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**Population Pressure and Labour Intensification
An Indian Historical Perspective**

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ABSTRACT

Population pressure on land can unambiguously be associated with falling land-person ratios. But the consequent agrarian change may be many-sided, involving multiple cropping, technological improvements for raising the productivity of land and labour, shifts to high-valued crops, and so on. This paper does not pursue this complex process in its totality; the focus is on one of the underlying factors, namely labour intensification. The partiality needs an explanation. The proliferation of households with small landholdings has been a characteristic feature of Indian agriculture since independence. This persistence and its obvious connection with demographic change has not attracted as much scholarly attention as did the inverse relationship between farm size and productivity, noticed from the early 1960s, with distinctly higher levels of output per unit of land in the smaller holdings. The well-documented inverse correlation has been the subject of much economic analysis: higher use of labour (especially family labour) has been identified as a key causal factor. It is possible to regard both these empirical findings - growing number of small farms, and the intense use of labour in them - as two interrelated aspects of the same long term dynamics associated with population pressure working under changing economic conditions: one seen at the macro level and the other at the household level. This paper is an attempt to study the historical roots of these relationships.

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Population Pressure and Labour Intensification An Indian Historical Perspective

Population pressure on land can unambiguously be associated with falling land-person ratios. But the consequent agrarian change may be many-sided, involving multiple cropping, technological improvements for raising the productivity of land and labour, shifts to high-valued crops, and so on. We do not pursue here this complex process in its totality; instead we focus on one of the underlying factors, namely labour intensification. The partiality needs an explanation. The proliferation of households with small landholdings has been a characteristic feature of Indian agriculture since independence. This persistence and its obvious connection with demographic change has not attracted as much scholarly attention as did the inverse relationship between farm size and productivity, noticed from the early 1960s, with distinctly higher levels of output per unit of land in the smaller holdings. The well-documented inverse correlation has been the subject of much economic analysis: higher use of labour (especially family labour) has been identified as a key causal factor. It is possible to regard both these empirical findings - growing number of small farms, and the intense use of labour in them - as two interrelated aspects of the same long term dynamics associated with population pressure working under changing economic conditions: one seen at the macro level and the other at the household level. This paper is an attempt at synthesis of the Indian experience based on such an understanding.

Section 1 below has a brief review of some relevant theoretical perspectives. We first consider here the theories of Malthus and Boserup which directly refer to the effects of population growth and pressure; and then move on to Marxist formulations of the persistence of the small peasant economy set out in the general context of the development of capitalism, in which, however, the influence of demographic factors hardly ever finds

a place. Then follow sections 2 and 3, which present some statistical analyses of the post- and pre-independence periods respectively. This reversal of the chronological order in presentation is useful because for the period after independence we need only to present the substance of the extensive literature on the subject, which, moreover, provides some hindsight for analysing the sparse data of the earlier period. Concluding remarks appear in the final section.

1. Relevance of Theories

Theories based on models portray conditional truths; they cannot explain historical change over the long period. Hence, the conditions that qualify models and their possible relevance to observed changes in given periods of time need to be examined. Malthus (1798, reproduced in Malthus, 1961) does not consider population pressure as we do here in terms of worsening land-person ratios. In his analysis, unchecked population growth combined with diminishing returns to land produces declines in food production (per head); which in turn lead to famines and high death rates. Thus mortality is the most important and inevitable means of population adjustment to given resources. He also considers the other side of the relationship that describes how population change occurs in response to resource use: in his view, improvements in the supply of the 'necessities of life' promote early marriage and more children among the poor. His ideological and moral background, which led him to this reasoning, and his stand on the 'poor-laws' in England do not concern us here; more important and relevant are his model and the prognosis for humanity he derived from it. In this context, the questions to be asked are: whether population growth leads inevitably to worsening food supplies and whether such a worsening leads to famines and excessive mortality. (It is possible to regard declines in food supply per head as a reflection of population pressure; the question then is whether such declines bring about famine deaths.)

Malthus has proved to be a false prophet - a fact acknowledged even by those who talk about the population bomb in the modern context. Consider recent history. On a worldwide scale population has expanded at unprecedented rates (2 percent per annum or more in many countries) during the latter half of the 20th century, but food production has not lagged behind. For example, the growth in foodgrain production has outstripped

that of population in the Third World countries as a whole during that period. Moreover, the growth rates in foodgrain production have in general been higher in the so called less developed countries than in the developed ones (Dyson, 1974; Paulino, 1986; Sen, 1994). However, there are several poor countries - notably Bangladesh and some in the sub-Saharan region - as also sub-regions within some countries, such as Kerala and the eastern region in India, where foodgrain production has lagged behind population in certain sub-periods. It must be emphasised, though, that the decline in per capita production and the consequent emergence of chronic food scarcities have nothing to do with the rapid rise in population these regions have been experiencing mainly due to the continuously falling death rate. Domestic food supplies are restricted by the patterns of land use determined both by internal factors such as the extreme inequality in land-ownership and by external factors leading to the dependence of poor economies on the cultivation of exportable produce: fruits, cocoa, groundnut, palm oil etc. In a number of Third World countries, political independence has not led to a weakening of the external links forged by colonial dominance, which continue to influence cropping patterns.

One clear lesson from this historical experience is that checks to population growth through high mortality have not emerged, as they should have in accordance with the Malthusian model. True, since the time of Malthus, there have been many famines taking a heavy toll of human lives. But for the most part famines have in occurrence been local rather than global, rare, and short in duration; moreover, it has been argued convincingly that many famines - including the great Bengal famine of the 1940s - were caused not so much by the decline in food availability as by 'entitlement failures', in particular the erosion of purchasing power among the poor (Sen, 1981). It is clear that famines and epidemics are *sui generis* and the factors behind excess famine deaths need to be investigated in each case separately.

Hindsight enables us to see that the failure of the Malthusian model arises from the fact that it is essentially a closed model. If the extent of land is given, the scope for increasing yields limited, and both migration on a big scale and external trade are ruled out, then population increases produce declines in food production and supply per head in accordance with the model; but we know now that technological change has been taking place

continuously, productivity of land has been increasing and populations getting redistributed - more in some regions and periods and less in others, but significant nevertheless over the long period and in global terms. Above all, regions within countries and countries in the world do not constitute closed economic entities; trade and other types of transfer play an important role in food supplies.

The anti-Malthusian argument derives from the capacity of human beings to adapt and innovate in response to changes in the environment. Ester Boserup's historical analysis of technological change in agriculture - ranging from long fallow systems to the intensification of land use, with associated changes in the use of inputs - is relevant not only as a fairly accurate description of history, a history made by human beings in adaptation to the changing environment, but also because in many Third World countries these different systems coexist in varying proportions. For example, in India there is still shifting cultivation in the North East and 'modern' intensified agriculture in the Punjab and other regions. The technologies for raising the productivity of land are known and the scope for raising the yield per unit of land in India as a whole - as in a number of other poor countries - must certainly be very significant. The scope is not limited directly by population growth and density but by other factors such as the pattern of landownership, public investment and support of various kinds, and so on.

Boserup's (1965 and 1981) discussion of innovation as a response to population growth refers essentially to a situation when the land frontier is reached. However, her analysis can be seen to be useful even for economies where land extension is still possible. For example, as in colonial India, small peasants - in large numbers - may have limited or no access to additional land (under different forms of tenure). Agricultural intensification (encompassing all types of change to garner subsistence, including increases in family labour use) on small landholdings can then emerge as a distinct phenomenon, independent of changes induced by feudal and colonial interests. We discuss this in the Indian case later.

Marxist discussions of the survival of the small peasant economy under conditions of developing capitalist relations in agriculture and the emergence of technologically superior large-scale farming refer explicitly to factors underlying such survival. Marx himself wrote briefly about the non-

applicability of the profit calculus to the economics of peasant farming (Marx, 1964, Vol 3:805-806): "For the peasant owning a parcel, the limit of exploitation is not set by profit of capital ...The absolute limit for him as a small capitalist is no more than the wages he pays to himself, after deducting his actual costs. So long as the price of the product covers these wages, he will cultivate his land, and often at wages down to a physical minimum". Sen (1962) has reframed this proposition with reference to the conditions of Indian agriculture in the immediate post-independence period, characterized by a large peasant economy coexisting with markets for wage labour. Simply stated, Sen's theory suggests that a peasant can push his family labour to the limit irrespective of wage rates, while a capitalist employs hired labour up to a point only where the marginal product of labour equals the wage rate.

Lenin developed a coherent model of the process of capitalist penetration into the agrarian economy. Based on earlier Marxist writings (including notably of Karl Kautsky), the model identifies the development of capitalism with the progressive alienation of the direct producers from the means of production and the consequent emergence of the classes of labourers and capitalists at polar extremes. The separation of peasants - the direct producers - from land converts them into wage-dependent labourers. The process creates at the same time home markets on an increasing scale for both consumer goods and those required for agricultural production, hitherto produced by peasants themselves. The model thus is an integral one embracing the development of land, labour and commodity markets. What, however, is the process through which the peasantry is alienated from land? The question is not usually raised in this stark fashion, but in Marxist studies repeated reference is made to the inability of the small peasant to survive under developing market conditions that establish the superiority of large-scale production, presumably operating a variant of the big-eats-small jungle law. This leads to a chicken and egg problem about how markets penetrate into agriculture and dissolve the peasantry, further developing the markets. We can ignore this in the context of the history of colonialism that played a significant role in the development of markets.

The qualifying conditions in Lenin's model relate to the ability of small peasants to survive under emerging capitalist agriculture. Lenin says, "The existence of a small peasantry in every capitalist society is due not to the

technical superiority of small production in agriculture, but to the fact that the small peasants reduce level of their requirements... and tax their energies..." (Lenin, 1964). Further, even if the "technical superiority" of large-scale production is established, the small peasant may increasingly get involved in commercial cropping and thereby gain greater 'staying power'. Thus the development of commodity markets attending the dissolution of the peasantry must clearly be distinguished from the growing entry of small peasants in such markets. Such a process retards land alienation; it may fail to lead to an ever-increasing concentration of land in the hands of a few, even as income inequalities grow. It may simply produce increasing numbers of wageworkers and small peasants, the two categories overlapping and becoming indistinguishable. For a fuller discussion of the small peasant question see Chandra (2002).

2. The Post-Independence Period

Since independence, the Indian population has been growing at over 2 percent per annum. On the other hand, the increases in net sown area have been minimal, the growth rates for India as a whole being less than 0.2 per cent per annum after the 1960s (Bhalla and Singh, 2001: 33-34). There is a certain amount of spatial variation in these different rates; nevertheless, land-person ratios have been falling everywhere; thus one can associate the entire post-independence period with a countrywide experience of population pressure on land. The impact of this pressure is clearly reflected in the changing distribution of landholdings. The periodic data from the National Sample Surveys and the Agricultural Census clearly exhibit a continuous increase in the number of small holdings, in terms of both ownership and actual cultivation (operation) by households.

These trends in the distribution land are no doubt related to the ability of small peasants to hold on to their small parcels of land under changing conditions, favouring capitalist agriculture. Let us in this context consider the growth of agricultural labour. Even if the precise spatial and temporal contours of this growth cannot be mapped given certain statistical difficulties (involving changing concepts in data), the growth itself - reflected in a declining cultivator-labourer ratio - cannot be denied if one takes the whole period after 1950. Further, data generally show the existence of 'landed' labourers in significant proportions, as distinct from 'landless' labourers.

In interpreting these statistics it must be remembered that the distribution of 'hutment' land under land reforms has converted some of the 'landless' into the 'landed'. But in any case, landholding data show very conclusively the existence of a majority of peasant households cultivating holdings of a size that cannot fully support their families. These households earn wage incomes in addition to the subsistence derived from farming. For a detailed discussion of the role of the demographic factors in the growth of agricultural labour, see Krishnaji (1992: 218-235).

The Leninist model does not set a calendar time for the processes to work themselves out. Still, the lack of dramatic changes in the distribution of landholdings over the post-independence period needs an explanation. In terms of surface areas there is no great change in relative inequalities although one can discern some reduction in the proportion of large holdings as well as in landlessness at the bottom end. While land reform, however poorly implemented, might have contributed to this type of observed change, there is no doubt that underreporting of large landholdings and/or their spurious subdivision through *benami* transfers must also be responsible for the observed changes. Add to this the fact that generally large holders have been able to exploit technical conditions and favourable market conditions more than the small peasants could, and the picture that emerges is certainly one of growing inequalities in income.

One must then ask the question why such economies of scale as actually have emerged have not promoted a perceptible dissolution of the small peasantry. A clear inference from the data is that the small peasants have been able to cling to their land not only by the suggested 'tightening of the belt' and taxing their energies to the limit, but also by supplementing their incomes through wage work, entering into markets as sellers of produce, and so on. (In recent decades, both the development of education and the increase in employment opportunities in the rural non-farm sector must also have contributed to the ability of peasant families to retain ownership of land.)

The persistence of the peasant sector and the intense use of labour in small farms are thus the result of a complex process in which demographic factors have also played a part through the subdivision of landholdings. It is interesting to note in this context that the inverse relationship between

farm size and productivity of land holds under spatial aggregation. To explain: small household holdings are more productive by virtue of higher use of labour and other means for improving productivity of land everywhere at the village level. An aggregation of holdings across villages may not reproduce the inverse correlation between the size of holdings and productivity in terms of averages at the aggregated level for the simple reason that the mean size and the distribution of holdings varies much across villages. In fact, however, such an inverse correlation - between land-person ratios and land productivity - has been consistently observed across districts for the period after 1960s (Krishnaji, 1992: 236-255; Bhalla and Singh, 2001: 170). The following section examines the implied positive association between population density and labour intensity.

3. The Pre-Independence Period

Census data regularly available since the 1870s show that population growth in India began to accelerate from the 1920s. Earlier decades were marked by high rates of fertility and mortality under which the population grew haltingly and at very low rates. Thus during the half century preceding 1921, the population of the Indian subcontinent (including the areas now in Bangladesh and Pakistan, and the regions not under direct British rule) grew by a mere 20 percent from 255 million to 306 million, implying a simple annual average growth rate of 0.4 per cent. During three decades of this period, namely, 1872-81, 1891-1901 and 1911-21, the population levels were virtually stagnant (Visaria and Visaria, 1982:488). This pattern of unsteady growth, under a regime of unchanging high fertility, was the result of normally high mortality rates combined with the heavy toll of life that famines and epidemics took periodically in different parts of the region. The decade 1921-31 registered an unprecedented, high growth rate of over one per cent per annum. This was no doubt because of the low population base in 1921 that was the making of the influenza pandemic of 1918-19; excess deaths caused by the flu led to much population loss in several parts of the subcontinent. The growth during the 1920s is remarkable nevertheless because the region as whole has been experiencing high rates of population growth ever since.

Famines and epidemics causing excess mortality have tended to be local and region-specific, never country-wide in their spread; this meant that

population levels fluctuated a lot at the province level - more so than they did in British India as a whole. Thus there were occasional population declines over a decade: for example, during 1901-11 and 1911-21 in the United Provinces, 1891-1901 and 1911-21 in Bombay-Sind and Central Provinces (Visaria and Visaria, 1982).

Let us now turn to expansion of areas under cultivation. Table 1 presents the trends in gross cropped area per person (GCAP) in the British Indian provinces for the period 1891-1941. Greater Bengal experienced a continuous fall in GCAP. Apart from this, the data exhibit fluctuating trends over the period 1891-1921 and steady declines thereafter. The erratic levels of the former period arise obviously from unsteady trends in population numbers. For example, in the United Provinces, the area per person increased from 0.74 acres in 1901 to 0.83 acres in 1911; this was actually the result of a decline in population and a less-than-proportionate decrease in the gross cropped area. During that period population declines resulting from excess mortality were generally associated with heavier death tolls among children and the old-aged; such a pattern of mortality leads to an increase in the proportion of adults in the population. On the other hand, if the deaths among the adults are proportionately higher for whatever reason, there is the possibility that children and the old-aged would be pressed into agricultural work. These are reasons why cultivated areas may not decline in proportion to population losses. In general, when population levels change and the area under cultivation does not change proportionately or in the same direction, such fluctuations in land-person ratios (LPRs, as exhibited by GCAP here) will emerge. On the whole it is difficult to associate the wide fluctuations at the province level with population pressure, mainly because the population growth rates were low during the period 1891-1931. However, provinces were very large entities in terms of area and population size, and we can with good reason expect fairly steady population growth and consequent significant declines in net sown area per person (NSAP) at least in some districts. A district level regional analysis would then provide us with insights into adjustments that occur in response to population pressure on land. Indeed, district level data (to be discussed below) show that in as many as 20 districts out of 96 districts in British India the population levels decreased over the four decades; while, at the other extreme, 24 districts experienced growth of over 20 per cent, 15 of them more than 30 per cent.

Table 1: Gross Cropped Area per Person (GCAP in Acres), 1891-1941

Province	1891	1901	1911	1921	1931	1941
Grater Bengal	0.72	0.67	0.63	0.60	0.54	0.49
United Provinces	0.61	0.74	0.83	0.83	0.78	0.72
Madras	0.69	0.70	0.68	0.68	0.64	0.58
Greater Punjab	0.94	0.83	1.12	1.11	1.20	0.80
Bombay-Sind	1.28	1.17	1.25	1.29	1.24	1.11
Central Provinces	1.50	1.52	1.50	1.43	1.38	1.23
British India	0.81	0.79	0.84	0.82	0.77	0.70

Source: Blyn (1966) and Census Reports.

The data we use here have been compiled from official publications by Reddy (1996); they refer to 96 districts covering about 85 per cent of the total population (as also of total cropped area) in British India. A few districts could not be included because of difficulties in matching population data with agricultural statistics, given changing boundaries of districts. These area statistics for the period 1891-1931 cover net sown area (NSA), gross cropped area (GCA), and area under food crops (FA); and the corresponding census data refer to population size (P) and the number of male agricultural workers (MWA), comprising cultivators and labourers.

Populations in which the majority eke out a bare subsistence from land respond in many different ways to declines in land person ratios (LPRs). In colonial India the direct producers, labourers and tenants, had probably a very limited control over land. Therefore any observed changes in patterns of land use must take into account land and labour relations specific to each region. This applies to commercial farming in particular; the conditions under which crops like groundnut, sugarcane or cotton were grown and how they shaped subsistence among small tenants varied across space and time. The present study is, however, purely statistical in nature, providing summaries of changing patterns; it cannot explain the changes. (To give an example: in a subsistence economy which is integrated to some extent with markets - internal and external - and in which the direct producers fully control the use of land and its products, a continuous decrease in the LPR may lead to either a fall or a rise in areas

under food: the outcome will depend on a number of factors such the relative prices of food and commercial crops, the possibilities of importing food, etc. The outcomes will be even more unpredictable when the direct producers have no control over land use).

Nevertheless, the observed changes following a steady population growth can be usefully summarised in terms of: (a) migration, (b) changes in the productivity of land, (c) cropping intensity (the ratio of GCA to NSA, reflecting the use of land for raising more than one crop in a year), (d) cropping patterns (in particular the distribution of land between food and non-food crops) and (e) labour intensity (measured by the number of workers employed per acre of land).

Consider migration first. There is no evidence of large-scale migration of rural populations within India (during the colonial period) in search of land for cultivation, in response to population pressure or otherwise. Migration for recruitment to plantations, mines and industry has of course altered the economies of regions from which the recruits were drawn. But, by and large, migratory flows have not been significant enough to alter the regional variations in land scarcity, especially when the regions considered are large - such as districts. In any case, this study looks at land- person ratios: migratory flows, big or small, leave their imprint on these ratios through overall population change, including migration, over the long period.

Consider productivity growth next. It is not easy to compile the relevant data at the district level. Most of the debates about Blyn's analysis (Blyn, 1966) refer to the reliability of the productivity data. Estimates of productivities at the district level can be built up in the Blyn fashion, but their reliability will obviously be problematic.

This leaves us with cropping intensity (GCA/NSA), cropping patterns (measured unsatisfactorily by the area under food in the total, FA/GCA) and work intensification (measured by the number of male workers per acre: MW/NSA) as the only means of adjustment to population pressure that we can look at in this study. In other words we attempt to see to what extent the above three characteristics of agrarian change respond to declines in the LPR (measured in what follows by the net sown area per person, NSAP).

We begin the district level analysis with the observation that population growth by itself does not bring about 'pressure' if farming can be extended to hitherto uncultivated areas. It is only when such extension reaches the frontier that we can talk about population pressure on land. Likewise, a fall in net sown area per person (NSAP) need not necessarily be a consequence of population growth: even declines in populations may bring about more-than proportionate decreases in cropped areas (through, for example, a severe loss in the adult population). Accordingly, population pressure can be said to operate when areas per person fall sharply as population grows.

In Tables 2 and 3 we present a two-way classification of 91 districts of British India (for which all the relevant data are available) by the growth rates of population across the rows and the extent of decline in the land person ratio (measured by NSAP) along the columns. In both cases we have used the median values of the variables as the cut-off points for classification. We thus have in the top-left cell 35 districts that have experienced both low rates of population change (less than 10 percent in four decades) and low declines in the NSAP (less than 6 percent during 1891-1931). On average these districts in fact have registered a marginal fall in population levels and a slight increase in the NSAP; simultaneously, there have been no significant changes in the response variables, namely cropping intensity, areas under food in total and labour intensity (Table 3). These districts present an almost static picture of population and agrarian change. Consider now in contrast the 34 districts in the bottom-right cell, with high rates of growth and sharp declines in NSAP. On average, these districts have recorded a population increase of close to 24 percent, a marginal decline in the net sown areas, and hence a large decline in the areas per person of 22.5 percent. It is possible to see in these districts the operation of processes of adjustment to population pressure. Table 3 shows that in these districts the average cropping intensity has not changed much, while there has been a decline in the proportion of areas under food crops; but by far the most significant change is in the labour intensity. The number of male workers per acre has increased from 0.27 to 0.33 (by over 22 per cent).

The top-right cell refers to 12 districts that have experienced a fall in NSAP associated with low rates of population growth. Even here the most

prominent 'response' has been in terms of a significant increase in the labour intensity, In contrast, the bottom-left cell presents the interesting case of 10 districts that (on average) have recorded a slight increase in the NSAP, despite a high rate of population growth, thanks to expansion of net sown areas. This no doubt reflects the availability of land for extension in these regions; one can see that here the changes in the response variables have been minimal.

To see whether the relationships suggested by Tables 2 and 3 hold across all districts we carried out simple regressions of the changes in different response variables on the changes in land person ratios over the period 1891-1931. Table 4 shows that the most prominent adjustment to declining land person ratios is an upward one in labour intensity; with unit elasticity. (Since the regression variables are represented by percentage changes, the coefficients in Table 4 give us estimates of the corresponding elasticities.) Regressions estimated for each decade separately (not presented here) exhibit similar results, showing perhaps that a decade is long enough to produce the suggested upward adjustment in labour intensity. This is further confirmed by variations among districts classified into deciles by land-person ratios in 1891 shown in Table 5. Districts with low (high) land person ratios are characterised by high (low) labour intensities - obviously as a result of a continuous process in operation during a long period of insignificant technological change.

Table 2: Averages of Area and Population Variables in 1891 and 1931 among Districts Classified by Changes in Population and Net Sown Area per Person

% Population Growth	% Decline in NSAP					
	Below 6			6 and above		
	1891	1931	% Change	1891	1931	% Change
Below 10						
NSA ('000 acres)	797	819	2.76	1292	1204	-6.81
GCA ('000 acres)	925	957	3.46	1529	1508	-1.37
P ('000)	1095	1082	-1.29	1526	1623	6.36
FA ('000 acres)	807	832	3.10	1306	1295	-0.84
MW (000)	251	264	5.70	341	382	12.02
h (n)	35			12		
10 or Above						
NSA	1598	2029	27.01	1619	1599	-1.12
GCA	1731	2247	29.83	1835	1851	0.01
P	1376	1701	23.64	1517	1880	23.92
FA	1439	1694	17.71	1441	1381	-4.16
MWA	325	372	14.54	364	422	15.93
(n)		10			34	

Notes: NSA stands for net sown area, GCA for gross cropped area, P for population, FA for area under food crops, MW for male workers, and (n) for the number of districts in each cell.

Table 3: Weighted Averages of Different Ratios in 1891 and 1931 among Districts Classified by Changes in Population and Net Sown Area per Person

% Population Growth	% Decline in NSAP			
	Below 6		6 and above	
	1891	1931	1891	1931
Below 10				
NSAP	0.78	0.81	0.95	0.84
GCA/NSA	1.18	1.17	1.20	1.26
FA/GCA	0.8	0.86	0.86	0.85
MW/NSA	0.32	0.33	0.26	0.32
(n)	35		12	
10 and above				
NSAP	1.31	1.37	1.17	0.93
GCA/NSA	1.13	1.15	1.16	1.19
FA/GCA	0.84	0.78	0.79	0.76
MW/NSA	0.25	0.23	0.27	0.33
(n)	10		34	

Notes: See notes to Table 3. The weights used are the denominator values in each case.

Table 4: Linear Regressions of Response Variables to Changes in Net Sown Area per Person

Response Variable (% Changes in)	Coefficient	Standard Error	R square	N
Cropping Intensity (GCA/NSA)	-0.143*	0.045	0.1047	91
Food in Total Area (FA/GCA)	-0.007	0.059	0.0002	91
Labour Intensity (MWA/NSA)	-1.061*	0.117	0.4789	92

Note: Here the independent variable is % change in NSAP over 1891-1931 in the regressions of GCA/NSA and FA/GCA; in the case of labour intensity the % changes refer to 1901-31.

**Table 5: Variations among Districts Ranked by Net Sown
Area per Person in 1891**

Decile	NSAP		GCA/NSA		FA/GCA		MW/NSA	
	1891	1931	1891	1931	1891	1931	1901	1931
1	0.48	0.47	1.27	1.37	0.86	0.86	0.43	0.47
2	0.57	0.56	1.25	1.20	0.88	0.86	0.39	0.41
3	0.65	0.58	1.21	1.22	0.87	0.85	0.35	0.43
4	0.72	0.67	1.16	1.15	0.86	0.82	0.34	0.33
5	0.79	0.68	1.23	1.28	0.83	0.85	0.30	0.34
6	0.83	0.73	1.12	1.16	0.86	0.83	0.28	0.30
7	0.90	0.74	1.17	1.24	0.84	0.83	0.28	0.33
8	1.08	0.86	1.14	1.16	0.84	0.83	0.22	0.27
9	1.65	1.63	1.10	1.13	0.79	0.74	0.14	0.14
10	2.24	1.89	1.02	1.03	0.73	0.67	0.11	0.12

Note: The table refers to 91 districts ranked by levels of net sown area per person in 1891. Each decile group has 9 districts, except the last one that has 10 districts. For definitions of variables see notes to Table 2.

4. Concluding Remarks

The experience of the post-independence period stands in marked contrast to that of late colonial India. After independence, the State played a decisive role in agricultural development through the expansion of irrigation, the introduction of new technologies, and so on. Several related policy measures including, notably, intervention in markets for the provision of various kinds of subsidies promoted a rapid capitalist transformation that nevertheless did not lead to a progressive dissolution of the small peasant economy; instead, they led to ever-increasing numbers of wage-dependent semi-proletarians getting integrated into commerce. These changes however were region-specific unlike population growth, which was fairly uniform. So, the persistent labour intensification must be interpreted as a means of survival for peasants everywhere under conditions of land scarcity.

The late colonial period, on the other hand, was one of agrarian stagnation and decline. Despite the low rates of population growth during this period, some regions have experienced pressure on land with substantial declines in land-person ratios. Our limited analysis shows that the 'adjustment' to

such pressure has taken place largely through labour intensification, so prominently that over the long period regions with low land-person ratios continued to have high labour intensities as a characteristic. The analysis, does not, however, cover how the colonial and feudal interests have influenced this course through their hold on the peasantry.

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