enough, public service does not have the same pattern. I suppose that public service includes various local administrative, tax and police activities. The numbers are small, but public service is slightly more common in the remote areas. In particular it is negatively associated with population density on cultivated land (the same as rented land is negatively associated), suggesting that those who take up public service may be the large landowners, mostly managerial farmers, who remain in farm households although they are close to elite status. In more densely populated areas, near towns and cities, those in public service would be more likely separated from the farm sector.

These are the major statistical patterns to be seen in this occupation data, with my interpretations as to their social meanings. It also leads to the next section which makes further use of the Population Survey data on migration.

The next section, Section 6.4, continues this inquiry with an examination of migrants and their occupations, but it also moves towards a detailed examination of population processes in Section 6.5, proposing that migrants may to some degree represent the labor produced in the rural sector to meet urban labor needs, while this is labor that is not itself fully self-reproducing. The latter is seen in marriage ages and rates both for migrants and for residents; these rates are also found to be related to land tenure structure.

6.4 Migration and Movement between Farm and Non-Farm Sectors

The Population Survey Data on Migration

One of the proposals of this research is that the level of interconnectedness between rural and urban sectors is much greater than has generally been depicted in the "dual economy" conceptualizations of China scholars such as Myers and Roll (Roll 1980, p. 4; critiqued in Arrigo 1986, p. 278). However, it is not just the level of interconnectedness, but its nature that is at issue. I have proposed that the landownership distribution is the base structure of inequality that underlies exploitation both within the rural sector and between rural and urban sectors. Part of this interconnectedness is a siphoning of grain to the cities, and part is a flow of labor to the cities, labor that is not produced there and that will not reproduce there. This section will deal with the latter, discussing what can be known about the flow of labor from the Buck survey. We are not concerned with migration such as occurs in famines and wars, or permanent change of residence of households, but with repeated movement between farm and non-farm sectors, or movement as migrant agricultural labor, that is part of the economic strategy of farm households.[68]

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[68] For example, to quote from Thomas Gottschang (1987), farm households in North China "year in and year out weighed the information they received about job possibilities and wage levels in Manchuria against local conditions, with an eye to sending off a son or a brother when the difference promised a positive return to their investment."

A more detailed description of migration is to be found in Buck 1931:

> Emigration is usually from farms in densely settled districts, such as in North China, to farms in a sparsely settled country like Manchuria. In Yenshan Hsien, Chihli, this migration is of three types. The least frequent is where the whole family leaves its native country permanently. This occurs only in case of extreme necessity. A second type is that of the individual, almost always the young man, who is obliged to seek work for his living and to assist in the support of his family. Some of these individuals return to their homes at least once a year, usually at the New Year season, while others may not return for several years. The third kind is that of the individual who leaves for short periods when there is no work to do at home. This is most common after the harvests are over, migration beginning then to Tientsin or some nearby place. The chief occupation of these temporary migrants is making brick and roof tiles. These people return to the village in time for spring work on the farm.
>
> ... Some members of the family live outside the family household but still continue to contribute to the family exchequer to the extent of nearly eleven dollars a year per household. ... It is the young men who are away from home and they range in age from 15 to 40 years. ... Of the total absent members 58 per cent are sons and 18 per cent are brothers of the farm operator. (Buck 1931, pp. 348-349).

Remittances should be seen in relation to Buck's calculation for farm earnings on small farms of $72 for North China, and $144 for East Central China (p. 106). According to Table 48 on income from other than the farm (p. 98; including rent income and household industry), remittances from absent family members provided nearly a third of non-farm income (i.e. about $25 per household). Remittances were the main source of this income. The weight of remittances would be even higher if we could separate out rent receipts, the second main source.

In this inquiry we will return to the data of Buck's Population Survey that was organized and partially analyzed by F.W. Notestein, and much later also used by Irene Taueber in her article "The Families of Chinese Farmers" (1970). The data on migration in the Notestein archives seems to have hardly been tapped further.

Some characteristics of the Population Survey must influence our interpretation of it. The Population Survey analysis encompassed 101 localities and 38,256 families with a resident population of 202,617. Non-residents (absent members of the household) add another 3,657 to that number. However, the survey sites were not as widely distributed as the Farm Survey, and much of the South was hardly represented. In particular, the important Rice-Tea Area in central south China, with 27 localities studied in the Farm Survey, is represented by only four in the Population Survey, and most of these are farther east and closer to the lower Yangtze River, within reach of Shanghai, which is significant to our examination of migration. On the other hand, the Farm Survey studied only 8 localities in Szechwan, a large and densely-populated province, while the Population Survey covered 16. I have merged the two localities surveyed in the "Tibetan Foothills" close to the boundary areas of Szechwan and Yunnan into the adjacent Southwest Plateau area, a small sample of four localities, because agricultural conditions and population features appear similar. The most significant difference in regionalization between the two surveys is that the Population Survey divided the crop area Winter Wheat-Millet into two and lumped part with Spring Wheat to make Notestein's North Highlands area, and part with Winter Wheat-Kaoliang for the North Plains area. This does however maintain the gradient in increasing population density and land productivity.

The Population Survey regions are otherwise close enough to the crop areas that they can be considered congruent, with only a change of name, and for my convenience and that of

researchers who may further analyze these sources I have used the Population Survey areas as named by Notestein when citing this data. The Farm Survey areas and corresponding Population Survey regions are listed within Datasets 6.3.10 and 6.4.1 for easy reference. It is significant for thinking on migration to note that the South (Double-Cropping Rice) region includes not only Kwangtung, but goes as far north along the hilly coast as Amoy in Fukien, including the nearby counties that have contributed heavily to the diaspora of Chinese throughout Southeast Asia and around the world. And the Southeast Hills region (corresponding to the Rice-Tea Area, mostly Hunan, Kiangsi, and coastal Chekiang in the Farm Survey, a vast area linked by tributaries to the Yangtze River) is represented in the occupation data by only two localities in Chekiang for the occupation survey sample.

"Non-Resident" Population and the Composition of Migration

What is classified as the "non-resident population" in the Population Survey summations is not persons temporarily resident in the farm households, such as hired labor or servants; the survey encompassed only a smattering of these, as can be seen in Notestein archive sheets on relationship to the head of household. Rather, the "non-resident population" is overwhelmingly family members, sons and daughters and uncles, who had been resident in the household within the preceding year, but not at the time of the survey. This part of the Population Survey has been easily neglected before in that it seems to represent only a small sliver of the population, and perhaps not an enduring one at that; but given the state of transportation in the 1920's in China, it is more likely that the numbers of family members who were absent for long periods of time but still part of the economic pot of the family were easily two or three times the number recorded in the survey. Although we cannot reconstruct that number except through the age and sex structure of the population, as was done in Chapter 2, we can give greater attention to the composition of the non-resident population than would be warranted if their numbers were merely as given, and take it to represent a larger mass.

Moreover, the numbers of those non-resident at the time of the survey are also only a fraction of those who have come and gone within the year, but happen to be resident at the time of the survey. This can be seen in section A of Dataset 6.4.1. The source for this table cover 9116 migrants, whether immigrants, emigrants, or round trip travellers.

Dataset 6.4.1 Urban-Rural Links: Analysis of Migration Data in the Notestein Archives

A. The Scale of Male Migration

Migrations are events of coming and/or going within preceding year; Non-Residents were present during year but absent at time of survey.

Population Survey Region	Farm Survey Crop Area Name	Migrations per 1000 Men Age 15-44 Male Migrants	Male Non-Residents	Ratio
North Highlands	W Wheat-Millet, Spring Wheat	209.7	92.3	2.3
North Plain	W Wheat-Kaoliang, W W-Millet	107.3	58.8	1.8
Lower Yangtze	Yangtze Rice-Wheat Area	136.9	47.5	2.9
Southeast Hills	Rice Tea Area, eastern part	299.3	119.8	2.5
South	Double-Cropping Rice Area	33.4	16.5	2.0
Red Basin	Szechwan Rice Area	90.7	30.8	2.9
Southwest Plateau	Southwest Rice, Tibetan foothills	41.6	12.2	3.4

B. The Scale of Female Migration

Region	Est.* % of Female Migration for Marriage	Marriage Migration/ 1000 Females Age 15-24	Non-Marriage Migration/ 1000 Females Age 15-44	Est. % Female Migration in All Non-Marriage Migration
North Highlands	74%	149.0	24.3	8%
North Plain	92%	176.6	6.9	5%
Lower Yangtze	74%	149.9	22.7	11%
Southeast Hills	54%	98.9	34.1	8%
South	89%	135.8	7.9	16%
Red Basin	88%	147.3	8.8	7%
Southwest Plateau	95%	166.5	3.8	7%

*These estimations assume that all migration for marriage is migration by females. There were 2756 migrations for marriage in the year and 2667 women married in the year, i.e. 97%.

C. Cause of Migration** — Push from Place of Origin

Region	Lack of Work	Lack of Food on Farm	Other	Famine or Bad Crop Year	War or Bandits
North Highlands	38.2%	11.2%	49.6%	0.0%	0.9%
North Plain	49.1%	8.0%	42.1%	0.2%	0.6%
Lower Yangtze	40.2%	3.2%	52.2%	4.1%	0.2%
Southeast Hills	42.4%	5.2%	52.4%	0.0%	0.0%
South	16.7%	18.9%	64.4%	0.0%	0.0%
Red Basin	27.5%	4.4%	68.1%	0.0%	0.0%
Southwest Plateau	24.8%	4.8%	70.3%	0.0%	0.0%

** Excludes migration for marriage and cases where cause unknown.

Dataset 6.4.1, continued.

D. Destination of Migration

Region	Migrations by Place of Destination: Within Home Hsien	Between Hsiens in Province	Between Provinces	Farm/City Migration: Farm to Farm	Between Farm & City
North Highlands	66%	24%	10%	53%	47%
North Plain	63%	24%	14%	51%	49%
Lower Yangtze	40%	44%	16%	50%	50%
Southeast Hills	30%	62%	8%	24%	76%
South *	74%	8%	*19%	68%	32%
Red Basin	71%	26%	3%	41%	59%
Southwest Plateau	89%	10%	1%	70%	30%

* For South only, migration between countries is 18% of all migration, so it is the bulk of long-distance migration; in the other areas migration between countries is less than 1%.

E. Occupations of Migrants (See Dataset 6.3.9 to compare with source population.)

Overlap of Agricultural and Non-Agricultural Occupations:

Region	N of Families	N of Known Occupation	Workers/ 100 Fam's	Agri Only	Agri & Other	Non-Agri Only	Idle All Year
North Highlands	1938	772	24.7	26%	15%	60%	0%
North Plain	8636	2220	17.1	25%	13%	62%	1%
Lower Yangtze	5553	1654	23.5	39%	29%	32%	2%
Southeast Hills	824	334	31.3	6%	21%	73%	1%
South	1305	155	8.0	30%	37%	32%	5%
Red Basin	1175	263	15.7	27%	26%	46%	1%
Southwest (part)	310	114	28.1	34%	57%	8%	0%

* Those idle and in domestic service (housework) only are not counted as gainfully occupied. Domestic workers here may be partly women moving between households in marriage.

Migrants in Occupation per 100 Families of Source Sample Population

Region	Agri-culture	Trade	Trans-port	Manu-facturing	Profes-sions	Public Service	Home Industry	Dom-estic
North Highlands	8.2	9.4	1.5	1.9	2.9	0.8	0.0	17.3
North Plain	5.4	4.2	0.3	2.6	2.3	1.7	0.4	9.4
Lower Yangtze	12.6	2.7	1.7	3.7	2.0	0.3	0.2	9.5
Southeast Hills	5.2	2.0	0.2	16.2	5.7	1.7	0.1	9.6
South	3.9	1.8	0.1	0.9	0.5	0.2	0.4	4.6
Red Basin	6.3	2.9	1.4	2.0	1.4	1.5	0.2	8.6
Southwest (part)	17.7	8.2	0.0	0.6	1.1	0.0	0.3	13.4

Agriculture Only or Non-Agricultural Only as Percent of All in Occupation

Region	Agri-culture	Trade	Trans-port	Manu-facturing	Profes-sions	Public Service	Home Industry
North Highlands	64%	81%	58%	78%	93%	94%	--
North Plain	65%	81%	71%	91%	89%	76%	75%
Lower Yangtze	57%	37%	14%	71%	98%	83%	28%
Southeast Hills	23%	65%	50%	77%	88%	87%	100%
South	45%	39%	0%	50%	100%	100%	67%
Red Basin	51%	77%	18%	57%	88%	89%	100%
Southwest (part)	38%	11%	--	0%	17%	--	100%

The age, sex and marital composition of the non-resident population makes it clear that this population is an organic part of the resident population. It is composed mostly of men of working age, and of young women who have been transferred from one household to another in the process of marriage. So it makes sense to consider their numbers relative to the same age ranges for the whole population, both resident and non-resident, as is done in Dataset 6.4.1.

Male Migration

We see in section A, "The Scale of Male Migration", that the level of movement for men is highest in the commercialized Southeast Hills (the occupation data of Section 6.3 showed much skilled labor and manufacturing in this area) and second-highest in the destitute North Highlands (much hired agricultural and unskilled labor). For the Southeast Hills that is nearly 300 migrations per 1000 men in the age cohorts 15-44, and nearly 120 men non-resident at the end of the year.[69] The lowest level of movement was in the South area, with 33 migrations per 1000 men and 17 non-resident; however, as we shall see below, the South migration is split between very near and very far. The numbers of migrations and non-residents mostly move in tandem for the seven areas of data, but the ratio between them does vary somewhat, from 1.8 to 3.4, with the higher numbers perhaps indicating more seasonal than long-term movement.

Female Migration

Section B deals with the scale of female migration. The bulk of female migration is for marriage (except in the Southeast Hills where it is only half), and, judging from the female non-resident age breakdown, it occurs mostly in the prime marriage ages, 15-24. Since virtually all women marry in Chinese society, it would be anticipated that the rate of migration for marriage would be fairly constant relative to the number of women, and that is what is investigated in the second column, which is number of

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69 I have taken the age group 15-44 for the whole population as the denominator in this calculation because it is the prime working age, and 85% of non-resident population, whether for males or for females, falls within those ages, as seen in Dataset 6.5.3 B. There is no age breakdown for migrants, but there is no apparent reason for their age distribution to differ from that of non-residents.

marriage migrations (of any age) per 1000 women in the age cohort 15-24.[70] The answer shows some variation, but not so much as to negate an assumption that marriage is a constant process, here measured at an average of 146 marriages annually per 1000 women age 15-24.

Having deducted marriage migration, we can look at female migration that is not for the purpose of marriage, which is given in the third column of section B. Averaging the seven areas in a simple average, there were 131 male migrations per 1000 males age 15-44, and 15.5 female migrations per 1000 females age 15-44, a ratio of about 8.5 to 1. The areas that stand out as having a significant level of non-marriage female migration are the North Highlands, the Lower Yangtze, and the Southeast Hills, the last two perhaps reflecting opportunities for town or city employment. In the South (Fukien and Kwangtung), where a significant portion of men are probably away in long term contracts abroad, the absolute level of female movement is low, but by interregional comparison women there have the largest representation among economic migrants (still only 16% to men's 84%).

Section C of Dataset 6.4.1 also removes marriage cases from the causes of migration and examines those remaining. The categories of this tabulation seem to have been trying for

70 Evaluation of the migration data as an economic process requires separating out the temporary status of women defined as non-resident due to recent marriage and transfer from one household to another, which is the point of the calculations in section B. Although sex of the migrant is not specified in Notestein tabulations that give cause of migration and occupation, it seems safe to assume that migrations by reason of marriage are virtually all by women, because the numbers of migration for marriage purposes are nearly the same as numbers of women in the whole population having married within the past year. We cannot know from the data whether the change of residence has taken place within the same village or far afield. Moreover, the large number of migrants with unknown occupation or "domestic service" may well encompass the newly-married women. With this reasoning, the figures for migrations have been adjusted by excluding migration for the purpose of marriage. So the following sections C and E of Dataset 6.4.1 can be construed to apply overwhelmingly to adult men.

The Southeast Hills is the major deviation from the rough constancy of the rate of marriage migration for women, with only 99 marriage migrations per 1000 women age 15-24, a third lower than the average. In all areas there is some marriage of girls before age 15, often up to 10%, and for the small sample of population in the Southeast Hills there seems to be an unusually large number of girls in ages 0-10, about 1% of the cohort, being transferred in one year. There are hints in the non-resident data and in the tables for relationship to the head of household that adopting a future wife for a son occurs, though infrequently, in all areas; but the indications are more frequent in the Southeast Hills data. In the case of adoption of a future daughter-in-law, the later marriage would not involve change of residence. The occurrence of this custom will be discussed further in Section 6.6.

the "push" causes of migration, why the migrant left a place of origin, and so they relegated the "pull" economic or family functions to "other" reasons, which however are more than half of the answers. The "other" reasons do seem to be indirectly explained in the data on occupation of migrants.

Lack of work and lack of food on the farm were the most common "push" causes in the North, which is understandable from the low level of agricultural product and the polarization of farm size. Catastrophes such as famines, floods, crop failure, war and banditry occupied only a few percent of causes, and only in the North. Moving south towards higher agricultural product per capita, the "other" explanations take more and more of the total.

Migration, Spatial Differentiation, and Occupation

Section D gives the breakdown for destination for migration. There was much more movement outside of the home *hsien*, or county, in the commercialized Lower Yangtze and Southeast Hills areas. The Southeast Hills is particularly notable in that three-quarters of movement was between farm and city, no doubt related to the high percentage of skilled labor and manufacturing work among the farm households. Elsewhere, two-thirds or more of travel was within the home *hsien*, though this seems to have often included a city as destination, as can be seen by comparing the two breakdowns in Section D, each of which sums to 100%. For example, for the Red Basin (Szechwan), with 59% of migrations to or from the city, about half of these must be to a city within the same *hsien*. The most unusual case of destinations is in the South region (Fukien and Kwangtung), where much of the population is tied to the coast by short river valleys, but not joined together by great river systems as are those population concentrations along the Yangtze and Yellow Rivers. For the South three-quarters of travel is within the home *hsien*, but another 18% is bound for foreign countries. I have added this to the 1% originally in the "between provinces" category to avoid making another column on the table just for the South.

The last part of Dataset 6.4.1, Section E, deals with reported occupations of the migrants, including those absent at the time of the survey, the "non-residents". Occupation information was collected in only 49 localities of the Population Survey, as described in the previous section, and this is the case for the migrants of the farm

households as well. Information on occupation was not collected for any localities in the Southwest Plateau, but one locality remains for the adjacent border area, whose data will represent Southwest Plateau here. The source data on occupation covers 5512 migrants with known occupation, out of a population of 19741 families. Occupations of the whole migrant population were compared with those of the whole population in Dataset 6.3.9, and correlated by area in Dataset 6.3.11. Data is presented here in the same format as in Dataset 6.3.10, by area. As before, "domestic service" is excluded from the count of those gainfully occupied.

The first section of Dataset 6.4.1 E indicates the extent of overlap between agricultural and non-agricultural occupations, i.e. migrants reporting both agriculture and other. The next section is a more specific breakdown of occupations of the migrants, given first as percentages of those with known occupation. These occupational categories are, in order of numbers involved: domestic service, agriculture, trade, manufacturing, professional services, transportation, public service, and home industry.

Since the regions have very different levels of migration, from 33 migrants per thousand working-age males to 210 — 21% of working-age men involved in migration during the year — , the composition by percentage may lead to distorted comparisons. So I have rendered these percentages into rates of migrants with certain occupation per 100 families of the source population.

About half or more of the migrants — all members of farm households — were non-agricultural only, except in the one Southwest locality, where there was clearly a large overlap of traders (8.2 migrants/100 families) with agricultural work in a remote but relatively rich agricultural economy. But it is more the general case to have a variety of occupational specialties within a remote or less densely populated rural area; as could be anticipated from the parasitic city model, where elites remain in the countryside due to difficulty of export of the surplus, secondary circulation takes on a more autarkic nature. See in this data that for the remote North Highlands 9.4 migrants/100 families were engaged in trade, by far the highest of the seven regions; for the commercialized South and Southeast Hills, trade was the lowest, 1.8-2.0 migrants/100 families. The 60-62%% "non-agricultural only" migrants for the North Highlands and North Plains suggests a mass of small peddlers who were full-time itinerants, even though they were members of farm families. This could follow from the large number of farms with land much too small for subsistence, i.e. a portion of the population pushed, not pulled, out of their own farm homesteads.

The North Highlands, North Plains, and also Lower Yangtze (partly growing wheat, less labor-intensive than rice, and transitional between the characteristics of the North and South divisions of the country) probably had the largest numbers of migrant agricultural laborers; the numbers of migrants in agriculture and without other occupations (see bottom of Dataset 6.4.1 E) were greater than elsewhere. This is consistent with a greater prevalence of large estates in these areas, estates based on owned land This description for the North has some commonalities with the mythical Mountain Peak Village in Section 6.1 — more agricultural hired labor as well as more non-agricultural exchange within the rural sector.[71]. It is the same picture we have seen before from many angles of the Buck survey.

The greatest contrast to the apparently lower urbanization of the North is the Southeast Hills region, where we saw three-quarters of migrants from the farm households travelled to the city. The large number of "non-agricultural only" migrants in the Southeast Hills is likely related to the 16.2 out of 31.3 migrants/100 families (52%) with occupations in manufacturing, many times more than in other areas. The contrast with other areas is even greater if we consider the absolute volume of migrants is also the highest. The Lower Yangtze ranks next, but far behind, in manufacturing migrants with 3.7. Although the Southeast Hills does not rank highest in agricultural outflow (see the Rice-Tea Area in Dataset 6.2.2, approximately the same region in the Farm Survey), the Population Survey localities are mostly in northern and coastal Chekiang, an area which enjoys the commercialization attendant on downriver surplus accumulation from the entire Yangtze basin as seen in Shanghai and Ningpo, plus international trade. So this is an exaggerated version of the Plains Village just-so story,

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71 There is a rough parallel overall between the Farm Survey report on percent of farm work done by hired labor and the Population Survey report on occupations of migrants (for example, Double-Cropping Rice, a.k.a. South, is lowest), which gives some credence to the migration data reflecting general patterns of work.

The prevalence of large estates in these regions can be seen in a careful comparison of figures in Datasets 5.4.4, 5.4.6, and 5.4.7. Spring Wheat and Winter Wheat-Millet have little rented land; estates are based on cheap labor, not high product. Winter Wheat-Kaoliang, North and Yangtze Rice-Wheat have large owned-land farms with high productivity and better wages to labor. For Yangtze Rice-Wheat rented land is somewhat less prevalent than farther south. I do not know why "agriculture only" migrants do not show up in Szechwan Rice and Southwest Rice, which also have large proportions of farms with hired year-labor, though for the largest farms, in Szechwan Rice, size is based much on rented land.

one in which Plains Village workers garner the labor market for the goods that supply all the nearby villages.

As seen in this migration data, domestic service was the major non-agricultural occupation, and was reported for 42% of all migrants whose occupation was known; but women accounted for only 36% of the 9116 migrations, and most of that, 30%, was marriage migration, as discussed above.

Figures for "domestic service", which was one category of the source compilation, are also provided in Dataset 6.4.1 E, although this has not been considered part of gainful employment in this analysis. The term "domestic service" in the survey is somewhat misleading, because it did not distinguish work in one's own home from paid work in another's household, and generally "domestic service" was work in the home (see Buck 1937, p. 372). But here we are dealing with migrant population, much of which was probably travelling to places of outside employment, for example the farm, home or shop of an employer. Some of this migration, either for men or for women, could well have been for work as servants, i.e. luxury consumption of personal services by elites, and this interpretation is supported in that relative to the source population, migrants in the Lower Yangtze and Southeast Hills regions have somewhat elevated numbers of migrants in domestic service.

No doubt more could be explained from this information on occupations in concert with a study of regional economies and trade, but I will not carry it further. This review of previously-unpublished material on Chinese migrant populations has provided a fairly detailed description that can be related to known regional characteristics. From the perspective of this thesis, it is important in establishing the link between farm households and non-farm or urban labor. More details on the non-resident population will be provided in the next section, but first I will review the big picture on the proposed relationships between land tenure, labor flow, and population processes.

6.5 Land Tenure and Population Processes

In the previous sections we have dealt with the outflow of grain, the secondary circulation of surplus, and labor relations within and between the rural and urban sectors, as were modelled in the grain flow economy of the parasitic city model. Now we will turn to population patterns, which are often explained in terms of particular cultural complexes, but which will soon be seen to be rooted in the same conditions of the farm economy.

Let us outline the population patterns derived from the parasitic city model, as seen in the contrast between the just-so cases "Plains Village" and "Mountain Peak Village":

Set conditions:	High population density	Low population density
Agricultural economy:	Much rented land, little agricultural labor, smaller range in farm size.	Little rented land, much agricultural labor, large range in farm size.
Rural-urban links:	Large grain outflow, urban labor markets, more rural/urban division of labor.	Moderate grain outflow, rural craft production, less rural/urban division of labor.
Population patterns:	High adolescent sex ratios, high male labor migration, low adult sex ratios. Both male landowners and tenants marry within short age time frame Higher fertility per woman.	Lower adolescent ratios, low male out-migration, higher adult sex ratios. Male marriage parallels land owned; large gap in age and opportunity. Lower fertility per woman.

The relevant population statistics were calculated at the bottom of Dataset 6.1.2 A for Plains Village and Mountain Peak Village. These are the hypothetical differences at the same level of productivity, but with varying population density or ease of transport. If, in addition to this, the level of productivity varies (we will not deal with rent rates for now), then grain outflow may be higher or lower, and this will affect the labor markets down the chain of the grain economy as well, and thence reproductive patterns.

We have demonstrated the relationships between population density and demographic features — sex ratios before and after marriage ages and implied loss of adult males from the farm sector — in Chapter 2, especially Section 2.10. Hopefully, the minutiae of the

presentation in Chapter 2 seem more significant in light of the explanations of land tenure and migration presented in Chapters 5 and 6 above. I hope to clarify here how features of the population processes that in Chapter 2 may have seemed to be only happenstance are the necessary outcomes.

Let us begin with the differences between North and South China, which represent, overall, the difference between regimes of lower productivity/lower population density, and higher productivity/higher population density. This difference, first of all, determines that the former will have a predominance of large estates farmed with hired labor, and that the latter will have much rented land. Following on this, the former has a wide range of farm sizes, and the latter a narrower range of farm sizes. (This is the main reason for the regular patterns seen before in the HI/LO wealth locality gap in the analysis of sex ratios for four regions, in Section 2.11.)

Secondly, due to the commercialization attendant on higher population density and a larger population of absentee landlords, excess male labor in the latter case overflows to an urban labor pool, whereas in the former case of population sparsity male labor is absorbed as agricultural labor on large estates. (I use the word "excess", but it would be more accurate to say that the presence of this labor is the outcome of demand, if we can consider the reproductive strategies of peasant families as responses to this demand.) This is the source of the regional patterns of pre- and post-marriage age sex ratios demonstrated in Dataset 2.10.1.

To review Dataset 2.10.1, it was shown that the excess of adolescent males over females increases with higher population density over the gross area (implying ease of transport and commercialization). Meanwhile, adult males more outnumber females, the lower the population density on cultivated land (implying the immediate environment of agricultural production, with a transition from tenancy to use of hired labor by large landowners). The difference in numbers of males from adolescence to adulthood is the estimated loss of working-age adult males, which is positively and closely related to, again, higher population density over the gross area — commercialization and distant labor markets.

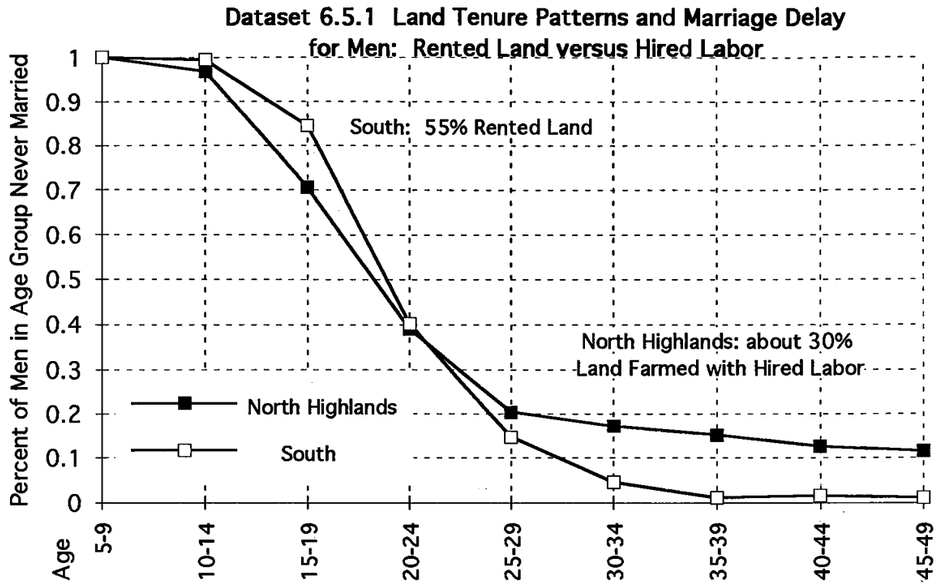
This is the big picture on the relationship between the agricultural economy and population processes. Below we will proceed to greater detail, particularly in looking at regional differences in age of marriage.

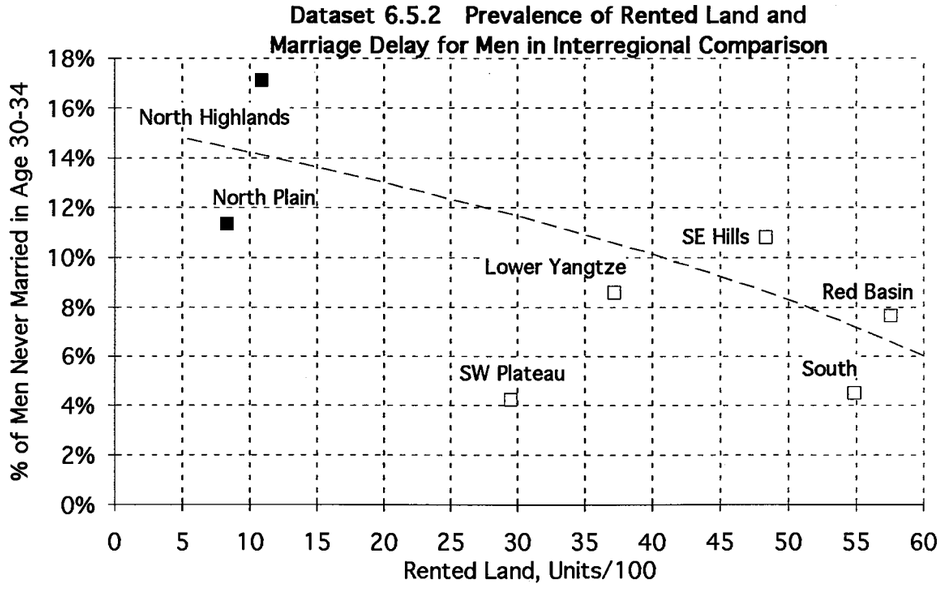
Land Tenure and Age at Marriage for Men

The prevalence of rented land loosens the constraints on reproduction set where lack of land ownership delays or prevents marriage for men. Where rented land is prevalent and little agricultural labor employed, a large portion of young men disappear, apparently emigrate, by maturity, but for those remaining marriage occurs fairly universally and uniformly in the ages 18-19. Where there is little rented land, age at marriage is very low, 13-14 for the sons of large landowners, while 10-15% of rural males marry past age 35 or not at all. The presence of unmarried adult males in the farm sector seems to be the mark of laborers hired by the year.

This relationship of marriage to the rural economy can be demonstrated in two figures, Dataset 6.5.1 and Dataset 6.5.2. These are based on the Population Survey data, with the population of residents and non-residents combined. The first one charts percent of men never married by age, contrasting two areas with very low and very high population density on cultivated land, the North Highlands (Spring Wheat plus some Winter Wheat-Millet localities) and the South (the same as the Double-Cropping Rice Area in the Farm Survey, i.e. Kwangtung and Fukien). Average product per capita is low and medium in the two areas, respectively. But in both areas at least three-fifths of farm households do not own enough land to survive on (see Dataset 6.3.3) The North Highlands has about 18% of farms with labor hired by the year, and only about 12% rented land; the South area has a very low 8% of farms with year labor, but 55% rented land. The North Highlands has 30% of men within the tender ages of 15-19 already married, no doubt the sons of large landowners as in Gamble's North China village study (Section 2.3), but 20% remain unmarried for age 25-29, and the number unmarried only shrinks slowly thereafter, perhaps due to death as well as later marriage. In contrast, in the South area the onset of marriage for men is a little later, but nearly all are married by age 30-34.

This observation of lack of marriage for men is given its broader significance in Dataset 6.5.2, which compares all the seven areas in the Population Survey. The vertical axis is percent of men never married in the age cohort 30-34, and the horizontal axis is percent of land that is rented land, which is labelled units of land per 100 units. The more rented land, the fewer men that are unmarried among those remaining in the farm sector.





That does not tell us the fate of those who have left the farm sector for employment elsewhere, whether labor in town and city or non-agricultural work still in the rural environment. There is likely a bifurcation between kinds of occupations, with the sons of poor farmers migrating to pull rickshaws, and the sons of rich farmers helping to diversify the family fortunes by branching out into commercial ventures. The latter are probably relatively more represented among the "non-resident" population which maintains at least annual trips to the home farmstead.

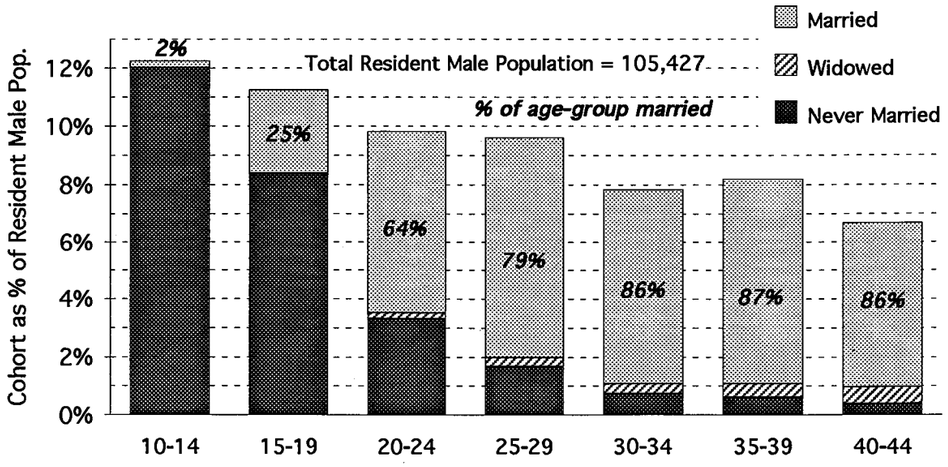
All the same, the non-resident population in the Population Survey shows a lower rate of marriage by age group than the resident population. The two are contrasted, both in age structure and in percent married, in Datasets 6.5.3 A and B. The height of each column represents the percentage of the age group in the respective population, resident or non-resident, and the shading bands within each column represent the portion which are never married, currently married, or widowed. Actually "widowed" also includes those divorced, but the numbers are so small as to be negligible. The percentages cited on the columns are the proportions of those within the age groups who are married.

Dataset 6.5.3 A, for five-year cohorts of the resident population, age 10-14 through age 40-44 (57% of the total male population), shows regularly decreasing numbers as is typical of a self-reproducing population with some continual level of mortality. Dataset 6.5.3 B represents the non-resident male population, 91% of which fall within the ages 10-44. They are a predominantly working age group that has been reproduced within the resident population, as is obvious in the virtual lack of non-resident women, other than those in transit because of recent marriage. The gap between residents and non-residents in proportion married is largest for ages 20-24 and 25-29.

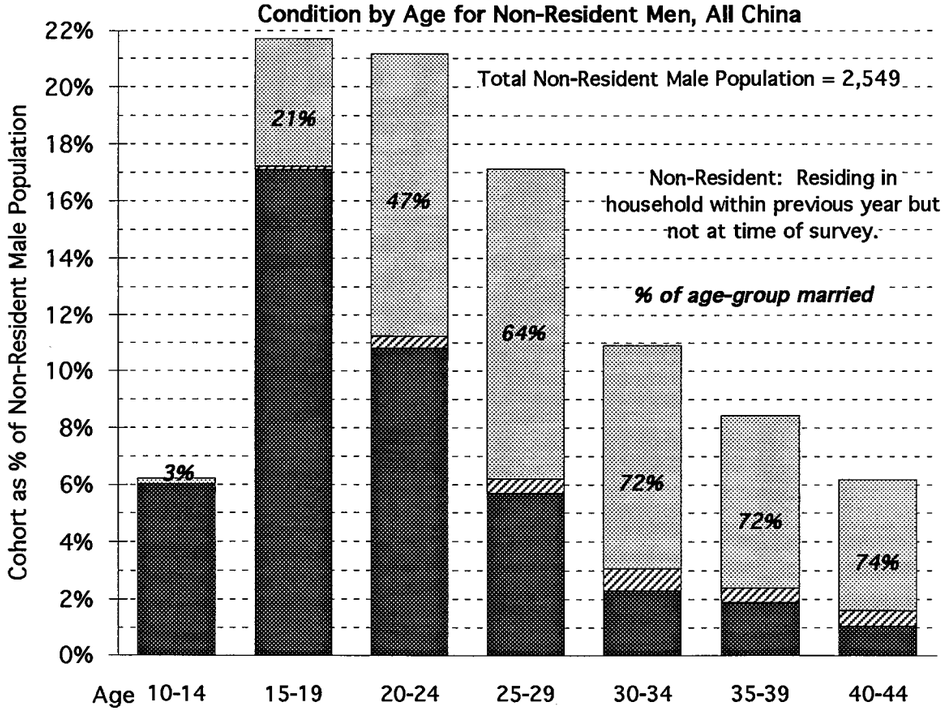
This gap is not extreme, but if we could contrast against the stable farm population just the populations of laborers in cities, town and countryside, it would likely show a much greater disparity in marital status and other demographic measures such as mortality. What I am implying is that the contrast between resident and non-resident population is some indication of the conditions of males cast off from the farm sector and filling the roles of marginalized labor in both rural and urban settings, but it does not reflect the full difference.

Non-marriage for excess males cast off from the farm sector is the obverse side of the coin to nearly full marriage for men who inherit land or gain tenure on rented land, where rented land is prevalent. Obviously the high adolescent sex ratios that go with

Dataset 6.5.3 A Age Composition and Marital Condition by Age for Resident Men, All China



Dataset 6.5.3 B Age Composition and Marital Condition by Age for Non-Resident Men, All China



high population density and much rented land must mean that a large portion of those boys marry late or never — but they disappear from the rural scene by marriage age, and we can only assume that they are among the teeming masses of laborers and artisans working in towns and cities.

Relations of Production and Relations of Reproduction: Foreshadowings of Evolution

Let us recapitulate here the basic proposals of Part One's model of differential reproduction by class, and play out its implications. In its ideal form, there is a balance between the relations of exploitation and the relations of reproduction: The large landowners, whether landlords or managerial farmers, rake off the surplus production of tenants and hired labor, and thus propagate the next generation of landlords and managerial farmers and middle farmers. Their progeny increase in numbers, and some are downwardly mobile because their fathers' rate of reproduction is somewhat higher than their rate of accumulation. Conversely, the tenants and hired labor fail to fully replenish their own numbers, due both to their low level of sustenance and the dearth of women to marry. This leaves more room at the bottom for the now-poor grandchildren of rich, those who have divided the patrimony again and again. The system is in balance and stable, because there is a set ratio between exploited and exploiters. It only takes so many tenants and hired laborers to farm the land of the landlords and managerial farmers.

The system is still stable if the rate of exploitation increases, and the rates of both reproduction for the rich and die-off for the poor increase as well. The two processes are complementary: more exploitation should drive more die-off and more failure to reproduce at the bottom. The higher the rate of exploitation, the more prevalent the female infanticide that prevents marriage for poor males.

What we have found in the empirical data resembles the ideal model, but then it is more complicated, especially when the system is laid on the ground. Most of the landlords live in towns and cities, and take their surplus there. The more surplus they take from the countryside — the surplus outflow increases if population density increases and some landowners are transformed from managerial farmers into landlords —, the more they generate urban labor markets. And the more the young males also leave the countryside. This can also be a stable system, because it is just a geographical differentiation of the

conditions that existed before, with the part of the underclass that gets tenure on rented land marrying and reproducing, and the part that doesn't leaving for a life of lonely labor and oblivion.

But as such a process of increasing population density and increasing exploitation continues, the relations of production are slowly changing, and so are the relations of reproduction. In the city, landlords reproduce less than before[72] (perhaps slightly consolidating and amassing more land and other capital if they divide it less), and with more rented land in circulation and larger urban labor markets as well, the tenants enter into a race to reproduce labor power.[73]

If there is such a historical development, it is certainly not spread evenly over time and space. When the landlords leave the countryside, it makes a difference where they leave from and where they go to. Of course this is not merely a voluntary or arbitrary process, but one determined by geographical and historical conditions. There is increasing geographical differentiation, and the characteristics of core and periphery are accentuated, as Skinner noted after his recent study of current regional differentiation in China (Skinner 1994, p. 23).

Although we have dealt in this study with contrasts and comparisons of regional averages, and most of those regions have a self-contained core and periphery structure,

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72 At high population densities there may be very little geographical barrier to absentee landlord status, and commercial opportunities may provide an impetus to leave the village environment at the lowest possible sufficiency level (XXX ref to Part Three analysis of sufficiency threshold for renting). There is evidence in Chinese data that landlord families were smaller than the families of large farmers, whatever their tenure status (Buck 1937, p. 368; Chiao, Thompson and Chen, 1938). The reproduction of joint families was dampened for the collateral lines (Dataset 2.9.2 C, from Buck 1930). All of this makes sense in terms of labor and consumption needs and their changing balance in a transition from large farmer to rentier.

73 After the analysis of the rate of rent in Part Three, it will be even clearer that there are conditions under which tenants retain a considerable portion of the surplus, and so control of rented land engenders profit for the laborer as well as exploitation. It is this profit on labor that motivates and allows the high rate of reproduction on large tenant and part-owner farms.

Aside from the leveling of marriage opportunities between owners and renters, the effect of the prevalence of rented land is to set off a race for reproduction as a strategy for expansion onto rented land. Data supporting this proposition was presented in Chapter 2: timing and sex composition of reproduction to bear a number of sons early in the family cycle (Datasets 2.5.2 and 2.10.2), and the apparent advantage of a large labor mass in gaining control of rented land (Dataset 2.10.3).

all the same we have seen in these comparisons a covariance of the characteristics that would be expected in periphery/core comparison, from remote and self-contained, to dense and urban/rural differentiated. This is first because the "core" is proportionally larger where surplus extraction is higher in absolute terms, and second because there is somewhat of a national-level core-periphery structure with interregional transfer of surplus, particularly along the Yangtze River and the Grand Canal. So in observing the variations in these regional patterns and reasoning through their rationale, we may also be witnessing the gathering signs of change in relations of production and reproduction, if only on a long-term and incremental scale.

This is the overview of what I see in this data from the 1930's, and it raises the question of, logically, what happens next? I can only approach this question briefly and speculatively, but still that inquiry requires recourse to studies from South Asia and elsewhere, in the concluding section.

The last three sections of this chapter deal specifically with demographic issues and demographic data, topics somewhat disparate and distant from the preceding discussion of regional economies, and yet still related. Section 6.6 describes female marriage ages and speculates on economic causes for a less frequent but still significant form of Chinese marriage, adoption of young girls to raise as brides for sons, in the context of increasing commercialization along the southeast coast of China and in Taiwan around the turn of the century. Section 6.7 explains average rates of reproduction for the farm population in each area by matching them with measures of the amount of grain remaining in the countryside after harvest sale. Finally, Section 6.8 returns to and continues the large questions broached above.

6.6 Marriage Markets and the "Little Daughter-in-Law" Phenomenon: A Manifestation of Contradictions in the Relations of Reproduction?

If there is a race for reproduction for the producers where rented land is prevalent, but high rates of female infanticide make it difficult and costly to find a bride, what recourse is there for the farmer who wants to take in a daughter-in-law to match with his son as soon as possible? If, with commercialization, there are lucrative labor opportunities for sons as well, then the strategy of early reproduction may pay off in more ways than one. But these opportunities for access to rented land and commercial employment also hold the potential for a son to break away from dependence on inheritance of ancestral land, the source of a father's power to enforce filial piety, the Confucian rock of ages.

Early in his fieldwork on Taiwan, beginning in the late 1950's, Arthur Wolf discovered that farm families in the northern Taiwan villages he studied often had histories of adopting in girls as young as one or two years old, "little daughter-in-laws" that were raised to serve as wives for their sons; and he made study of this custom his major life's work. He found that about 40% of women in northern Taiwan had been married in this fashion about the turn of the century (Wolf 1974; Wolf and Huang 1980; Chuang and Wolf 1995).[74] Wolf has researched the fertility of such "minor marriages" in the past as a way to understand incest aversion, but has also recently moved towards a marriage market explanation for their surprising prevalence in the recent history of Taiwan. His explanation seems to concur with what can be observed in the Notestein data.

Let us listen to Wolf's explanation for the great prevalence of minor marriage in rapidly-commercializing northern Taiwan at the turn of the century, for which he gives partial credit to John Shepherd, formerly his student:

> Briefly, our hypothesis is that the very high frequency of minor marriages in northern Taiwan was a direct result of an unbalanced sex ratio and an affluent economy. Both of these, in turn, were consequences of the rapid and very successful development of Taiwan's tea trade. The opportunities created by the need for both skilled and unskilled labor in Taipei's tea warehouses attracted

[74] As late as 1975-79 while studying factory girls in Taiwan I found a few girls, then about age twenty, who had been adopted by well-to-do farm families to marry the sons of the family. When both the boys and girls learned of the proposed match at age 17, they rejected it forcefully. The girls were subsequently cruelly ostracized and cut off from family support, though their remittances were still taken by the family.

> large numbers of male immigrants from southern Taiwan and from established tea-growing districts on the China mainland. ...
>
> The general version of our argument says that the frequency of minor marriages rose when the male-to-female ratio in the marriage market rose at the same time that per capita income rose. A rise in the sex ratio alone was not sufficient to promote minor marriage because it just forced poor men out of the marriage market, and a rise in per capita income alone was not sufficient because it did not generate a more intense competition for women. ...(I)t was most likely to occur in a small market bounded by natural or social barriers. (Chuang and Wolf 1995, p. 791)

Wolf then suggests that the usual formal marriage, transferring girls at least past puberty to the homes of their parents-in-law, gradually evolved into raising the girls from a much younger age, because brides of a suitable age were not available or called for a formidable brideprice. As he has also explained elsewhere in discussions of incest aversion, adopting a daughter-in-law ties the new bride (who enters the households more in the status of an exploited servant) more tightly to the foster parents than to the putative husband, and weakens the threat of the powerful conjugal tie to the patriarchal family unit. Could this be a means of binding sons when a commercialized economy, with also a prevalence of rented land in northern Taiwan, provides potential for independence? At any rate, by the 1930's, with Taiwan's labor markets expanding under Japanese colonial industrial development, this form of marriage declined.

There are signs in the Notestein data that such a custom may also have been present in China in the 1930's, predominantly in the lower Yangtze valley and South. This accords with ethnographic accounts cited by Wolf. The best evidence for this is in the table on composition of the farm households in terms of kinship relations to the head of household, as follows.

Dataset 6.6.1 Adopted Daughters and Da's-in-Law in Farm Households

		Household Members per 100 Heads of Household			
Region	N of Heads	Daughter	Adopted Da-in-Law	Adopted Daughter	Adopted / All Das.
North Highlands	1919	57.0	1.4	0.5	3.2%
North Plains	14648	67.9	0.8	0.8	2.4%
Lower Yangtze	10983	73.7	3.8	1.7	6.9%
Southeast Hills	1525	53.0	11.5	1.8	20.1%
South	1860	74.9	9.4	0.9	12.1%
Red Basin	2420	74.8	0.9	0.2	1.4%
Southwest Plateau	2621	75.2	0.5	1.4	2.5%

Source: Calculated from Notestein archives Machine Table No. 14.
Notestein's term for adopted daughter-in-law is son's fiance.

The source table does not give any further breakdown by age, and does not separate sons into married and unmarried, so the best comparison for numbers of adopted girls is numbers of daughters, since in China's strictly patrilineal kinship extremely few daughters remain in their natal household after marriage age. Daughters, adopted daughters (who may be adopted in anticipation of their marrying a son, or "calling-in" a uxorilocal husband, or even prostitution; see Wolf 1975), and adopted daughters-in-law are all the same cohort of unmarried girls. We see that for the Southeast Hills adopted girls are 20% of this cohort. In fact for girls at marriage age the percentage who were adopted is no doubt at least a third higher, because probably about half of adoptions occur after age 5, so adopted daughters would be much less represented within the toddler ages. There is no way to know how many adopted daughters did actually eventually marry their foster brothers.

The areas where adopted daughters were most prevalent are those that were most commercialized, as we have seen in previous analysis of occupations and migration, the Southeast Hills, the South, and the Lower Yangtze. The Lower Yangtze might rate higher if we could separate out from this huge region the localities that are closer to transportation routes and population concentrations, but the Population Survey compilation provides the kinship and occupation information only by area. We have seen in the occupation analysis (Dataset 6.3.10) that some number of women in these three areas were employed in manufacturing, and women in the South were heavily occupied in home industries, must more than elsewhere. For the Southeast Hills and the Lower Yangtze (and North Highlands too), significant numbers of women were involved in non-marriage migration (Dataset 6.4.1).

All of this suggests some slight tip in the balance of valuation of women's labor that may have also been at play in the greater numbers of adopted daughters. It is relevant that the patrilineal Chinese family considered daughters "good on which you take a loss" (*lau tsai huo*, as I have heard quoted from Taiwanese mothers-in-law), but looked to daughters-in-law as long-term sources of reproduction, household labor and income. A rational response of the patriarchal family to women's income-earning potential could be to take in young daughters-in-laws and to dispose of daughters, if possible, thereby avoiding later brideprice and dowry costs. In the case of employment for girls outside the home, marriage age might also be postponed. It might be presumed that adopting daughters-in-law would be a practice of the poor, but Wolf did not find so, and my

conclusion is that it was more a practice of those of better means, at least the wherewithal to marry off their sons.[75]

Dataset 6.6.1 provides definitive evidence of the presence of adopted daughters-in-law and their regional distribution. Chiao Chi-ming's analysis of family relationships in his thesis also showed numbers of "son's fiancees" and adopted daughters in some counties of Anhwei, Kiangsu, Chekiang, and Fukien (Chiao 1933, Appendix Table 2). Their presence could also be inferred from other more subtle hints in Notestein's tables on female non-residents and their marital status, in the patterns of sex ratios before and after marriage, and in the tables on infant and child mortality, which actually reflect disappearance from the household, not definitely death, and should be reinterpreted. We will look at several of these to understand how this early transfer of women appeared in other more ambiguous forms of the data.

As discussed above, most (79%) of the female non-residents were young women who married within the prior year, i.e. they were resident in the family but had married out. A few, however, were very young children, and this leads to the suspicion that they were

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75 Very early marriage, at least in terms of transition of residence, would explain some of the anomalies that I have found in the population data for the Lower Yangtze in particular. After arguing at length in Chapter 2 that girl children born to rich families were subject to infanticide and mistreatment, but that rich families then took in for wives women raised by families lower down on the rungs of the socio-economic ladder, in Section 2.11 I matched localities in the Population Survey with data from the Farm Survey, and ranked them HI or LO in economic status for four large regions. This and previous exercises showed overall that rich families had high M/F sex ratios for pre-adolescent ages, and low ratios for adults; poor families were short in fertile-age women. But this pattern did not entirely hold for the Lower Yangtze HI/LO comparison. If we calculate correlations for localities within regions for product per capita and sex ratios, the following is the result:

Correlation with Product per Capita after Rent:

Region	N of Localities	Sex Ratio Age 0-4	Sex Ratio Age 5-9
Northwest	15	**0.62***	0.06
North Plain	21	-0.14	-0.17
Lower Yangtze	15	0.18	**-0.59***
South	15	**0.57***	**0.55***
All China	66	**0.41***	0.06

* Significant at 0.025 or better.

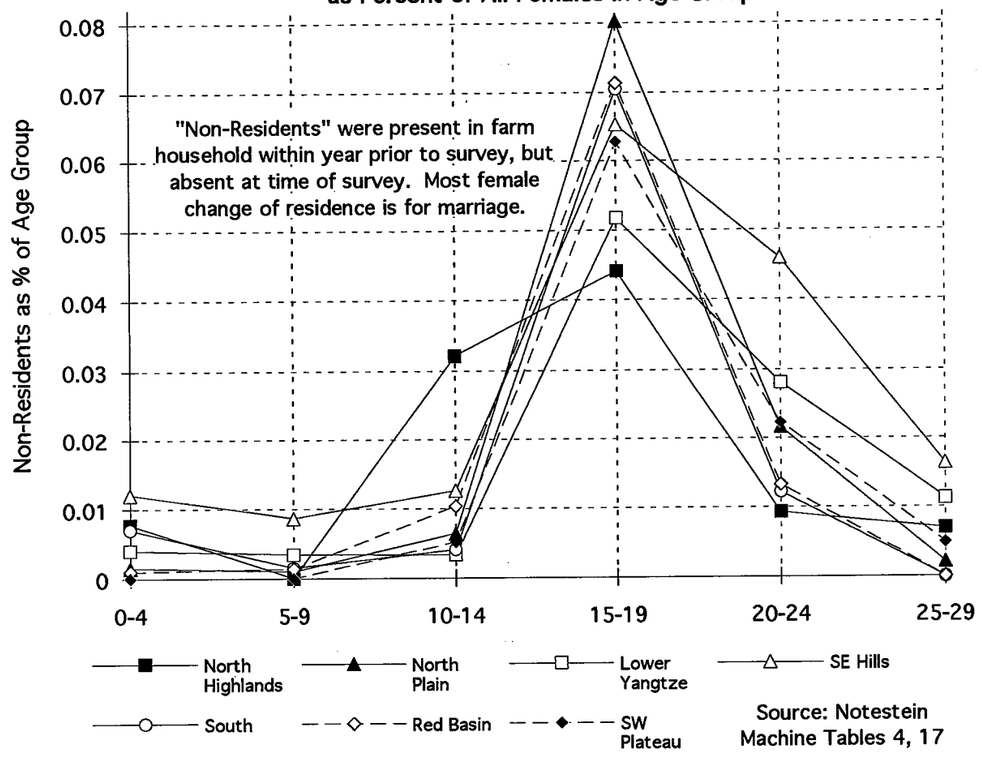
A positive correlation between wealth and high M/F sex ratios is the expected and general condition for young ages, but for the Lower Yangtze an opposite significant correlation develops by age 5-9. This could occur if richer families outbid others for the little brides and the girls were conveyed to their prospective grooms' homes far in advance of marriage.

adopted out. Dataset 6.6.2 charts the number of non-resident women relative to their age groups in the total populations of the seven areas of the Population Survey (from Notestein Machine Tables 4 for residents and 17 for non-residents). This can also be seen as a chart of age distribution of transferred women, transfer predominantly in marriage. The numbers are very small relative to the whole population, both resident and non-resident; for each area sample there are only a couple or a handful of young girls in the ages 0-4 and 5-9 non-resident count. But no doubt these young girls are undercounted. We do see, however, that the Southeast Hills ranks highest in numbers of "non-resident" females in the ages 0-4 and 5-9 (though only 1-1.2% for each year), and the Lower Yangtze, South, and North Highlands also make some showing. Non-resident status for women in the 15-19 and 20-24 age cohorts is probably almost exclusively transfer in marriage, except that the elevated rates for Southeast Hills and Lower Yangtze after age 19 probably represent non-marriage migration.

We saw before in Dataset 2.10.1 that the Lower Yangtze region had the highest ratio of males to females for the 5-14 age group of any region — 135 M/100F. The Southeast Hills had the second highest with 132 M/100F, and the South was third with 123 M/100F. The Lower Yangtze and the Southeast Hills also ranked the highest in the apparent outflow of men; these regions are joined into the commercial heart of China by the great artery of the Yangtze River.

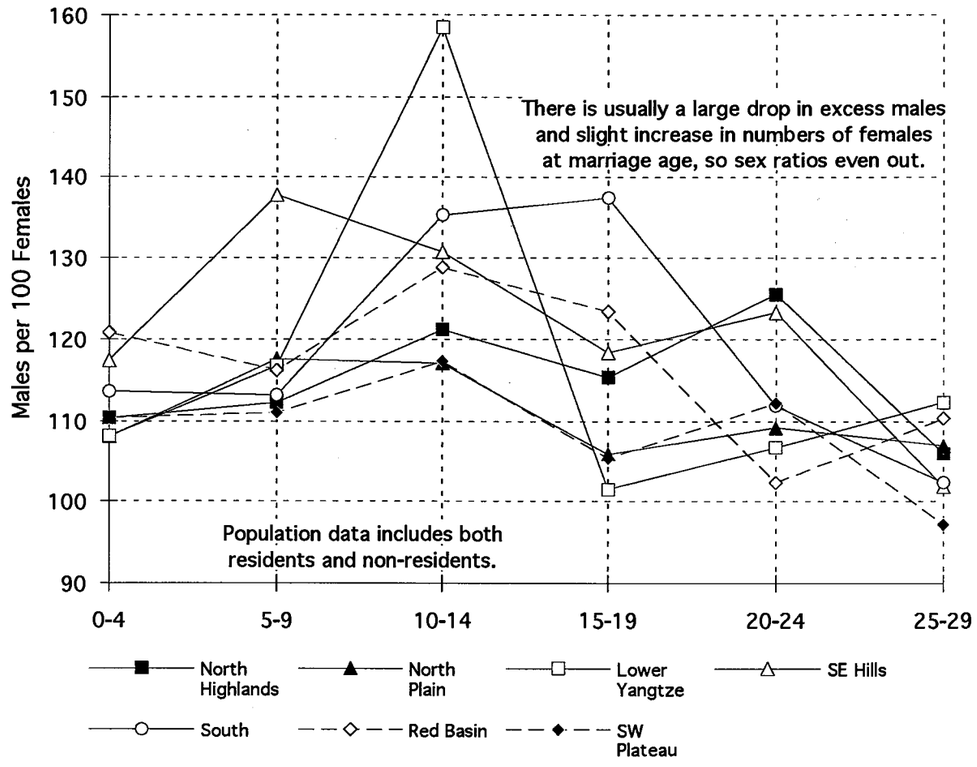
Some difference in marriage behavior is also suspected after a closer look at sex ratios by age for the seven regions. The general pattern of sex ratios is that marriage age marks a transition from high to low sex ratios as maturing sons leave the households for work and girls are married in. In the case of adopting a daughter-in-law, this transition might take place well before actual marriage. As can be seen in Dataset 6.6.3 (calculated from Notestein Machine Table 2), the three areas Southeast Hills, Lower Yangtze and South reach the highest sex ratios among the seven areas. If we were to extrapolate from the pattern for five-year cohorts where the age of the highest sex ratio in the pre-marriage years would be, it might be about age 8 for the Southeast Hills, age 12 for the Lower Yangtze, and age 16 for the South region. The sex ratios drop down by age 15-19 for the Southeast Hills and Lower Yangtze, a transition that begins earliest in the Southest Hills. This pattern implies transfer of women earlier than marriage for these areas, which calls for further investigation.

Dataset 6.6.2 Transfer of Women: Female Non-Residents as Percent of All Females in Age Group

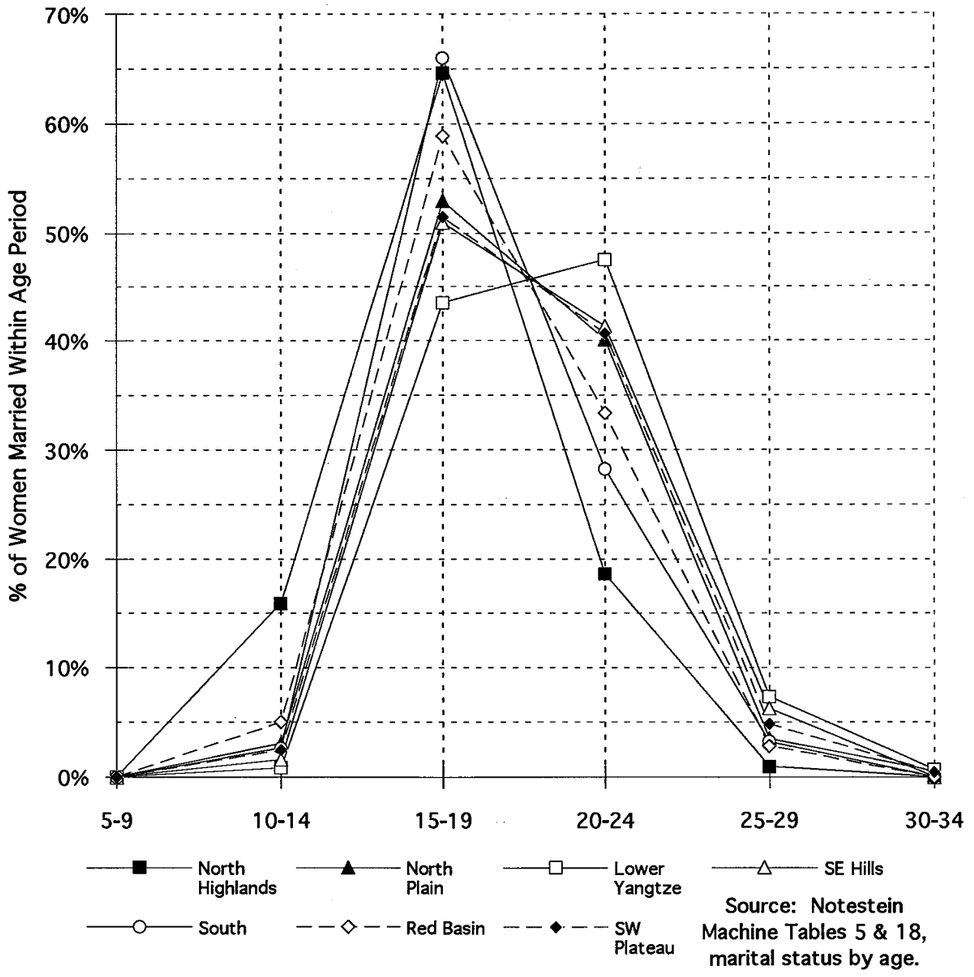


Source: Notestein Machine Tables 4, 17

Dataset 6.6.3 Sex Ratios by Age, Seven Regions of China



Dataset 6.6.4 Age at Marriage for Women, Seven Regions of China



Source: Notestein Machine Tables 5 & 18, marital status by age.

The depressed number of marriage migrations per 1000 women found for the Southeast Hills (and to a lesser extent for the South and Lower Yangtze regions) in Dataset 6.4.1 B, fully a third below the average, also suggests that significant numbers of girls were transferred before marriage. If girls had been transferred to their prospective husbands' homes long before marriage, then they would not migrate at time of marriage. Unfortunately the numbers are very small, and the Southeast Hills area is represented here by surveys in only four localities.

Let us examine age at marriage more directly. The peak age of marriage for women is from 15 to 19 years of age, as shown in Dataset 6.6.4, which was estimated from the marital status by age for the whole population of each area (from Notestein Machine Tables 5 for residents and 18 for non-residents). Within this peak age period, for example, 64% of women in the North Highlands region are married. (Chinese ages are counted as one year at the first Chinese New Year passed, so a response of "20" was 19 years of age in the tabulation based on Western reckoning.) The North Highlands shows both early age of marriage (about 16% in age 10-14) and much transfer for women in age 10-14 (Dataset 6.6.2), a consistency between age of marriage and transfer.[76] But despite adoptions of little daughters-in-law, the Southeast Hills and the Lower Yangtze show the latest ages of marriage for women of all the areas, with some 7-8% marrying as late as age 25-29. Could this be due to earnings opportunities for women, either as factory workers or maids (see Dataset 6.3.13), in the vicinity of the towns and cities of the Yangtze basin?

This section has dealt with a rather esoteric subject, the custom of "little daughter-in-laws", and yet it may be useful in that it fits into the puzzle of the Chinese economy a topic on which some researchers have expended painstaking effort. Here in the most commercialized areas we seem to have both a paradox and two complementary phenomena of a patriarchal family structure — the highest male-to-female sex ratios (reflecting, I have argued earlier, farm household preferential reproduction of male labor to fill the

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76 In Ting Hsien: A North China Rural Community, Gamble showed female age at marriage varying greatly according to father's size of farm, almost as much as for males (Gamble 1954 from 1931 fieldwork, pp. 42-43). This appears to be within the North Highland Population Survey region, an agriculturally poor area with little rented land. The South and the Red Basin (Szechwan) regions, with much rented land, show a somewhat contrasting pattern in Dataset 6.6.4, with almost all women marrying within a small age span, mostly 15-19. I interpret this as an equalization of marriage opportunities for men too within the rural sector because of prevalence of rented land.

demands of urban labor markets) and at the same time such high demand for brides that they must be snatched from the cradle. But such commercialization brings the possibility of a viable livelihood for sons and daughters that is independent from inheritance of the family farm, and this must shake the foundations of the patriarchal Chinese family. The custom of adopting daughters-in-law may be seen, speculatively, as one element arising in an evolving contradiction between relations of production and relations of reproduction, a contradiction sharpest at the geographic core of surplus accumulation.

6.7 Malthusian Musings: Absolute Income and Reproduction

Increasing population density has been mentioned repeatedly in this thesis as the motor for change in land tenure relations and in increasing extraction of surplus. This is Marx within a Malthusian conundrum. This is reason enough that this thesis should address the apparent limits to expansion of the population. But in addition to this, the Notestein archives that have been investigated here contain the data that has been an important source for estimates of growth of the Chinese population in this period, and also a major bone of contention.

Some years ago there was a dispute between a demographer and an anthropologist, Ansley Coale and Arthur Wolf. Both examined the Notestein data, but argued for different levels of fertility in China of the 1930's, Ansley Coale believing the level of fertility low, and Wolf believing it high.

With the analysis of agricultural economy in this thesis, it is possible to make an interpretation that is different from either of these, one that is both biologically Malthusian and socially Marxist.

That is, fertility is related to physical conditions, but these conditions are wrought both by nature and by man. The level of production should determine physical well-being, as taken for granted in neoclassical analyses such as that by Kang Chao. But it does not, because populations can also be deprived of their product. That is be seen in Dataset 6.2.2: averaged per capita over the whole population, the amount of grain sold after the harvest is almost equivalent to the production of rented land. Rented land is often extensive where the product per capita is high; there is no necessary relationship between production and product retained. What I am suggesting is that the gross rate of reproduction or growth of a population should be parallel to its income <u>after</u> the processes of exploitation have done their work.

Dataset 6.7.1 A repeats some rough figures for average income for the farm households, for comparison with estimates of reproduction of that population. The first part of the estimation is the amount of grain retained by farm families after the sale of the crop at harvest time, in terms of absolute kilograms of grain-equivalent, which was calculated through the marketing analysis in Dataset 6.2.2. Total production is much higher, but

does not closely correspond to the livelihood attained from that production. And as discussed before in Section 6.2, figures for the average product retained still disguise a wide range between famine and glut, a combination of forced sale to pay rent and taxes and debts, and marketing the farm surplus to buy non-essentials. But the numbers for amount of grain retained after harvest sale, even discounting them somewhat as an overestimate of outflow, suggest at best bare subsistence for the overwhelming majority. These numbers, given in the first column of Dataset 6.7.1 A above, have the advantage of summarizing the concrete results of production, markets and exploitation, from whatever causes or conditions. However, the Farm Survey agricultural areas and localities studied were not exactly the same as the Population Survey, and this detracts from the precision of the comparison.[77]

Dataset 6.7.1 A Reproduction versus Income: Average Product Retained by Farm Households After Harvest Sale plus Off-Farm Income, for Seven Regions of China, 1937

	Income per Capita in Kg. Grain-Equiv.			Crude	Total Fertility
Population Survey Region	Product on Farm After Harvest Sale	Off-Farm Income	Total Income	Birth Rate: Births/1000 Population	Rate: Projected Births/Woman over Lifetime
North Highlands	123	37	160	30.8	4.07
North Plain	169	43	212	38.3	5.01
Lower Yangtze	204	43	247	36.7	4.80
SE Hills	182	42	224	38.0	4.72
South	130	45	175	37.3	4.91
Red Basin	205	82	287	43.1	5.44
SW Plateau	265	44	309	52.3	6.51

Source: Dataset 6.2.1 | Calc'd from Dataset 6.3.3 | Notestein Archives, Buck 1937, Taeuber 1970, Wolf 1984

To the estimated grain retained by the farm households I have added an estimate of the amount of income obtained from off-farm work, calculated in preparing Dataset 6.3.7 A and B. That is, Buck presented figures for percent of total income obtained from off-farm work, both agricultural labor and other subsidiary occupations, and so a rough

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77 The main divergence between regional divisions of the two surveys is in the North. North Highlands in the Population Survey includes 1060 households in the Spring Wheat crop region, and 878 households in the Winter Wheat-Millet crop region. The North Plain includes 10,930 households in the Winter Wheat-Millet crop region, and 4713 households in the Winter Wheat-Kaoliang crop region. The Farm Survey area figures have been averaged with weighting accordingly.

measure of that absolute value can be made in relation to the farm production.[78] That result is given in the second column of Dataset 6.7.1 A, and total income follows. The main effect of the addition of off-farm income is to put the Red Basin (Szechwan Rice Area), which has the highest rate of subsidiary occupations, in line between the Lower Yangtze and SW Plateau. Even after this addition, average income is low for most of the areas.

The Notestein archives contain sheets for numbers of sons and daughters born to married women of specific five-year age groups (Notestein Machine Tables 7A,B,C). This information is given by regions, and is not broken down by locality surveyed, so it is not possible to rearrange the Population Survey data to make a better geographical match with the Farm Survey. Several researchers, namely Taueber (1970), Barclay, Coale, Stoto, and Trussell (1976), and Wolf (1984), have made calculations of reproduction using this data. Dataset 6.7.1 A lists the crude birth rate (current annual births per 1000 population) calculated by Taeuber and the total fertility rate calculated by Wolf.[79]

These two measures are in very close agreement with each other, as can be seen when they are juxtaposed on appropriate scales, as in the Dataset 6.7.1 B, where both are graphed against total income. Assuming a linear relationship, the correlation of income with the crude birth rate is 0.882, and with the total fertility rate is 0.860. These are convincing correlations, but what is more interesting is the inferences to be drawn if we look at the irregularity of a line drawn through the data points.

My interpretation of this comparison is that there is a plateau of reproduction levels around the range of necessary subsistence, about 200-220 kg. per capita. This level of reproduction, about 4.8 births per woman over a lifetime or 38 births per thousand

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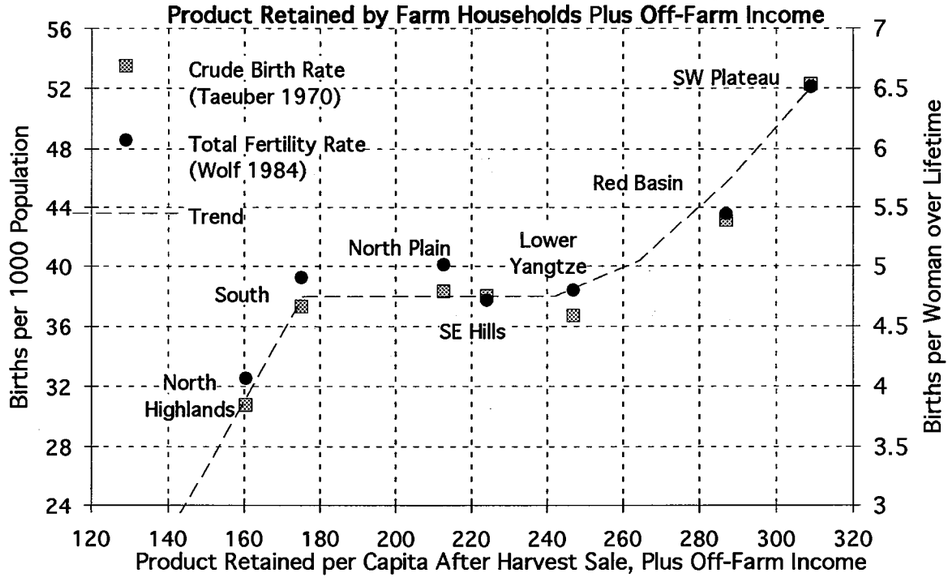
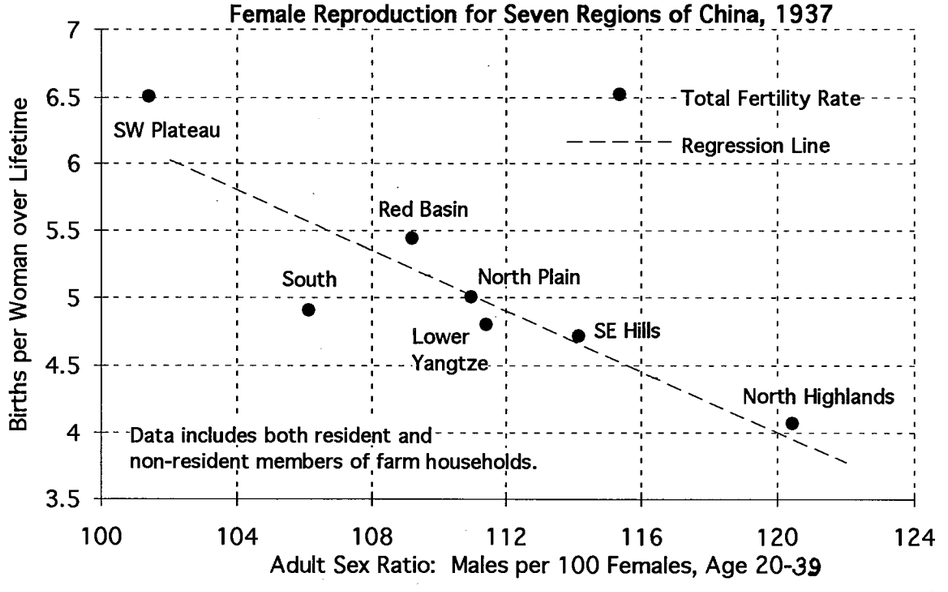
78 The average for each area was made after carrying through the calculation of farm size group data for five quintiles of farm size; this is more accurate than applying the simple average of localities' off-farm income percentages to the whole area. For example, Buck's figure for the Szechwan Rice Area as a whole, produced by simple average of the localities, was 21.3% (Statistics Vol. p. 309); but my recalculation weighted by numbers of farms and by absolute production yields 15.6% off-farm income overall for Szechwan.

79 The total fertility rate adds up the annual births per woman (times five) for each five-year cohort through the full reproductive cycle of age 15 through 45. It is a projection of how many children women would have at the end of their childbearing years if age-specific reproduction continued at the current rate. The total fertility rate, however, does not take account of earlier mortality or widowhood for women, or of unbalanced sex ratios among children, and so it somewhat overshoots the actual level of reproduction or the net reproduction rate.

Dataset 6.7.1 B Reproduction versus Income: Agricultural Product Retained by Farm Households Plus Off-Farm Income



Dataset 6.7.2 Malthusian Restraints: Adult Sex Ratios and Female Reproduction for Seven Regions of China, 1937



population, probably represents only a slowly growing population, given periodic high mortality (see Buck 1937 p. 387). It is a population, morever, that is reproducing at far less than "natural" or maximum potential fertility (generally considered to be an average of about 7 births per woman), apparently due to ecological and social constraints.

The regions on this demographic plateau are all the heartland of China, the eastern half of the empire. The South (Double-Cropping Rice Area) could reproduce adequately on a somewhat lower average income probably because, with the prevalence of rented land, income was more evenly distributed. By contrast, it seems that sustenance in the North Highlands, the cold and barren northwest, was so low that reproduction was impaired.

At the upper end of the income scale, population in the Red Basin and on the Southwest Plateau was probably expanding. Production per capita was highest there, with good ecological conditions, but also both are in the near-inaccessible interior. For the Southwest Plateau in particular there is no navigable river to bleed the production surplus. Even in Szechwan, where rented land was over half the arable and grain exported down the Yangtze gorges, a large part of the surplus circulated in the countryside, as seen in its highest rates of off-farm income and subsidiary occupations (Dataset 6.3.2). It cannot be determined whether the Malthusian pressures of expanding population were destined to eat up the surplus.

Malthusian pressures are probably reflected in adult sex ratios as well as in fertility rates for women. The high negative correlation between the sex ratio for ages 20-39 (M/100F, including both resident and non-resident household members), a significant -0.89, and the total fertility rate is graphed in Dataset 6.7.2. The young adult sex ratios, age 20-39, reflect mostly the rural economy. This negative correlation suggests that limitation of births (whether intentional or inadvertant) and non-marriage of men are concomitant outcomes of subsistence pressure within the rural sector.

This discussion of income has put Chinese reproduction in a different light, one that is economic or ecological, not cultural and not the "Chinese" level of reproduction that Wolf and Coale disputed. (This critique and more detailed examination of the Wolf and Coale arguments and data was made in an unpublished ms., Arrigo 1984, "Fertility in Prerevolutionary China: A Comment on the Wolf-Coale Debate".) That is not to deny that habitual practices take on an historical weight of their own, and may be resistant to change even as economic conditions change. However, the historical record is also that

reproductive habits may change in the course of one generation under the force of economic exigencies and choices. Or the pattern may change by increments, as an extension of prior countercurrents, until these increments sum to predominance. This is a view that may integrate some of the seemingly contradictory patterns seen within the Chinese agrarian economy into a broader historical picture of general demographic change in transition from agrarian to industrial society.

6.8 An Explanation for the Transition from High to Low Fertility for the Wealthy in the Process of Industrialization

The last few pages of Section 6.6 reviewed the big picture of class differentials of reproduction and their geographical variation in the context of increasing urban/rural differentiation, suggesting that this variation presaged growing contradictions in relations of production and relations of reproduction. Section 6.8 continues this train of thought. The central issue is why the common pattern for traditional agrarian societies practicing partible inheritance, higher reproduction for the wealthy, gives way to that which is taken for granted in industrial societies, high reproduction for workers and low reproduction for technical, management and capitalist classes. (An early analysis with a demand for labor perspective is found in Coontz 1964).

Although the issue of a demographic transition is outside of the main scope of my thesis on the class differentials of reproduction in agrarian society, the investigation of the transition also contributes to understanding of the dynamics of the processes before transition. Rates of reproduction are set as habitual responses to concrete circumstances, and are part and parcel of household strategies for survival and advancement under the existing socio-economic order. Let us stand back now and think on the significance of the comparisons of peasants in pre-revolutionary China, early 20th century Russia, and contemporary South Asia that were presented in Chapter 3. There is a notable continuity of demographic processes in these cases from far-flung areas, each with a very different cultural milieu and particular ecological and historical conditions. Even though land was plentiful and was not privately owned in most of Russia, class differentials of reproduction in the countryside, based on ownership of draft animals and tools, were apparent. South Asia, with the basic features of high population density, skewed landownership distribution, female infanticide, and hypergamy, is close to the pre-communist Chinese case.

We can understand this continuity of form under the generalization that the material conditions provide certain constraints that limit the possible range of cultural responses. In this I ascribe to the view of Harris and Ross's 1987 book Death, Sex and Fertility: Population Regulation in Preindustrial and Developing Societies. Their view that the infrastructure of society is composed of two inseparable parts, the mode of production and the mode of reproduction, is laid out in the introduction. Extending the

implications of this view that the mode of reproduction is an inherent part of the mode of production, there can hardly be a point at which the socio-economic structure changes so fundamentally and suddenly as to overturn previous practices at once. The logic of the strategies and processes continues, even while these appear in shifting proportions as structural conditions evolve. It is not surprising then that there should be continuity in causal relationships at the micro level, but new configurations should appear from the bird's-eye view of the society. From this viewpoint of cultural materialism they also assert that there is no point in trying to distinguish the unconscious demographic effect of social practices from conscious fertility decisions, an enterprise which greatly occupies demographers. I have followed this viewpoint in avoiding discussion of "natural" fertility (the demographer's term for unrestrained or maximum reproduction), or debate on whether practices leading to unbalanced sex ratios are intentional.

With this perspective, I do not expect that there is some cultural influence, such as diffusion of Western ideals, that dictates a reversal in the traditional correspondence between landownship and reproduction. Then how may the reversal for industrial society be explained? My answer to this question is located in the gradual transformation of the relations of production as labor is increasingly separated from the means of production, a process that is advanced either by growing agricultural surpluses per land area and increasing extraction, and/or by increasing predominance and concentration of non-agricultural means of production. If we look at economic history as the long-term, slow accretion of infrastructure and population, then the two are aspects of the same process. Applying Chapter 5's determination of land tenure, and Chapter 6's determination of secondary circulation of the extracted surplus, a direction of development can be projected.

Let us first review some of the literature on the relationship between landowning and reproduction. A particularly well-researched example is to be found in the case of peasants in Turkey who changed their reproductive behavior within one generation. This illustrates both the micro- and macro causation of a demographic transition.

Demographic Transition: A Detailed Study for Turkey

A transformation from high to low fertility for rich peasants is described in Aswad 1981 on the basis of 1965 fieldwork in three villages on the Amouk Plain of southwest Turkey, near Antioch, a fertile area earlier part of Syria. Most of the land in the area was originally owned by absentee landlords; in 1961 60% of the population was landless. Lineages of rich peasants, which held their land communally, were able to encroach on other villages by acting as agents of the landlords. They practiced polygyny, 42% of the older generation of rich peasants having two or more wives. Lineage heads averaged 15 children over four generations.

> Since leadership passes to the sons of the most successful leader of the former generation, there is a buildup of population at the center of the lineage. ... One would imagine that (this) would decrease the power of succeeding generations through inheritance. However, the leaders used their alliances with patrons to obtain additional land from surrounding villages on which to place some of their sons. (Aswad 1981, p. 97)
>
> The children of this group (rich peasants) did little physical labor, although the girls aided their mothers. No children worked in the fields. Children were important for the economic and political transactions of their fathers: the more children one had, the more transactions one engaged in through the use of brideprice. The size of the unit of males is also important for reasons of vengeance and as a fighting unit, since force sometimes entered into land disputes. (Aswad, p. 98).

Aswad's account explains the function of large kin groups in local political dominance, part of the rationale for high fertility for the rich, and a function reminiscent of that described for lineages in South China. It also adds to an understanding of upper class dowry in the social context of power relationships; landowners traditionally used daughters' marriages to cement strategic alliances with patrons. Both of these are relevant to an understanding of dowry and female infanticide among the rich in China and India, as discussed before in Section 3.5.

Land reform, beginning in the early 1950's in one of the three villages of study, and mechanization for large-scale production of cotton at about the same time, changed the balance of agrarian relations. Some absentee landlords expelled their sharecroppers and converted their land to agribusiness. Rich peasants, no longer benefitting from the patronage of the absentee landlords, sought to invest in education for their sons so they could seek urban jobs. In contrast, sharecroppers, renters and laborers pushed to have

more children, marrying earlier, to benefit from the labor of their children in picking cotton. The reproductive outcome of this transition was as follows in 1965:

Dataset 6.8.1 Number of Children by Economic Group and Age of Father, Amouk Plain, Turkey, 1965.

Economic Group	Older Generation, 45+ Fathers	Older Generation, 45+ Children	Younger Generation, < 30 Fathers	Younger Generation, < 30 Children
Poor	9	4.5	5	3.9
Laborer	-		13	3.7
Sharecrop/Renter	32	3.0	6	3.6
Middle Peasant	38	5.5	19	3.6
Rich Peasant	23	6.3	8	3.9

Source: Aswad 1981, Table 1, p. 95; data from three villages combined.

Although reproduction may not have been quite complete for the younger generation at the time of the study, it appears that the earlier positive relationship between wealth and reproduction was substantially flattened. Aswad found that among young rich peasants large families were no longer the ideal.

Landownership, Landholding, Labor

In Chapter 2 I explored at length the pattern of reproduction in relation to landownership and land control for 1930's China. We have seen that Chinese renters had accelerated rates of reproduction, and landlords had fewer children than large cultivating owners. Following on the observation of patterns similar to these in South Asia, there has been an extended discussion among demographers based mainly in the South Asian literature about the relationship of landholding to fertility. In early studies the operational holdings of farms were not clearly distinguished from ownership, and even now few studies can ascertain how much land is owned by a household and rented out. The main advance in this discussion has been made by Stokes and Schutjer in a 1984 summary article, "Access to Land and Fertility in Developing Countries", which in its introduction criticizes the lack of a theoretical base in previous land/fertility accounts (p. 195). Their own theoretical framework is as follows.

> At least two dimensions of land appear to be important for fertility behavior. One dimension is the size of landholdings to which a household has access for cultivation purposes. A second dimension is land ownership, including all legal and institutional arrangements that specify how land is to be used and how produce from the land is to be distributed.

> The two dimensions are distinct in that an individual, family, or household may have use rights (usufruct) but not ownership rights. Equally important, the two dimensions lead to different streams of income. Individuals or households with use rights (renters, sharecroppers, leasees, etc.) receive a management return for managing the agricultural production processes on the land. Owners of agricultural land receive returns to equity based on their investment. A third income stream is generated by the labor input to the agricultural production process. For the landless laborer this is typically the entire return. Owner-operators are the only households which can capture all three types of return: labor, management and equity. Tenants of various types may receive a management and labor return, but regardless of how secure their use-rights, they do not receive returns to equity. The two dimensions of land and the alternative income streams have disparate implications for fertility.
>
> ... Stated simply, farm households with access to larger holdings have greater labor requirements, are able to employ profitably more family labor, and this incentive encourages continued high fertility.
>
> Land ownership, on the other hand, is hypothesized to have negative long-term effects on fertility, operating through the income returns to equity and the resulting increase in old-age security. ... (L)and ownership should reduce the importance of children as sources of old-age security and contribute to lower fertility. (Stokes and Schutjer, 1984, pp. 197-8).

Stokes and Schutjer recognize that much of fertility behavior is involuntary; i.e. the desired number of children is often not achieved at the lower end of landholdings because of poor maternal nutrition and infant and child mortality. They review micro-level studies on the land/fertility relationship for Poland, Iran, India, Bangladesh, Thailand, Philippines, Brazil, Guatemala, Mexico, and their own study in lower Egypt.

Cain (1985) criticizes Stokes and Schutjer for overrating the degree to which land can substitute for children as old-age security, and for neglecting the value of children's labor especially to landless households. He reviews his own findings on child labor, cited in Section 3.5. However, Stokes and Schutjer's proposal on the negative effect of landownership on fertility, and positive effect of operational holdings, has been endorsed by Sharif and Saha in a 1993 analysis of 99 Bangladeshi families. In Sharif and Saha's neo-classical cant, there is a cost to family prestige for large landowners if their children work, and this runs counter to the value of children's labor.

In my view Stokes and Schutjer's formulation is an advance towards empirical description, and it is outlined in a concrete way. However, it does not go far enough towards causal explanation of reproduction in the context of the relations among social classes. I wish to sketch a "unified field theory" that will link the fragmentary observations for China through to the transition from high to low fertility for wealthy

families in South Asia.[80] Our Chinese and South Asian data have not been detailed enough over a wide enough range of landownership to specify clearly what the turning points are for various fertility strategies, but the large-scale Russian data in Chapter 3 showed a plateau or even a decrease in reproduction rates for about the top 5% of peasant population, i.e. those holding three to four times the average land per capita. There have been enough indications of the general relationships to construct a conceptual model.

A Conceptual Model of Demographic Transition: Relations of Production

The conceptual model of the demographic transition to be presented below will approach the issue from the total societal perspective of the relations of production and control of the means of production. It is an extension of the parasitic city model that calls on readings in South Asian demography for projection to an industrialized future. In standard demographic prose this would be characterized as a "demand for labor" type of theory. The model will take as illustrations two phases that are not the extreme beginning and end points of such a transition, but points on the way. These are depicted schematically, with orders of magnitude, in Dataset 6.8.2.

The first is an agrarian society somewhat like South China where land is unequally distributed, but not extremely so, and there is a sizeable agricultural surplus that allows some portion of large landowners, say 10%, to live as absentee landlords. The land they rent out, say 30% of all land, is what allows some portion of the landless and land-short to subsist with independent management and variable labor input on the land; some other subsistence is spread around through the agricultural labor work available on the farms of middle and rich peasants, but that can sustain only about 10% of the population of the 25% or so that are landless. If there were no rented land there would be no space for the subsistence and proliferation of the others as tenants.

In Phase One capital other than agricultural capital (i.e. processing, manufacturing, transport, commercial) is only about a fifth the value and magnitude of agricultural capital (land, trees, tools, buildings, animals), and except for a small urban luxury

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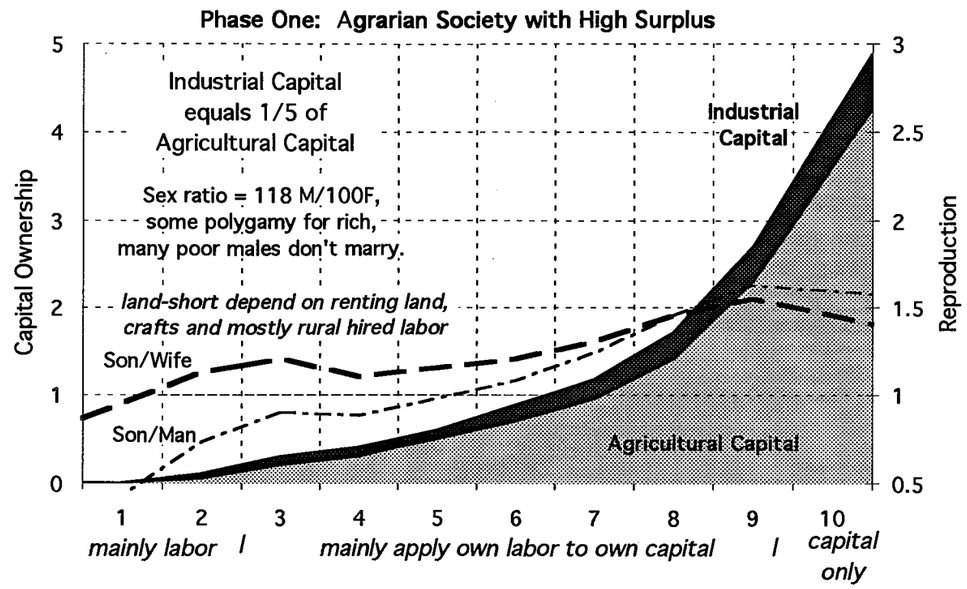
80 This is not what demographers call the "Demographic Transition" in European experience, schematically depicted as a change from a period of high fertility and gradually decreasing mortality, with high rates of population expansion overall, to the low fertility and low mortality of an advanced industrial society. However, what I am calling a transition in reproductive behavior is no doubt part of the prolonged demographic transformation.

craft sector it is closely tied to the land as well, since poor and and middle peasants are engaged in crafts like basket-making, spinning, weaving, and silk-raising as part of their agricultural cycle, and rich peasants run small mills and manufactories for oil-pressing, paper-making, fiber-processing, etc. that often make use of their cash crops.

The reproductive constraints and strategies that impinge on different segments of the population have been sketched many times in the previous discussions, and will be repeated in here in a summary just-so story. The center 60% of the population applies family labor to its own capital for the most part, though it uses some hired labor or labor exchange in busy seasons and rents in some land. Its capacity and desire for reproduction is high: proportional to its landholdings plus prospects for expansion of landholdings. For the large landowners who live as rentiers, or who manage their farms with hired labor but do not personally engage in farm work, demand for children is slightly less, although they still wish many children as a sign of prosperity, for control of diversified investments and commercial activities, and to maintain alliances through marriages. About a fifth of this group have polygamous marriages or attach female servants to their households; their women reproduce less than the wives of rich peasants. The 30% of population that is landless or near landless, and can only live from its labor power, wishes for a number of income-producing children for short-term gain in household labor capacity and for old-age security. Some men of this group inherit secure tenure to rented land or become master craftsmen and so can approach their reproductive goals, but many do not have sufficient livelihood to save for brideprice and to support a family. So reproduction and even survival is hit or miss in this landless group.

In sum, over this continuum there are different rates of reproduction for men and for women; these are much affected by the overall imbalance in the sex ratio and the maldistribution of women, and secondarily by fertility of women and child mortality. Men's and women's reproduction of surviving sons is represented on the figures with heavy dotted lines. This supposes an overall slow population growth. Although there is a small rise in female reproduction at the mid-left of the chart for big tenants and a small dip at the right for landlords, these run counter to the general trend of male reproduction increasing with landownership in an agrarian society, and these blips would be imperceptible in samples with fewer than five or six segments over the range of wealth. The overall relationship is reproduction parallel to landed wealth.

Dataset 6.8.2 A Model of Transition in the Relationship Between Reproduction and Capital Ownership



The second phase is early industrial society, still largely agricultural, but with non-agricultural capital (mostly labor-intensive manufacturing of textiles and other consumer goods) that has expanded to equal agricultural capital in value. Land is still subject to partible inheritance, which prevents severe concentration, but it is slightly more concentrated than before because enlarged commercial profits are reinvested in land and because opportunities for wages have allowed the middle and poor peasants to proliferate without the previous Malthusian constraints. The greatest inequality is in non-agricultural means of production, because although there is still a range of ownership here, mechanization or/and increased efficiencies with systematic division of labor have decimated the private craft sector and de-industrialized the countryside. The counterpart to the accumulation of capital is the expansion of labor. The "bourgeois" sector of the population, mostly resident in cities and towns, has expanded greatly because it shares in the profits of industry and commerce in serving as technical and bureaucratic personnel, and also because increasing population density allows smaller landowners to become absentee landlords.[81]

In this early industrial society the middle segment of self-sufficient and surplus-production peasants has shrunk to perhaps 40% of the population, and they also have lost much of their previous craft income. Though they still want many sons, their enthusiasm for numbers is dampened in light of costs for educating some sons for urban social mobility. The portion of the population that lives on rents, profits and urban wages has doubled, to 20%, and here the traditional ideal of many sons has given way to lowered reproduction; owners of capital are interested rather in concentrating their wealth, and the industrial facilities are not physically divisible among sons.

Mass wage labor (perhaps up to 40% of the population counting both near-landless agricultural laborers and non-agricultural laborers), on the other hand, has further

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81 This description is a creative integration of disparate observations, among them 1951 census data in Driver (1963) for all of Nagpur District in central India, 247,000 households. With about 5.5 acres land owned per household over the whole district, its population density was probably only somewhat less than that of North China. Thirty-four percent of the households were in the central city, 10% in towns, and 56% in villages. However, while 42% of male heads owned at least some land, only 26% had "agricultural" occupation, implying that at least two-fifths of landowners in the district were absentee, and that nearly half of villagers were not operating farms. If we take the district landownership distribution given in Driver 1963, Table 11 on p. 29, and exclude an estimated 18% of the population that is neither landowning nor village-dwelling, then landownership inequality is at least 58% displacement, and probably considerably higher.

stimulated the capacity and motivation of the landless to rapidly produce sons to send emittances from factory jobs — analogous to their previous drive to expand onto rented and. If the labor market is such that daughters are also employable, unequal sex ratios may be somewhat redressed and laborers may enjoy better chances for marriage; otherwise it is possible that greater social inequality will also breed higher sex ratios and more male laborers whose wages do not meet the cost of their reproduction. In general, the fewer the number of women the greater the number of births per woman. So middle and poor peasants who marry may exhibit even higher fertility than in phase one.

The overall pattern is likely to be complicated by the persistence of the middle sector, but in phase two the capital and labor extremes of the population will result in a dominantly negative relationship between ownership of wealth and fertility.

This conceptualization of demographic transition in the patterns of reproduction by class may be only of interest to population specialists, and not to sinologists. However, since the whole project of this thesis originated in basic questions of demography, I hope the reader will bear with it. I have sought here to play out the contradictions found in the empirical inquiry into the class relations of reproduction, and to arrive at a clear and detailed conceptualization of their implications.

The End of Chapter 6

The central purpose of Chapter 6 has been to explain the relationship between agricultural economy and population processes. Chapter 6 links the models and empirical findings of the previous chapters, though the pathways are not neat or well contained. In this endeavor it has wandered far afield into analysis of urban/rural connectedness — outflow of the agricultural surplus, occupational structure, migration — and of demographic features — sex ratios, marriage patterns, fertility. It has sketched the logic of geographical variation and historical change. It has been a project of excessive ambition.

There remains one more main model that is interlinked with those that have gone before. That is the analysis of the rate of rent. It is the last puzzle of the agricultural economy, to be unlocked in Part Three.

Chapter 7 Points of Transition in the Rationale of Land Use: The Sufficiency Threshold and Scale of Ownership for Hiring-In Labor and Renting-Out Land

7.0 Introduction

There is a matter which has been left unfinished from Chapter 5, and which we need to deal with solidly before proceeding to Part Three and the logic for the determination of the rate of rent. This is substantiation and quantification of the operation of a "sufficiency threshold", an absolute level of income at which landowners prefer freedom from physical labor to additional income from their land.

In Chapter 5 I stated this as a proposition and modelled it into a just-so story of the hypothetical Lin Village. Then I proceeded to show that the patterns of land tenure relations looked as though such a threshold were in operation. This model and its confirmation through analysis of land tenure patterns is important to the next stage of modelling of the determination of the rate of rent, in Part Three. But before this there is still more that can be done to provide evidence of the sufficiency threshold and to refine measurement and understanding of its geographical variation, which will be the topic in the following sections of this chapter. Let me first summarize my main conclusions.

The sufficiency threshold is a construct, but it is not merely an abstraction or an idea. We can quantify it through analysis of concrete behaviors, at least as these are known to us through survey data. It is the level of income — not to be counted in nominal monetary figures, but in a more enduring and basic measure, grain — at which the peasant/landowner will forego further income in favor of freedom from physical exertion in the fields. At some point this is not just a withdrawal from greater application of family labor to produce a potentially greater harvest, but a substitution of others' labor for the family's labor. At this point the sufficiency threshold enters into the balance of land/labor relations and begins to shape the land tenure structure.

That the sufficiency threshold is a quantifiable level of income does not mean that it is necessarily precisely the same for all individuals or even for all areas. It is an average which is the outcome of individual choices, choices which are no doubt distributed in a range of distribution around the average. Economists like to make elasticity curves of how many oranges the consumers will buy if the price of apples goes up; inelasticity is a

measure of insistence on a preference. But by my analysis of the sufficiency threshold it is much more solid than that, it is a response to concrete circumstances and a matter of physical comfort, not a cultural artifact in this peasant society, and it is perhaps only somewhat more mutable than the minimum subsistence level, which is a physiological absolute only varying according to body weight, climate, age composition of the population, and whether it is successfully reproducing itself. Peasants live very close to nature and to the choices imposed by nature under conditions of scarcity and uncertainty.

Where the size of ownership that affords the sufficiency threshold differs slightly by area, as much as we can measure it by finding what size of farm uses hired labor, there are also good reasons for it. The wages to labor and thus the cost and the trade-off in income for leisure varies somewhat in the various agricultural economies of different areas. Despite this variation, which includes some extremes, the basic sufficiency threshold for avoidance of physical labor remains within a small range.

In a brief discussion in Chapter 5 I contrasted the Chayanovian perspective on peasants' choice of leisure, of which the "sufficiency threshold" logic is one variant, with the perspective of neoclassical economics. The usual neoclassical analysis (such as Kang Chao's analysis of profits on hired labor versus tenants), and in fact most Marxist analysis as well, takes it as a given that the only issue is the maximization of income. This follows from the usual presumption that labor and capital are completely discrete and separate. On the scale of industrial capital this assumption may be valid, or close enough to realistic social conditions; but on the scale of peasant society, with its small gradations of means and meager possessions, it bypasses the first stage of differentiation between labor and owner.

The sufficiency threshold logic is not a rejection of maximization or a romanticization of the moral economy of the peasant. It is a kind of maximization that is difficult to quantify for industrial society, but which could be contained within the usual economic discourse. If we view the individual as maximizing quality of life — quality measured first in essentials such as plenty of food to eat and enough clothing to keep warm, and beyond this in physical rest, cultural and political participation, and social status —, then it is a rational choice for the peasant to choose increments of freedom from farmwork rather than income at progressively higher levels of potential income from land.

What I have been talking about so far is the sufficiency threshold for the lowest level of remove from farming, that of a rich farmer who must directly manage the labor he hires. Certainly he must at the least secure his own subsistence before sharing the product with others. From data analysis I have concluded the basic sufficiency threshold was about double bare subsistence in most areas. But there is another transition at higher levels of income, from managerial farmer to full rentier, and this marks another form of land/labor relations, that of landlord and tenant. Of course I do not mean "transition" just as a change of status for a peasant who has accumulated more land over time, but as a discontinuity or shift in the forms of land utilization found on a continuum ranked by increasing levels of ownership. It is just easier to describe in the storybook terms of individual choice.

It is a progressive advance for the peasant to avoid physical labor in the role of managerial farmer, and for the managerial farmer to transform himself into a rentier who can pursue entertainment, commercial gains or bureaucratic power in the market town or city. Rentiers receive less of the product of their land than do managerial farmers, since they have abandoned even the task of management. This in itself raises the threshold of income for rentier status. But this second transition also requires increased gross income in order to overcome the costs of transporting the agricultural product to market, if urban residence is to be achieved. It is this second transition that is more sensitive to geographical factors of the distance to population concentrations and position in the core/periphery hierarchy, as was modelled in the hypothetical Lin Village history in Chapter 4.

The quantification of the concept of the sufficiency threshold has involved a certain amount of simplification and neglect of gradations of social reality, such as imposing a sharp divide between countryside-dwelling managerial farmers and town-dwelling landlords. Despite this, I hope to demonstrate further in this chapter that the sufficiency threshold is useful and necessary for analysis of the agricultural economy. Conceptual and computational refinements could be added, but they would not rescind the central conclusions about the operation of the sufficiency threshold in determining the land tenure structure.

In the subsequent discussion the sufficiency threshold will be differentiated into the sufficiency threshold for hiring-in labor and the sufficiency threshold for renting-out land, though both involve first achieving adequate physical comfort. These were utilized

in Model Two in Chapter 4 and in the empirical data matching in Chapter 5. Minimum subsistence is the third transition in condition that we must be concerned with in analyzing the agricultural economy, and it will also be discussed in this chapter, since we saw in Chapter 6 that sufficiency thresholds were depressed where a large portion of the population fell short of subsistence even after wages from hired labor and crops retained on rented land. We will not be overly concerned with subsistence though until the analysis of the rate of rent.

To repeat with further specification, I believe the determination of land tenure patterns in this agrarian society can be modelled adequately with the following few points. The discussion summarizes my conclusions on some basic issues from working with the empirical data, how some benchmark figures enter into modelling, and what are the limits of versimilitude in the modelling.

1. Subsistence. Subsistence requirements are about 220 kilograms of grain-equivalent per capita for a self-reproducing farm population of men, women, and children[82]. This figure allows for some margin for food consumption other than grain, for clothing and shelter, and for small production inputs such as tools and seed. However, it is a very low standard of living, with monotonous, minimal nutrition and only a few garments even for the head of the family.

2. Hire-In Threshold. The basic level of landownership at which peasants prefer avoidance of physical exertion to further income is about twice that providing minimum subsistence, so the "sufficiency threshold" may be taken as a round figure of say 450 kilograms of grain-equivalent per capita. This does not mean that "managerial farmers" at this level of ownership spend twice as much on consumption; they must pay for hired labor, the major production input, as well as seed and fertilizer, so their net income is considerably lower.

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82 The best source for this is C. Clark and M. Haswell (1964), The Economics of Subsistence Agriculture. Clark and Haswell's estimate (based partly on the Buck data) for populations living by subsistence agriculture is that daily calorie requirements are 1,985 to 2,365 calories per capita, depending on body weight and climate. Under barest milling, one kilogram of wheat or similar grain yields 900 grams, or 3,150 calories. 220 kg. grain per capita annual consumption equals 1,900 calories per day for a general population if rendered entirely in grain. That must encompass an average among adult men doing heavy labor, women, and infants and children, as well as some non-food expenditure.

However, populations in South Asia have also been known to survive on as little grain as 180 kg. per capita for extended periods; that is 1,555 calories a day. We found in Chapter 6, Dataset 6.3.8 A,B,C that the poorest quintile of Chinese farm population seemed to achieve only about that level of income.

I have called the hire-in sufficiency threshold a constant because it seems to be a constant feature of land/labor interaction in agrarian society, although the point of transition relative to subsistence may not be precisely the same (as much as we can measure it) in all environments. The relatively minor variation in the hire-in threshold seems to be due mostly to variation in farm labor costs, which are generally lower where markets are distant. Most regional variation falls within the range 420-500 kg., though for areas with average per capita production under 300 kg., the sufficiency threshold is much depressed, i.e. owners of land producing only 250 kg. per capita for the household may employ hired labor, and here we might deduce that not just the low price of labor, but also a moral economy imperative to help neighbors survive may come into play.

This describes the sufficiency threshold for hiring-in-labor. This implies that those who own land in excess of that supplying this income will hire labor to farm at least the excess; if they own enough land to reach that income merely through profits on hired labor, they will only manage and not farm themselves. [83]

3. Rent-Out Threshold. Large landowners who have enough land to reach rentier status with a net income achieving the sufficiency threshold will prefer to forsake even the supervision of labor, particularly if this allows them to relocate to town life. Rents received by landlords are less than the profits of farming with hired labor per land unit[84], though how much less is not clear, and there seems to be some parallel in general levels between the two as well.

   Rentier status requires a higher level of income and landownership than managerial farming, often two or three times as high, the more so where population is dispersed. This is the case except where population is extremely dense. It is assumed for simplicity that all rentiers are absentee landlords; certainly the majority, owning the bulk of rented land, are known to be. It is also generalized that they are town or

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83 However, in practical calculations on a landownership distribution it is difficult to apply complex formulations for how much hired labor is used, so in my models land farmed by hired labor has usually been estimated just as the land held by managerial farmers in excess of that supplying their sufficiency threshold requirements, which is probably an underestimate. An underestimate can be somewhat justified in that more extensive farming on very large estates decreases labor use per land area, so numbers of hired laborers probably do not increase as rapidly as farm size, and the underestimate seems to match better with demographic counts. Although there is some fluctuation in the sufficiency threshold, in complex modelling for interregional comparisons I have often used a standard hire-in sufficiency threshold, 450 or 480 kg., to control for and avoid the effects of regional variation, especially that due to agricultural labor wage levels.

84 For the conditions under which landowners choose to use hired labor or rent out land, review the long quote from Fei and Chang (1949) in Section 5.2. Fei also says for his village study in Yunnan that "tenants can enjoy a profit even if they operate their rented land by hired labor" (p. 77), and "These figures confirm the villagers' observation that an owner will find managing his farm much more profitable than renting it out" (p. 75). We will return to this issue and to Fei's findings in regard to regional variation in the rate of rent.

city-dwelling. This seems supportable in light of the sensitivity of rented land to population density over the gross area, i.e. transport conditions.

This simplification does ignore managerial farmers who rent out some land and landlords who may live in the countryside near their tenants. It is not possible to deal with this empirically because the source data for testing is not sufficiently detailed; in fact from the farm household data we can only infer how many landlords there are from the extent of rented land and the standard landownership distribution. In the absence of other information, it does not improve modelling to assume that any particular percent of those who rent out land are not absentee.

The relationship between prevalence of rented land and population density must be established empirically; the rent-out sufficiency threshold may be deduced from it.

4. Landownership Distribution. The landownership distribution is more-or-less constant relative to the average, due to the effect of repeated partible inheritance. This was the central premise of Chapter 1. Then knowledge of the average product per capita provides an estimate of the production of land owned for any segment of the landownership distribution. This is the basis for applying the transition values for subsistence, hire-in, and rent-out to the landownership distribution. It can be calculated what portion of the population does not own enough land to afford subsistence, and it can be predicted how much land should be rented land if the rent-out sufficiency threshold is at a certain level.

As can be seen in the discussion of these points, my major concern with the sufficiency threshold is not merely to establish it as a feature of the agricultural economy, but to utilize it in modelling the complex configuration of determination of the land tenure structure (done in Chapter 5) and, following this chapter, in determination of the rate of rent on agricultural land.

In preparation for this, Chapter 7 undertakes further investigation of this construct, the sufficiency threshold, and in particular will analyze the geographical rationale for variation in the threshold for renting-out land.

In Section 7.1 I will first quote some of the ethnography of the day for conditions of use of labor in 1930's China. Then I will proceed in Section 7.2 to some small-scale analysis of the point of income at which landowners employ hired labor. This involves mostly data from North China, where the conditions are not complicated by the presence of rented land and possibilities for multiple cropping and other intensification.

Finally in Sections 7.3 and 7.4 I will take on the data of the 1937 Buck survey. I will estimate the scales of ownership necessary for hiring-in year laborers and for renting-out land, and analyze these in terms of wages to labor and population density.

The analysis of the scale of ownership for renting-out land in particular is preparation for Part Three, the determination of the rate of rent. In the process of the estimate we find what portion of landowners may be living off rents and thus absent from the farm survey; several adjustments to our understanding of the farm data on population per hectare and product per capita come out of this.

7.1 The Valuation of Freedom from Physical Labor in an Agrarian Society

Fei and Chang have written a masterful study from their 1938 intensive field study of two villages in Yunnan (Fei and Chang 1949). After a careful study of the economic situation of the different classes of people in the villages, they summarized the villagers' attitude to farm labor as follows:

> ... In the course of this survey there have been revealed certain phenomena that may be puzzling to an observer who is not familiar with the traditional attitudes of the villagers. Such an observer would almost inevitably ask: "Why should the landowners be content with a small income and a low standard of living when these could be increased by working the farm themselves instead of hiring laborers for that purpose?" It is clear that, if it is at all possible, the owner refuses to perform any labor on his farm and solves the problem of cultivation either by hiring workers or by renting his land to tenants. By so doing, he renounces some income that he might otherwise enjoy, unless the time thus freed is employed in other productive activities. But in Luts'un, as we have seen, the owners devote their time to noneconomic activities in opium dens, at gambling tables, or in the teashops. It is apparent that they are not concerned with securing the maximum material return for the energy they expend. They are interested in improving their family fortunes but, ordinarily, only within certain limitations. These limitations are of a sort which it is difficult for an observer from an acquisitive world to understand, and they result from a deeply rooted and pervasive attitude which characterizes the outlook of the villagers. ...
>
> ...We have seen in the above analysis that the real incentive to work is a striving not for material gain but merely for subsistence. When subsistence is secured, the peasants relax and even retire from active work. They are satisfied at the level at which a comfortable living is maintained, "comfort" being defined by the absence of strenuous effort rather than by the satisfaction of numerous material wants. ...
>
> ...We should remember that in a community where the implements of production are so simple, the suffering involved in working is not inconsiderable. We have already pointed out that in Luts'un most of the farm work is done by hand. The Chinese describe labor as "sweat and blood". That is literally true we can testify, for we were constantly being called upon to give first aid to the workers. (Fei and Chang, 1949, pp. 81-83.)

The central point here is that the farmers valued leisure over material goods once a basic living was secured. What Fei and Chang call subsistence in the paragraph before last above I have specified as two levels, a level of minimum physiological subsistence and a level of sufficiency that allows what Fei and Chang call "comfort". "Comfort" is not a high standard of living in material goods, they say, but freedom from farm work. In

remote areas with lower labor costs like Yunnan it is likely to be more accessible than where hiring labor is costly, and so the gap between income required for the two levels might be slightly less than elsewhere . Fei and Chang also made a close study of the level of landownership necessary to achieve leisure.

> ... From the above comments on the table, the difficulty in estimating farm receipts and expenses will be apparent. However, from lengthy discussions with the villagers, we reached certain approximate figures. The net profit (if with payment to all labor at the rate for hired labor) from high-grade land is about $6.00 per *kung* (the local land measure); from medium-grade land, $3.50; and from low-grade land, $0.50. Since the proportion of low-grade land in Luts'un is small and the ratio of the high- and medium-grade is about 2:1, the average profit is about $5.00.
>
> In this connection we may raise the question: How many landowners of Luts'un can obtain an adequate livelihood (with no labor input of their own) entirely from the land? As a minimum requirement for a modest living, we propose the following estimate. In Luts'un the value of food consumed, either grown on the farm or purchased, is about $20 per year for each adult. With an average of five and four-tenths members, equivalent to four adults, the yearly expenditure for food per household comes to about $80. In general, in Chinese villages, food costs account for 60 per cent of the total expenditures. Thus, the annual expenditure of such a household would be around $135. On the average, therefore, it will take the net earnings of a 27-*kung* farm to cover the total domestic expenditure of a household farming its land entirely with hired labor. According to this, in Luts'un there are only about thirty-three households, or 27 per cent of the total, in which the owners need not work — always provided they are willing to accept a relatively low standard of living. But, in fact, idle males far exceed the above estimate. This is made possible through the cutting-down of labor costs on the smaller farms by means of work performed by the women of the family. Having their own female workers at command, farm owners can hire less labor and consequently realize greater profit; thus in 1938 the highest net return from a single *kung* was $7.50. In other words, the qualifications for the enjoyment of leisure may be met even by those owning 18 *kung* [85] of land. Moreover, farm receipts can also be increased by selling hulled rice (in effect gaining the profit on the labor of hulling, which is usually women's work) and by utilizing the hulls to raise pigs. Therefore, it is not surprising that in Luts'un idle men can be found in one out of every three houses. (Fei and Chang 1949, pp. 73-74. Explanations in parentheses added.)

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85 From Fei and Chang's figures on productivity (1949, p. 71), it can be concluded that for the local measure for land, a *kung*, one acre equaled about 17 *kung*, and one hectare would be equivalent to about 42 *kung*. According to their measures in *piculs*, production of husked, polished grain was 68 *piculs* for the best land and 52 for the medium, which if one *picul* equals 50 kg. would be an astounding 8400 kg. and 6425 kg. per hectare respectively. Chang and Fei do state that production was much higher than in Kiangts'un in the Lower Yangtze valley, the site of Fei's previous fieldwork. So 18 *kung*, though only 0.42 ha., may have yielded 2700-3525 kg., or 540-700 kg. per capita for a family of five. But I suspect the *picul* here should be a somewhat smaller measure.

Although women elsewhere in China did not work as much in agriculture as in the Southwest (see occupational analysis, Dataset 6.3.10), this description portrays the concrete dimensions of the impetus for escape from farmwork, even to the extent of preferentially exploiting the weaker members of the household.

Chang and Fei (1949, pp. 84-95) collected detailed information on family budgets and standard of living for five families, two managerial farmers who used hired labor for all farm work, one owner-tenant renting 80% of his cultivated area and using only necessary hired labor, and two wage-earning families. The land providing income to the three farming families was 0.95, 0.64, and 0.88 (0.71 rented, 0.17 owned) hectares respectively. Counting production of rice and beans in its equivalent of the value of polished rice, the two managerial families received gross production from their farms that was 4.75 and 3.0 times their annual consumption of polished rice[86]. In general payment to hired labor totalled about one-third of production (calculated from p. 70). They had substantial two-story houses and silk garments for ceremonial occasions, and ate about half a pound of meat a day per family. Sons went to school.

After payment of rent at a high rate of over 60%, the owner-tenant was left with 2.3 times the family's rice needs. This would seem to be enough, but with production costs for the whole farm, including rented land, this income still did not allow a reserve, and the family frequently had to sell rice intended for consumption at low prices and buy rice later at high prices to cover unexpected expenditures. This family lived in overcrowded conditions and wore patched garments. Food was 70% of its total budget; even so the family spent only 3% of food cost on meat, in contrast to 25% and 34% for the managerial farmer families.

Since the two wage-labor families were partly provided with food by their employers, it is not possible to figure their total food intake from the household budgets; but in addition to food from employers they spent 80% of their cash expenditure on food, which

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86 Fei and Chang seem to have figured rice consumption per capita in the family as 7 piculs, which if 1 picul equals 50 kilograms would be 350 kg. per capita, a high figure but not unbelievable for the richer families. However, Brandt estimated subsistence per adult male worker at 3-4 piculs (1989, p. 113-115). Since there seems to be no certain standard for a picul, a measure of volume, I suspect the measure is not the same; or else Yunnan ate very well relative to the central areas of China.

in rice was about 150 kg./capita. The two families rented one-room huts outside the village gates — wet, windowless, smoky hovels with earthern walls that frequently collapsed.

Remembering the proposal in Chapter 1 that the rich over-reproduce and the poor die out, we can also compare the family structures of these five cases; all wives of the household head were past or nearly past reproductive age. The two managerial farmer families had four living sons, two each. The owner-tenant had one son. Malaria and trachoma were serious health problems for the owner-tenant and wage labor families. Only one child, a daughter, was alive among six or seven born to each of the wage labor families.

This dismal picture imparts a palpable sense to the terms subsistence and sufficiency. It can be surmised from these figures that total freedom from farm labor required ownership of land producing about three times basic rice consumption, or probably about two and a half times normal food, clothing and housing needs. We will pin down these numbers more precisely with larger samples in the following sections.

We have seen in the regional comparisons that the Southwest was agriculturally rich and densely populated in small patches of cultivated land, but was otherwise the most remote of the areas in the Buck survey, and rented land fell far below what would be expected from its agricultural productivity (Dataset 5.4.5). In Luts'un 36% of the land farmed by the villagers was rented land, but landownership afforded leisure to many more than the absentee and corporate landlords. Many of the large number of idle men in Luts'un village ("in a region where neither commerce nor industry is well-developed", Fei and Chang 1949, p. 69) would probably be engaged in commerce and alternative activities in nearby towns if this were a more commercialized area; and then their land would be given over to tenants. So this description, combined with the previous quote from Fei and Chang in Section 5.2, is also an illustration in reverse of the rationale for landowners to rent out their land where population is dense and commercialization advanced.

7.2 The Sufficiency Threshold for Hiring-In Labor: Establishing the Absolute Level

In a peasant society with monetized means of exchange, it is to be expected that some portion of labor will be performed by hired labor, even under completely egalitarian distribution of landownership. That is, during peak labor requirements, say for plowing, transplanting, and harvesting, ordinary farmers are likely to need more labor than can be supplied by the household. Different crops and differing localities, even within a small radius, frequently have different periods of peak labor requirements. These same farmers may hire out their own labor during periods of slack on their own farms. The net effect may be that the household hires out as much labor as it hires in, and there is no net exploitation due to hiring of labor. However, actual conditions in the society we are investigating, prerevolutionary China, were that landownership was very unequally distributed, and those who owned sufficient land could live well and with considerable leisure by hiring in a large portion of labor requirements for the farm.

Detailed Surveys from South Asia

Another region with intensive agriculture and very skewed landownership distribution is South Asia; this condition continues to present. Although there were several large scale surveys in China in the Republican period, there is very little to match both the scale and detail of the South Asian data, which of course reflects both British colonial management and then the post-World War II methods of sociological research designed to serve developmental programs. Statistics bearing on the issue of hired labor, based on a detailed study in West Bengal, 1956-57 (since 1971 Bangladesh), are given in Patnaik (1976), and this table is reproduced in Dataset 7.2.1.

The first section of Dataset 7.2.1 is Patnaik's calculation of a labor exploitation ratio, which was the focus of her analysis that sought to differentiate classes of peasants. From her data we see that, at moderate sizes of holdings, the more land held by the household (and the greater the family's income, it may be assumed), the less it hired out its own labor. However, in these data there seems to be a necessary minimum of 17-20 days of hired labor required per acre farmed at normal intensity, probably to cover peak season

activities. In fact greater intensity of farming on very small holdings pressed by subsistence exigencies may require even slightly more hired labor in order to meet peak season needs of multiple cropping.

For increasing size of farm, there is first a decrease in the intensity of labor inputs per acre, and then as farm size increases further, the toil is increasingly relegated to hired labor. The transition from a net hiring-out to a net hiring-in occurs at about 5 acres farm size (about 2 hectares), but it is not until considerably larger sizes of farm, 10 acres and larger, that there is a several-fold increase in use of hired labor and decrease in application of family labor.

Dataset 7.2.1 Patnaik's Calculation of Labor Exploitation Ratio: Net Hired Labor in Relation to Family Labor, West Bengal, 1956.

Operated Holding (acres)	Labor Days Hired In A	Labor Days Hired Out B	Net Labor Days Hired C = A - B	Family Labor Days D	Exploitation Ratio E = C / D
Above 15.0	823.2	- -	823.2	unknown	high
10.01-15.0	478.8	0.5	478.3	171.3	2.79
7.51-10.0	118.5	11.6	106.9	306.6	0.35
5.01-7.50	131.3	91.7	39.6	253.6	0.16
3.76-5.00	86.1	89.5	-3.4	160.7	-0.02
2.51-3.75	53.6	74.2	-20.6	151.5	-0.14
1.26-2.50	37.5	84.4	-46.9	92.7	-0.51
0.01-1.25	10.4	101.1	-90.7	57.8	-1.57

Operated Holding (acres)	Estimated Family Size*	Estimated Product** per Capita	Days Labor per Acre: Family Labor	Hired Labor	All Labor	Percent of Labor Hired
Above 15.0	10.9	910	about 5	about 42	about 47	over 90%?
10.01-15.0	9.5	665	13.7	38.3	52.0	74%
7.51-10.0	8.3	535	35.1	13.5	48.6	28%
5.01-7.50	8.2	385	40.6	21.0	61.6	34%
3.76-5.00	7.1	310	36.7	19.7	56.4	35%
2.51-3.75	6.5	245	48.5	17.1	65.6	26%
1.26-2.50	5.9	160	49.4	20.0	69.4	29%
0.01-1.25	5.2	60	94.5	16.9	111.4	15%

* This estimate applies family size as related to farm size in Jannuzi (1982) for 1978 Bangladesh (formerly East Bengal); adjusted down 5% in consideration of earlier slightly lower yields and lower population density. ** Production estimated at 1.25 metric tonnes per hectare, from Boyce 1987, p. 1, for West Bengal.

Source: Utsa Patnaik, 1976. "Class Differentiation within the Peasantry: An Approach to Analysis of Indian Agriculture". Economic and Political Weekly (India), Vol. 11 (No. 39, September 25, with Review of Agriculture Supplement): A82-101.

From Patnaik's figures I have calculated the input of labor (both family and hired) per acre, and the percent of labor that is hired labor. These are given in the lower section of Table 7.2.1, and they show that for farms of size 7.5 acres and larger labor input per acre is considerably lower. At the next larger size category, 10 acres and up, use of hired labor suddenly shifts from less than a third of all labor input to nearly three-quarters. This is, I believe, the sufficiency threshold effect in operation, and so it warrants further examination as to what level of absolute production of grain it may coincide with.

Bengal, both West Bengal which is still a part of India, and East Bengal, which became East Pakistan in 1947 and the independent nation of Bangladesh in 1971, is a flat or slightly rolling delta for most of its area. Conditions of rice planting and multiple-cropping are mostly affected by seasonal flooding after the annual monsoons; one low-yielding crop of rice is planted by broadcast in deep standing waters, and the main crop after the waters have receded. Other than this conditions of cultivation are rather monotonously uniform, and yields, much lower than in China or Japan, have only increased slightly over many decades even after Green Revolution innovations (Boyce 1987). For land productivity I have applied an intermediate figure of 1250 kilograms rice yield per hectare to Patnaik's table, and for family size by size of farm I have applied the pattern found in a very large 1978 survey in Bangladesh (Jannuzi 1982), with just a 5% reduction in size of family to match the probable land productivity of the 1950's. By this means an estimate of product per capita by size of farm has been produced, as seen in the lower left of Dataset 2.7.1; the numbers should be considered to have a margin of error of plus or minus 10%, but probably not more than that, given the large size of the surveys.

What does the pattern of use of hired labor mean in relation to the estimated product per capita for the farm family? The 5 acre farm size transition from net hiring-out to net hiring-in is at about 350 kilograms per capita; but actually all those from 245 kg. to 385 kg. have very little of either. They are above subsistence (220 kg.) but below sufficiency (tentatively 450 kg.). The two poorest groups, 60-160 kg., hire out nearly as much or more labor than they put into their own land, and could be considered semi-proletarians. The group at 535 kg. per capita (7.5-10 acres) uses much hired labor, and family members are exerting themselves just a little less (counting both on the

farm and off) than those in the 385 kg. group.[87] The groups with land producing 665 kg. grain per capita or more, on the other hand, are largely leisured and relying on hired labor to reap the crop.

This South Asia data analysis confirms that use of hired labor replaces input of family labor precipitously above a certain level of landownership. The level of income at which that occurs seems somewhat higher than the figure of 450 kg. that was suggested as a sufficiency threshold for Chinese peasants. But let me specify more clearly what is meant by the sufficiency threshold. That is the level of landownership at which leisure is preferred to further income, i.e. that at which a net hiring-in of labor will <u>begin</u> to be substituted for family labor. Let us think again what relationships can be seen in this detailed South Asian data.

Even the smallest farms hire 17-20 days of labor per year for each acre of cropland, which is about one-third of all labor input to the farm (see Dataset 7.2.1, percent of total farm labor that is hired labor). So this is probably a necessity of the agricultural cycle, say at peak harvest time. But much hiring is of the nature of labor exchange between neighbors or villages, so labor as hiring-out on a neighbor's farm may in effect be just a labor output to cover one's own peak season. So use of hired labor seems to be rather even and significant over a large range of farm sizes. This explanation is probably applicable to the middle range of incomes, 245-385 kg./capita.

At higher farm sizes hired labor is increasing substituted for family labor. Let us measure this in a way that excludes possible labor exchange, by comparing <u>net</u> hired labor against total labor input on the farm. We can calculate what portion of labor on the farm is a <u>net</u> labor hiring by the operator, as given below in the supplement to Dataset 7.2.1. Obviously this does not apply for the smaller farms where net labor is negative. The figure is 10% of labor for farms with average per capita income of 385 kg., and 25% for those with 535, i.e. there is a gradual transition to full reliance on hired labor.

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87 Divide family labor days hired out and on the farm in the first section of the Patnaik data by estimated family size for each group, in the second section, to see the pattern by size of farm. Applying the Chinese data ratio (see Dataset 7.3.4 below) for workers:household members, labor for the 535 kg. group is about 145 days per year for a family worker, a medium level of labor, and about 155 days for the 385 kg. group, but then progressively slightly less for those owning less land, implying underemployment.

Let us query, for comparison, what portion of farm labor would be done by hired labor if the farm operator aspired to an income of precisely 450 kg. per capita, but aside from that enjoyed as much hired labor as possible, at a rate of payment that was 40% of the product (Formula: % Farmed by Owner = [(450/Land Product) - 0.6] / 0.4). That calculation is in the last column below.

Dataset 7.2.1 Supplement. Net Hired Labor vs. Family Income, West Bengal, 1956: Comparison with 450 Kg. Sufficiency Threshold.

Operated Holding (acres)	Estimated Product per Capita*	Net Labor Days Hired In C	Total Labor on Land A + D	Net Hired / Total Labor C / A+D	Hire but Maintain 450 Kg. Income*
Above 15.0	910	823.2	900?	91%?	100%
10.01-15.0	665	478.3	650.1	74%	81%
7.51-10.0	535	106.9	425.1	25%	40%
5.01-7.50	385	39.6	384.9	10%	0%
3.76-5.00	310	-3.4	246.8	0%	0%

*Percent of labor done by hired labor, such that operator of land retains income of precisely 450 kg./capita while enjoying as much leisure as possible. Assumes payment of 40% of crop to hired labor.

Source: Calculated from data in Patnaik 1976 (see Dataset 7.2.1 above) plus estimate of land productivity from Boyce 1987.

By this comparison the 450 kg. benchmark is in about the right place, or only a little bit low, though the main difference is that it models a more abrupt transition. Not surprisingly, as averaged in aggregate data and no doubt as experienced in small increments, the transition in labor use from large farmer struggling to cultivate a large expanse and using only necessary hired labor, to managerial farmer/landlord living primarily off the labor of others, is a gradual one. But since the bulk of land farmed by hired labor or tenants is at levels of ownership far above this transition, the gray area of the transition, or even the exact benchmark for the transition (say within the range 420-500 kg.), does not much affect the total evaluation of percent of all land that is farmed by other than owner. A little bit more here is balanced by a little bit less there.

This compilation of data by Patnaik for West Bengal is rare; I know of no such accounting of labor hired-out against labor hired-in for Chinese peasants. However, we can see from many other sources that the pattern for Chinese peasants is the same, with very large landowners enjoying leisure with use of hired labor, and very small landholders merely keeping a foothold in a garden plot while they are primarily wage earners.

We will make the most we can out of the following Chinese sources, still seeking more evidence of the operation of the sufficiency threshold, and its absolute lower level, that for hiring-in labor.

Levels of Landownership and Use of Hired Labor in Chinese Data

Within Chinese data for the prerevolutionary period, the best place to investigate the relationship between size of farm and use of hired labor is the cultivated plains along the lower stretch of the Yellow River, the provinces of Hopeh and Honan and the west part of Shantung. This is the Winter Wheat-Kaoliang area in the Buck survey. The reason for this is that the level of productivity is high enough that there is a moderate surplus — so not an immiserated majority of peasants swelling the ranks of agricultural laborers at very low wages as in the northwest. But population, though filling all arable land on the plain, is not so dense that rented land prevails, and so there is a considerable range of farm sizes and much utilization of hired labor. Finally, levels of production per hectare (1380 kg. grain/ha.), transport conditions and geographical features do not seem to vary greatly over the plain, so the patterns of the agricultural economy seem fairly consistent within it. The main variation is the lower population density in the northern areas originally reserved for military-related populations during the rule of the Manchus.

The most detailed statistical studies of North Chinese villages were made by the Southern Manchurian Railway Company (Mantetsu) in the 1930's as Japan prepared to extend its rule into China. The Mantetsu surveys have been the source for many later analyses, including one reported on previously in Chapter 2, Section 2.13. Philip C.C. Huang has also used them in a masterful study, The Peasant Economy and Social Change in North China, 1985.

Huang's study of North China, mostly villages in Hopeh, leads us to the same general conclusions about use of hired labor as seen in Patnaik above. Huang's description of large estates farmed with hired labor has already been cited in Chapter 5, Section 5.1. He seems to have been first in recent sinological scholarship to document that although the North China plain was populated by owner-operators, large expanses of land were

owned in estates farmed by hired labor, indicating severe socio-economic inequality.[88] He seems to have also coined the term "managerial farmer" to distinguish these non-laboring owners from rich, middle and poor peasants. His description in Chapter 5 emphasized the limits of scale that could be personally supervised by the owner. But our focus of analysis here is the scale of landownership at which a landowner could largely forsake physical labor for himself.

In the following tables (Datasets 7.2.2 and 7.2.3 are adapted from Huang, 1985), I have made some additional calculations and estimations. There are some interesting observations to be made. The first table deals with fourteen farms in Michang, a commercialized cotton-growing village. For these farms the labor inputs seems to have been studied in great detail.

For Dataset 7.2.2, I have calculated work days per hectare, work days per family adult male, and work days per year laborer. It may be seen that both managerial farmers and rich peasants relied heavily on hired year labor for the operation of their holdings, and worked only lightly themselves. The burden of labor days carried by the year laborers was nearly three times that of the proprietors. So when we look at numbers of family and hired workers in surveys, the proportion of their numbers must generally understate the proportion of work done by hired labor, especially on large farms. The year laborers must have been hard pushed to cover the territory on large farms; 252 work days per year implies excessive intensity of labor, considering the short length of the growing season in this area. Work days per hectare fall much below average; that is, the managerial farms were cultivated at lower than customary intensity per land area.

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88 The fact that the North China plain was populated by owner-operators, as shown in the Buck survey, is held up by those who argue this implied relative equality. Mark Elvin (1973, pp. 254-255) has concluded that "the amount of land held by landowners who did not themselves farm was clearly too small to serve in and of itself as an adequate basis for a distinct and socially dominant class." Philip Huang's research and my own clearly stand in contradiction to this statement.

Dataset 7.2.2 Use of Hired Labor in North China, Michang, Hopeh Province, 1937

Type of Household	N of Cases	Farm Size(ha*)	% of Land Rented	Adult Male Farm Workers: Family	Hired	All
Managerial Farmer	2	7.93	0%	1.0	4.5	5.5
Rich Peasant	3	3.50	9%	0.7	3.0	3.7
Middle Peasant	4	2.21	14%	2.3	1.0	3.3
Poor Peasant	5	0.80	91%	1.2	0.2	1.4

	Work Days per Cropland Hectare	Family Adult Male	Year Laborer	% Farm Labor Done by Family	Day Labor	Year Labor
Managerial Farmer	179	86	252	12%	8%	80%
Rich Peasant	265	87	226	19%	8%	73%
Middle Peasant	278	170	125	69%	11%	20%
Poor Peasant	291	104	117	81%	9%	10%

* Original data is in mu; it has been converted to hectares by Buck figure for nearby localities, Changli and Tung, 1 hectare = 16.28 local mu.

Source: Huang 1985, pp. 170, 186, from South Manchurian Railway Co. surveys

On all fourteen farms in Michang something in the range of 8%-10% of all labor was performed by day laborers, which was no doubt the requirement of seasonal peaks of farming activity. For poor peasants' farms this was probably not a net hiring-in of labor, because they generally also serve as day laborers. What we are mainly concerned about, then, is the remainder of hired labor, that performed by year laborers. On managerial and rich peasant farms, year laborers performed 9-10 times as much of the work as did day laborers. And on these farms year laborers did 73-80% of all labor, largely replacing family labor. There is a considerable discontinuity in the use of labor between middle peasants, with 2.21 ha. per farm, and rich peasants, with 3.50 ha. per farm.

How might these sizes of farms be related to the sufficiency threshold in landownership? Let us apply the fairly-constant average product per hectare for the Winter Wheat-Kaoliang Area, 1380 kg. grain-equivalent per hectare. Although Michang farmed a great deal of cotton, the nearby Tung and Changli samples of the Buck study show a close figure for land productivity, so this average is as good as any. Since there is also no direct family size information, let us assign 5.5 members per family to all. Then the managerial farmer families had 1990 kg./capita production (all owned), the rich peasants 880 (800 on owned land), the middle peasants 555 kg.(475 on owned land), and the poor peasants 200 kg. (20 on owned land). These are very rough figures, but

they put the transition from mostly family labor to mostly hired labor in the range of 500 to 800 kg. per capita ownership of land, and net hiring-in of labor would begin at a somewhat lower level of ownership.

I do not believe that Michang was an isolated example of managerial farms in this region of North China. Let us compare it with the three nearest locality samples in the Buck data, in Tung and Changli counties (two samples in Changli), which showed similar distribution of farm sizes as well. Year laborers worked on 42% of farms in the survey samples for these two counties, and were the main labor on 73 out of the 300 farms, i.e. 24%. Although there are no direct data on hired labor by size of farm, I have estimated very roughly the number of year laborers present in these households by figuring what is the excess of adult male labor relative to the average household composition, using Buck's figure for man-equivalent per farm by size of farm.[89] Farm laborers probably constituted 50% of workers resident within the households, and 70% of total farm labor. If so, gross production in kilograms of grain equivalent was 1000 kg. per household member, or 1474 per family member, on these managerial farms. This is comparable to the above supposition of production per family member for managerial farmers in Michang.

Huang has further listed information for 64 farms that hired labor, in four villages in Hopeh, including Michang, in his Table 14.1 and 14.2 (see Huang 1985, pp. 249-53). The villages were surveyed by the South Manchurian Railway Company between 1936 and 1942. These farms he classified as managerial farmers, rich peasants, and middle peasants, and they accounted for all hiring of year laborers and 72% of short-term hired days in the villages. I have condensed this information, counting long-term labor only, to Dataset 7.2.3, adding further estimations. The basic information is farm size

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89 The ratio of adult males (over age 15) to family members in Buck's and other aggregate population data for farm households of the period was about 1 to 3.3. By this low standard, in Tung and Changli on the 73 largest farms (24% out of 300 farms), "household members" working on the farm were at least 50% hired long-term laborers. These farms averaged 10.15 members per household. By the above average ratios of adult males to family members, family size was probably no more than 6.9 persons, and the remainder of household members — 3.25 — were almost certainly year laborers.

The 73 farms ranged in size from 5.23 to 17.86 hectares, with an average of 7.75 ha. (about 126 *mu* at local measure of 16.28 *mu* to a hectare), thus confirming Huang's estimate that most managerial farms occupied a range of 100-200 mu in scale in this area. 1312 kilograms of grain-equivalent were produced per hectare, and only about 1% of land was rented in.

and land owned, household size, and numbers of family laborers and hired year laborers in the households. From this the proportion of hired labor can be figured.

Dataset 7.2.3 Landownership and Hiring of Year Laborers in North China, Four Hopeh Province Villages, 1936-1942

	N of Farms	Farm Own Land (ha*)	Rented In (+) or Out (-)	Owned Land / Family Member	Size of Family	Adult Male Labor Hired Family	Hired by Year	% Hired
BY TYPE OF HOUSEHOLD**								
Mgr. Farmer	7	9.72	+.25,-.87	.66	15.1	4.4	3.6	45%
Rich Peasant	8	2.63	+.47,-.36	.59	3.5	1.5	2.3	61%
Middle Peasant	49	1.60	+1.04	.26	6.6	2.0	0.6	23%
BY LAND OWNED PER FAMILY MEMBER (hectares)								
.50-1.35	12	6.21	+.05,-.51	.83	6.7	2.4	2.3	49%
.30-.49	14	3.01	+.25,-.23	.46	6.1	2.0	1.1	35%
.15-.29	19	2.05	+.91	.27	7.6	2.3	0.8	26%
.00-.14	19	0.79	+1.85	.10	8.1	2.3	0.6	21%

BY LAND OWNED PER FAMILY MEMBER (hectares)		Land Farmed	% of Land Rented-In	Size of Household	Product/Capita @ 1380 Kg./Ha. All Owned / Family	Farm&Own / Household
.50-1.35	12	5.97	0%	9.0	1145	915
.30-.49	14	3.11	3%	7.2	635	418
.15-.29	19	2.81	27%	8.4	372	337
.00-.14	19	1.35	41%	8.7	138	126

* Original data in mu. 1 hectare = 2.471 acres = 15.0 mu.

** Types designated by Huang according to labor use and farm size. In this small sample managerial farmers have very large families, rich peasants very small ones, the latter suggesting those absent are not counted. It is uncertain from the original tables whether hired laborers are in household.

Source: Huang 1985, pp. 250-253, from South Manchurian Railway Co. surveys.

As might be expected, the managerial farmers not only have the largest farms, they also rent out a small amount of land, about 8% of what they own. The data for individual farms leads to some complexity, but what is significant to note in the rental figures is the relative size of renting in and renting out, implying land/labor relationships. Middle peasants shown here rent in much more than they own; evidentally there is significant rented land in this cotton-growing area. Only those hiring some labor are caught in this table, and they must operate enough land to need it, so probably those small owners included tend towards the renters. Land rented out is included in the measure of land owned per family member, since this land is also a source of income that may afford leisure. This information is very rarely available in farm surveys, and it allows us to make some further comparisons below.

Aside from Huang's categories, I have ranked the 64 farms by land owned per family member. It may be seen in the second section of Dataset 7.2.3 that this measure is a somewhat better predictor of the utilization of hired labor than is the category of household type, which is largely based on the scale of total landholdings. Percent of year laborers in the household's adult male labor force increases regularly with land owned per family member, from 21% to 49%. Only the largest owning group uses as much hired as family labor and rents out a portion of land, thus decreasing labor requirements further. Can we also locate the sufficiency threshold in Dataset 7.2.3?

There are several problems in dealing with aggregate survey data that decrease the degree of precision to which we can aspire, especially in regard to measuring patterns of inequality. For one, farm surveys generally deal with farm size and the economy of the farm, and disregard the total landownership of families. Second, it is often not clear whether the household has hired laborers or servants counted within in. It is not surprising that these distinctions should be overlooked in surveys, because they are generally only significant for those landowning households near the peak of ownership, and not for the majority of peasants. But the blurring of data does affect our view of the big landowners.

This discussion is by way of introduction to the third section of Dataset 7.2.3, which applies again the average 1380 kilograms of grain-equivalent per hectare for the Winter Wheat-Kaoliang Area, and thence compares total ownership per family member, which information is afforded by Huang's tables including information on land rented out, with owned portion of the farm per household member, which is the closest measure of per capita ownership that can be calculated from the Buck data. The implication of this comparison is that we should employ a slightly lower number for the sufficiency threshold in dealing with this blurred data, because the levels of inequality behind the blurring are actually somewhat higher than apparent. By the first measure the production for the highest group is 1145 kg. per capita, and by the second measure it is 915 kg. per capita.

Despite such problems of measurement, increasing leisure and use of hired labor for landowners at increasing scale of ownership is not in dispute. As we take up surveys with more numerous locality samples and cases, the regularity of the relationship can be modelled more reliably, whether or not we can locate a precise absolute point of transition for a shift to hired labor.

Landownership and Use of Hired Labor in North China:
The Buck Survey

We will continue to focus on the North China plain in the examination of the relationship between ownership of land and use of hired labor, for the reasons stated at the beginning of the previous sub-section. In the Buck Farm Survey 38 locality samples of about 100 farms each were collected in the Winter Wheat-Kaoliang Areas, North and South. Information on labor was not collected in two of the localities, and the reported data was merged for one county with two locality samples. So we are left with 35 samples covering 3617 farms, a respectable sample size.

Buck's main table on hired labor is Statistics volume, chapter 8, Table 2, "Percentage and Amount of Farm Work Performed by Family and Hired Labor". This table lists the amount of work performed by family and by hired labor, in man-equivalents, in each locality. Another piece of information on hired labor is hidden in chapter 8, Table 1, "Proportion of Persons Employed in Farm and Subsidiary Work"; there the final columns give percent of farms in each locality having men, women, or children as hired year laborers, again for each locality. Unfortunately, there is no information on hired labor provided by size of farm.

These tables are the source for the measures of percent of farm labor performed by hired labor and percent of farms having adult male year laborers that were presented before in Chapter 5, Dataset 5.4.4, for crop areas as a whole.[90] Now we will move to a more detailed examination of the data within one area. At least in this data we know the

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[90] The percent of labor performed by hired labor has been calculated from the numbers of man-equivalents per farm for family labor and for hired labor. However, it is likely that this understates the actual importance of hired labor by a considerable margin.

"Man-equivalent" is measured in months over the year for hired labor, that is, an adult male hired for six months would count as 0.5. But "if a person works only six months on the farm but does no other work he is considered as giving a full year to farm work" (Statistics Vol, preface); an adult male family member thus rates 1.0 for the same six months farm work input. Moreover, as we have seen in Dataset 7.2.2, year laborers were worked much harder than family laborers on the largest farms. The effect of Buck's measurement of man-equivalent is probably to dampen the magnitude of variation concerning hired labor that can be seen in the data, but comparisons can still be made.

kilograms of grain-equivalent produced by the farms, whereas previously for the West Bengal and Mantetsu studies we could only apply reasonable conjectures. Given these data, we should be able to find a correlation between the presence of large farms in a locality and an elevated proportion of hired labor used in the whole locality.

The expected relationship is confirmed in Dataset 7.2.4 A. A scattergram of product per capita versus hired labor for the 35 localities would show a considerable dispersion of data points, but the relationship is significant for percent of farms with year labor and percent of labor performed by hired labor, with correlations of 0.41 and 0.53 respectively. It is not surprising that the correlation with year labor is lower, because as seen in the summary in Dataset 7.2.4 A and previously in 7.2.2, the use of year labor is a characteristic of farms of a certain large scale, and shows a sudden increase rather than a gradual linear increase. Huang has made a detailed analysis of the economics of scale for managerial farmers (Huang 1985, pp. 171-173). Product per capita shows a much better match with the indicators of labor than total product of the farm.

In Dataset 7.2.4 A the locality data has been ranked by product per capita and averaged by groups, to show the relationship between average product per capita and use of hired labor. Of course it is not the average product per se that is the determinant, but the number of larger farms (large in their product per capita of the household) within the locality. The number of large farms is only indirectly reflected in the average product per capita of the locality. It would be better to go directly to compare farms by size with use of hired labor.

We have information on hired labor for the localities, but not for farm size groups. However, there seems to be an indirect indication of the presence of hired labor in the data on total adult-male man-equivalents applied to farm work (which is provided by farm size groups in the Statistics Vol., p. 297). The indication is in the ratio of man-equivalents to household size, somewhat like a workers-to-consumers ratio. If all sectors of the population reproduced at an even rate and the households did not include hired labor, this ratio would be the same for all sectors. If rich farmers reproduced more than poor farmers — and we saw in Chapter 2 that for North China they did — then they would have fewer adult workers per consumers. But what is found in the data is that the largest farms have the most workers per household members, and that the pattern of increase in the ratio by farm size is close to that for the increase in use of

Dataset 7.2.4 Product per Capita versus Percent of Farm Work Done by Hired Labor in 35 Localities of North China

The Winter Wheat-Kaoliang Areas have medium to high product per capita, little rented land (12%), fairly uniform wages and transport conditions, and a wide range of farm sizes, so productivty data here can more validly be compared with measures of use of hired labor.

A. By Average Product per Capita of Localities, with Hired Labor Measures for Localities

By Product for Locality	N Local-ities, Farms	Product /Capita After Rent*	Size of House-hold	Man-Equivalent Working on Farm: Hired	Family	All	Percent Hired Labor	Farms w/Male Yr Labor
Richest	6 616	734	6.83	0.70	1.67	2.37	28%	35%
	8 915	575	6.96	0.41	1.54	1.95	20%	20%
	7 690	374	6.21	0.36	1.70	2.06	16%	20%
Subsisting	7 693	268	6.62	0.24	1.71	1.96	13%	14%
Poorest	7 703	174	6.78	0.23	1.54	1.77	13%	14%

Correlations: Locality Product/Capita with Year Labor, 0.41, with Percent Hired Labor, 0.53, both significant at 0.01 for 35 locality data points.

B. By Farm Size Groups, with Hired Labor Estimated from Standard Ratio of Family Workers to Household Size

By Product for Farm Size Group	N of Farms	Product/ Capita After Rent*	Man-Equivalent Working on Farm: Est.** Hired	Est.** Family	All Labor	Est.** Work by Hired Labor
Richest	201	1409	3.16	1.36	4.52	70%
	286	755	1.13	2.01	3.14	36%
	332	544	0.42	2.03	2.45	17%
	390	419	0.48	2.17	2.65	18%
	411	343	0.34	1.95	2.29	15%
Subsisting	497	276	0.21	1.70	1.92	11%
	460	209	0.15	1.47	1.62	9%
	467	160	0.08	1.43	1.51	5%
Poorest	471	92	0.01	1.48	1.50	1%

By Product for Farm Size Group	Farm Size (ha.)	% of Farm Rented	Size of Household	Household/ Farm Man-Equivalent	Idle Mos. per Able-Bodied Man	% Non-Farm Income
Richest	10.92	4.8%	10.5	2.56	1.96	3.2%
	5.29	10.5%	8.7	2.91	1.92	8.0%
	3.48	11.1%	8.0	3.40	1.93	7.8%
	2.55	18.6%	8.1	3.26	1.89	9.3%
	2.17	13.4%	7.5	3.52	1.76	13.1%
Subsisting	1.81	10.6%	6.7	3.73	1.85	13.7%
	1.12	12.0%	5.8	3.74	2.01	17.3%
	0.84	11.2%	5.5	3.83	2.19	18.6%
Poorest	0.71	9.8%	6.0	4.38	1.97	25.4%

* With production of rented land less 40% rent, recognizing the added scale of farms with rented land while adjusting their total production. For North China this adjustment is minor.
** Estimate of portion of farm man-equivalents hired based on man-equiv. to household ratio.

hired year laborers[91]. Some of these year laborers may be counted in the household and some may not, but it seems that the man-equivalent measure captures all of them, since Buck was very concerned with measuring the efficiency of labor inputs and farm size.

In Dataset 7.2.4 B I have sorted the farm size groups (178 of them altogether for the 35 localities of the Winter Wheat-Kaoliang Areas) by product per capita (less 40% for rent on rented land, which is minor here). Then I averaged these in segments of about twenty farm size groups each, resulting in nine segments with 200-500 farms each. Average product per capita for these segments ranges from 92 kg. to 1409 kg. This is the listing in Dataset 7.2.4 B; the bottom section of it gives several indicators that we know to be related to income, particularly idle months in the year per able-bodied man, and percent of total income from non-farm sources. A line across the table between 209 and 279 product per capita demarcates under-subsistence from over-subsistence, for ease of reference.

Idleness is lowest for those with land producing 343 kg. per capita; those with less land are underemployed, and those with higher incomes gradually begin to enjoy more leisure.[92] Non-farm income is of course highest for those with the least land, and especially for those far short of subsistence. The ratio of household members to adult man-equivalents of labor may be compared with these. The farms at the boundary of subsistence, 209-276 kg., have a stable ratio of 3.73, probably reflecting a low but normal level of reproduction with no hired labor in the household. Smaller farms have a lack of productive workers in farming for lack of sufficient land to employ them, and a

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91 It cannot be ruled out that some of this pattern is due to a life cycle effect, such as proposed by Chayanov, that the worker/consumer ratio varies over the life cycle, but it seems that hired labor is used along with family labor for higher ownership per capita, all the same. Actually there may be a subtle transition within the gradation for the largest farms, that there is a plateau in use of hired labor (see farm size groups with product of 419-544 kg.), and then a rapid tip towards use of long-term hired labor for larger farms, with concomitant decrease in family size and family participation in farmwork. The upper limit for Chayanov family life cycle effects is probably below this transition.

92 The freedom from physical labor enjoyed by large landowners is doubtlessly unestimated by this measure. Men in households include some number of year laborers, who shoulder the burden of farm labor on very large farms, as seen in Dataset 7.2.2. Yet the Buck figures average both types of men together in the household. Further considering that large landowners take up genteel and mercantile occupations, and so are not "idle", even a small income-related increase in leisure per able-bodied man is telling.

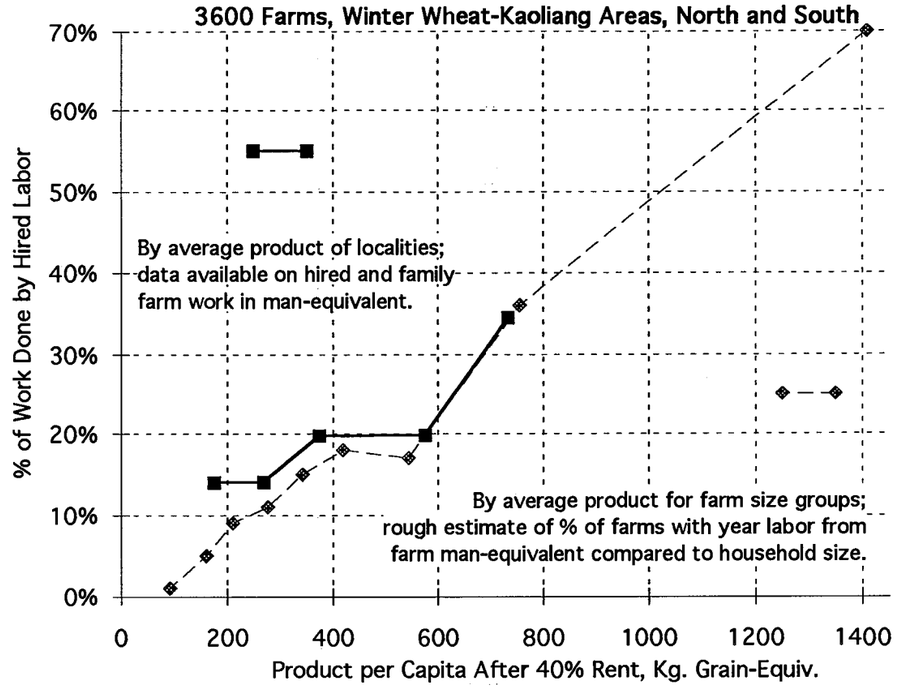
high dependency ratio. On the other hand, farms over the subsistence boundary have a progressively greater number of workers relative to household members, i.e. a markedly lower household-to-man-equivalent ratio for the largest groups that implies much of that labor is hired.

I have extrapolated from the Dataset 7.2.4 A data for localities, comparing the man-equivalents per household members there with known hired labor, and allowing for some averaging of the distribution within localities, to propose proportion of hired labor for the nine segments of Dataset 7.2.4 B. Man-equivalents for the farm size groups have also been divided between hired and family labor accordingly. This is shown graphically in Dataset 7.2.5. Actually the slope of the increase in hired labor by farm size should probably be even steeper for farms over 535 kg., but there is not enough data to specify this much more.

Let me paint the picture seen so far with broad strokes. With land producing over 450 kilograms of grain-equivalent per household member, the landowner/farmer will begin to substitute hired labor for family labor, and will also decrease exertion in intensity of land use. By landownership of 900 kilograms per capita, the balance is tipped, and hired labor is relied upon for half or more of the farm's labor needs. This picture is a generalization that can be further elaborated and specified with reference to influences such as wages to labor, and the alternative possibility for those at the upper end of the scale of ownership, renting out the land. The next section will do this.

Philip Huang has explained how in Hopeh, North China, a certain minimum scale of farm (100 *mu*, or about 6.7 hectares) was necessary to make efficient use of the full capacity of laborers hired by the year. The returns to managerial farming, using no family labor in the fields, were probably twice those of renting out the land, so there were strong motivations to continue at least supervision of farm operations. But he has also explained that it was not feasible for a managerial farmer to personally supervise labor on more than 200 *mu* (about 13.3 hectares). For landowners over that scale, the differences in income per unit of land were less pressing, and they had sufficient capital to engage in lucrative money-lending and commerce (Huang 1985, pp. 171-174). On such a scale they could be landlords leasing out their land.

Dataset 7.2.5 Farm Production and Use of Hired Labor, 3600 Farms, Winter Wheat-Kaoliang Areas, North and South



Section 7.3 will examine the range of farm size in farming with hired labor. This involves two transitions, one from owner-operator to managerial farmer at the lower end of the range, and one from managerial farmer to rentier at the upper end of the range. Although, as I have discussed above, these are not all-or-nothing transitions, still it is possible to represent the average transition point with a single number, and to proceed from there for interregional comparisons. The interregional comparisons facilitate investigation of the logic for the positions of these transitions relative to the landownership distribution.

7.3 The Macro-Economic Effects of the Sufficiency Thresholds in Geographical Perspective: The Scale of Farming with Hired Labor

The study of large farm holders in the countryside of Hopeh and Yunnan gave us some material by which to analyze the substitution of hired labor for family labor. The term "peasant" is hardly appropriate for households that in effect live off the gains of their land without physical labor, and so I have adopted Philip Huang's term "managerial farmer" for these. Section 7.2 showed that beginning from a certain scale of landholding use of hired labor increased rapidly; this I have called the "hire-in" sufficiency threshold of ownership. Further analysis calls for finding the hire-in threshold in large-scale surveys.

The Buck survey is a very thorough one, and yet somehow Buck did not think to compile according to size of farm the detailed information collected on family and hired contribution to total farm labor. This was compiled only by locality.

But inspired by looking over the farm size rankings and other evidence presented above, we can engage in some further speculation and try to estimate the scale of farm size at which hired labor begins to be used. If we assume, fairly reasonably from the analysis in Section 7.2 above, that the largest farms are those which employ the hired year laborers, and we know how many farms over all have year laborers, then we can find the size of the farm at the cut-off point, the n-th in the ranking. For example, if we know that for a hundred farms 23% have hired year laborers, then the twenty-third largest should be the smallest farm that uses year laborers.[93]

But it does seem to be substantially true that it is the largest farms, as measured in land farmed per capita, that are the main users of hired year labor; I have verified this by

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[93] Even if it is not literally true that only the largest farms use hired year laborers, still the cutoff point no doubt encompasses all but a small portion of year laborers, and it will do for interregional comparison where all areas have the same error. In the actual computation on the ranking of the farm size groups, the point of transition is not one farm or even one farm size group from one locality. I take the average product per capita for several farm size groups, about 40-50 farms, around the point of the ranking cutoff. This works to even out differences among localities and other random effects.

looking at a proxy indicator of hired labor, the ratio of workers to household members, in two areas (see Dataset 7.2.4 and 7.4.1 later below). Both absolute size of farm and land farmed per capita seem to correlate with the presence of hired labor, but land farmed per capita is the better predictor. The same can be seen by looking at other indicators of economic well-being such as percent of income from non-farm sources (low if high farm income). So by this means I have estimated the lower limit of the scale of landholding that employs year laborers, for the ten cropping areas of the Buck survey. As usual, it is not the surface area of the land that is of interest, but its physical production in kilograms of grain-equivalent. This will be given below in Dataset 7.3.1.

Dataset 7.3.1 An Estimate of the Scale of Farming with Hired Laborers

Area	N of Farms	%* of Farms w/Adult Male Year Laborers	Scale of Farming w/ Hired Year Laborers Lower Limit	Upper Limit
Spring Wheat	1233	15.6%	278	618
Winter Wheat-Millet	2025	12.6%	400	960
W Wh-Kaoliang, North	1080	30.2%	540	1693
W Wh-Kaoliang, South	2697	17.1%	506	1069
Yangtze Rice-Wh, East	2123	13.0%	870	1473
Yangtze Rice-Wh, West	1556	19.2%	768	1600
Rice-Tea	2745	12.1%	700	1575
Double-Cropping Rice	1203	5.1%	890	1362
Szechwan Rice	802	18.2%	995	2048
Southwest Rice	1221	10.7%	875	1315

Area	Total Wages to Year Labor, Kg. Grain-Eq.	Product/Ha. Cultivated Land, Kg.	Persons per Ha., Farm Population	Product per Capita, Farm Population
Spring Wheat	562	512	2.35	218
Winter Wheat-Millet	666	1118	3.92	286
W Wh-Kaoliang, North	900	1386	2.32	598
W Wh-Kaoliang, South	607	1381	3.76	368
Yangtze Rice-Wh, East	1309	2179	3.97	549
Yangtze Rice-Wh, West	1034	2872	4.67	615
Rice-Tea	1690	2731	5.92	462
Double-Cropping Rice	1299	3219	6.62	486
Szechwan Rice	1175	3889	5.38	724
Southwest Rice	959	4224	6.99	605

* By simple average of farm numbers; previously in Dataset 5.4.4 numbers were weighted by production of locality, to better reflect contribution of hired labor.

** Estimate was made by ranking farm size groups by product/capita, with assumption that top ranked were those hiring year laborers. Upper limit is average of top 5% of farms. Lower limit is the n-th farm of ranking, where n is number of farms hiring year laborers. Final result for lower limit is average of about 40 farms around n-th farm. Lower limit means year labor is hired, but does not necessarily replace family labor.

The next logical transition on the scale of increasing landownership is that from managerial farmer to rentier. On this matter we do not have such detailed accounts. Itcan often be known from village studies what portion of the crop was paid over in rents, or how much cash rent was paid for an acre or a *mu*. But there is too little direct information about landlords to clarify what is the scale of landownership that is necessary for rentier status.

The lack of such information is no doubt related to the difficulty that any researcher encounters in trying to figure out which landlord is the owner of rented land and how much a particular landlord owns in total, given that the landlord(s) may be resident in some distant town, and that their holdings may be divided among several tenants and even spread among several villages. The Bangladesh survey cited in Chapter 1 is the only large-scale farm survey I have had access to that actually did collect household information on ownership rather than operational holdings.

Our recourse in examining the transition from managerial farmer status to rentier status is again to be found in the large-scale data of the Buck survey. For one, we can look at the largest farms caught in the survey, and assume that they are just under the size at which rentier status is achievable. Of course their size may also be limited by capacity to manage, as Philip Huang suggests, and so may not be right at the boundary size. A managerial farmer could rent out some land aside from managing his own farm, and still not have enough land in total to live off rents alone. We have seen some examples of this in Huang and Fei (see Dataset 7.2.3 for Huang; Fei and Chang 1949 household budget for Household A). Still, the size of the largest farms should give us some rough numbers for interregional comparisons. This is also given in Dataset 7.3.1.

Secondly, what we know most reliably is the percent of total land area that is rented land, and if, as has been proposed in Part One, the landownership distribution has a characteristic curve and is more-or-less constant relative to the average, then we can estimate what is the point of transition on that landownership distribution, such that that amount of rented land can be matched. This means of estimating the point of transition to rentier status relies on the theoretical conceptualization of the agricultural economy. We will discuss this later in Chapter 7, since it leads naturally into the logic for the determination of the rate of rent beginning in Chapter 8, Part Three. Let us return here to what can be known more concretely from the Buck survey.

What we are looking at first, in Dataset 7.3.1, is the scale of farms that use hired year laborers, which implies a considerable supplement to or substitution for family labor. This is the scale of land operated, not land owned; for the areas of North China, where there is little rented land, the two are almost identical, but not so for the South. From various experiments with the data, however, it is apparent that the extent of landholdings per capita, whether owned or rented, is the best predictor of use of hired labor. In the next section we will hone this analysis further and remove the rented land so that we can specify the relationship between ownership and use of hired labor, but for now we will look at what an agrarian researcher might see out on fieldwork, the size of farms using hired year labor. Let us begin with a general description.

Datasets 7.3.2 A, B and C initiate a series of charts that describe and explain the patterns in the data. The horizontal axis in these two charts and several subsequent ones is a simple one that serves to separate out the data regionally: product per hectare of cultivated cropland. The low range of product per hectare is the four areas of the North: Spring Wheat; Winter Wheat-Millet; and Winter Wheat-Kaoliang North and South. The middle range is the densely-populated areas of east central and southeast China (in order of increasing product per hectare): Yangtze Rice-Wheat, East; Rice-Tea; Yangtze Rice-Wheat, West; and Double-Cropping Rice. The high range is the two areas of the southwest interior: Szechwan Rice and Southwestern Rice, where productivity is extremely high on cropland, but cultivated land is scattered among hilly areas, in contrast to the plains of the lower Yellow and Yangtze Rivers.

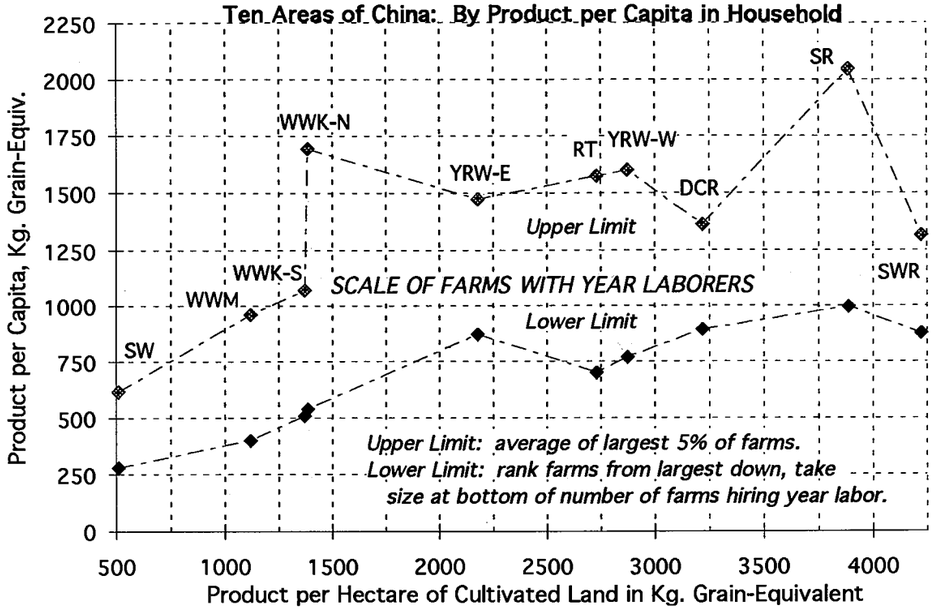
Population density is expected to affect the scale of farming with hired labor because of its relationship to export of the surplus, commercialization, and wages to labor, as was explored in Chapter 6. Population density per hectare of cultivated land generally increases with product per hectare in this lineup of areas, though not with complete correspondence. For example, the Winter Wheat-Kaoliang Areas, North and South, have virtually the same product per hectare, but the population density in Winter Wheat-Kaoliang, South, is much higher, with correspondingly lower product per capita. Density of cultivated land over the gross area is generally higher in the flat lower stretches of river valleys, where population density on the cropland is also usually higher. But an exception to this can be seen in the comparison between Yangtze Wheat-Rice East and West, where the inland middle Yangtze valley, the West part, has higher land productivity and population density than the coastal lower Yangtze valley, the East part, which is however probably fed indirectly by the upriver surplus and stimulated

by commerce disproportionately, such that agricultural wages are higher than in the West. For most of the areas we are dealing with the averages of locality samples which are all in a discrete river basin or regional economy. However, the average still reflects a particular mixture of the geographical types in the area, hilly or flat, which work to shape the agricultural economy. I will continue to use the same x-axis, product per hectare, though many of the following charts so that the reader can more easily envision the interacting effects of several variables that will be examined.

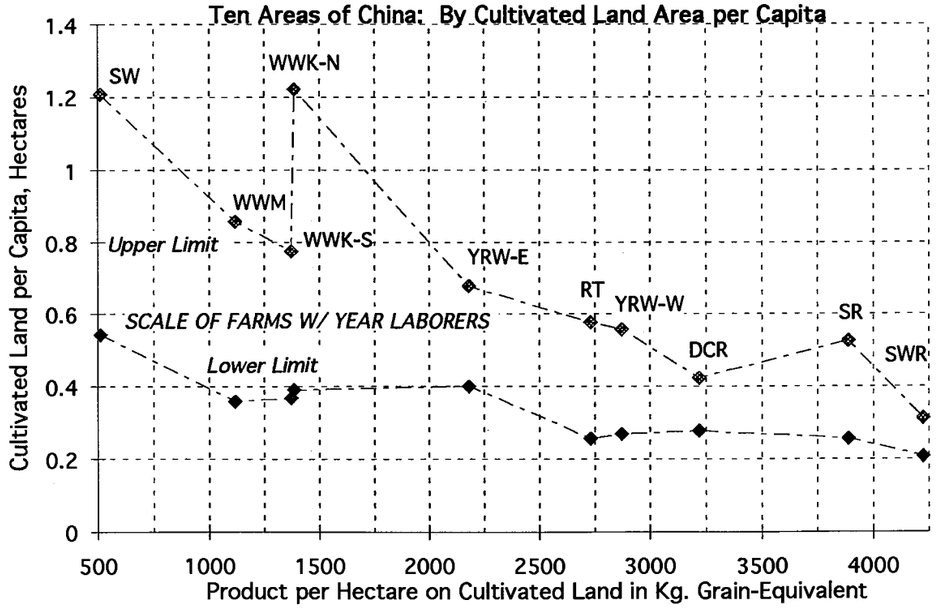
Dataset 7.3.2 A shows that the lower limit of the scale of farming with hired year labor increases gradually as product per hectare increases. Most of this effect can be related to the annual wages to year labor, which are listed in the table Dataset 7.3.1 and shown against the same scale of product per hectare in Dataset 7.3.2 C. Wages in the four North areas are relatively low, even in the Winter Wheat-Kaoliang Area, North, where labor is highly productive on large estates. The lack of rented land means that the large portion of the population that is land-short has little alternative to poorly-paid agricultural labor. So it is not surprising that farmers can begin to employ hired labor at a rather low level of farm size, from 278 to 506 kg. per capita of the household. The other areas, which have much higher product per capita and/or higher commercialization with much rented land, also have substantial wages to hired labor. Other than this rise related to labor wages, the lower limit of the scale of farming with hired labor does not shift markedly.

The upper limit is more irregular. Here on the larger scale of farm, and probably substantial ownership, we are dealing with complex conditions of the trade-off in profitability of farming with hired labor or renting out the land and collecting rents. We will investigate this more systematically later. The reader may merely note for now that the two areas with the widest span of farm sizes, Winter Wheat-Kaoliang, North, and Szechwan Rice, have product per capita and per land area that render a high potential surplus, while wages are not as high (relative to production) as in the densely-populated and commercialized central and southeast coastal areas. Dataset 7.3.2 C which charts wages to labor also gives in italic numbers for each area the population density per square kilometer over the gross area (combining both measures, persons per cropland and cropland per gross area). Yangtze Rice-Wheat , East and the Rice-Tea Area have the highest wages and high population density; although Yangtze Rice-Wheat Area, West, seems to violate the generalization of high gross density/high wages, it is more inland and probably loses a good deal of its surplus to the lower Yangtze cities.

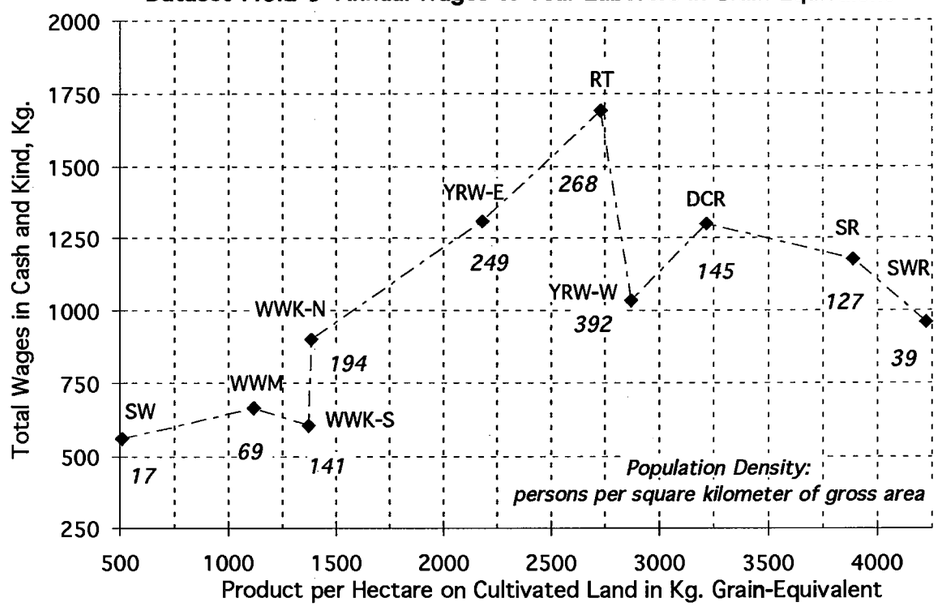
Dataset 7.3.2 A The Scale of Farms with Year Laborers for Ten Areas of China: By Product per Capita in Household



Dataset 7.3.2 B The Scale of Farms with Year Laborers for Ten Areas of China: By Cultivated Land Area per Capita



Dataset 7.3.2 C Annual Wages to Year Laborers in Grain-Equivalent



In Dataset 7.3.2 B the size of farm in product per capita is converted back into land area (hectares) per capita. The physical size of farm decreases steadily with increasing product per hectare, even though Dataset 7.3.2 A showed product per capita increasing. This of course reflects a more intense use of land, with labor-intensive multiple-cropping and transplanting of rice sprouts to carefully prepared wet fields, rather than dry farming of wheat, millet, or kaoliang. More intense use of land has been linked to decreasing feasibility of farming with hired labor, because of the difficulty of supervising labor for careful field leveling, weeding and other activities that greatly affect yields (Chayanov 1966, Harris 1977). Tenants, in contrast, are motivated to produce the greatest yields for their own interest as well as for the landowner's.

It may well be that the effect of intensification in decreasing the scale of farm (in physical area, not in product) can be seen in this data. However, I do not believe that this is the main reason for a transition from farming with hired labor to rented land. The explanation lies ahead, beginning late in this chapter and continuing through the rate of rent analysis in Part Three.

Section 7.3 has quickly introduced the scale for farming with hired labor. Some of the reasons for the scale of farming no doubt lie in the technical and human capacities for management of land of a certain size, the "optimum size of farm" that John Lossing Buck and other agricultural economists of the 1920's, including A.V. Chayanov, were so concerned with discovering. However, this discussion only takes us part way to the issues that are the central concern of this thesis, the inequality of landownership distribution and the unequal relations between owners and laborers that it spawns. Section 7.4 will deal with ownership, not farm size; as usual we must go through the complications of extricating rented land from owned land within the farm size groups.

7.4 The Macro-Economic Effects of the Sufficiency Threshold in Geographical Perspective: The Scale of Ownership for Hiring-In Labor and for Renting-Out Land

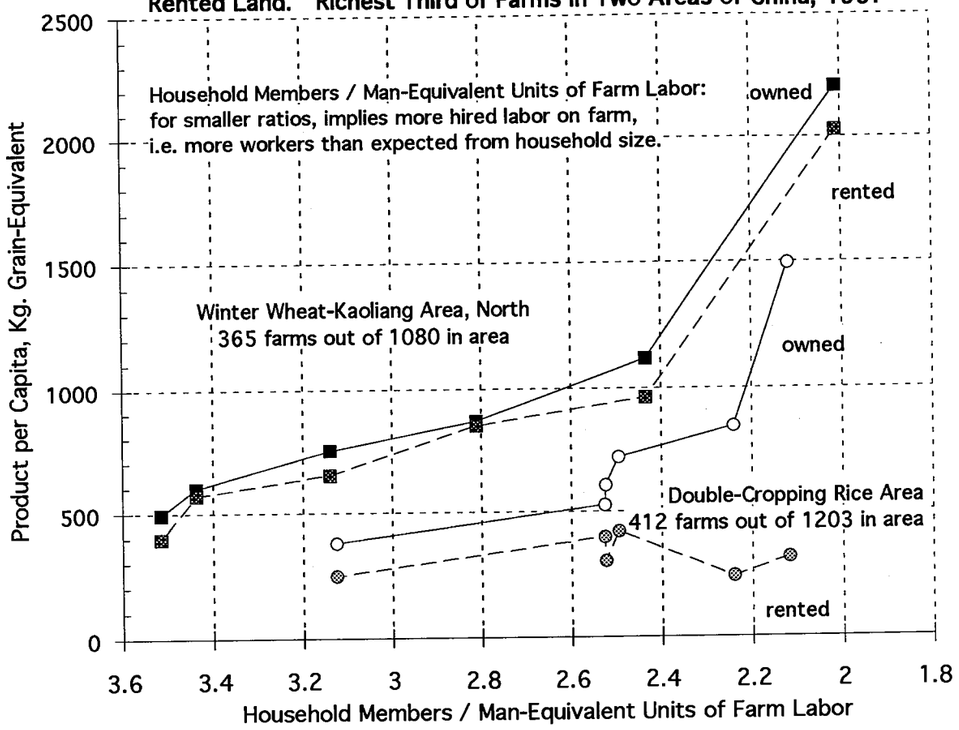
The Minimum Scale of Ownership for Hiring Year Laborers

The scale of farming with hired labor, in particular year laborers, was not so difficult to estimate, because of considerable consistency in the ranking of the farm size group data and shifts seen in indicators such as the ratio of farm labor to household size. The pattern is not ambiguous where there is a large range of farm sizes and little rented land to complicate the relationship between land owned and land farmed, for example in the case of the Winter Wheat-Kaoliang Areas that were examined in Dataset 7.2.4. Here the increased use of hired labor above a sufficiency threshold of about 550 kg. product per capita of the household seemed clear.

Where rented land is a large part of the area, the matter is much more complicated. Tenants must farm a large area just to meet minimum subsistence, the more area the higher the rent. It is possible to reach an extreme as in the Double-Cropping Rice Area, where the largest farms were those of tenants and part-owners who owned very little land of their own. However, it seems they still used a few year laborers on those large farms, probably as a supplement to family labor rather than a replacement.

Looking at the two extreme cases in more detail can help us understand the pattern of use of hired labor in relation to renting-in of land. The Winter Wheat-Kaoliang Area, North (WWK-N), and the Double-Cropping Rice Area (DCR) differ somewhat in product per capita (598 kg. and 486 kg.), but they differ even more in population density. The former is relatively sparsely populated at 2.32 persons per hectare, and the latter has near thrice that population density, 6.62 persons per hectare. True to the expectation that there is a shift from use of hired labor to use of tenants by large landowners where population is denser (Dataset 5.5.3), WWK-N has only 9.5% of its area in rented land, but 30.2% of farms have year laborers. DCR has 54.9% of its area, well over half, under rental, but only 5.1% of farms (by simple average of locality data) have year laborers. These are reciprocal relationships of course, because the more land that is rented out by large owners, the less remains for managerial farming.

Dataset 7.4.1 Scale of Farm and Use of Hired Labor: Owned Land and Rented Land. Richest Third of Farms in Two Areas of China, 1937



Dataset 7.4.1 is based on the largest farms in each area, WWK-N and DCR. The largest third of farms (or rather, farm size groups, the smallest unit of data) were selected according to their total product; then they were ranked by product per capita and divided among six groups to reduce the bulk of the data and even out other random variation. The percent of rented land for the farms in the group was calculated. The resulting farmed and owned land is graphed against the number of household members per farm worker (adult male equivalent units) in Dataset 7.4.1. Man-equivalent units includes family labor, hired short-term labor, and year laborers, but partly due to the method of counting the laborer as contributing 12 months to the farm if the laborer has no other activity (Buck 1937, Statistics Vol., Preface, Definition of Terms), it is likely that only family labor and year labor make a significant impact on the count of man-equivalent units.

Since about 325 farms (30.2% of 1080 farms) in WWK-N use hired labor, it is not surprising that for the 365 farms in six WWK-N size groups in Dataset 7.4.1 there is a smooth progression of product per capita and the household member/worker ratio, implying progressively greater use of hired labor. About 60 farms (5.1% of 1203 farms) in DCR use year laborers, a small portion of the 412 largest third of farms, and these are probably mostly within the two top DCR groups in Dataset 7.4.1. Before that point there is only a very slight correspondence between product per capita and change in the household member/worker ratio. But the two top DCR groups, while farming much more land, actually own less land than the groups below them. They just rent in much more. For the top 5.1% of farms in DCR, 94% of farm area is rented land; for the top 10.2% of farms, 84% is rented land. In all, few farms have year laborers, and use of year labor on owned land is almost insignificant, so we can hardly find a point of transition to managerial farming based on the profits of ownership.

As we will see in Part Three, DCR has the highest rate of rent of all the areas, which no doubt is what spurs tenants and part-owners to till relatively large acreage, if they can get tenure on it. But the same problem of measurement occurs as well in the Rice-Tea Area (48.4% of land is rented land), and to a minor extent in the Szechwan Rice Area (57.6% of land is rented land, but the rate of rent is relatively low). Outside of the Double-Cropping Rice and Rice-Tea Areas, figuring the amount of land rented-in by the large farms that probably use year labor yields a plausible result. The percent of land rented is removed from both the upper limit and the lower limit of the scale of farms

farmed with hired labor in order to estimate the amount of ownership which that scale represents; the results are given in Dataset 7.4.2.

Dataset 7.4.2 Analysis of the Scale of Ownership for Hiring Year Laborers: Dealing with Hired Labor on Rented Land

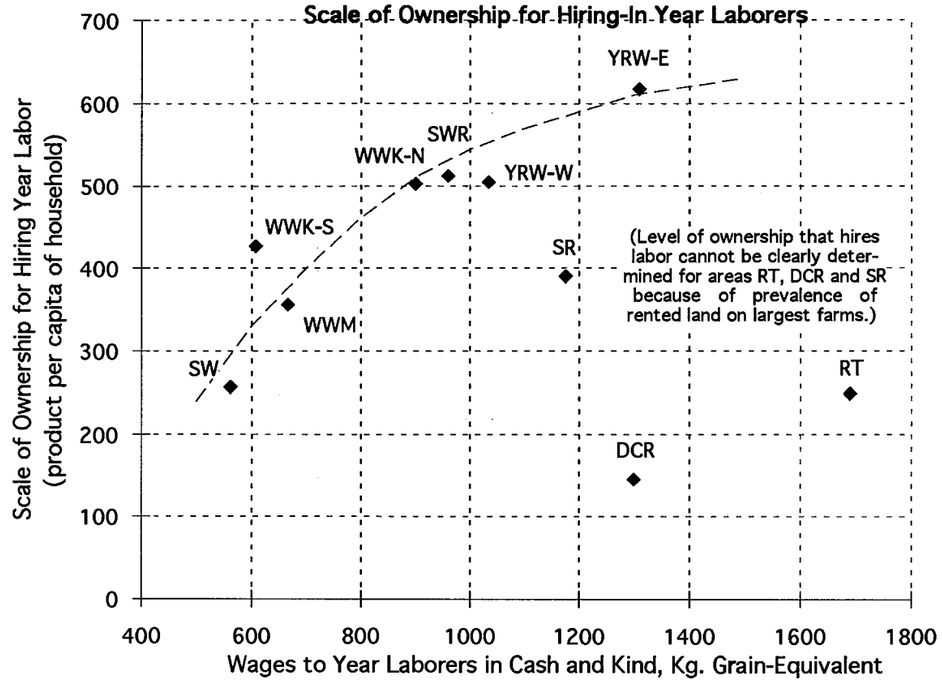
	Farms w/ Year Laborers			Scale of Ownership* for Farming w/Year Labor	
Area	Avg. Product per Capita	% Land Rented	All Farms Land Rented	Lower Limit	Upper Limit
Spring Wheat	401	7.7%	9.5%	257	570
Winter Wheat-Millet	680	11.0%	15.2%	356	854
W Wh-Kaoliang, North	922	7.0%	9.8%	502	1565
W Wh-Kaoliang, South	802	15.7%	13.7%	427	901
Yangtze Rice-Wh, East	1163	29.0%	30.6%	618	1046
Yangtze Rice-Wh, West	1136	34.3%	44.6%	505	1052
Rice-Tea	1008	64.5%	48.4%	248	559
Double-Cropping Rice	1362	83.6%	54.9%	178	272
Szechwan Rice	1441	60.8%	57.6%	390	802
Southwest Rice	1162	41.5%	29.5%	512	770

* Scale of ownership for farming with hired labor is scale of farm as in Dataset 7.3.1, less percent of land rented by all farms hiring year labor.

The plausibility of this result is shown in Dataset 7.4.3, which charts the lower limit of farming with hired labor, on the y-axis, against annual wages to year laborers, on the x-axis. For the areas where there is little complication with rented land, the relationship is clear and logical: the cheaper the wages to labor, the smaller the owners who can afford some respite from labor. For these seven areas the average "sufficiency threshold" of ownership for hiring labor is 454 kg. per capita, close to the standards of 450 and 480 kg. that I hit upon early in this research merely on the basis of modelling from the landownership distribution. We might surmise that the three areas with much rented land actually have sufficiency thresholds that fall on the same line as the others, not below.[94] If we assume this, and then weigh the sufficiency threshold of ownership in each area by the amount of land farmed by hired labor (giving more weight to the

[94] It could well be the case that those who have enough land to live well, but not enough to rent out all their land, decline to exert themselves farming more land, and also use no hired year laborers. Given high wages to labor and high rents, they would be more likely to rent out their excess land than in other areas, if renting-out provided profits equivalent to managerial farming. Then the farms with largest ownership would not be the largest farms, as we see in DCR. Note in Dataset 7.4.2, comparing the second and third columns, that for Rice-Tea and Double-Cropping Rice Areas the largest farms rent in much more land than the average for the area.

Dataset 7.4.3 Wages to Year Laborers and the Minimum Scale of Ownership for Hiring-In Year Laborers



North), the weighted average would be about 460-490 kg. per capita. This is about as close as we can come here to precision in judging the level of landownership at which avoidance of physical labor is preferred to further income.

The precise number is not as important as the concept that there is a fairly stable level of income in grain and other life necessities at which freedom from physical exertion is preferred to further income, a level that is nearly as basic to the agricultural economy as subsistence needs. Since we cannot easily measure consumable income directly and concretely — costs of production in fertilizer, seed, hired labor, and depreciation on tools and capital would have to be deducted from gross production — we can only try to locate the level of landownership that allows the owner to eschew physical labor.

The lower limit of the scale of farming with hired labor is the beginning of the transition from family labor to hired labor, and it seems to be affected by little except the cost of labor, and, where a large portion of the population has access to neither owned nor rented land, by the general dearth (judged from many multiple linear regressions with product per capita, population density measures, and wages; also from my 1990 measure of land-short population in each area). The local economy is the major influence, and even then the range of variation of the hire-in threshold is on a scale that can be understood within the budget of the individual smallholder family.

There is little such pattern for the upper limit of farming with hired labor, which I have estimated as the average product per capita of the top 5% of farms in each area. The lack of pattern is not surprising, because the boundary is likely to depend not just on the cost of hired labor, but also on the rate of rent. Here we must instead push forward to look for the boundary of the scale of ownership at which land may be rented out. We cannot analyze the pattern for that boundary on the basis of the size of farm data on hand. However, there is another angle from which we can estimate it.

The Scale of Ownership for Renting-Out Land

A continuing theme throughout this thesis has been that the landownership distribution sets the basic conditions for the relations of production between large landowner and land-short labor. The point of transition from owner-operator to exploiter of labor determines the total amount of land to be turned over to hired labor or to tenants. This is the effect of the most basic sufficiency threshold, that at which physical labor is avoided.

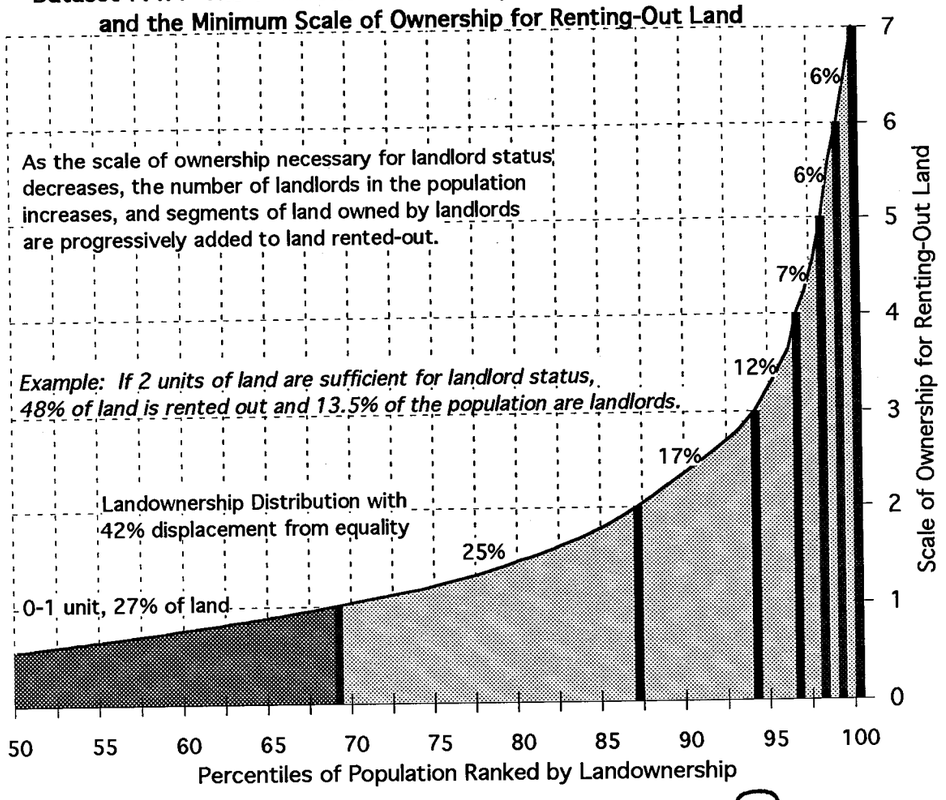
But at a higher level of ownership it may be possible for the owner to achieve at least the same minimum of sufficiency while enjoying a life completely separated from farm production, a life as a rentier. Then it is not the costs of production as for a managerial farmer, but the rate of rent and the cost of transport of crops paid in rent that stand between gross receipts and net income. Again, we cannot know precisely what these are, but we can estimate the level of ownership that affords renting out the land.

We know how much land is rented out, and we believe that the landownership distribution has a particular skewed shape that is more-or-less constant relative to the average, due to repeated partible inheritance (Chapter 1). The correspondence between empirical data and the land tenure outcome of this supposed distribution has been demonstrated in Chapter 5, for example in Datasets 5.5.5 A & B in the explanation of the difference in land tenure patterns between two areas which have nearly the same product per capita, Winter Wheat-Kaoliang Area, North and Yangtze Rice-Wheat, West. Now we will reason from the landownership distribution to the size of ownership for landlords, with a few additional refinements.

Consider Dataset 7.4.4, which is the familiar curve of the landownership distribution with 42% displacement from equality, in a form like a histogram, with percentiles of population ranked from poor on the left to rich on the right. The landownership of each percentile is measured in units relative to the average. In Dataset 7.4.4 only to top half of the distribution, from the 50th to the 100 percentiles, is shown, to allow focus on the detail at the upper end. Let us review the characteristics of the distribution, which is based on a simulation of partible inheritance with some higher reproduction for the rich (see Chapter 1), resulting in 42% displacement from equality. The bottom percentile owns virtually no land, the 50th percentile owns 0.55, and the 100th percentile owns 7.1 units. Overall, 69% of the population owns less than the average, and 31% owns more. That richer-than average 31% owns 73% of the land (73 units out of a hundred), which is 42% more of the land than they would own if there were complete equality.

We can also look at the distribution in terms of how much land is owned by farms of a certain size range. For example, owners of from 2 to 3 units of land hold 17 units in the aggregate. So if we were to slice the percentiles of the landownership distribution up by ranges of one unit each, the result would be as in Dataset 7.4.4. Let us say that two units at the prevailing rate of rent provided sufficient income for a rentier, and owners of two or more units all rented out all their land. Then total rented land would be the

Dataset 7.4.4 The Theoretical Relationship between Land Rented Out and the Minimum Scale of Ownership for Renting-Out Land



sum of all segments of land to the right of the 86.5-th percentile, which is that just before the holder of precisely two units. In all, 48% of land (48 out of 100 total units) would be rented land.

Conversely, if we knew that rented land were 19% of all land, we could infer, given this distribution, that the transition point to rentier status was at 4 units of land, and that 3.5% of the population were landlords. The investigation of the scale of ownership for renting-out land incurs a host of other adjustments. If those who participate in the underlying landownership distribution are landlords who do not appear in the farm survey, then both population per hectare and product per capita must be adjusted. The population density of those who live off the fruits of this land, whether or not they are physically present near the fields, is higher than just the population density of the farm population. In terms of the landownership distribution, landlords are exchangeable with managerial farmers, and they should be represented. Likewise, the product per capita that is the reference unit for the landownership distribution is lower than the product per capita of the farm population. This exercise, which at first may have seemed merely pedantic repetition, should make it clear to the reader how the estimates for the minimum scale of ownership for renting-out land were arrived at for each area, as given in the table Dataset 7.4.5, and how new numbers for population density and product per capita were generated.[95] The last column on the right gives the minimum scale of ownership for renting-out land in terms of the adjusted product per capita.

It must be acknowledged, however, that such an estimate is still a crude approximation, with some simplifications for the sake of ease of computation, or for lack of more detailed empirical examples to follow. As a case in point, renting out land is modelled as an all-or-nothing mode, as if a certain percentile of the population either operated all its owned land or rented it all out. Just as in the case of the hire-in threshold, this compresses a gradual transition into an abrupt one.

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95 Let me further clarify how population per hectare and product per capita has been adjusted. If landlords are a previously-unrecognized 20% of the population, then the farm population represents 80%. Population density must be increased by 25% (20%/80%) in order to include the landlords who also subsist on the production of this cultivated land. Likewise, product per capita is 25% lower than previously thought.

Dataset 7.4.5 An Estimate of the Minimum Scale of Ownership for Renting-Out Land

Area	Rented Land as % of All Land	Min. Land Owned by Landlords* Rel. to Avg.	Landlords as % of All Population	Persons per Ha. (including landlords	Product per Capita &farmers)	Minimum Land of Landlords in Kg.
Spring Wheat	9.5%	5.95	1.4%	2.38	215	1277
Winter Wheat-Millet	15.2%	4.95	2.4%	4.02	279	1380
W Wh-Kaoliang, North	9.8%	5.89	1.4%	2.35	589	3469
W Wh-Kaoliang, South	13.7%	5.18	2.2%	3.84	360	1863
Yangtze Rice-Wh, East	30.6%	2.94	6.5%	4.25	513	1506
Yangtze Rice-Wh, West	44.6%	2.17	12.0%	5.31	541	1174
Rice-Tea	48.4%	1.96	14.0%	6.88	397	777
Double-Cropping Rice	54.9%	1.65	17.5%	8.02	401	660
Szechwan Rice	57.6%	1.53	19.0%	6.64	589	894
Southwest Rice	29.5%	3.03	6.5%	7.48	566	1715

* Based on estimate from percent of land that is rented land in each area, and landownership distribution with 42% displacement from equality.

This estimation is made from the theoretical landownership distribution with 42% displacement from equality as a constant applied to all areas, which could be questioned on several grounds. But after much experimentation in matching land tenure patterns with the model of the landownership distribution, I believe there is considerable basis for applying this landownership distribution (see a major evidence in Dataset 9.6.1) I suspect landownership inequality may be slightly lower than the 42% model in low-productivity areas.[96] Moreover, more intense cultivation on small farms and less intense cultivation on large farms tips ownership of production towards more equality than landownership, by just a few percent. This may affect the delicate balance of the

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96 This is an important point, but it cannot be fully developed here. The empirical landownership distribution will be examined further in Chapter 9, Section 9.6. In Chapter 1 the 52% displacement from equality for the landownership distribution was produced by computer simulation of partible inheritance without differential reproduction. Adding differential reproduction, the resulting inequality was 32%. The most complex level of simulation included both differential reproduction and a process of accumulation of ownership due to exploitation. The net result of these two processes at equilibrium varied somewhat depending on the level of each (see Dataset 1.2.7) but the midrange was about 42%.

Displacement for each area could be estimated with greater precision for each area, but it would require a very extended process of calculations that I will defer for the time being. From a preliminary study, only the Southwest Rice-Area seems to have an inequality of landownership much lower than the other areas.

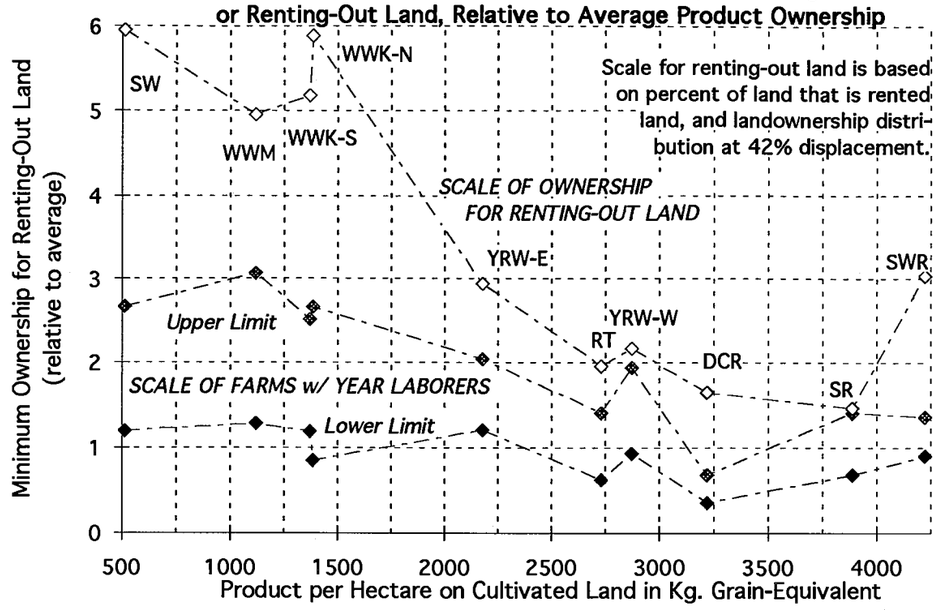
land/labor market in the Part Three solution of the rate of rent, but the 42% displacement is the better-matching landownership distribution to utilize for modelling.

But the estimated scale of ownership for renting-out land has been fixed through a procedure with a crudely abrupt transition — as if the biggest landowners were the only rentiers, and the transition were an all-or-nothing choice between renting out all land owned or self-managing it all. This crude procedure of estimation is not meant to be set in stone forever. There is still much refinement and closer specification of parameters to be desired. Like the four blind men describing an elephant from tail, leg, tusk and trunk, what seemed at first to be disparate elements of the agricultural economy have been gradually knit together into an enormous but whole picture through the chapters of this thesis. But it is a picture that is still shifting as we seek the best angle for focus on this huge structure.

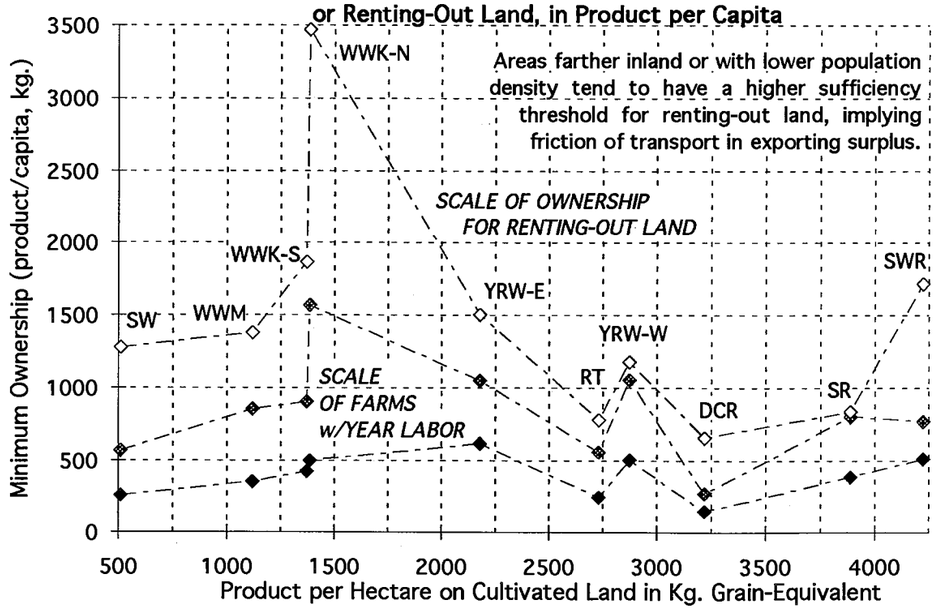
One important indication that the data is coming together into a consistent whole is shown in Datasets 7.4.6 A and B, which again peg the area figures for scale of ownership against the same x-axis as in Datasets 7.3.2 A, B and C, the product per hectare. Dataset 7.4.6 A gives the level of ownership for renting-out land, as derived from the percent of land that is rented land, in units relative to the average. Dataset 7.4.6 B translates that level of ownership into product per capita, given a revised and lowered estimate of overall product per capita for all population that depends on the product of the land, including non-farming landlords (see Dataset 7.4.5, fifth column). Both figures also have the scale of farming with hired labor charted for comparison. It is most gratifying to see that the upper limit of farming with hired labor, a figure that comes directly from the top 5% of the farm size groups (and so no doubt falls a little short of the transition point), runs mostly parallel to the scale for renting-out land, derived from a theoretical formulation for the landownership distribution.

Though parallel in the direction of their inflections from point to point, the two scales are closer together where rented land is prevalent, and farther apart where rented land is scarce. This may be related to the rate of rent, which will be found to be higher where population is dense. Other than that, some adjustments in modelling, such as recognizing that perhaps 10-20% of rented land may be owned by those who are also operating farms or those who do not farm because of lack of labor power (the "poor widow" syndrome), could almost certainly close the gap. So theory and empirical data have been joined on another front.

Dataset 7.4.6 A The Scale of Landownership for Hiring Labor or Renting-Out Land, Relative to Average Product Ownership



Dataset 7.4.6 B The Scale of Landownership for Hiring Labor or Renting-Out Land, in Product per Capita



The last two charts in this chapter explore the rationale for the variation in the scale of ownership for renting-out land. Population density on the cropland and wages to labor are the major factors; the two are not fully independent, for wages reflect the alternative labor markets of a more commercialized economy, again strongly related to population density and concentration of surplus.

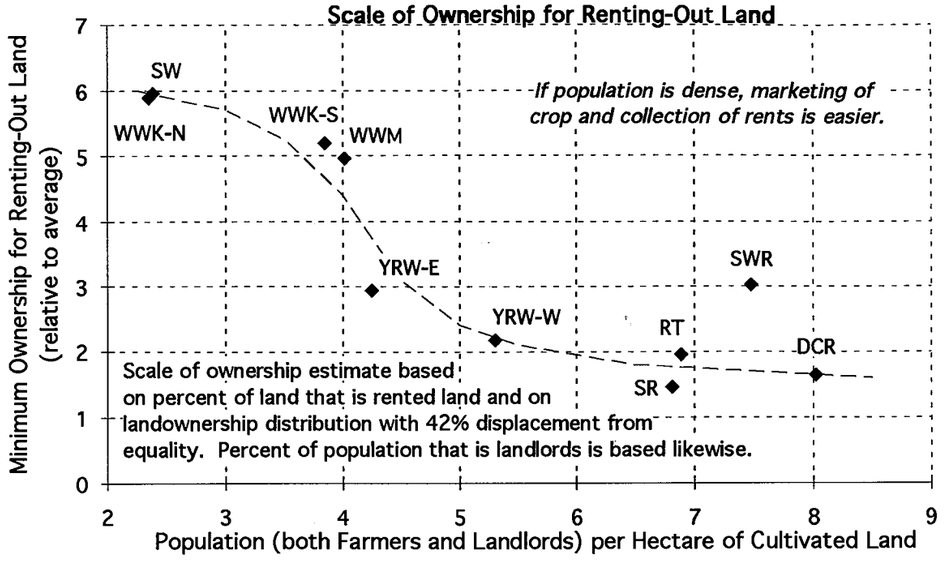
In Dataset 7.4.7 we see that the scale of ownership for renting-out land decreases sharply as population density on the cropland increases. The scale of ownership is measured in units of land relative to the average, so this measure in effect controls for differences in product per capita, which contributes greatly to the regularity of the match. The scale of ownership drops from 6 times the average to about 0.5 as population density increases from 2.3 persons per hectare to 8. By contrast, the minimum scale of ownership for hiring-in labor stays close to 1 unit relative to the average, at least for the areas where we can measure it with reliability; it is not much affected by population density directly, but rather by wages to labor.

The other convenience of the measure is that the scale of ownership in units relative to the average is directly related, though not linearly, to the extent of rented land, from which it was derived. Put simply, Dataset 7.4.7 tells us that rented land increases with population density. However, it also tells us a little more than that.

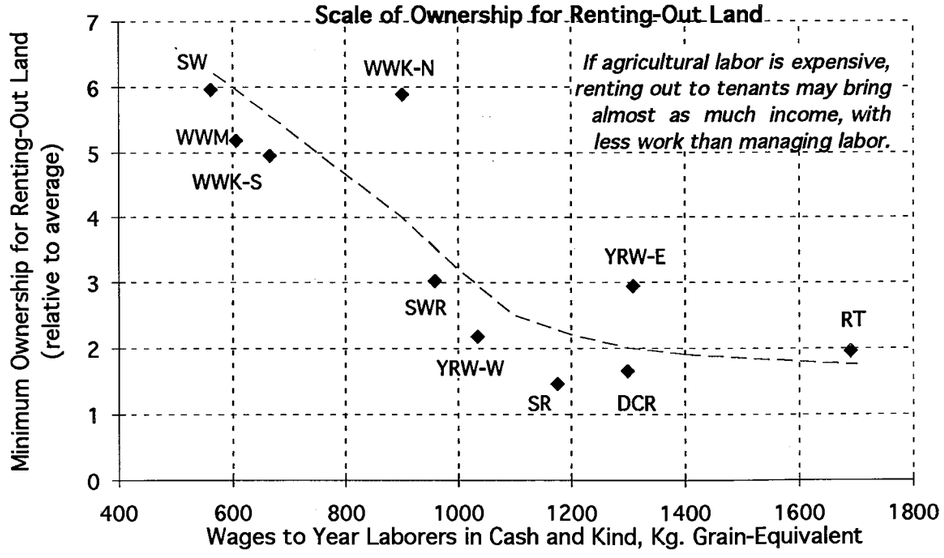
The area data points suggest that this is not a gradual progression, but rather a rapid transition in the range of 4 to 5 persons per hectare of cropland (including all those directly dependant on livelihood from the land, both farmers and landlords). There are two reasons why this relationship between rented land and population density on the cropland should be so close (discounting the usual apparent lower inequality in the remote Southwest Rice Area). First, it is easier for the landlords to emigrate to towns and to market the surplus where population is denser; this is as was modelled in the Lin Village just-so story of Chapter 4. Second, the rate of rent increases with population density on the cropland, though this is not the whole story. Both factors allow landowners with smaller holdings to achieve the status of rentiers. Dataset 7.4.7 is basically another, more detailed view on the shift from managerial farming to landlordism with increasing population density that was shown before in Dataset 5.5.3.

In addition to this, the close correspondence of the scale of ownership for landlords and population density on cropland suggests that the density of cropland over the gross area plays a relatively minor role in determining the amount of land rented out. However,

Dataset 7.4.7 Population Density and the Scale of Ownership for Renting-Out Land



Dataset 7.4.8 Wages to Year Laborers and the Scale of Ownership for Renting-Out Land



where high population density on the cropland is at great odds with the dispersal of cropland and impedance of transport, as in the Southwest Rice Area, it comes into play in raising the scale of ownership necessary for absentee landlordism.

This relationship of population density and rented land does not however preclude the likeliness that part of the effect of population density works through wages to labor. As shown in Dataset 7.4.8, there is also a negative relationship between the scale of ownership for renting out land, and wages to labor. With higher wages to labor, land is rented out at a lower level of ownership, which implies a calculation of relative profitability on the part of landowners. In general, with increasing population density, higher rents boost payments to landlords and higher wages to labor shave away profits to managerial farms; the point of switchover to landlord status moves down the landownership distribution.

Chapter 7 has been intended to provide a firmer footing for the concept of the sufficiency threshold before we ascend to the nether world of the determination of the rate of rent, where we must reason through the pure logic of the market between labor and land: the aggregate of land rented out by landlords and "supplied" to tenants, versus the aggregate land hunger of those owning too little land to afford subsistence. The sufficiency threshold is crucial to the mechanics of summing up the amount of land rented out at a particular rate of rent.

There are just a few simple points to be summarized from Chapter 7. The minimum sufficiency threshold in terms of the net income and standard of living it provides is probably fairly constant, about double the income necessary for subsistence. But its manifestation in terms of the landownership needed for managerial farmer status varies somewhat according to wage levels for agricultural labor, and its manifestation at the higher level of landownership needed for landlord status varies greatly with population density and with the rate of rent — which awaits discovery in the following chapters.