POPULATION
Chapter XVI

POPULATION

I

In spite of the variety of statistical information in the अिन-ि अकबरी, it offers no account or estimate of the number of people for the whole of Akbar's Empire or any portion of it. Abūl Fażl himself tells us that in the 25th regnal year, the जेगिरदारा, शिज्जारा and the दरोगाह were ordered to write the names and occupations of all inhabitants, village by village. But the results of this census are not recorded; it may be presumed that either the order was not carried out or the data were incomplete; or, again, Abūl Fażl omitted to give us the results through oversight. As matters stand, the surviving records of the Mughal Empire, during its entire period, fail to offer us any large-scale census for any region; only returns of inhabitants (enumerated by caste) or of houses, for some towns, have survived. These are supple-


2. For example those found in Nainsi, Marwar re Pargana ri Vigat, ed. by Narain Singh Bhati, Jodhpur, 1958; also his Khvat. The evidence is studied by B.L. Bhadani in IESHR, Vol. XVI, No.IV, 1979, pp.415-27.
mented by a few estimates by European travellers for some
cities or general remarks made by contemporaries about the
density of population in some regions.

In the absence of any enumerations, one can only
resort to use of indirect information for forming an estimate
of the country's population in or about 1600. Moreland was
the pioneer in this field. He tried to estimate the popula-
tion of Northern India on the basis of the arāzī (measured
area) figures in the Ṭūbrī Akbarī, which he takes to represent
the entire gross cropped area. Comparing the arāzī with the
gross-cultivation at the beginning of this century and assuming
a constant correspondence between the extent of cultivation
and size of population, he concluded that from 'Multan to
Khargpur' there were 30 to 40 million people at the end of the
16th century.

For Deccan and Southern India, Moreland took as the
basis of his calculation the military strength of the Vijay-
agara Empire. Assuming a rather arbitrary ratio of 1:30
between the soldiers and the civilian population, he estimated
the population of the region at 30 millions. Allowing for

1. W.H. Moreland, India at the Death of Akbar, pp.16-22.
the territory lying within the pre-1947 limits of India but not covered by his two basic assumptions, he put the population of Akbar’s Empire at 60 millions, and that of India at 100 millions.

These estimates received wide acceptance. Nevertheless Moreland’s basic assumptions (and therefore his figures) seem quite vulnerable. For estimating the population of Northern India he follows two premises. He believes, first, that the ārāzi represents the entire gross-cropped area of that time, which leads to two further assumptions, viz., (a) that measurement was made out of the cultivated land only; and (b) that it had been carried to completion everywhere. His second major premise is that the extent of cultivation per capita remained the same in 1600 and c.1900.

These various assumptions, are open to serious objections. The ārāzi of the Āin did not in fact represent the gross-cropped area, but was the area measured for revenue purposes, which included uncultivable waste in varying proportions. Moreover, measurement had by no means been completed everywhere.¹ The ārāzi figures, therefore, were not even an index of the extent of cultivation but give simply the extent of area under measurement.

¹. See Chapter II of this thesis.
In deducing the size of population from the extent of cultivation, Moreland implicitly ignores the size of the urban population. But even taking up his own simple assumptions, one would hesitate to agree with his view that the average size of the operational land holding did not vary over the period 1600 and 1900. Since a comparatively smaller area was under the plough in 1600, the cultivable waste must have been much larger. Therefore, the average holding should tend to have been of the optimum size (assuming that agricultural technology remained the same, and the peasants had about the same resources per head in terms of cattle, ploughs, etc. as in 1900). At the beginning of the 20th century due to the growth of the population, the pressure upon land was much greater; and the availability of virgin land much smaller. The average holding about 1900 should therefore have been distinctly smaller than in 1600.

With these weaknesses in his basic assumptions, Moreland's estimate of the population of Northern India loses much of its credibility. It is weaker still for the Deccan and Southern India. The army:civilian ratio is not only arbitrary but undependable; the comparison with the France pre- and Germany of World War I, seems, in particular, to be quite large-scale inept. These countries had organised total mobilisation of
their resources; and this would surely have tended to lower the army:civilian ratio. On the other hand, the infantry of Vijayanagara, living on subsistence wage (unlike the modern army) might have needed only a small fraction of the labour of the total civilian population to supply its needs and weapons, and so a higher military:civilian ratio than in modern times was also possible.

It is curious too that Moreland has not adopted the same method of counting troops, to make an estimate of the population of Akbar's Empire. The Ḍīn-i Akbarī provides detailed figures for the number of zamindārs' armed retainers, horse as well as foot. These total 4.66 millions.¹ For the year 1646-7, during Shahjahan's reign, we have Lahori's official estimate of the Imperial cavalry (1,85,000 cavalry, 8,000 mansabdārs; 7000 ahadīs; total 200,000) and infantry (30,000).² If one were to apply the ratio of 1:30 to these figures, one would get 146 millions (not 60 millions) for the population of Akbar's Empire. The ratio of 1:30 that Moreland had assumed for South India thus negatives completely his estimate for Northern India.

¹. Ḍīn, II, p.386.
². Lahorī, II, p.715.
Furthermore, Moreland seems to have given an inadequate weightage to the areas outside the two regions whose population he has estimated. To make an appropriate allowance for these regions, Kingsley Davis raised Moreland's figure for the whole of India to 125 millions.¹ This modification does not still, of course, remove the more substantial objections to Moreland's method, which we have raised above.

Another significant attempt, by using different kinds of data, has been made by Ashok V. Desai.² This has required rather complex assumptions. Desai compares the purchasing power of the lowest urban wages, on the basis, first, of prices and wages given in the Āin and then, of the all-India average prices and wages of the early 1960's. Shorsbhāh's rai provides him with a means of measuring the change in agricultural productivity. Assuming that the total food consumption in Akbar's time was 1/5th of that of 1960's and that cultivation was then concentrated in the areas with highest yields, he finds that the productivity per unit of area was 25 to 30 per cent higher in 1595 than in 1961. This in turn enables

him to estimate the productivity per worker in agriculture at twice as high in 1595 as in 1961.

Basing himself on the statistics of consumption in 1960s he attempts to extrapolate the level of consumption in 1595 and finds that the consumption level was somewhere between 1.4 and 1.6 times the modern level. He then/constructs the pattern of consumption in the 16th century.

With these figures at hand and taking into account other relevant modern data, Desai works out the area under the various crops, per capita. Multiplying these with revenue rates (averages of rates of the last four years from the 'Āin of 19 years', for Delhi, Agra, Allahabad and Awadh), he computes the per capita land-revenue, at between 58.47 and 79.56 dāms. Dividing the total jama of the Empire, given in the 'Āin by the upper and lower limits, he gets the two limits for the population of the Empire, at 64.9 and 83.3 millions. Desai himself prefers the lower figure of 64.9 millions, confirming thereby Moreland's estimate of 60 millions for Akbar's Empire.

Some objections have been raised/against Desai's method, as well as against some detailed assumptions involved

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in his application of it. ¹ Heston's main objection is that the modern Indian Yields (based on the crop-cutting method) cannot be compared with the 16th century estimates of yields which were arrived at by inspection and were influenced by a desire to raise land-revenue. But such peremptory dismissal of comparisons of yields seems unjustified, since the estimates of yields down to 1893 were in any case arrived at by the same method of general estimation and for the same purpose as in Mughal times. Heston's objection cannot thus apply to yield estimates made in the 19th century and yet these do not diverge substantially from later estimates based on crop-cutting.² Heston's other objection is not to Desai's method; but to an error (Desai's as well as mine) in converting units of weight, which resulted in highly inflating the purchasing power of urban wages in Akbar's time.

There are also some other modifications in Desai's method which seem called for. Desai used modern all-India statistics, to compare with 16th century data. Since the

¹. Shireen Moosvi, 'Production, Consumption & Population in Akbar's Time', IESR, Vol. X, No.2, 1973. In this paper I myself made some other assumptions which I should now like to withdraw, and some slips which need correction.

². See Chapter III.
prices and wages in the Ain are those of the Imperial Camp and therefore, apply to Agra (and possibly to Lahore), it is inappropriate to compare these with modern All-India averages. In the same way, the Ain's standard crop-rates (raja) applied either to the immediate vicinity of Sher Shah's capital, Delhi, or at the most to the region where the dastur-ul'amals were in force, i.e. mainly Uttar Pradesh, Haryana and the Panjab. These are thus not comparable with average all-India yields. Moreover, Desai divided the total jamā' of the Empire by the hypothetical land-tax per-capita, without making any distinction between the zabtī provinces and other regions, where the tax incidence might have been much lower. Another assumption of his which requires correction is that the jamā' was equal to total land-revenue, whereas it really was an estimate of the net income from tax-realization of the jagirdars and the khālisā.

1. See Chapter XIV.
2. See Chapter IV.
In spite of the legitimate objections to the estimates of Moreland and Desai, the statistics of area, yields, revenue rates and jāra in the Ain-i Akbari still furnish us with a means of estimating the population in the 16th century. The methods suggested by Moreland and Desai too remain, in essence, valid, though they can be followed only with certain qualifications and refinements and with a revised set of assumptions based on the conclusions reached in our previous chapters (especially Chapters II, III, V, and XIV).

As suggested by Moreland the relative extent of cultivation worked out from the Ain can serve as the basis for working out the population of the time. To translate the extent of cultivation into population, data on two other aspects are, however, essential: (a) The ratio of rural population to urban population in 1601, and (b) the change in land under cultivation per head of agricultural population between 1601 and 1901.

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1. Since modern censuses in India are undertaken in the initial years of each decade (1901, 1911, 1921, and so on), it has been thought convenient to assign the estimate of population based on the Ain's information to the year 1601, rather than 1595 (the year in which the Ain was closed). When one is making a comparison across centuries, the shift of six years is hardly of any significance.
As for (a), we have already argued for a ratio of 15:85 as that of the urban to the rural population.

The operational holding in 1601, owing to the lower pressure on land and greater availability of virgin lands should have tended to be of the optimum size, though given the poverty and limited resources of the 17th century peasant, the 'optimum' must have had certain limits. As a rather arbitrary (but, perhaps, not unreasonable) inference, I could suggest that the average operational holding in India, c.1601, was about 10% higher than 1901. Since the yields as well as the over-all agricultural productivity in general remained unaltered, the larger area of cultivated land per head of agricultural population should have implied a higher consumption level. The real wages worked out from the Ain do appear to reflect such a higher consumption level: To judge from the Ain's data, the urban real wages in 1601 should have been about 35% higher than what they were in the 19th century. But the general consumption might not have been higher by this percentage. For one thing, the rural real wages in 1601 might even have been especially depressed, since the rural economy suffered from a tremendous drain in the form of extraction of land-revenue flowing away to the towns. If we then assume that (a) urban consumption per capita in 1601 was 35% higher than in 1901, but that (b) rural consumption per capita

1. See Chapter III.
2. See Chapter XIV.
was of the same size in 1601 as in 1901, and given (c) the urban population at 15% of total, we get a lower limit of 5% for the margin by which general consumption was higher in 1601 over that in 1901. Translated into cultivated land per head of the agricultural population in 1601 we would get 106% as the lower limit. On the other hand, the higher limit would be 140%, if we assume that the ratio of urban to rural consumption has remained unaltered down the centuries. But since there is strong reason to believe that the relative urban level of consumption was much higher than the rural in Mughal India (compared to the ratio in 1901), the actual margin by which general consumption was higher in 1601 than in 1901 should have been much nearer to 5% than 35%. This supports our inference that the average operational holding was 10% larger in 1595, since this would imply (with urban population at 15% of the total), a general consumption level equal to 108.5% of that of 1901.

With these inferences at hand one can estimate the population if one can establish the relative extent of cultivation in the closing years of the 16th century. Our own analysis and calculations in Chapter II suggest that the total cultivation in the area covered by U.P., Panjab, Haryana, Multan and Gujarat was between 50 and 55% of what it was in the
opening decade of the present century. It would be reasonable
to assume that the extent of cultivation in the three regions
was broadly representative of the extent of cultivation in the
whole of India. It is helpful to remember in this context
that the regions comprised areas of full as well as backward
cultivation: Hardly any extension in cultivation has taken
place in the Doab during the intervening period, since it was
already almost fully cultivated, while in Multan due to the
introduction of canal irrigation cultivated area has gone up
by about three times during the intervening centuries.1

The population for 1601 may now, therefore, be worked
out on the basis of the relative extent of cultivation. For
the sake of convenience the main assumptions are restated
below:

(i) The total cultivation in 1601 was 50 to 55 per cent of
what it was during the first decade of the present century.

(ii) The ratio of urban population to rural was 15:85 in 1601.

(iii) The average agricultural holdings in 1601 were 10% 
larger than in 1901.

1. See Chapter II.
The following symbols are to be used:

\[ A = \text{Area under cultivation} \]
\[ P = \text{population} \]
\[ a = \text{cultivated area per head of agricultural population} \]

Subscript 0 refers to 1601 and 1 to 1901. Superscript \( r \) stands for rural, and \( u \) for urban.

Now

If \( A_1 \propto P_1 \)

and \( a_0 = 1.1 a_1 \)

Therefore

\[ A_0 \propto 0.11 P_0^r \]
\[ 0.5 A_1 \leq A_0 \leq 0.55 A_1 \quad \text{(assumption I)} \]

or
\[ 0.5 P_1^r \leq 0.11 P_0^r \leq 0.55 P_1 \quad (1) \]

\[ P_1 = 28,39,70,000 \]
\[ P_1^u = 0.102 P_1 \quad \text{(K. Davis, p.24)} \]

or
\[ P_1^r = 0.8989 P_1 \]
\[ = 25,49,15,260 \]

Substituting \( P_1^r \) in equation (1)
\[ 12,74,54,750 \leq 0.11 P_0^r \leq 14,02,03,393 \]

or
\[ 11,58,70,520 \leq P_0^r \leq 12,74,54,750 \]
But \( P_0^* = 0.85 P_0 \)  

(assumption II)

Therefore,

\[ 13,63,18,310 \leq P_0 \leq 14,99,50,153 \]

The population of India in 1601, should accordingly have been between 136 and 149.9 millions.

One can also make another estimate by following Desai's method, though in a modified form. We can, that is to say, proceed from gross land-revenue. For this, we must work out the incidence of land-revenue per capita at that time. To do so, we should continue with some of the assumptions already adopted, and use a few of the conclusions reached in our previous chapters. The basic relevant assumptions are as follows:

(i) The yields remained the same between 1601 and 1892  
   (Chapter III)

(ii) The per-capita land under different crops was 8.5% higher in 1601 than in 1892, since the operational holding per head of agricultural population was 10% larger while the ratio of the urban population to the rural was 15:85.
(iii) The pattern of consumption of food and so the relative distribution of land among major food crops has remained largely the same. The increase in cloth consumption between 1601 and 1892 being met almost entirely by imported English textiles and yarn, the proportion of the total cultivated area under cotton per head in 1601 and 1892 was also the same.

With these assumptions (some quite different from those of Desai), Desai's method for obtaining an estimate of per capita land revenue can be greatly simplified. The per-capita area under different crops in 1601 can now be calculated by simply drawing upon figures of the area of each crop per head in 1892. Assuming that the results obtained for certain districts of U.P. can be applied to the whole of Northern India, the area of each crop per head of population in 1892 can be worked out by dividing the area under different crops in these districts by their total population as counted at the 1891 Census.¹ Raising it by 3.5% we get the area per head of population under these crops in 1601.

Multiplying the per head area under different crops with the *dasture* (cash-rates per bigha) and adding them all we

get the total per capita land-revenue in 1601. The rates here are the averages of rates for all circles in Agra, Delhi, Allahabad, Awadh and Lahore, given in the Āīn-i dehsāla. It is these (and not any of the 19-year rates used by Desai) that were in force at the time to which the Āīn-i Akbarī's jama' figures relate. ¹

Table I

<table>
<thead>
<tr>
<th>Crops</th>
<th>Area/capita</th>
<th>Dastūr</th>
<th>Land-revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>C</td>
<td>D = BxC</td>
</tr>
<tr>
<td>wheat</td>
<td>0.413</td>
<td>62.7 dāms</td>
<td>25,895 dāms</td>
</tr>
<tr>
<td>barley</td>
<td>0.196</td>
<td>41.1 dāms</td>
<td>8,056 dāms</td>
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<tr>
<td>juar</td>
<td>0.202</td>
<td>36.6 dāms</td>
<td>7,393 dāms</td>
</tr>
<tr>
<td>bajra</td>
<td>0.145</td>
<td>27.9 dāms</td>
<td>4,046 dāms</td>
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<tr>
<td>gram</td>
<td>0.197</td>
<td>38.0 dāms</td>
<td>7,486 dāms</td>
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<tr>
<td>rice</td>
<td>0.099</td>
<td>49.9 dāms</td>
<td>4,940 dāms</td>
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<tr>
<td>other foodgrains &amp; pulses</td>
<td>0.250</td>
<td>36.0 dāms</td>
<td>9,000 dāms</td>
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<td>oil seeds</td>
<td>0.012</td>
<td>36.3 dāms</td>
<td>0,436 dāms</td>
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<tr>
<td>spices</td>
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<td>63.5 dāms</td>
<td>0,572 dāms</td>
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<td>sugarcane</td>
<td>0.107</td>
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<td>cotton</td>
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<td>89.7 dāms</td>
<td>14,442 dāms</td>
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<tr>
<td>other crops</td>
<td>0.002</td>
<td>100.00 dāms</td>
<td>0.200 dāms</td>
</tr>
</tbody>
</table>

97,487

¹ Chapter I.
The per-capita land revenue therefore comes to 97.487 dams. On dividing the gross land-revenue by this figure we should get the population in 1601. The total land-revenue is, however, not to be taken as identical with the nāqqi or jama' figures of the Āin. The jama' recorded in the Āin's 'Account of the 12 subas' is not the total land-revenue assessed on the basis of dastūr-rates, but the expected net income of the jagirdar. Making allowances for all expenses of collection (20%%) and the share of other claimants (20%% for zanjīndārañ and 7%% for local potentates), and assuming further that 10%% of the jama' came from taxes other than land-revenue, the jama' given in the Āin should be increased by 69.81% to get the gross land-revenue based on the dastūr (see Chapter V).

As we have already marked in passing the per capita land-revenue in regions where the zābt system (with its dastūr) did not prevail might not have been the same as in the zābt provinces. It will, therefore, not be proper to divide

1. See Chapter VII.
2. See Chapter IV.
3. Were we to assume that the per capita revenue rates were the same in both the parts of the Empire, the ratio of jama' should approximately be the same as the ratio of population of these provinces to the total population of the Empire. The total jama' of these provinces was 212 crore dams and the total jama' of the Empire subtracting half of Kabul (for area beyond the Durand Line) was 512 crores. This gives a ratio of 100:41.406. The ratio of population of the total contd....
the entire gross land-revenue of the Empire by the per capita land-revenue obtained for the zabt provinces. Nevertheless, we can estimate the population for the five provinces, (viz., Agra, Delhi, Lahore, Allahabad and Awadh). The total jamā' of these provinces was 212 crores.¹ Increasing it by 69.81% we get the gross land-revenue: 359,997 crore damā. On dividing this figure by the per capita land-revenue (97.487 damā) the population of these provinces comes to 3.693 crores.

Now, supposing that the ratio of population of these provinces to that of the Empire and the whole of India has remained constant since 1601, and taking the ratios worked out from the 1891 census,² we get the figure of 9.89 crores for the Empire and 14.55 crores for whole of India.

Thus from two different methods we obtain two sets of estimates of the population in 1601:

(continued from previous page)

¹ to that of the zabt provinces in 1891 was 100:36.23. Such a difference in the two ratios can be either because the per capita revenue rates were different, or because of shifts in population. Since a movement of population on this scale since Akbar's time cannot lightly be assumed, we are left only with the former alternative.

2. The figure is based on the pargana totals.
2. Imperial Gazetteer, Vol. I, p. 491, Table III.
(a) Based on cultivated area: 13.63 crores to 14.99 crores
(b) Based on Land-Revenue: 14.55 crores.

The second estimate falls within the range set by the first. One should therefore not be far wrong in assigning a population of about 14.5 crores in 1601 to the territories of Pre-Partition India.

Taking the population of India to be around 145 millions in 1601, and 255 millions in 1871 - this being the total counted by the first Census of 1872 (as modified by Kingsley Davis to allow for fuller territorial coverage), the compound annual rate of growth of the country's population for the period 1601 to 1871 works out at 0.21% per annum. Adopting this rate and given the two population-figures for 1601 and 1871, one gets for 1801 a population of some 210 millions. This offers a welcome corroboration of our estimates, since the recent estimates for 1801 based on different arguments and calculations range from 198 millions to 210 millions.¹

The rate of growth during the last three decades of the 19th century (1871-1901) was 0.37% per annum — a rate higher, but not substantially higher, than the one deduced for the long period of 1601-1871.

An annual rate of growth of 0.21% suggests some interesting inferences about Mughal Indian economy. Population growth has been usually regarded as an index of efficiency of pre-capitalist economies. Upon this test, the Mughal economy could not be deemed absolutely static or stagnant if the population tended to grow by nearly a half in two hundred years. Davis, on the basis of arguments that have now been heavily criticised, believed in a stable population of 125 millions continuing for practically the two hundred years from 1601 to 1801, thus yielding a zero rate of growth. The rate of 0.21%, on the contrary, suggests an economy in which there was some room for 'national saving' and net increase in food production, although the growth on the balance, was slow. The slowness must have come from natural calamities like famines, as well as man-made factors (of which the heavy revenue demand could not but have been one). If one had data for estimating

populations for some intermediate points, such as for the years 1650 and 1700, one could perhaps have worked out rates of population growth for shorter periods, and obtain a closer view of the efficiency of Mughal economy within those periods. But, unluckily, at the moment the data on which such estimates for the whole country could be based lie undiscovered — if, indeed, they exist at all.