

Did India Experience Rapid Population Growth in the Pre-Census Period? A Village-level Study from South India

TSUKASA MIZUSHIMA

INTRODUCTION: PRE-CENSUS PERIOD IN A BLACK BOX

Due to lack of information, the population movement of India in the pre-Census period or the period prior to the first Census of 1871¹ has been kept in a black box, despite its critical importance in understanding the nature of economic development during the colonial period. The higher population growth rate starting from the 1920s than the previous decades from the 1871 Census onwards was, for instance, generally understood to be facilitated by a gap between lowering fertility rate and even lowering mortality rate. Questions arising from here are, first, whether the slower population growth rate observed in the period between 1871 and 1921 was truly the continuation of the pre-1871 trend or not, second, whether the first half of the colonial period starting from around the beginning of the nineteenth century really experienced very low level of economic development, and last, what actually happened in Indian economy in the first half of the colonial period. This paper attempts to investigate these questions.

Both demographers and historians working on the pre-Census period have attempted to make estimates of population movement in various ways and concluded differently, though often without substantial evidences on the early nineteenth century. Visaria and Visaria, who summarized previous population studies as shown in Table 1, argued that the population around mid-eighteenth century had already become as high as 200 million, then stagnated till the end of that century, slightly increased by the mid-nineteenth century, and reached the first Census year level (around 250 million) in 1871 (Visaria and Visaria 1982: 465-6).² Kingsley Davis, on the other hand, proposed that the population around 1600 was 125 million, stagnated in the same level till mid-nineteenth century, then made a steep increase to the level of 255 million by 1871 (Davis 1951: 24-7). Angus Maddison estimated that the level of population was 125 million around 1600 and came to 227 million in 1856. By allocating the growth rate of

TABLE 1. POPULATION ESTIMATES AND GROWTH RATES, 1600-1901

Author	Year of Publication	1600	1650	1750	1800	1850	1871	1901	1800 (Base Year)	1850	1871	1901	1850 (Base Year)	1871	1901
Moreland	1920	100													
Willcox:															
1st series	1929	100	100	144		205	233						100%	114%	
2nd series	1940		80	130	157	190	233		100%	121%	148%		100%	123%	
Shirras	1933		80	130		190							100%		
Carr-Saunders	1936		100			205	251						100%	122%	
Swaroop and Lal	1938			102	139	183	206	232	100%	132%	148%	167%	100%	113%	127%
Davis	1951	125		125			255	285							
Datta	1960														
Low		101		133	162		248		100%		153%				
Mean		106		142	169		248		100%		147%				
High		109		152	176		248		100%		141%				
Durand:	1967														
Low				160	160	215	255	285	100%	134%	159%	178%	100%	119%	133%
Medium				190	195	233	255	285	100%	119%	131%	146%	100%	109%	122%
High				214	214	242	255	285	100%	113%	119%	133%	100%	105%	118%
Bhattacharya	1967			190	207	247	255	285	100%	119%	123%	138%	100%	103%	115%
Sen Gupta	1969-1970				179	223	244	286	100%	125%	136%	160%	100%	109%	128%
Gujral	1973					224	255	285					100%	114%	127%
(population in millions)								(growth rate in percentage)				(growth rate in percentage)			

Source: Compiled from Visaria and Visaria 1982: 466.

0.2 per cent in the pre-1800 period and 0.4 per cent after that, Maddison gives a figure of 186 million for the population in 1800 (Maddison 1971: 164). Sumit Guha states that the population in 1800 was 160 million and the population growth accelerated after 1800 to reach 255 million by 1881 (Guha 2001: 58-9).³

Annual growth rates from the beginning of the nineteenth century allocated in these studies were 0.18 per cent by Visaria and Visaria, 0.26 per cent by K. Davis, 0.4 per cent by A. Maddison, and 0.58 per cent by S. Guha respectively.

The difference of these estimates arises from the lack of information on population in the pre-Census period. Most population studies on pre-Census period have been more or less based upon information of a few centuries before or that in *Ain-i-Akbari* compiled by Abul Fazl at the end of the sixteenth century. Statistical information recorded in it includes land use, crops, production, revenue, army, etc., but without any on population. Starting from W.H. Moreland in the 1920s, demographers and historians have variously attempted to make estimates by processing information contained in it.⁴ No concrete evidence on population has been found in sources other than *Ain-i-Akbari*, either. So it is yet to reach an agreeable conclusion. To say at most, the colour of the box has changed from black to grey after various attempts.

The same holds true for the period from the eighteenth century till the first Census of 1871. Guha describes the even gloomier image of the situation of the period by saying that 'unsatisfactory though these estimates for the seventeenth century undoubtedly are, they are far superior to those for the eighteenth century, in that the latter do not exist' (Guha 2001: 34). Actually only small studies have been attempted on the topic of population during the eighteenth century, mainly due to the lack of information. An important study is that of Guha, which I will take up later.

SOME FEATURES OF POPULATION MOVEMENT DURING THE CENSUS PERIOD

TWO DEMOGRAPHIC REGIMES

Population studies during the Census period or after 1871, on the other hand, have clarified important features of demographic movement in India. One among them is the regional variance within the subcontinent, in which South India presents a unique trend not found in any other regions. Summarizing demographic studies in India, Osamu Saito argues that two types of demographic regime could be observed between North and South India during the Census period (Saito 2002: 172-3). Mortality rate, especially infant mortality rate, of North India is much higher than South, as typically represented by Punjab. Average life expectancy, especially

the one at birth, is higher in South India than North. Preference of son to daughter is notable in North India, represented by its higher infant mortality rate of daughters than South. As a result of these two regimes South India succeeds in reducing fertility rate which North India cannot attain yet. Saito explores further into the past and states that the mortality rate was higher in North and Central India than South, the impacts by epidemics were severer in North India than in South, and the infant mortality rate was lower in South India compared with other regions (Saito: 173). In addition, by using vital registration records of several districts from both north and south Saito investigates into temporal trends and clarifies that life expectancy was lowered and infant mortality was increased between 1891 and 1920 in all the studied areas (Punjab, Berar, Madras), but that the amplitude of life expectancy and infant mortality was much lower in Madras than others. The gender difference was also conspicuous between South and North India. Infant mortality, female infant mortality, and the mortality after one-year old were clearly higher in Punjab than Madras. From these evidences Saito indicates that there existed some structural difference in population movement between north and south in the past, and that even though we can observe reversal trend from 1920 onwards when life expectancy started increasing, infant mortality decreasing, and the gap between two sexes reducing in general, the two types of demographic regimes continues till today (Saito: 181-2).

HIGHER GROWTH RATE IN THE SOUTH IN THE PRE-CENSUS PERIOD?

The regional difference between north and south referred to by Saito during the Census period may be applicable to the pre-Census period, too. Among historians who dealt with pre-Census period it was Sumit Guha who analyzed the population movement of the pre-Census period of nineteenth century in several regions in India (Guha 2001). As his work is important in reinterpreting the foregoing population studies, we will follow his argument after the eighteenth century in more detail next.

According to Guha the last quarter of the eighteenth century was marked by major demographic calamities. Monsoon failures, famines, military operations, and rapacity of administration all led to devastations and contributed to a decline of population. Starting from this view, Guha moves to regional analysis and then attempts to construct aggregated movement of the subcontinent from the beginning of the nineteenth century. Table 2 is prepared from his summary of investigation, which was adjusted to the regional category adopted by the Visarias' work (Guha 2001: 34-60). Table 2 clearly indicates, if we can accept Guha's figures, that South India, together with East India, experienced much higher increase (more

than four times compared with North India!) than the rest of India. What is to be noted is that such wide regional variance was contained in the overall population growth rate of only 60 per cent between 1800 and 1881 for all of India.

TABLE 2. REGIONAL VARIANCE OF POPULATION INCREASE, 1800-81

	1800	1881	Increase (million)
East	39.00	76.42	96%
West	16.43	25.96	58%
Central	21.70	32.87	51%
North	63.45	80.20	26%
South	18.34	39.06	113%
Total	158.92	254.51	60%

Source: Compiled from Guha 2001: 58 (Table 1.4).

Prior to Guha, it was Dharma Kumar who referred implicitly to the higher population increase of South India (Kumar 1965: 120-1). Though South India seems to have better information compared with other regions, the situation is far from complete. Table 3 indicates the district-wise population in South India between 1800 and 1881 which is constructed from the best possible information available. Some of the problems related to the figures in the Table are as follows. The population figures for the years 1800-2 are available only for eight districts but the total of 9.57 million is given in some source (Kumar 1965: 101, 120), the figures of the areas placed under the zamindari system tended to become under-estimates due to the unstable political condition in the early nineteenth-century, and the enumeration of urban population was hard to launch and remained as a guess for a long period.⁵ Though there are more problems than these as we will examine below, what we should do is to select better information instead of shutting all such information away from our investigation. We will next examine the reliability of the figures of different years in the Table in order to arrive at some reasonable figures.

Some of the district figures of 1823 seem to be under-estimates due to the inadequate system for demographic enumeration in addition to the prevalence of zamindari areas. Those of 1827 and 1830-1, on the other hand, seem to be somewhat reliable because of the following reason. After comparing the population figures of Fusly 1240 (1830-1) with those of 1827, the Acting Secretary, R.A. Banerman, tried to explain the reason of the population decrease observed only in Ganjam and Salem districts. According to him, the reason for the decrease in Ganjam was due to the 'unwillingness of the zemindars to afford any sort of information to Government regarding their zemindaries', and the reason for Salem was 'entirely to the incorrectness of the returns upon which the census of 1827

TABLE 3. DISTRICT-WISE POPULATION IN SOUTH INDIA, 1800-81

	1800-2	1823	1827	1830	1851-2	1856-7	1861-2	1866-7	1871	1881
Ganjam		332,015	468,047	438,174	926,930	949,737	1,136,926	1,235,790	1,520,088	1,749,604
Visakhapatnam		772,570	1,008,544	1,047,414	1,254,272	1,284,243	1,715,652	1,934,558	2,159,199	2,485,141
Godavari/Rajahmundry		738,308	660,906	695,016	1,012,036	1,081,703	1,366,831	1,427,472	1,592,939	1,791,512
Masulipatnam Kistna		529,849	519,125	544,672	520,866	623,808				
Guntur Kistna	135,877	454,754	476,787	518,318	570,083	593,213				
Kistna							1,194,421	1,296,652	1,452,374	1,548,480
Nellore		439,467	730,608	846,572	935,690	952,032	999,254	1,168,664	1,376,811	1,220,236
Kurnool					273,190	287,726	725,768	770,857	959,640	709,305
Bellary		927,857	941,612	1,128,839	1,229,599	1,181,087	1,234,674	1,304,998	1,668,006	1,336,696
Cuddapah		1,094,460	1,000,957	1,063,164	1,451,921	1,351,151	1,050,104	1,144,759	1,351,194	1,121,038
Chinglepet	271,372	363,129	289,828	331,821	583,462	605,221	675,390	804,283	938,184	981,381
N. Arcot		892,292	730,410	772,968	1,485,873	1,588,104	1,654,557	1,787,134	2,015,278	1,817,814
S. Arcot		455,020	549,795	553,388	1,006,005	1,135,961	1,128,430	1,261,846	1,755,817	1,814,738
Salem	612,871	1,075,905	955,480	822,107	1,195,377	1,268,200	1,493,221	1,619,233	1,966,995	1,599,595
Trichinopoly	459,055	481,292	476,720	536,697	709,196	809,580	939,400	1,006,826	1,200,408	1,215,033
Tanjore		901,353	1,065,560	1,128,730	1,676,086	1,657,285	1,652,170	1,731,619	1,973,731	2,130,383
Madura		564,957	1,122,979	1,135,411	1,756,791	1,792,737	1,856,406	1,946,389	2,266,615	2,168,680
Tinnevely	571,000	788,196	766,746	850,891	1,269,216	1,339,384	1,670,262	1,521,168	1,693,959	1,699,747
Coimbatore		638,199	854,050	854,834	1,153,862	1,176,831	1,215,920	1,430,738	1,763,274	1,657,690
Malabar	465,594	907,575	1,003,466	1,113,497	1,514,909	1,602,914	1,709,081	1,856,378	2,261,250	2,365,035
Canara	396,672	657,594	665,652	707,571	1,056,333	1,126,938	788,042	839,688	918,362	959,514

Nilgiris									49,501	91,034
Pudukottai									316,695	302,127
Chennai City	600,000	462,051	462,051	462,051	450,000	450,000	450,000	450,000	397,552	405,848
Total	9,574,458	13,476,843	14,749,323	15,552,135	22,031,697	22,857,855	24,656,509	26,539,052	31,597,872	31,170,631

Sources:

- 1800-2, 1823 Kumar 1965: 120-3.
- 1827 *Proceedings of the Board of Revenue*, Fort St. George, 11 May 1829, pp. 4,506-7.
- 1830 *Proceedings of the Board of Revenue*, Fort St. George, 4 March 1833, pp. 2,301-5.
- 1839 *Proceedings of the Board of Revenue*, Fort St. George, 28 January 1839, p.1,483.
- 1851-67 *Proceedings of the Board of Revenue*, Fort St. George, 19 July 1852, pp. 8,167-9 and *Imperial Census of 1881*, Operations and Results in the Presidency of Madras (By Lewis McIver), vol. III. Appendix A. Madras, 1883, p. 1.
- 1871 *Census of the Madras Presidency, 1871*, Supplementary Tables of the Census Results of the Madras Presidency for 1871, by W. R. Cornish, F.R.C.S., Surgeon-Major, vol. II, Madras, 1874, p. 36.
- 1881 *Imperial Census of 1881*, Operations and Results in the Presidency of Madras, Madras, 1883, vol. II, p. 10.

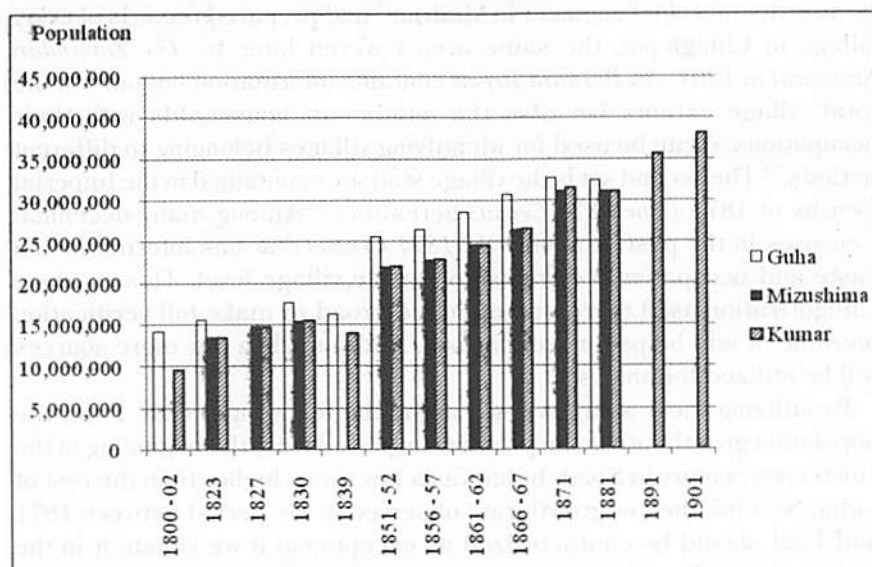
was formed'. The cause was also adduced by the Collectors of Vizagapatam, Bellary and Malabar in their explanation of the increase.⁶ It is, however, interesting to read his succeeding comment that 'the increase which appears in the population of the other districts does not seem to call for any particular observation'. Though it is not known to what extent we can rely on the population figures of 1827 and 1830-1, we can at least assume that the Government was conscious of presenting accurate information. On the other hand the figures in the revenue record of 1839⁷ seem incomplete or are just copies of previous Census. I can also see the lack of serious concern of the officer in charge.⁸ My conclusion is not to take them for analysis.⁹ As to the Census of Fusly 1260 (1850-1), W.H. Bayly, the Secretary General of Fort St. George, stated that the 'Census was, under particular instructions from this office taken with unusual care and the Board believe that on the whole the Table now submitted may be relied on as a tolerably accurate documents. Masulipatam is perhaps an exception, but the Collector has been addressed again on the subject, in order that the Census may be carefully revised'. Assuming what he wrote is not far from truth, we will take the figures of this year for calculation. The quinquennial Censuses after 1850-1 are known to be usable, even though a few dubious figures are included in them.

The total population during the same period, which is the sum of all the district figures, contains similar problems. Figure 1 indicates the estimates by Kumar, Mizushima, and Guha respectively. Though all of them are based on the same sources, Mizushima's figures are produced by omitting or revising some of Kumar's figures. On the other hand Guha considers there had been under-enumerations previous to the 1881 Census. Accordingly he converted all the figures previous to 1881 Census and increased them by 16 per cent (Guha 2001: 51). The missing bars in the Figure 1 are where the information is either missing or not confirmed.

Though every figure in the Figure needs some notes and its interpretation needs a number of reservations, it is still worthy to examine it here. Taking 1800-2 as the base year, the increases of 1850-1, 1881, and 1901 become 133 per cent, 226 per cent, and 299 per cent respectively. If we take as the base the figure of 1823, when comparatively reliable information than 1800-2 was available, the increases of 1850-1, 1881, and 1901 become 65 per cent, 131 per cent, and 183 per cent respectively. Making 1850-1 as the base year, the percentages for 1881 and 1901 become 42 per cent and 71 per cent respectively. Though the figures used in these calculations are too fragile to be tested in detail as mentioned above, we may sense much higher growth rate for South India compared with other regions and all India figures presented by Guha.

As summarized so far, we are still far away from knowing the actual situation of population movement in the pre-Census period. To make a

FIG. 1. POPULATION MOVEMENT IN SOUTH INDIA, 1800-1901



Sources: • Kumar: Kumar 1965: 120-3.

• Mizushima: see the sources in Table 3.

• Guha: Guha 2001: 50-1.

Notes: 1. The figure for 1839 (1837-8) is skipped by Mizushima due to the reason stated in the text.

2. Kumar's figure for 1850-1 is 22,031,697, but the figure from the original source [*Proceedings of the Board of Revenue*, Fort St. George (IOL, P/310/27), p. 8,167] is 22,301,697. The latter is adopted.

step forward we need to explore evidences from different parts of India and to accumulate them as much as possible. This paper is one of the steps towards it.

POPULATION MOVEMENT OF CHINGLEPUT

SOURCES ON CHINGLEPUT IN THE PRE-CENSUS PERIOD

The primary records to be utilized here are village-level statistics at the beginning of the nineteenth century. The statistics are recorded in *The Zamindari Statement* which was prepared for introducing zamindari settlement in South India.¹⁰ The statistics cover around 2,300 villages in Chingleput.¹¹

To clarify the temporal changes two other sets of village-level records are to be utilized. One is Barnard's village accounts (we call them as *Barnard Report* hereafter). Thomas Barnard, an English East India

Company servant, conducted a survey in Chingleput from 1767 to 1774 by an order of a chief engineer in Madras¹² and prepared records of every village in Chingleput, the same area covered later by *The Zamindari Statement* in 1801. As *Barnard Report* contains information not only on the total village extents but also the number of households with their occupations, it can be used for identifying villages belonging to different periods.¹³ The second set is the village statistics contained in the Imperial Census of 1871 (*The 1871 Census* hereafter).¹⁴ Among many decennial Censuses in the past, it is only *the 1871 Census* that has information on caste and occupational composition at the village level. Though caste categorization used there was often too broad to make full verification possible, it still helps for comparison. Additionally a few more sources will be utilized for analysis.

By utilizing these sources I will argue the following points. First, the population growth rate in the pre-Census period from the beginning of the nineteenth century in South India was a few times higher than the rest of India. Second, the low growth rate observed in the period between 1871 and 1921 should be characterized as exceptional if we situate it in the long-term trend in the past two centuries. Third, the developmental path of South India in the nineteenth century seems more similar to that of Southeast Asia rather than the rest of India. Fourth, our understanding on the economic development of nineteenth century India has been greatly distorted, because the understanding of colonial South India has been separated from the rest of Indian Ocean World and kept confined only within the Indian sub-continent. Last, the explosive agricultural development that occurred simultaneously in the nineteenth century Indian Ocean World was the most important feature in contributing to the development of global economy during the concerned period.

CHINGLEPUT IN THE 1790S

One of the earliest records having information on population was the so-called *Place's Final Report* submitted to the Madras Board of Revenue at the end of the eighteenth century by Lionel Place, who was a collector in charge of Chingleput. He took charge of the area and carried out the collector's work of collecting revenues from Fusly 1204 (1794-5) to 1207 (1797-8). Among his numerous reports the most important was this *Final Report* of 1799 (hereafter *Place's Final Report*), which was submitted to the Board before his resignation from the post.¹⁵ *Place's Final Report* includes a detailed description of population movement during his collectorship.¹⁶ It was as follows.

According to the *Turrabuddy* and *Teerwa* account or the revenue account examined by Place, the number of houses or families was 52,445 in Fusly

1204 (1794-5), 53,878 in Fusly 1205 (1795-6), and 57,911 in Fusly 1207 (1797-8). For obtaining the figure for Fusly 1204 (1794-5), Place initially attempted to calculate the total population by allocating four persons in each house and led to a figure of 2,09,780 as the total population. Place was apparently not satisfied with this method and sought to acquire more accurate information. What he did was to conduct a sort of sample survey in the area and 'took a minute account of 6 of the largest and of 6 small villages in each district of the Jaghire [Chingleput]'. During this sample survey Place counted 'every soul...from the new born infant to the oldest man or woman'¹⁷ of 181 villages for Fusly 1206 (1796-7) and 182 villages for Fusly 1207 (1797-8) and got the medium of 4 52/64 heads per house.¹⁸ Further, Place sent directions requesting 'that the curnums [village accountants]...should each bring along with him a correct state of the population of the village...at the beginning of the year, and a complete bill of mortality in the course of it, together with an account of all intermediate removals of old, and arrivals of new residents' for Fusly 1207 (1797-8).¹⁹ As a result his estimates came to be 2,45,836 for Fusly 1204 (1794-5), 2,52,553 for Fusly 1205 (1795-6), 2,54,268 for Fusly 1206 (1796-7), and 2,71,367 for Fusly 1207 (1797-8).²⁰ Place's tenacity for more accurate information observed in other revenue business²¹ would make us take his statistics as the base figures at the end of the eighteenth century for our investigation.

CHINGLEPUT IN 1801

Around the same time when *Place's Final Report* was submitted, a new land policy called permanent settlement was ordered to be introduced in South India by the Home Government. The permanent settlement was the one that followed the zamindari settlement introduced in Bengal in 1793. Zamindari was a unit for revenue administration. The size of a zamindari sometimes exceeded one district in the case of Bengal, but it comprised only several dozens of villages so far as the zamindaris in Chingleput were concerned. Each zamindari was auctioned and successful bidders were chosen and given the ownership of the estate. The owner of the zamindari was called a zamindar. As the amount of revenue for each zamindari was planned to be permanently fixed, it was called as permanent settlement, though many of the zamindars soon went into bankruptcy and were replaced by others.

As soon as the Government order was received, village-level statistical information necessary for assessing the amount of revenue in each zamindari was gathered by a collector and the record called *Zamindari Statement* was submitted in 1801 to the Board of Revenue, Fort St. George, along with other information for revenue administration.²² As the 1801

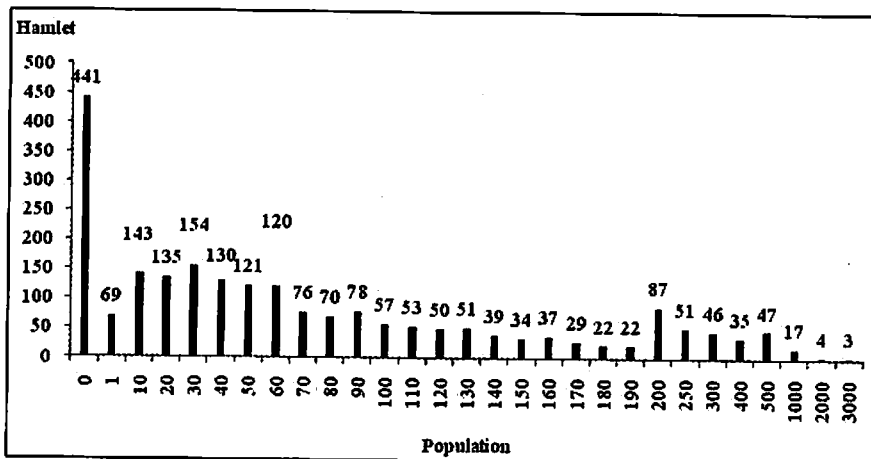
Zamindari Statement contains information not only on population but also on territorial size of every village, the information can be used to link villages in it with other villages recorded in other sets of records.

According to the 1801 *Zamindari Statement*, the total population was 2,44,845 (in 52,785 houses). As the population presented by Place were between 2,45,836 and 2,71,367 in the period between 1794-5 and 1797-8, this figure may be accepted as there was the fourth Mysore War in the years 1798-9.

Among the 2,315 hamlets recorded in the 1801 *Zamindari Statement* there were 458 hamlets without any inhabitants. In addition the statistics of the complete list of 77 hamlets are not shown separately but are included in other hamlets. Assuming the last category of hamlets had some inhabitants, the total number of hamlets with some inhabitants numbered 1,857. The population density per square kilometre was 95.

A look into the histogram of population among the hamlets in Chingleput exemplifies amazingly small size of population in the respective hamlets at the beginning of the nineteenth century. As indicated in Figure 2, around a half of the hamlets had less than 70 inhabitants. Actually hamlets with less than 100 inhabitants composed more than 60 per cent of the total. The number of houses was also very small as indicated in Figure 3. As many as 529 hamlets or around 30 per cent of all the hamlets had less than 10 houses. The average population density per square kilometre was 95 as mentioned above, but those less than 30 composed the majority or 70 per cent of all the hamlets as indicated in Figure 4.

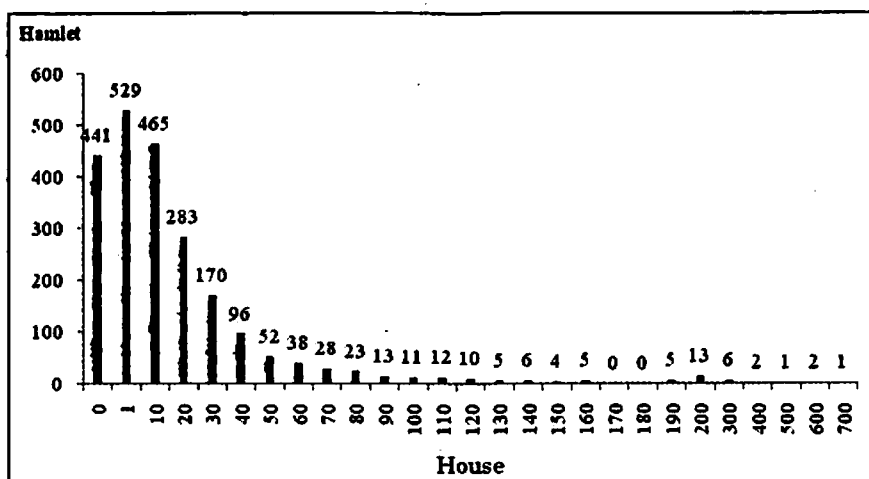
FIG. 2. POPULATION IN CHINGLEPUT HAMLETS IN 1801



Source: Compiled from the 1801 *Zamindari Statement*.

Note: Out of 2,315 hamlets in Chingleput there were 94 hamlets whose statistics are included in some other villages. The figure covers the rest or 2,221 hamlets.

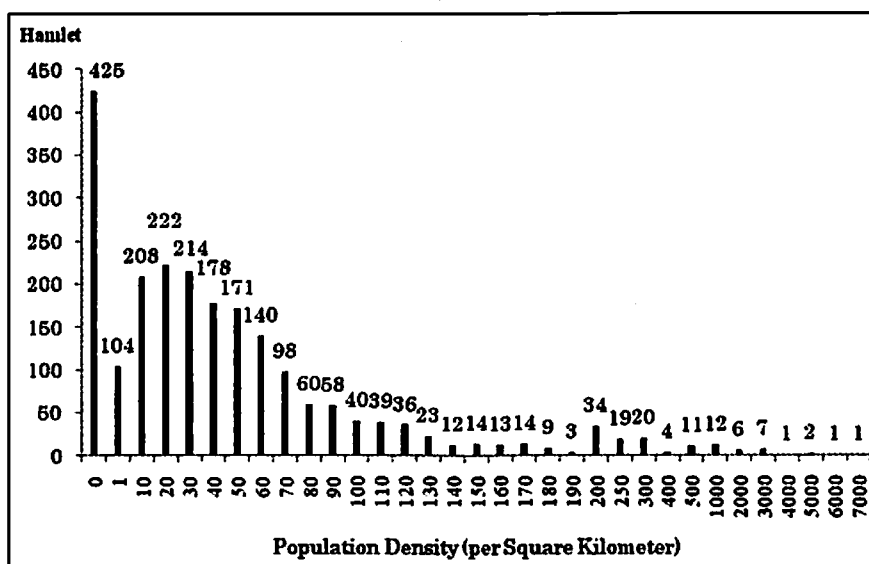
FIG. 3. NUMBER OF HOUSES IN CHINGLEPUT HAMLETS IN 1801



Source: Compiled from the 1801 Zamindari Statement.

Note: Out of 2,315 hamlets in Chingleput, there were 94 hamlets whose statistics are included in other hamlets. The figure covers the rest or 2,221 hamlets.

FIG. 4. POPULATION DENSITY OF CHINGLEPUT HAMLETS IN 1801
(PER SQUARE KILOMETRE)

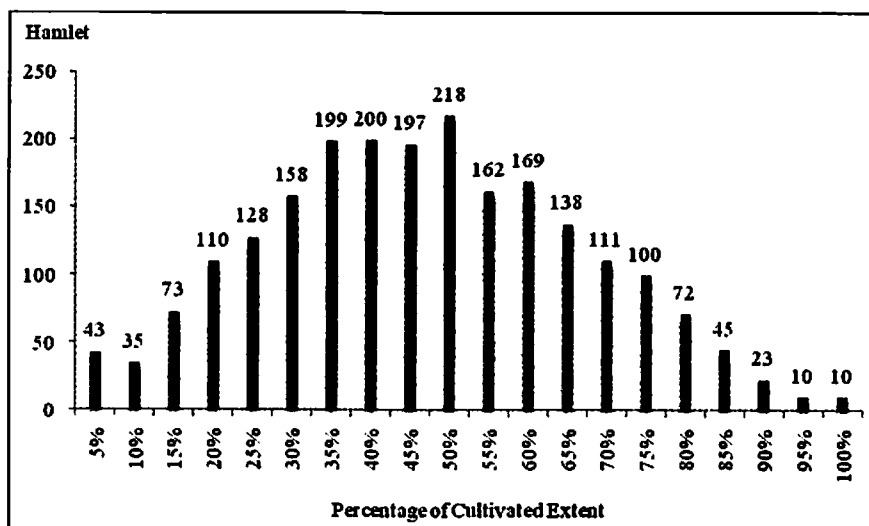


Source: Compiled from the 1801 Zamindari Statement.

Note: Out of 2,315 hamlets in Chingleput, 424 hamlets had no population (there was one hamlet with population density of 0.34, which is included in the leftist axis). In addition there were 94 hamlets whose statistics are included in some other villages and 22 hamlets without information on population or extent. The figure therefore covers totally 2,199 hamlets.

Besides the low population density, the low percentage of cultivated extent in the total area was also remarkable.²³ The percentage stayed as low as 32 per cent in average. It should be, however, noted that there was a wide variance in the cultivated percentages among the hamlets. While in some hamlets more than half of their extents were cultivated, it was not the case in which others had ample opportunities for further land development. The variance is indicated in Figure 5.

FIG. 5. PERCENTAGE OF CULTIVATED EXTENT IN CHINGLEPUT HAMLETS IN 1801



Source: Compiled from the 1801 Zamindari Statement.

- Notes: 1. Cultivated extent = cultivated *circar* (state) land + *maniam* (tax-exempted) land
2. Out of 2,315 hamlets, 114 hamlets don't have information. In addition, there were 99 hamlets whose statistics are included in some other villages. The figure covers totally 1,775 hamlets.

The variance is important in assessing the potential of further land development and spatial movement of the villagers. Figure 6 indicates the number of hamlets classified by size-distribution of cultivable extent per house.²⁴ The average extent of 9.26 hectares per house is apparently quite high compared with later periods. The situations of hamlets, however, were varied. While there were hamlets having more than 10 hectares per house, there were many hamlets with just a few hectares left for each house. In other words there was a population pressure in some parts amid scarce population density in general. The mixed situation of the potential for further land development in each hamlet produced varied responses of villagers in the coming decades.

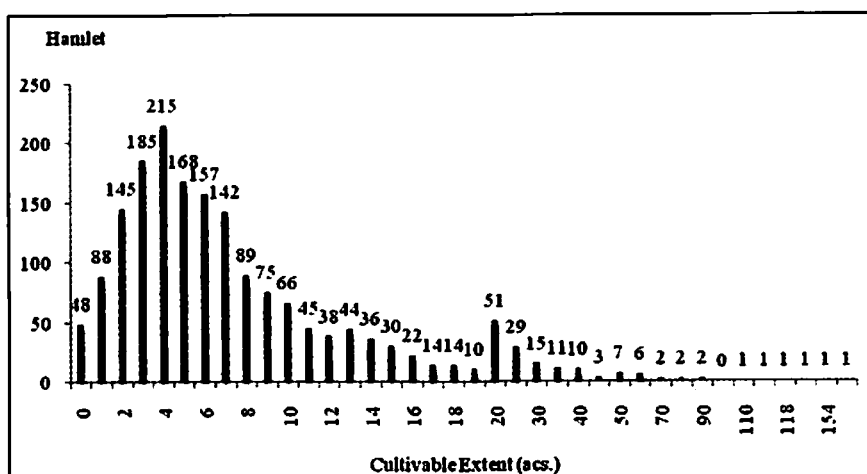


FIG. 6. SIZE-DISTRIBUTION OF CULTIVABLE EXTENT PER HOUSE IN CHINGLEPUT HAMLETS IN 1801

Source: Compiled from the 1801 *Zamindari Statement*.

Notes: 1. Cultivable extent = state land (cultivated plus uncultivated) + tax-exempted land + house and garden land.

2. Out of 2,315 hamlets, there are 441 hamlets without houses. In addition, there were 99 hamlets whose statistics are either included in some other villages or partly missing. The Figure covers the rest or 1,775 hamlets.

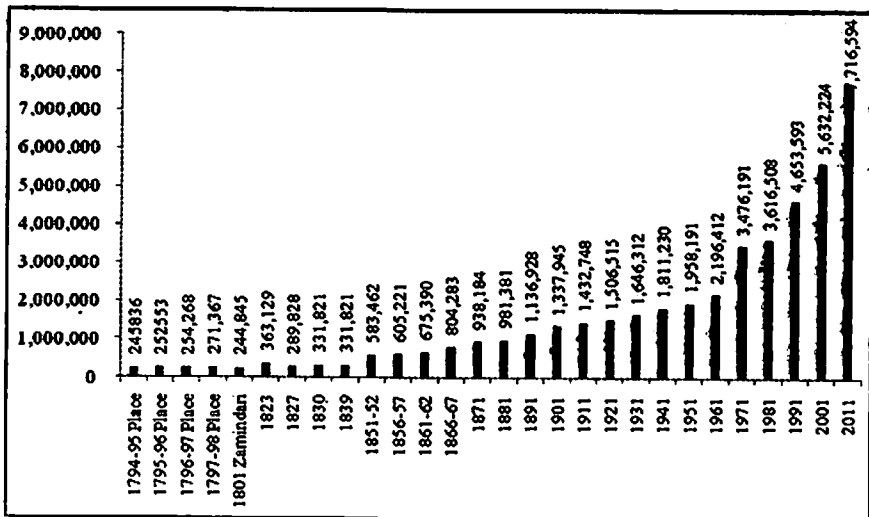
CHINGLEPUT FROM 1801 TILL 1871

If we take the population of 2,44,845 from the 1801 *Zamindari Statement* as the base, what movements can we observe since then?

First we will examine the population figures of different periods. Figure 7 indicates the population movement from 1794 to 2011. Information after 1871 is also included to show the overall temporal trend.

It is unfortunate that no village-level information on population in Chingleput is available in the period from the 1801 *Zamindari Statement* to the 1871 *Census*. In between there were a few statistics, but they were either of district level or sub-district level prepared for revenue administration (see Table 1). One of the earliest of this type of information is from a revenue record in 1823,²⁵ when Chingleput was reported to have totally 3,63,129 people. It was followed by another revenue record in 1827, when the population decreased greatly to 2,89,828 (male – 1,50,361, female – 1,39,467).²⁶ Then the population recovered to some extent and reached in 1830 to 3,31,821 (male – 1,71,699, female – 1,60,122).²⁷ The reason of ups and downs during these periods is not known except the occurrences of cholera from 1818 to the late 1820s and of famine and cholera in 1833-4. Next information was from 1839, when the population

FIG. 7. POPULATION MOVEMENT IN CHINGLEPUT, 1794-2011

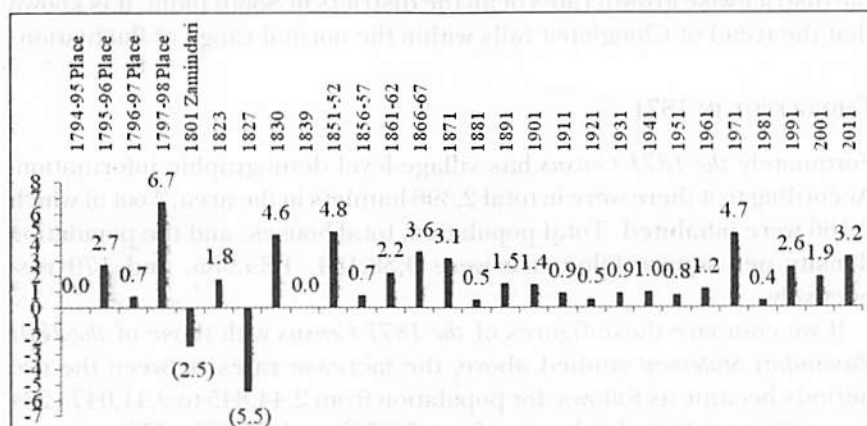


Note: Chingleput District, which was renamed from the Jagir at the beginning of the nineteenth century, was divided and renamed in the recent decades. The area is called throughout this paper as Chingleput.

- Sources:**
- 1794-95 Place, 1795-96 Place, 1796-97 Place, 1797-98 Place: *Place's Final Report on the Jagir, Board's Miscellaneous Records*, vol. 45 (Tamilnadu Archives), Fort St. George, 1st July 1799: Paragraphs 324-39.
 - 1801: *The 1801 Zamindari Statement* (Zamindari Statement relating to Permanent Settlement of the *Jagir* forwarded as Enclosures to Mr. Greenway's Letter, 29th March 1801, vols. 20-2.
 - 1823: Kumar 1965: 120-2.
 - 1827: General Abstract Statement of the Population of the Provinces under the Madras Government in the year 1827, *Proceedings of the Board of Revenue*, Fort St. George, 11 May 1829.
 - 1830: Collectors Report dated 21st February, 1831, *Proceedings of the Board of Revenue*, Fort St. George, 4 March 1833.
 - 1839: General Statement shewing the Population of the Several Districts of the Madras Presidency compiled from the Return of the Census taken in Fusly 1260, *Proceedings of the Board of Revenue*, Fort St. George, 19th July 1852, pp. 8,167-9.
 - 1851, 1856, 1862, 1867: Madras Population according to different Censuses, 1851 to 1867, *Imperial Census of 1881, Operations and Results in the Presidency of Madras*, vol. III - Appendices, Madras, 1883, Appendix A, Memorandum, p. 1.
 - 1871: Chingleput, Appendix no. XII, 'Descriptive Accounts of Districts, Localities, &c., in or connected with the Presidency', *Manual of the Administration of the Madras Presidency, in Illustration of the Records of Government & the Yearly Administration Reports in Three Volumes* (vol. II - Appendices), Madras, Printed at E. Keys, at the Government Press, 1885, pp. 65-8.
 - 1881-2011: *Census of India* of different years.

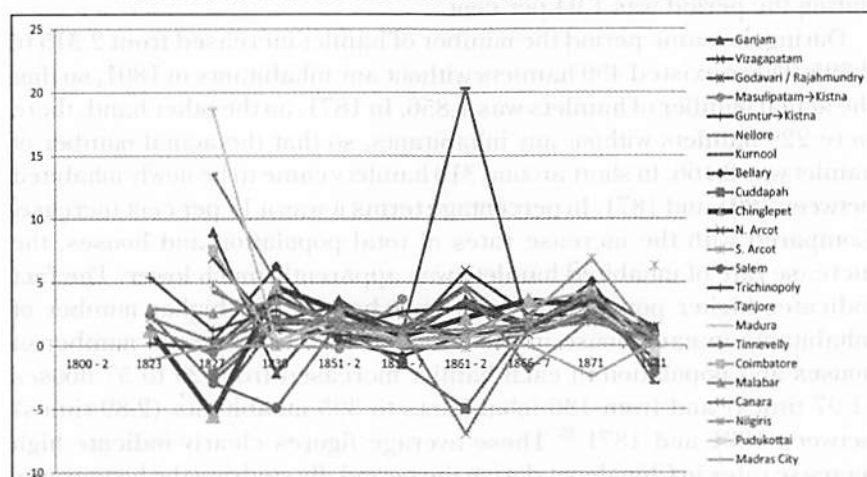
was reported to be 3,28,726.²⁸ As examined above, the figure of this year should be skipped from our analysis. After these came the quinquennial censuses starting from Fusly 1760 (1850-1 A.D.). The population in Fusly 1760 was 5,83,462.²⁹ The quinquennial censuses were conducted on a 'more systematic basis'.³⁰ The Revenue Board commented that there was a betterment of enumeration and concluded that 'on the whole the population table now submitted may be relied on as a tolerably accurate document'.³¹ If we accept the comment, the population figures during the first half of the nineteenth-century could be generally underestimates.

FIG. 8. ANNUAL POPULATION GROWTH RATES IN CHINGLEPUT, 1794-5-2011



Source: See Fig. 7.

FIG. 9. DISTRICT-WISE POPULATION GROWTH RATE IN SOUTH INDIA



Source: See Table 3.

Note: The seemingly big fluctuations of some of the districts can be due to the changes of coverage, changes in boundaries, and other reasons.

Then the population increased to 6,05,221 in 1856-7, 6,75,390 in 1861-2, and 8,04,283 in 1866-7.³² The annual growth rate in the five quinquennial Censuses starting from 1850-1 were 0.7, 2.2, 3.6, and 3.1 per cent respectively. Finally decennial censuses started from 1871 onwards till today. The growth rate remained between 0.5 and 1.5 per cent in the following decades till 1961, but the later period is out of the scope of this paper.³³

The annual population growth rate of Chingleput is indicated in Figure 8. To find out whether the trend of Chingleput is exceptional or not, it should be compared with the trends of other districts. Figure 9 indicates the district-wise growth rates of all the districts in South India. It is known that the trend of Chingleput falls within the normal range of fluctuation.

CHINGLEPUT IN 1871

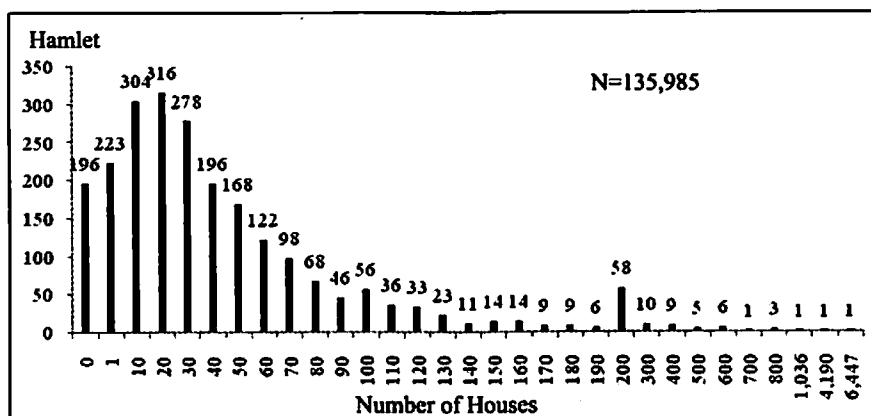
Fortunately *the 1871 Census* has village-level demographic information. According to it there were in total 2,396 hamlets in the area,³⁴ out of which 2,166 were inhabited. Total population, total houses, and the population density per square kilometre were 9,38,184, 1,35,985, and 179 respectively.

If we compare these figures of *the 1871 Census* with those of *the 1801 Zamindari Statement* studied above, the increase rates between the two periods became as follows: for population from 2,44,845 to 9,41,047 (284 per cent increase), for houses from 52,785 to 1,35,985 (158 per cent increase), and for population density per square kilometres from 95 to 179 (87 per cent increase). The annual growth rate of the total population during the period was 1.94 per cent.

During the same period the number of hamlet increased from 2,315 to 2,395. There existed 459 hamlets without any inhabitants in 1801, so that the actual number of hamlets was 1,856. In 1871, on the other hand, there were 229 hamlets without any inhabitants, so that the actual number of hamlet was 2,166. In short around 310 hamlets came to be newly inhabited between 1801 and 1871. In percentage terms it was a 17 per cent increase. Compared with the increase rates of total population and houses, the increase rate of inhabited hamlets was apparently much lower. The fact indicates higher population density per hamlet and higher number of inhabitants in each house in the latter period. The average number of houses and population in each hamlet increased from 29 to 57 houses (1.97 times) and from 136 inhabitants to 393 inhabitants (2.89 times) between 1801 and 1871.³⁵ These average figures clearly indicate high increase rates in Chingleput during the period. By studying the histograms of the statistics below, we will confirm the trend.

First is the number of houses per hamlet. The histogram of the number of houses per hamlet in Chingleput in 1871 is indicated in Figure 10. There

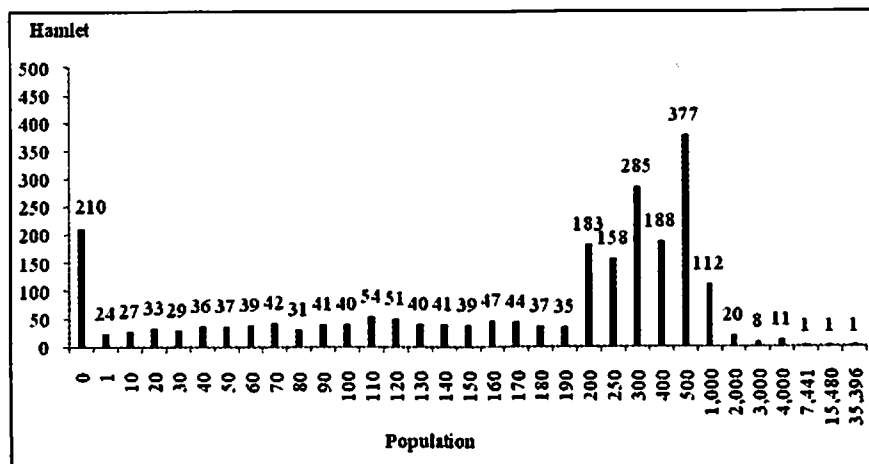
FIG. 10. HISTOGRAM OF NUMBER OF HOUSES IN CHINGLEPUT HAMLETS IN 1871



Source: Compiled from the 1871 Census.

Note: Out of 2,396 villages in Chingleput there were 68 villages whose statistics are included in some other villages as well as seven hamlets lacking information on households. The figure covers the rest or 2,321 villages.

FIG. 11. HISTOGRAM OF POPULATION SIZE IN CHINGLEPUT HAMLETS IN 1871



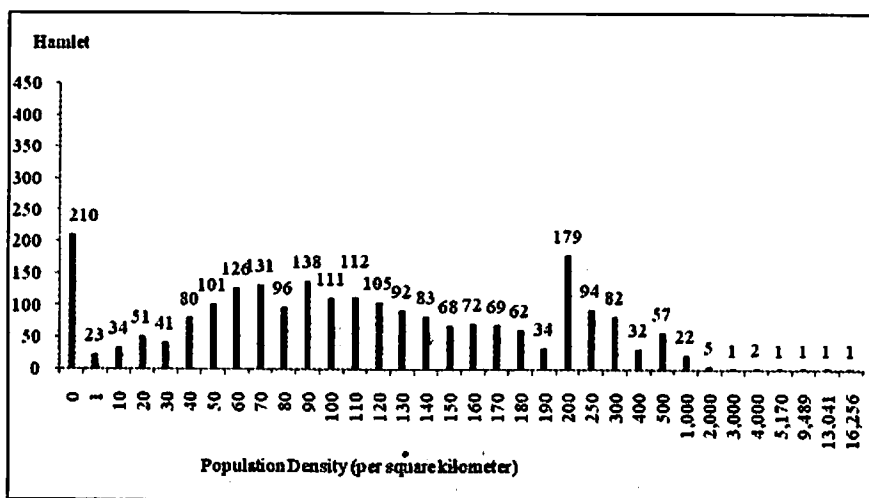
Source: Compiled from the 1871 Census.

Note: Out of 2,396 villages in Chingleput there were 66 villages whose statistics are included in some other villages as well as eight hamlets lacking information on population. The figure covers the rest or 2,322 villages.

were 1,35,985 houses in 2,321 hamlets in Chingleput. Whereas as much as 95 per cent of the hamlets had less than 50 houses in 1801, the ratio came down to 57 per cent (1,317 hamlets) in 1871.

The degree of increase in population was more than the number of houses. The histogram of population in each hamlet is indicated in Figure

FIG. 12. POPULATION DENSITY OF CHINGLEPUT HAMLETS IN 1871
(PER SQUARE KILOMETRE)



Source: Compiled from the 1871 Census.

Note: Out of 2,396 villages in Chingleput there were 71 villages whose statistics are included in some other villages as well as eight hamlets lacking information either on population or extent. The figure covers the rest or 2,317 villages.

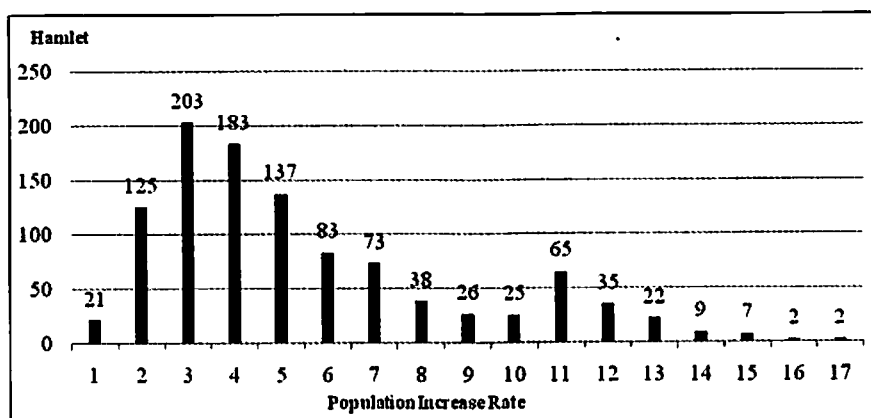
11. The hamlets with the population between one and 200 occupied 90 per cent in 1801, which came down as low as 33 per cent. Apparently the size of hamlets had increased greatly during the period.

The trend becomes very clear if we examine the population density per square kilometre. The average density increased from 95 in 1801 to 179 in 1871 as mentioned above. The histogram is indicated in Figure 12. Those less than 30 per square kilometre composed as much as 70 per cent in 1801, which became less than 3 per cent in 1871. All these figures point to the rapid population growth during 1801 and 1871 or in the pre-Census period.

Lastly we will trace the population movement of each hamlet between the two periods.

Due to the changes of names, to the creation, disappearance, amalgamation, or separation of hamlets, it is not easy to identify hamlets between the two periods. After time-consuming analysis of hamlet names between the two periods by using GIS (Geographical Information System), a total of 1,264 hamlets could be identified. Among them there are 189 hamlets whose population figures are blank in the 1801 Zamindari Statement besides 19 hamlets without population data in the 1871 Census. Therefore, a comparison of population in a total of 1,056 hamlets is possible. The result is indicated in Figure 13. Figure 13 is a histogram of the population

FIG. 13. HISTOGRAM OF POPULATION INCREASE RATE OF
CORRESPONDING HAMLETS BETWEEN 1801 AND 1871



Source: Compiled from the 1801 Zamindari Statement and the 1871 Census.

increase rate of the corresponding hamlets between the two periods. It clearly indicates that the majority of the hamlets experienced three or four times increase in addition to a considerable number of hamlets having more than five times' increase.

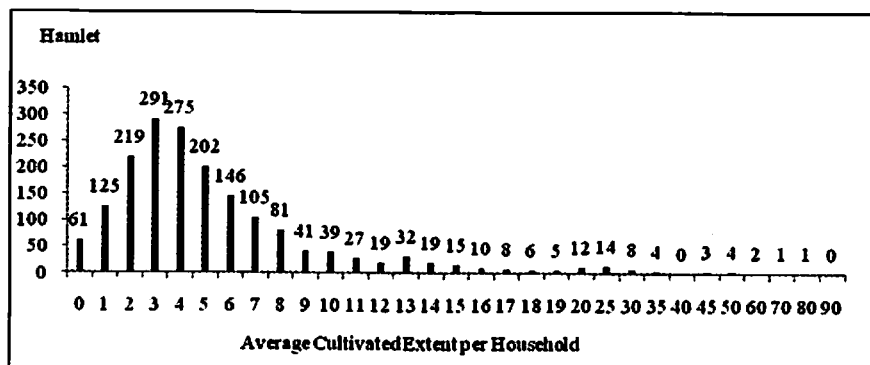
To conclude, all the information available at hand clearly indicates that the population increase in the pre-Census period from the beginning of the nineteenth century was much more greater than previously imagined to be.

BACKGROUND OF HIGH POPULATION GROWTH IN CHINGLEPUT

In this paper we have traced the population movement in South India and in Chingleput and found out a much higher growth rate during the pre-Census period in the nineteenth century than the rest of India. In this section I will briefly substantiate the argument from the aspect of land development in Chingleput during the same period.

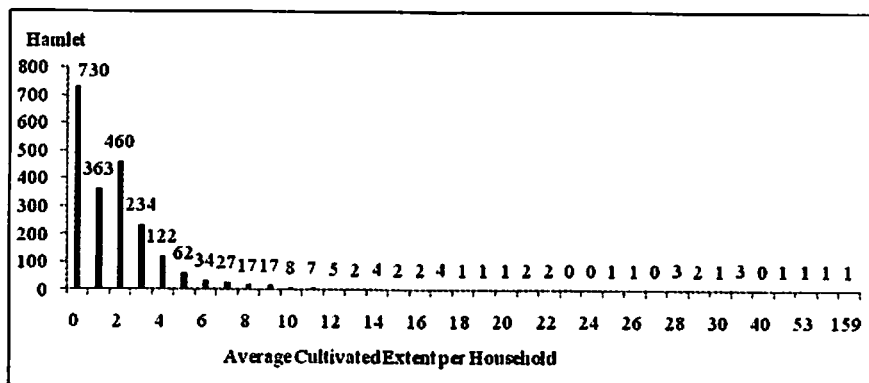
From the calculation of the statistics in the 1801 Zamindari Statement the average cultivated extent per household was 6.22 acres³⁶ whereas the same calculated from the 1871 Census was 2.58 acres.³⁷ The shrinking trend is clearly observable by comparing Figures 14 and 15 which indicate the histograms of cultivated extent per household in 1801 and in 1871 respectively. Thus the population pressure on land was greatly intensified between the two periods. In short the pre-Census period in South India can be designated as the period of population growth and agricultural development.

FIG. 14. HISTOGRAM OF AVERAGE CULTIVATED EXTENT PER HOUSEHOLD IN CHINGLEPUT IN 1801



Source: Compiled from the 1801 Zamindari Statement.

FIG. 15. HISTOGRAM OF AVERAGE CULTIVATED EXTENT PER HOUSEHOLD IN CHINGLEPUT IN 1871



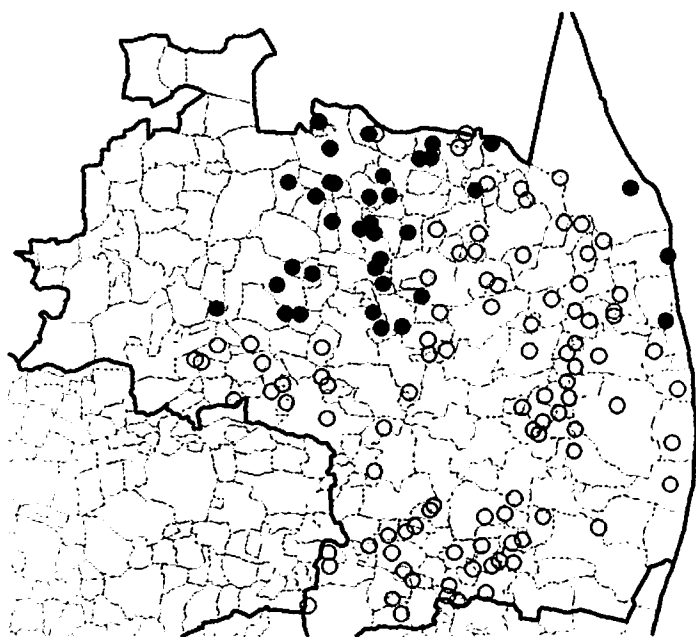
Source: Prepared from the 1871 Census

The development of cultivation must have occurred not only within the bounds of pre-existing villages but also in the new areas. However, the current state of available information does not allow us to verify it.³⁸ Still we have a hint in some other source. *The 1877 Settlement Registers* of Ponneri villages have lists of mirasidars and their landlord shares. Mirasidar was a class of village magnates who claimed whole village resources in shares in pre-colonial period. During the early colonial period they struggled hard to claim their landlord right over their villages and were finally allocated a landlord rent, though nominally, upon land cultivated by non-mirasidar raiyats (peasants) in the latter half of the century. Their shares were accordingly recorded in the settlement register of the respective villages. Some of the villages, however, did not have any mirasidars and

were called non-mirasidar villages. Figure 16-1 exhibits the spatial distribution of non-mirasidar and mirasidar villages in the area. It is interesting to find the features of the locations of these non-mirasidar villages. Figure 16-2 is the satellite image showing very contrastive ecological condition between the central area and the peripheral area. The central area is a rich irrigated area whereas the periphery has poor agricultural conditions. What is interesting is that many of the non-mirasidar villages were located in the latter as shown in Figure 16-3. Mirasidars' control over village resources in the central part of Ponneri and their contrastive absence in the periphery must have pushed non-mirasidar raiyats to escape from the mirasidars' control over the resources and to migrate out of the old mirasidar villages in the central area to newly opened area in the periphery.³⁹

The progress of land development and population growth in previously uncultivated area was not confined in Ponneri only, which is indicated by Figures 17 and 18. Figure 17 indicates the spatial distribution of hamlets classified by population increase rate in Chingleput between 1801 and 1871 and Figure 18 indicates the percentage of wood/rock land out of the total village area in Chingleput in 1801. A comparison of the two figures clearly indicates a strong correlation between the high population growth

FIG. 16-1. SPATIAL DISTRIBUTION OF MIRASIDAR AND NON-MIRASIDAR VILLAGES IN PONNERI



Source: Compiled from the *Settlement Registers* of Ponneri villages in 1877.

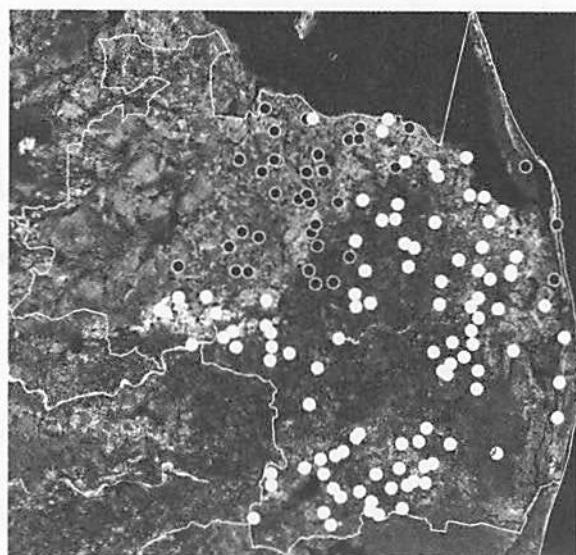
FIG. 16-2. SATELLITE IMAGE SHOWING CONTRASTIVE
ECOLOGICAL CONDITIONS IN PONNERI AREA



Source: Prepared from the satellite image dated 25 August 1991 (Landsat 5).

Note: The black portion in the centre is a richly irrigated area. The white portion surrounding the centre is the poorly conditioned area.

FIG. 16-3. DISTRIBUTION OF NON-MIRASIDAR AND MIRASIDAR
VILLAGES ON SATELLITE IMAGE



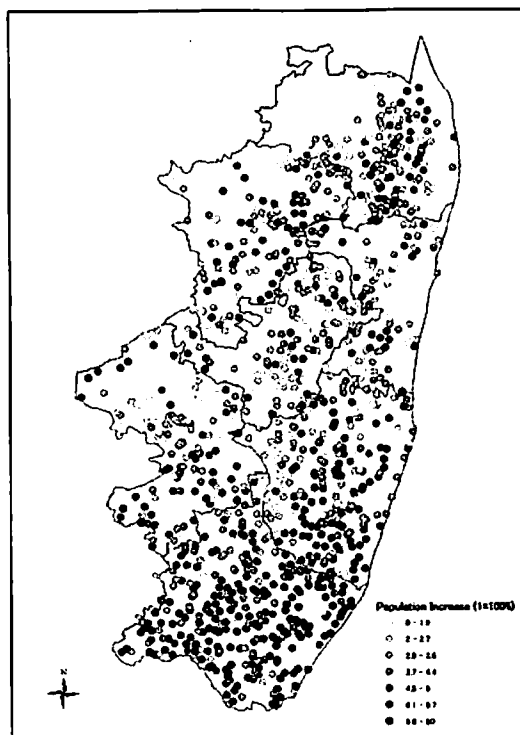
Source: See Figs. 16-1 and 16-2.

Note: black circle: non-mirasidar village, white circle: mirasidar village

rate during the period and the existence of wood/rock land in 1801. The trend is especially conspicuous in the southern part of Chingleput where the correlation between higher population growth and larger wood/rock land was observed.

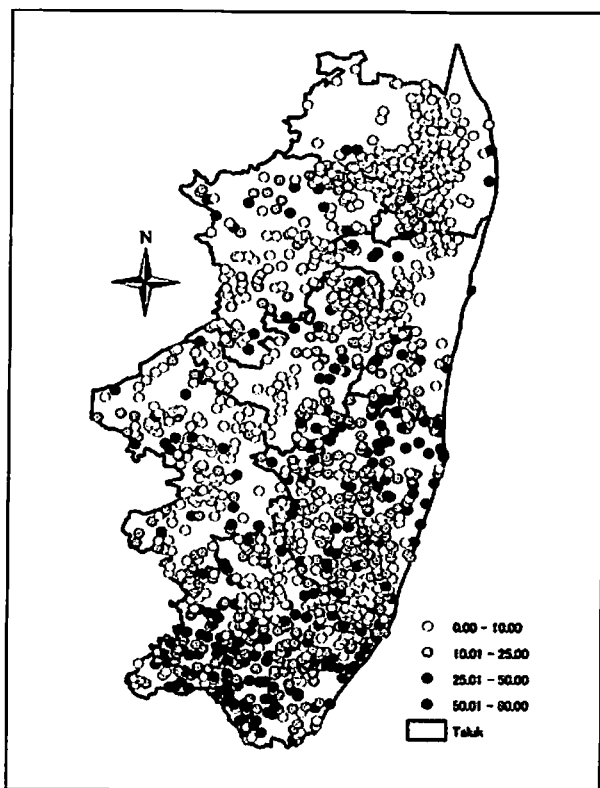
The investigation conducted above indicates that the area within village bounds and the peripheral woody area that had been left uncultivated in the pre-colonial period due to its unstable condition for agriculture came to be developed greatly during the pre-Census period in the nineteenth century. In other words the pre-Census historical process of land development and population growth endangered a subtle ecological balance in the area and led to an over-exploitation. Famines, epidemics, malaria, and other calamities experienced in the period between 1870 and 1920 could be the results of such over-exploitation that made agricultural production extremely vulnerable. South Indian agriculture needed some decades to make shift to more intensive agriculture based upon stable underground water.

FIG. 17. SPATIAL DISTRIBUTION OF HAMLETS CLASSIFIED BY POPULATION INCREASE RATE IN CHINGLEPUT BETWEEN 1801 AND 1871



Source: Compiled from the 1801 Zamindari Statement, the 1871 Census, and the Taluk Maps of Chingleput Districts in the 1960s-70s.

FIG. 18. PERCENTAGE OF WOOD/ROCK LAND OUT OF THE TOTAL VILLAGE AREA IN CHINGLEPUT IN 1801



Judging from the low population increase rate starting from 1871 till 1920 many former studies concluded that the demographic shift occurred in the 1920s when the mortality rate went down and population started growing rapidly. As I have shown, however, the pre-Census period had equally experienced high growth rate. In other words the period between 1870 and 1920 should be characterized as a period of exceptionally low growth period.

After the period of extensive land development during the nineteenth-century, South India shifted towards more capital/land intensive and more stable agriculture by investing in well and other irrigational facilities. The shift facilitated the stability of agricultural production and contributed to the rapid population growth after 1920, even though the process continued to remain unsatisfactory in stabilizing the peripheral agriculture till today.

The population movement of South India seemed to be similar to many countries of Southeast Asia during the nineteenth century. The countries such as Burma, Thailand, Indonesia, Philippines, Vietnam and others experienced very high rate of population growth that went parallel with

land development. The global economy of the period was developed and integrated with the development in these areas including South India. Instead of confining South India in the national economy of India, we should situate it in the modern world development occurring in the Indian Ocean Region.

The low estimates of population growth in India in the past can be ascribable partly to the lack of detailed information, to the strong impression of low growth rate from 1871 to 1921, to a biased interpretation of information from North India, and probably to biased historical interpretations criticizing colonial rule. People in India struggled hard in their daily lives against colonial exploitation and eventually managed to find their own way out.

NOTES

1. In some parts of India the first Census was conducted in 1872.
2. The figure of around 250 million for 1871 is from the figures described in Table 1.
3. Guha proposes the figure of 116 million for Akbar's time instead of c.145 million estimated by Habib and Moosvi (Guha 2001: 34).
4. In addition to the studies listed in the reference of Table 1, the following studies are to be consulted for the Mughal period. Habib 1982: 163-71; Desai 1972: 43-62; Idem. 1978: 53-77; Moosvi 1987: Chapter 17; Idem. 1973: 181-95. Population figures around 1600 or Akbar's time indicated in these studies are 142 million (Habib 1982: 165), 60-70 million for the areas governed by Akbar (Desai op. cit.: 62), and between 136 and 149.9 million (Moosvi op. cit.: 402). By assigning a population of 145 million to undivided India in 1601 and 255 million in 1871 Moosvi calculates the annual growth rate for the period 1601 and 1871 at 0.21 per cent, which was a little lower than the rate of 0.37 per cent observed in the period between 1871 and 1901 (ibid.: 405).
5. The population in Fusly 1260 (1850-1) was borrowed from non-governmental source (*Proceedings of the Board of Revenue*, Fort St. George, 19 July 1852, IOL, P/310/27, p. 8,104).
6. *Proceedings of the Board of Revenue*, Fort St. George, 4 March 1833 (IOL, P/298/70), pp. 2,301-5.
7. *Proceedings of the Board of Revenue*, Fort St. George, 28 January 1839 (IOL, P/301/52), p.1,458.
8. See the report of P.B. Smollett, the Secretary of Fort St. George, addressed to the Chief Secretary to Government (*Proceedings of the Board of Revenue*, Fort St. George, 28 January 1839 (IOL, P/301/52), p.1,458).
9. The Visarias argued that judging from the low annual increase rate in the four quinquennial Censuses between 1850-1 and 1866-7 (0.7 per cent, 1.5 per cent, 1.5 per cent respectively for the Madras Presidency), the steep rise of the annual growth rate of 3 per cent between 1836-7 and 1850-1 is inexplicable and concluded that 'in any case those figures would tell us little about the correct level of population growth' (Visaria and Visaria, 1982: 467-9). They therefore summarily deny the reliability of information in the pre-Census period and estimate that the actual

growth rate would have been much lower (ibid.: 467-9). As mentioned above, however, the figures of 1836/7 of 1839 should be neglected for assessing the population growth rate. If we skip the figures of 1839 and calculate the annual growth rate by taking the figures of 1830 and 1850-1, the annual growth rate becomes 1.77 per cent. Likewise Gopinath mentions that 'the pre-1851 population returns evoke little confidence in them' and that 'Historians' estimation of rates of population growth from 'these pre-Census figures are ... of little use' (Gopinath 2010: 55). The reasons of his verdict are the widely fluctuating annual growth rates derived from the pre-1851 population returns, the sudden increase of population between the last quinquennial enumerations (1866-7) and 1871 Census, and the undercounting of females in the enumerations till 1871 contrary to the results of all subsequent censuses (ibid.: 53). His verdict may be true, but my attempt here is, in addition to tracing village-level information, to salvage and examine all the available information as much as possible for reconstructing the long-term population change.

10. Zamindari Statement, Statement relating to Permanent Settlement of Jagir forwarded as Enclosures to Mr. Greenway's Letter, 29 March 1801, *Permanent Settlement Records*, vols. 20-2 (*Board's Revenue Miscellaneous Record*), Tamil Nadu State Archives. Preparation of the record was ordered for introducing the zamindari settlement at the end of the eighteenth century and was submitted to the Board of Revenue in 1801 by the respective district collectors.
11. The area was called the *Jagir* throughout the late eighteenth century and came to be renamed as Chingleput at the beginning of the nineteenth century. Hereafter we will call the area as Chingleput even for the eighteenth century to avoid confusion. It is an area surrounding Madras (present Chennai).
12. *Madras Revenue Proceedings*, Fort St. George, 20 December 1774 (IOL, P/274/17), pp. 203-19.
13. It is essential to find corresponding hamlets in examining population movement in two different times separated from each other for a few hundred years. Verification of around 2,000 villages was conducted as follows. First, all the hamlets were taken from one inch one mile scale Taluk (sub-district) maps prepared in the 1960-70s. Second, all the census villages in the 2001 Census were also taken from census maps. Third, all the hamlet names were taken from the Tamil Nadu Water and Drainage Department record. All the maps were geo-referenced and digitally processed for GIS (Geographical Information System). Dalrymple's list of villages, which has information on distance and direction of each hamlet in the Barnard Report, was also consulted along with the map (Dalrymple 1778). Verification was basically done one by one, but occasionally it was assisted by a specially made software which selects possible candidates according to the possible pronunciation of hamlet names (because of the lack of standardized transcription rule for Tamil, for instance, same hamlet is often spelt differently even in the same source. The software is titled as 'India Place Finder' and is open on the web (<http://newspat.csis.u-tokyo.ac.jp/placefinder/default/howtoEn>). As there are not a small number of cases of extinction, renaming, and birth of hamlets, and also a number of cases of different villages having the same name, the verification has been the most time-consuming and difficult work in this paper. Still, I am afraid to confess that the verification conducted here might have committed mistakes.
14. *Census, Statement of Population of 1871 in Each Village of the Chingleput District, Arranged According to Area, Caste and Occupation*, Madras, Printed at the Scottish Press, by Graves, Cookson and Co., 1874.

15. Place's Final Report on the Jagir, *Board's Miscellaneous Records*, vol. 45 (Tamil Nadu Archives), Fort St. George, 1 July 1799.
16. *Ibid.*, Paragraphs 324-39 and Appendix C. Place must have prepared and submitted village-level information to the Board. Unfortunately it is not available with me at the moment and further search of the colonial records is needed.
17. *Ibid.*, Paragraph 326.
18. *Ibid.*
19. *Ibid.*, Paragraph 327.
20. Populations for Fusly 1204 (52,445) and 1205 (53,878) were calculated by the number of houses stated in Teerwa or revenue accounts multiplied by 4 11/16 persons per each house. On the other hand the populations for Fusly 1206 and Fusly 1207 were obtained by counting village-wise figures. (Place's Final Report on the Jagir: Paragraphs 330-1). Compared with the preceding two years, there was a bigger increase from 2,54,268 to 2,71,367 or 6.7 per cent increase between Fusly 1206 (1796-7) and Fusly 1207 (1797-8). Place attributed the reason to the recovery from the storm by saying 'the great disproportion of new houses in Fusly 1207 (1797-8) compared with preceding years, which does not seem supported by other collateral circumstances, I must observe, that the greater part of the houses which had been destroyed in Fusly 1205 (1795-6) by the storm, were rebuilt in that year, the very minute account which I required had occasioned the Curnums (village accountants) of some villages to include shades for battle, many of which in fact were houses, with the residences of families' (*ibid.*, paragraph 328). According to Place, the number of new residents coming to settle in the Jaghire for a year from the beginning of Fusly 1207 till the end of Fusly 1207 was 18,766, the births in the course of the year was 13,340, the number who left the Jagir was 9,375, and the deaths was 5,632. The increase in the course of the year was 17,099 souls, and the whole population at the end of Fusly 1207 became 271,367. The total increase in three years of Fuslies 1205, 1206 and 1207 was 25,531 (*ibid.*, paragraph 331). The crude birth rate and mortality rate became 50.8 per cent and 21.4 per cent respectively. Both were three or four times higher than the rates in 2008 in the same area.
21. For instance, see the detailed list of mirasidars and payacaris prepared by him ('Abstract State of the Number of Meerassee Shares and of Meerassee Holders in the Several Districts of the Jagheer in Fusly 1207 Shewing Also the Quantity of Meerassee Unclaimed and Occupied by Pyacarries', *Board's Collections*, 2,115 and 2,116, vol.112 (IOL, F/4/112)).
22. The other types of information separately compiled in the *Permanent Settlement Records* are on *poligars* (military officers), *karnams* (village accountants), and *kovils* (temples).
23. The cultivated extent here includes cultivated circar or state land as well as maniam or tax-exempted land in the *1801 Zamindari Statement*. The other land categories used in the *Statement* include waste, house, tope, tank, well, yari (reservoir), wood and rock.
24. Here the cultivable extent is defined to be composed of state land (cultivated as well as uncultivated), tax-exempted land, and house plus garden land. As the land for house is not given separately from the garden land, it is included as cultivated land.
25. Kumar 1965: 120-2. The figures seemed to be taken from *Proceedings of the Board of Revenue* dated 3 November 1823. It is regretful that I could not trace the referred source during my visit to the British Library in 2012.

26. *Proceedings of the Board of Revenue*, Fort St. George, 11 May 1829 (IOL, P/297/8), pp. 4,506-7.
27. *Proceedings of the Board of Revenue*, Fort St. George, 4 March 1833 (IOL, P/298/70), pp. 2,301-5.
28. *Proceedings of the Board of Revenue*, Fort St. George, 28 January 1839 (IOL, P/301/52), p. 1,479.
29. *Proceedings of the Board of Revenue*, Fort St. George, 19 July 1852 (IOL, P/310/27), p. 8,167. The figures were 'compiled from the returns furnished by the Collectors of the Census returns taken in Fusly 1260'. Here, not only the sex ratio but also agricultural/non-agricultural, adult/children figures are separately given (ibid.: 8,104).
30. Kumar, op. cit., p. 102.
31. W.H. Bayly, the Secretary General of the Revenue Board Office of Fort St. George, reported that 'the great difference of 8.5 million is to be ascribed partly to greater accuracy in the returns and partly to the Census now submitted embracing generally all zamindaries and properties similarly situated' in addition to 'the entire population of Kulnool (273,190 souls) appears in the increase column, as that district has been assumed since the last return was prepared' (*Proceedings of the Board of Revenue*, Fort St. George, 19 July 1852 (IOL, P/310/27), p. 8104).
32. The figures are from *the Census Report, 1881*, vol. III, Appendix A, pp. 1-2.
33. There was a sudden increase in growth rate between 1961 and 1971, which is hard to explain (revision of district boundary was not involved during the period). On the other hand the period between 1971 and 1981 showed a very low growth rate of 0.4 per cent, which recovered again to 2.6, 1.9, and 3.2 per cent in the following decades till 2011.
34. Out of 2,397 villages listed in *the Census Report*, one village was transferred to other district. We will count the total number of villages in Chingleput as 2,396. Among the 2,396 hamlets, 196 had no houses and 210 had no inhabitants. In addition, there were 66 hamlets whose statistics were included in some other hamlets (they were either absorbed by neighbouring big villages or small hamlets belonging to some bigger villages), three villages were without name or statistical information, and four villages were with the information of names only.
35. Out of the 2,395 hamlets totally 229 hamlets had no inhabitants. In addition, there were 54 hamlets whose statistics were not separately recorded but included in some other hamlets.
36. Revenue record like *the 1801 Zamindari Statement* was prepared for its own purposes, so that the land use categories don't necessarily fit to our purposes. The cultivated extent is here assumed to be composed of government cultivated land, *inam* (tax-exempted) land, and house/garden land. As the whole extent of these categories of land was not necessarily cultivated, 6.22 acres was the maximum possible cultivated extent.
37. The average cultivated extent in 2001 came as low as 0.96 ha.
38. *The 1801 Zamindari Statement* covered 2,315 villages and the 1871 Census covered 1,945 villages. The verification of the villages contained there found a total of 1,264 villages included in both records. The reasons of the other missing villages in the corresponding records can be the changes of village names, the amalgamation of natural hamlets in the revenue villages, and others. Unless we get accurate maps around 1801 and 1871 with all the hamlets, the investigation is impossible. For instance, we have a list of villages and a map prepared by Thomas Barnard in the late eighteenth century. The list includes the information about the distance

and direction of every village. The verification work, however, faces many problems. It is urgently needed to build GIS base maps of different periods to facilitate this type of research.

39. We should also think about the possibility of raiyats moving out of the villages under high population pressure upon land as was indicated by Figures 15 and 16.

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