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ABSTRACT

Economic Conditions in Early Modern Bengal: A Contribution to the Divergence Debate

The paper contributes to the debate on relative levels of living in the early modern world by estimating the income of and probable range of income growth in Bengal before European colonization. The exercise yields two conclusions, (a) average income in Bengal was significantly smaller than that in contemporary Western Europe, and (b) there is insufficient basis to infer either growth or decline in average income in the 50 years before colonization and the century after. The former conclusion is relevant to the discussion on the origins of international economic inequality, or 'divergence', and the latter is relevant to the scholarship that considers the economic effects of colonialism.

JEL Classification: N10 and N15
Keywords: colonial india, comparative development and national income

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When did divergence begin? According to one view, Western Europe had higher standards of living than the rest of the world in the eighteenth century, and present-day international economic inequality had pre-industrialization roots.[1] These roots have been variously explained by enlightenment rationality and the quality of institutions. According to another view, standards of living had been similar between China and Europe in the eighteenth century, suggesting that divergence had a later origin.[2] In this perspective, the subsequently unfolding pattern of inequality tends to be attributed to unequal access to resources (mainly land, silver, and coal) necessary to sustain demographic transition, commercial expansion, and industrialization.[3]

The Indian evidence used in this debate is exploratory. One author draws an optimistic picture of South India in the eighteenth century, and considers colonialism to be the main differentiating variable between Britain and South India in the nineteenth century.[4] The argument builds on estimates of wage, which other authors have criticized.[5] Another recent contribution rejects the hypothesis that India and Europe were similar in terms of market efficiency.[6] As this test shows, regional markets in South Asia in the eighteenth century had been weakly integrated, which should caution us against relying too much on fragmentary data on wages to infer levels of living. Estimates of long-term trends in living standards based on wages show a sharp decline in the real wage in early modern India, but this finding needs to be confirmed with other benchmarks.[7] The differences in findings leave room for a re-examination by estimating income rather than the wage. An estimate of income is also the necessary first step in comparisons on national accounts aggregates.

The present paper provides an estimate of the average income of Bengal in 1763 before European colonization began. Bengal is an appropriate region for such an exercise for three reasons. First, many contemporaries believed that Bengal was one of the richest regions of India, containing fertile land, plentiful water, and a large cotton textile industry. An estimate of income for Bengal should represent an upper bound of the plausible range of income for the South Asia region as a whole. Second, Bengal was the earliest region to be colonized by the English East India Company,

[1] Landes, *Unbound Prometheus*, pp. 13-4; Maddison, 'Comparison'.
[2] Pomeranz, *Great Divergence*.
[3] See Frank, *ReOrient*, on the role of silver.
[4] Parthasarathi, 'Rethinking'. Parthasarathi extends the finding to Bengal in 'Agriculture'.
[5] Broadberry and Gupta, 'Early Modern Great Divergence', Allen, 'India in the Great Divergence'.
[6] Studer, 'India and the Great Divergence'.
[7] Allen, 'Real Wages in Europe and Asia'.

and was colonized the longest. An early estimate of the income of Bengal is a tool to assess the impact of colonial rule on long-term development.

Third, because of its commercial, administrative, and military significance in the eighteenth century, statistical sources on the region are relatively rich. Between 1765 and 1815, a number of tracts on the economy of the region were written by merchants and officers connected with the Company. These tracts contain statistical data on aggregates such as taxation, population, and cropped acreage, as well as standard yield, rent, and wages. Tax data were reliable, population and acreage were inferences, and yield, rents and wages were informed estimates. In this essay, I use the tax data to estimate an income, derive averages based on reconstructed population and acreage, and apply consistency checks on the averages using the third dataset on yield, rents and wages.

The rest of the paper is divided into five sections, dealing with the historiography, sources, methods and results, implications, and a restatement of the conclusions, respectively.

Historiography

Bengal in 1763, the year of the study, was an independent state that had broken away from the Mughal Empire with little change in its administrative structure.[8] The territory was geographically diverse. It included the fertile lower Ganges alluvial flat land, the less productive Bihar plains, the semi-arid uplands in the west, and the fertile but remote southern seaboard. In the year of the study, the state collected taxes from intermediaries variously called *zamindars*, *talukdars* or *maliks*, who in turn collected rent from the peasants, retained a portion, and delivered the rest to the royal treasury. It is generally held that the rental assessment was very high, as much as half of gross output.[9] However, lands gifted to religious figures, mosques, and temples, or offered to peasant communities for development of cultivation, attracted lower rents. What proportion the intermediaries sent to the treasury is not exactly known. The amount they delivered, however, is known.

Before the transition, the fiscal system and the military-civil administration were vested in two functionaries, the latter being usually a close relative of the Emperor and the former a courtier. These two officers of the state, the *dewan* and the *subahdar* (called *Nazim* in Bengal), rarely got along, which served the Emperor in keeping a check on disaffection on either side. In the early eighteenth century, the two offices converged in the hands of Murshid Quli Khan (1700-26), believed to be the

[8] On political history, see Marshall, *Bengal*.
[9] For a discussion, see Marshall, *Bengal*, p. 62.

most successful provincial ruler in his time. In the first half of his reign, his success was measured by the regularity with which he paid tribute to Delhi, and in the latter half, by an increased collection of revenue. Historians contend that this success did not owe to a policy of increasing production. Murshid Quli succeeded by arm-twisting the tax-collecting elite under him, the *zamindars*, and by manipulating conflict and competition in this sphere.[10]

Thirty years after Murshid Quli died, a force led by Robert Clive of the English East India Company defeated the ruler of Bengal in the battle of Plassey, and installed a friendly regime. Mir Qasim, the Nawab of Bengal in 1763, turned hostile and was defeated in 1764, when the titular Emperor of Delhi delivered the *dewanny* (charge of fiscal administration) of Bengal, Bihar and Orissa to the East India Company. The old diarchic system returned, the civil administration remaining with the Nawab. But the Nawab being heavily indebted to the Company and dependent on its army, the Company was the dominant partner. In the two years before this turning point, Mir Qasim had made strenuous effort to overhaul the decaying tax administration. His failure on the battlefield owed partly to the anxiety of the *zamindars* over these moves. On the other side, his success in these efforts, aimed at a fresh military build up, unnerved the Company.

Did the passage of empire impoverish the Bengal state and the Bengali people? The Mughal Empire began to collapse into a number of successor states from the first quarter of the eighteenth century. According to nineteenth century historians such as James Mill, British rule restored stability after a period of anarchy and warfare that followed the end of the Mughal Empire. The Aligarh historians read the end of the Empire in much the same way, as a process that upset and disturbed established modes of production and exchange, although contributors to this school do not share the imperialist view of the nineteenth century. In their interpretation, the collapse of the Empire and erosion of state capacity led to revenue farming, local conflicts, and atrophy of capital formerly connected with imperial finance and luxury manufactures in the towns.[11]

From the 1970s, a different interpretation of the eighteenth century gained ground.[12] In this view, the break-up of the Empire encouraged commercial accumulation and led the landed elite to forge closer partnership with merchants and bankers.[13] Maritime trade and land-based Asian trade

[10] For discussion, see Chaudhuri, *Peasant History*.
[11] Habib, 'Eighteenth Century'; Ali, 'Recent Theories'.
[12] Surveyed in Alavi, 'Introduction'; Marshall, 'Introduction'.
[13] Bayly, *Rulers, Townsmen*; Bayly, 'Epilogue'.

strengthened the accumulation process in textiles, cotton, grain, and banking.[14] Those regional states that managed to keep the old administrative order intact, Bengal among them, could devise 'efficient tax gathering procedures', encourage 'rural investments', and foster 'a more prosperous agriculture'.[15]

Leading contributions within this scholarship recognize the ambiguous pattern of economic change in this time.[16] Some historians, however, suggest a narrative wherein rising prosperity in the early eighteenth century was followed by gathering crisis from the middle of the eighteenth century with the onset of colonialism and de-industrialization.[17] Others, based mainly on trends in price, contend that there was indeed an eighteenth century crisis, but the crisis had origins in a depression of land yield owing to climatic and political factors.[18] Rising prices are read quite differently as signs of commercialization in yet another work.[19] And finally, one author speculates that a 'high-level equilibrium trap' turned into a disadvantage as growing population and 'pressure on the resource base ... constrained effective domestic demand for mass consumer goods'.[20] This study infers economic growth mainly from highly speculative population growth estimates.

The utilization of mainly qualitative, indirect, even speculative, evidence renders these generalizations about aggregate trends in levels of living unreliable. Contemporary accounts do not serve any better. The eighteenth century historiography often cites European impressions to suggest that the Bengalis were a prosperous people at the end of indigenous rule. In 1764, Clive described the erstwhile capital of Bengal to be 'as rich as London'. Twenty years later, a merchant in Calcutta described Bengal as 'one of the most fertile and productive Kingdoms under the sun'.[21] In the same year, an official report on the income of the province argued that its legendary riches had been overstated by predecessors.[22] Cotton textile exports from this region had been paid for with silver, a transaction that supposedly reflected 'the inability of Europe to supply western products with a

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[14] Perlin, 'Proto-industrialisation'; Prakash, 'Trade and Politics'; Prakash, 'The Great Divergence'; Chaudhury, 'European Companies'.
[15] Stein, 'Decade'; see also Marshall, 'Introduction'.
[16] Bayly, *Rulers, Townsmen*, is an example.
[17] The title of Chaudhury, *From Prosperity to Decline*, articulates this view. For a sympathetic review of the large scholarship debating the 'beginnings of economic decline' in eighteenth century India, see Frank, *ReOrient*, pp. 267-8. See also Parthasarathi, 'Rethinking'.
[18] Clingingsmith and Williamson, 'Deindustrialization'. Other scholars explain trends in price as an effect of supplies of specie. For a discussion on price statistics, see Haider, 'Prices and Wages'.
[19] Datta, *Society, Economy*, pp. 26-7.
[20] Frank, *ReOrient*, p. 301.
[21] India Office Records (IOR hereafter), IOR/H/392, p. 11.
[22] Parliamentary Papers (P.P. hereafter), 1812-13, (377), *Select Committee.*

potential market'.[23] Several contemporaries, however, read the lack of demand differently. 'The poverty of the infinitely greater part of the population', stated William Cowper, a revenue administrator, in 1812, 'renders it impossible that they should indulge themselves by the purchase of [European] commodities'.[24] 'The great mass' of the Bengalis, another officer stated, 'are not likely to become customers for Europeans articles, because they do not possess the means to purchase them.'[25] Confirming such statements, vendors of European goods like metalware or glassware in the early nineteenth century reported that their main clients had been the political and merchant elite, Nawabs of Carnatic and Awadh, and the Parsi shipbuilders, for example. It is plausible that the fifty years separating Clive and Cowper saw a decline in purchasing power. It is equally plausible that, with increased knowledge of the rural economy, and having observed the 1770 famine that devastated the peasantry, Company officers lost an illusion sustained earlier by their proximity to the regional rulers and the luxuries that the latter patronized.

The historiography, in other words, offers at best exploratory answers to the two critical questions that motivate it. How well-off was the average Bengali on the eve of British rule? Did s/he become better-off or poorer in the century before, and the century after? The attempt to answer these questions with a more direct approach, income measurement, must begin with an estimate of the income from land, which was the main source of livelihood and almost the sole basis for taxation in the region.

Sources

In the first quarter-century following the assumption of the *dewanny*, Company officers battled huge information gap on the taxable capacity of the region. These information problems, in one view, drove them towards making a grant of private property right to the *zamindars* in 1793 against a promise to pay a fixed sum to the state.[26] Between 1765 and the early nineteenth century, a number of individuals connected with the new administration tried to estimate the present value of land in order to arrive at a measure of taxable capacity. I have been able to locate four such estimates that deserve our attention.

[23] Prakash, 'The Great Divergence'.
[24] P.P., 1812-13 (122), *Select Committee*, p. 22.
[25] John Malcolm, P.P., 1812-13 (122), *Select Committee*, p. 57.
[26] Baden-Powell, 'Origin of Zamindari Estates'.

In 1791, George Smith, a private merchant close to the Company, estimated the aggregate agricultural output in a normal year by multiplying estimated average grain consumption by population, and adding export of grain to that figure.[27] The population of Bengal, by his guess, was 12 million. Food intake was estimated in this way: '80 lb of rice will boil into 160 pounds, and something more, which is full sufficient food for 100 men, women and children for one day.' His somewhat more informed guess of rice exported from Bengal to other ports of India between October 1, 1790, and October 1, 1791, was 180,000 bags of 72 kgs. (160 lbs) each, or 13 million kgs. On these assumptions, Bengal produced rice to the extent of 1.7 billion kgs, and exported about 7.5 per cent of the production.[28] Smith estimated the grain requirement of Calcutta (assumed population 300,000 in 1791) in the same way, as part of a proposal to erect a public granary therein. He considered that a price of rice at Rs. 0.052/kg would amount to starvation price, when 'multitudes will flock' to the granary.

James Grant, the Chief Sheristedar (the Accountant General) of Bengal until the position was abolished in 1789, estimated agricultural production (1785) by multiplying the extent of cultivable land by the value of yield per acre. With an estimate of the population of peasants, gross product per capita was derived.[29] Grant evaluated the situation that existed *circa* 1785 based on a series of guesstimates.[30] Out of the land area of Bengal, 90,000 square miles, he reckoned 20 per cent each to be uncultivable ('hilly, jungly, barren and useless') and unproductive (built up, lying under water, or waste), and 40 per cent under 'common pasturage .. beneficial plantations' or exempted from taxation. The net cropped and taxed area was only 20 per cent of land area, which amounted to a meagre 11.5 million acres. 'At the medium value of the lands .., being 1½ rupee per bega should yield .. a revenue of five krore twenty-two lacks seventy-two thousand sicca rupees' or Rs. 52 million, whereas no contemporary regime managed to collect half that amount. Grant's point at arriving at this figure was to underscore that not only was Bengal under-assessed, but also, 'those who have heard of the vast riches of Bengal' unaided by the means 'to estimate them intrinsically' ought to be reminded that the taxable wealth of 'the acknowledged garden of the East' was in fact

[27] Smith's papers contain important description of economic conditions. These papers have been used by Tripathi, who describes him as 'a resident merchant', *Trade and Finance,* p. 5. He is referred as a prominent resident of Calcutta by Hickey, *Memoirs*. One of the objectives of the report cited here was to offer a scheme of loans to induce peasants to clear waste lands in Bengal.
[28] IOR/H/434.
[29] James Grant (1750-1808) was a Company officer, and the author of the most influential treatise on zamindari tenure published before the Permanent Settlement in Bengal. See Embree, 'Grant, James'.
[30] P.P., 1812-3 (377), p. 323, Appendix 4.

quite 'inconsiderable'. Grant underestimated the cropped and taxed area of Bengal. As any conscientious bureaucrat would have done in these times, when the Company was short of money and committed to expensive military campaigns, he was making a case to tax more. Also, Grant was writing at a time when the disruptive effects of the famine of 1770, which lasted a generation, were still in evidence, and possibly he did find cultivable waste lands all around him. His contemporary Smith too had found an 'incredible' extent of good land lying waste in Bihar. The basis for Grant's calculation was the assumption that a peasant family of the average sort had access to 25 small *bighas* of land, or 1.67 acres per person.[31] An acre on average yielded Rs. 18 worth of gross produce. Out of the 11.5 million acres in supply, only about a third was in actual use, thanks to 'the indolence' of the Bengali peasant. The population was 10 million. Given the extent of acreage, the number of households or adult males would be 168,000, and the population dependent on agriculture 8.4 million. The gross output value works out to Rs. 210 million. His allowance of Rs. 2 million as seed cost is too low, the usual practice in rice being 8-10 per cent of gross output. With that revision, we arrive at Rs. 193 million as the value of agricultural income in Bengal in 1785.

In 1791, a third set of numbers was produced by Robert Kyd, who calculated per capita income of peasants in a district in the western Gangetic plains by dividing the assumed value of rent collected per acre with a plausible rent/output ratio.[32] Kyd had already prepared a report called 'Some remarks on the soil and cultivation on the western side of the river Hooghly' for William Jones. Following up the survey, he speculated on the relationship between agricultural yield and peasant income in the upper Gangetic plains. His conclusion was, 'taking the produce of one beegah in rice, wheat or barley, in what are termed the Spring and Autumn harvests in Agra, the assessment amounts to 96 Dams or 2 Rupees and 16/40th per beegah; and admitting this to be a just evaluation of 1/3d of the produce, the aggregate sum amounts to 7 rupees and 1/5th'.[33] These were *bigha-i-ilahi*. That being said, the gross produce numbers are not inconsistent with those assumed by Grant, indeed they are quite similar.

[31] *Bigha*, the common unit of measurement of land area in northern India came in two versions, the *bigha ilahi* of 0.6 acres, and the *raiyati bigha* of 0.33 acres. In Bengal, the *raiyati bigha* was in common usage in the late eighteenth century, except in indigo cultivation.
[32] Kyd was Lieutenant Colonel in the Bengal Army, and the founder and honorary Superintendent of the Botanical Garden at Calcutta. His papers can be found in IOR Mss Eur F95, 1791.
[33] IOR Mss Eur F95, 1791, p. 22.

The most well-known exercise in this class was performed by H.T. Colebrooke.[34] Having first estimated population, Colebrooke developed quantities of per capita consumption of a number of agricultural articles, namely, grains, sugar, tobacco, cotton, oilseeds, 'sundries', and seeds. Multiplied by prices and by population, these quantities added up to a gross output value. His book produced a set of numbers pertaining to 1784 for Bengal and Bihar districts together.

The results of these four attempts are shown in Table 1. The measure of aggregate production differed greatly between these attempts. The difference owed to the conjectural assumptions about land area and population. On the other hand, the average figures were located much nearer each other, suggesting that the rates of taxation, land yield, and consumption per head were more reliable. I combine these latter figures with taxation, the most reliable number of all, to derive income. The method is described below.

Method and results

From the time that regular statistical data began to be collected on agricultural production, cropped area, and prices, approximately the end of the nineteenth century, estimating agricultural income has followed the production method.[35] In this study we cannot adopt that approach because independent data on cropped area and production are not available. On the other hand, in a time when the administration was fanatically occupied with land taxes, we do have reliable measures of taxation. In 1765, the English East India Company assumed charge of the fiscal administration of Bengal. The Rs. 26 million that had been fixed by the erstwhile ruler of Bengal, Mir Qasim, as aggregate taxes in 1763 became a point of reference for the Company officers who took interest in taxation. I will use this figure in subsequent calculations.

On the assumption that land taxes maintained a stable relationship with actual output, I follow Kyd's approach of using the income of the government to infer the income of the population. Adapting the method of estimation to the information content, I define per capita income in three ways[36]:

[34] Henry Thomas Colebrooke (1765-1837) was a Company officer, sanskritist and jurist, and a Chief Justice of the Supreme Court. See Gombrich, 'Colebrooke'.

[35] On the sources and construction, see Blyn, *Agricultural Trends*; Heston, 'National Income'; Sivasubramonian, *National Income*; Roy, *Economic History*.

[36] I assume that the only intermediate input that is actually paid for is seeds, which is a fair assumption in a primarily rain-fed and under-manured cultivation system, which much of Indian

$G(1-s)/N = Tc(1-s)/N = (A/N)(G/A)(1-s)$

Where

G = gross output value

s = proportion of seeds in gross output

N = population dependent on agriculture

T = tax delivered to the treasury

c = 1/t, where t is the proportion of tax in gross output value

A = acreage cropped

The calculation of per capita income proceeds in four stages. T, tax delivered to the treasury as distinct from rent collected from the peasant, is the starting point of this exercise. In the first stage, gross output value is derived by dividing T with three possible values of t, and inserting values for s and N. This gives us three estimates for per capita income. In the second stage, the plausibility of these three estimates is tested. The checks are carried out on four ratios derived from the initial estimate - these are rent rates, tax rates, land-man ratio, and yield. A certain level of G derived from the first stage implies a pair of acreage per head (A/N) and yield per acre (G/A). I apply independent findings on these ratios to examine the plausibility of the first-round estimates. In the third stage, and having selected the most plausible income by this iteration, I derive a distribution of this income into three major classes, the state, the landlord, and the peasant, as follows:

$[Gt] + [G(r-t)] + [G(1-r-s)]$,where r stands for the proportion of rent collected by the tax-collecting intermediary over gross output value. The three terms represent the total incomes earned by the three sharers of land income: the state, the intermediaries, and the peasants, respectively. A value of r is assumed. So far, the calculation addressed income earned from agriculture alone; that is, N is the population dependent on cultivation, and T is assumed to be exclusively derived from land tax. In the final stage, an independent estimate of income earned in manufactures is also developed.

What was the taxable acreage? At the turn of the eighteenth century, there are two numbers that are more consistent with the probable land area than was James Grant's assumed acreage. The Fifth Report estimated cropped area at 44.8 million acres in 1807-08, and Colebrooke placed the cropped area of Bengal at 31 million acres about 1784.[37] Colebrooke's basis for the acreage estimate was surveys of parganas Sharifabad and Tajpur conducted in 1790, showing that three-eights of land area

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agriculture was until the nineteenth century. I make no distinction between peasants and wage-labourers, considering that eighteenth century Bengal was primarily a peasant economy.

[37] P.P., 1812 (377), pp. 322-5, 414; Colebrooke, *Remarks*, p. 12.

were subject to taxation and in actual tillage. He assumed that about half of the lands unassessed were also under cultivation. Applying these proportions to the area of the taxed territory yields 25.7 million acres in cultivation. This figure amounts to a believable 44 per cent of cropped to land area. No one knew the precise extent of the land area of Bengal 1763, the definition of the western frontier being a fluid one. Colebrooke thought it was 112,000 square miles, the 1812 report 91,000, and at the end of the nineteenth century, the combined area of Bengal and Bihar was 121,000 square miles. The later of the two contemporary figures, 91,000, appears the less impressionistic. On that basis, and there being no particular reason to assume a serious difference in acreage between 1763 and 1784, cropped acreage in 1763 is taken to be 25.7 million.

How many lived on the land? Population figures offered by Grant and Smith are too low. Colebrooke estimated the population of Bengal and Bihar at 30 million, based on a census of the Purnea district (*c.* 1800). He defended this figure by an ingenious device, estimating salt consumption per head. Salt sale was a government monopoly, so that the production of salt could be measured with reasonable accuracy if one assumed, somewhat tenuously, that smuggling was absent. The number can be tested by other means. It was stated that Bengal lost about a third of its population in the 1770 famine. A calculation based on collectors' reports of 22 million in 1789, is consistent with a figure of 30 million in 1763.[38] A recent reconstruction projects the rate of change recorded in the census period 1871-1921 backward to arrive at a population of 41 million for Bengal in 1761.[39] The territory of Bengal that produced the tax returns was about a quarter smaller than the territory used for this study, so that, 30 million is again consistent with this information. Inferences based on a later demographic trend can be questioned, since the natural increase in population in the region was apparently large in the nineteenth century, due to the rare occurrence of famines and migration into industrializing lower Bengal.[40] But these processes began late in the nineteenth century.

Several measures of density of population are available for the early nineteenth century. Francis Buchanan Hamilton was appointed by the Court of Directors to conduct a population estimate for the northern districts of Bengal in 1807-14. He reported 15.44 million persons for an area of 37,000 square miles, which included the already densely populated Bihar districts. The same area in 1872 contained 14.93 million persons. On the other hand, between 1822 and 1872, population density in

[38] *Remarks*, pp. 14-5. On famine mortality, see Bose, *Peasant Labour*, p. 10.
[39] Deb Roy, 'Population'.
[40] See discussion in Guha, 'Population History'.

lower Bengal increased from 243 to something nearer 500.[41] An 1815 census of Burdwan district found population density to be 280 persons per square mile, whereas the density according to the 1872 census was 610.[42] These huge shifts owed to industrialization in lower Bengal and migration into this region. Assuming that natural growth and industrialization were smaller in extent before 1822, the weighted average density for 1807-1822 can be applied backward to the estimated area of Bengal in 1763, which again yields a population of 30 million.

How many of these 30 million were dependent on agriculture? Grant considered 85 per cent, and Colebrooke, based again on the survey of one *pargana*, 80 per cent. Francis Buchanan's survey of north Bihar c. 1810 reported 19 per cent of the population to be artisans.[43] In some textile districts of lower Bengal, the proportion could be much higher.[44] On the other hand, in the western uplands and the seaboard, craft and commerce employed very few people. More recent calculations would place the proportion of non-agricultural population closer to the latter percentage. In lower Bengal, where the administration and textile trade had their centres, the proportion was higher.[45] Further, a certain proportion of the 'artificers' and manufacturers in any standard treatment of occupations in this time likely consisted of part-timers who also took part in agricultural work on the margin. On balance, 80 per cent is a reasonable conjecture.

How was the output shared between classes? What were the probable values of r and t? 'In the rule for dividing the crop', Colebrooke wrote, 'whether under special arrangements or by custom, three proportions are known'.[46] In these three arrangements, the landlord received 50 per cent, 33 per cent, and 40 per cent of gross output, and the peasant the remaining part. I take 40 per cent as the average assessment. Land tax is the only major exaction considered. Customs and ground rent were not large and unlikely to bear on the estimate substantially.

It is necessary to clarify the basis for the 40 per cent assumed. The standard system was for the *zamindars*, the tax collecting elite, to take a rent from the peasant, and send a part of the collection to the treasury. But this situation was not the universal one. The notional rent did not necessarily go to the *zamindars*. As the Company officers discovered, an indeterminate but large quantity of land in eighteenth century Bengal had been allowed by the Nizamat to be tax-free or leniently assessed. On

[41] Shakespear, *Memoir*, p. 4; Beverley, 'The Census of Bengal'.
[42] On the former number, *The Oriental Herald*, p. 11.
[43] Cited in Bagchi, 'Deindustrialization'.
[44] Datta, *Society, Economy*, p. 43.
[45] Datta, 'Agrarian Economy'.
[46] *Remarks*, pp. 53-4.

these lands, gifted to religious figures, mosques, and temples, the *zamindars* themselves did not earn an income, though rent was collected from peasants nevertheless. Furthermore, a substantial and indeterminate quantity of land had also been assessed tax free, upon a promise made by a contractor or peasant group to break in new land. In the forested areas of coastal southern Bengal, this arrangement was quite common. These truly rent-free grants cannot be isolated from the other kinds. Offering rent holiday was the only incentive used in this time to induce peasants to produce more. The strategy usually applied to virgin land, and was extensively deployed.[47] The 40 per cent is an average over lands leniently assessed and lands bearing crushing rent burdens in some of the older agrarian zones.

With these numbers in hand, the money received in the royal treasury as a proportion of gross sale value of crops is adjusted until the implied income becomes consistent with other benchmarks.

According to the institutions of the Mughal Emperor Akbar, the just share of the king was a fourth of every harvest. The *raiyatwari* assessment of Thomas Munro in South India followed this principle in settling the government's dues. According to the *Dharmasastras*, the just share of the Hindu king was about one-sixth. But the king rarely received these percentages, for tax collection was done not by officers but by *jagirdars*, *zamindars*, bankers, and other intermediaries who retained their dues before sending the tax to the imperial treasury. How much they retained is a matter of guesswork, and even the most informed guess cannot be applied in the present case because the situation varied from state to state and time to time.

I consider three proportions. In Estimate I, the proportion of net output that the king actually received is 20 percent, in Estimate II 10, and Estimate III 8 percent. The percentages that landlords retained become 20, 30, and 32 respectively. Estimate I suggests a family income of Rs. 12.5, which is below the reported annual wage of farm servants in this time in Bengal. Estimates II and III lie close to each other; but III satisfies the consistency checks better. In particular, the rent rates, tax rates, land yield, prices, and incomes implied by Estimate III lie sufficiently near the numbers we obtain from independent archival sources. The result is shown in the last row of Table 1.

All that remains to be explained are the consistency checks. I begin with rent rates.

[47] Chaudhuri, *Peasant History*.

Apart from Colebrooke's discussion of rent cited before there are two independent sources on actual average rent collected. Grant assumed an average assessment rate of Rs. 4.5 per acre, which is close to the average in Estimate III (Rs. 4.98 per acre collected from the peasant). In 1767, a team of officers toured 30 villages in Midnapore and Jaleswar region of southern coastal Bengal and collected data on land under cultivation, tax rates for various grades of land, and total collection.[48] Their data show that the rent collected from paddy lands in this area varied in the range of Rs. 1.4 to 1.9 (both are averages of three grades within a *pargana*) per small *bigha*, with Rs. 5.15 as the average per acre, which is again near the corresponding number in Estimate III. The diary figure for rent should capture the relatively higher band within Bengal, for coastal Midnapore had fertile land. The average for Bengal in this time with extensive forest lands and arid areas should be somewhat lower.

Next consider the ratio of collection to income. Colebrooke suggests that the average tax collection was Rs. 0.89 per acre, whereas full rent on assessed land was in the neighbourhood of Rs. 4. We would expect that the aggregate distribution of state's receipts and intermediaries' collection should maintain a 1:4 ratio. The Estimate III produces such a ratio.

The third benchmark is land yield. The gross output value implies an average annual yield per acre of approximately 520 kgs rice equivalent. The yield figure is derived by dividing gross output value with farm-gate prices of rice. Prices varied by region and market. If we exclude 1770-1771, the variations were moderate. A trend was fitted to 12 observations located between 1760 and 1810, all being retail prices of rice in major local markets (R^2 0.47), and the predicted number for 1763 is taken.[49] This procedure yields a price of Rs. 0.024/kg. Datta's more detailed price series for the eighteenth century produces a predicted value of rice price in 1763 within close proximity to what I find using different sources. Both these estimates suggest a price of about Rs. 0.04/kg. Farm gate prices could well be Rs. 0.024, given the extremely large profit margins in rice trade usual in the late eighteenth century.[50]

Is 520 kgs of rice-equivalent a credible average yield of land for 1763? The available estimates of yield of the principal crop of Bengal, winter rice, suffer from three kinds of ambiguities.

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[48] IOR, Mss Eur F331/35. It is not clear who the authors of this journal were. The text mentions in one point the words 'Mr. Graham's notes'.

[49] Six observations of retail prices reported in Calcutta Gazette, from Seton-Karr, *Selections*, p. 203; Price, *Five Letters*, p. 158 on rice price in Calcutta, 1769; Narain, *Indian Economic Life*; Colebrooke, *Remark*s, p. 102; IOR/H/392; Datta, 'Agrarian Economy', pp. 440-1.

[50] Datta, *Society, Economy,* 199.

First, it is not clear whether the estimates referred to unhusked paddy or husked rice. It is necessary to observe that all available market prices are prices of rice, so that we need to know yield in terms of rice. Ordinarily, the proportion of rice was about 60 per cent that of paddy. Second, whereas all estimates refer to the units *maund* for weight and *bigha* for land area, the definition of these two units varied over time and between regions.[51] And third, any analysis of grain yield in Bengal needs to be sensitive to the large variation that ordinarily occurred between districts in respect of yield, a variation that owed mainly to the quality of soil and available groundwater resources. Groundwater conditions could change dramatically between even contiguous districts. Between the alluvial flats, the uplands, and the seaboard, the difference was exceedingly wide. These variations should caution us against generalizing for the whole region based on isolated estimates from particular plots.

From the late nineteenth century, official statistics overcame these ambiguities by specifying yield in rice, calculating 'standard yields' based on crop-cutting experiments, standardizing the unit of measurement, and collecting figures for every district. I have located two sets of district yield data from the late nineteenth century.[52] These two sets suggest average yields of rice in Bengal of 444 kgs/acre (1866) and 409 kgs/acre (1901). The earlier of these is a report by William Hunter prepared after the 1866 Orissa famine. His district data suggest that the lowest yields occurred in northern Bihar (Purnea 285), whereas in deltaic Bengal, yield reached 571 kgs/acre (Rajshahi). According to official data in 1901, the later of the two sources, the 'standard' land yield of Purnea was 276 kgs per acre, that of seven lower Bengal districts 550, and the average for all of Bengal 409. In both cases, the average for Bengal was 75 per cent of that of deltaic Bengal.

I have located four estimates of a 'large' yield of rice from late eighteenth and early nineteenth centuries.[53] The observers were based in deltaic lower Bengal, and reported the upper end

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[51] In 1900, by official metrology, one maund was divided into 40 seers, and one seer was divided into 80 tolas, each tola being 180 grains Troy. Each seer was then equivalent to 2.057 lbs, and one maund 37 kgs. In the seventeenth century, the *man-i-Akbari* of northern India was again divided into 40 seers, but the seer of Akbar was of 30 dams, dam being the copper coin, and weighed less. In eighteenth century Bengal, both the Akbari maund (25 kgs.) and the colonial maund (37 kgs.) were in usage.

[52] Hunter, *Famine Aspects*, pp. 17, 36, 64, 94, 100, 105, *passim*; and Bengal, *Season and Crop Report.*

[53] 'Five quarters of rice per acre are reckoned a large produce' in Bengal, Hamilton, *East India Gazetteer*, p. 122. The measure of a quarter elsewhere in the same report is stated as follows: 15 maunds to 7 quarters, p. 20. Colebrooke in two different measures takes 7 maunds and 10 maunds per bigha of unhusked rice the standard for one crop*, Remarks*, pp. 101, 107**.** Kyd reported a large rice yield to consist of '13 maunds per beegah'. The bigha measure was specified at 3600 square 'guz', or the *ilahi guz*, IOR Mss Eur F95, p.21.

of the range of yields in Bengal. In all cases, the unit of measurement can be ascertained. These four estimates are (in kgs/acre) 396, 444, 634, and 543.[54] The two numbers in the middle come from Colebrooke and provide us with a range. The average of these numbers, 540 kgs., lies in close proximity to what Hunter and official statistics found to be the standard yield of deltaic Bengal a century later. That correspondence lends credence to these numbers. For, in the intervening century, there is no significant evidence of either a dramatic improvement or a deterioration of resource endowments and technologies in agricultural production in Bengal to warrant expectations of a rise or a fall in yield. Having noted that correspondence, I scale down the number by 25 per cent to estimate an average yield for Bengal, in this case, 405 kgs/acre.

Winter rice was the dominant crop, but not the only one, in deltaic Bengal. Colebrooke generalized that the usual practice was to either harvest a major rice crop that accounted for about 80 per cent of value, or harvest one minor rice crop of 60 per cent of value. On average, a third or a quarter of the gross output value could be harvested from crops that did not compete with rice. It is likely that Colebrooke overestimated cropping intensity, which varied in as wide a range as did fertility of soil. If we take a third of value to come from non-rice crops, the rice equivalent of gross output should be 525 kgs./acre, almost identical with the number suggested by the output estimate.

An average output figure of 405 kgs/acre from one crop of rice is smaller than grain yields cited in current economic history scholarship. These yield figures are usually one-off estimates taken from plots of land, presumably by court officers conveniently located near these plots, and do not come from sample surveys. Comparisons between these one-off numbers and the figures that come from colonial surveys usually lead to the inference of a decline in the productive power of land between precolonial and colonial India. Desai is the pioneer of such before-and-after comparison, and also of the decline thesis. Parthasarathi cites yield figures for paddy in late-eighteenth century deltaic South India (1700 kgs per hectare, or 708 kgs/acre) that are nearly double the average yield in Tanjore in 1906.[55] Raychaudhuri and Habib report three estimates of rice yield from Tanjore that average to about 650 kgs/acre, again significantly larger than those derived from later surveys.[56]

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[54] Datta reports four other estimates from lower Bengal. The units of measurement are not defined. On the assumption that these figures referred to rice in the husk, large maund and small bigha, the average yield was 633 kgs/acre, *Society and Economy,* p. 41.

[55] Madras, *Season and Crop Reports*, p. 15. The average paddy yield for Tanjore was 1600 lbs/acre, which translates to 436 kgs of rice per acre. The average for Madras Presidency was less than 300 kgs per acre.

[56] Parthasarathi, 'Rethinking'; Raychaudhuri and Habib, *Cambridge Economic History*, pp. 218, 232.

Are my figures of yield too low? If it is assumed that the higher numbers refer to rice in the husk the difference narrows but does not disappear. It is not inconceivable that rice yield sometimes reached 600 kgs/acre in individual plots. But as an average the high figures are unreliable. It is easy to see why that is so. Yield variations between what colonial officers called dry lands, that is rainfed and usually unmanured lands, and wet lands, where the volume of water was subject to human control and which were therefore usually manured lands, was extremely wide. In rice, the range within Bengal was 1:3 (1900). In rice again, the range in Madras was about 1:2 (1906). In wheat, the range was 1:4 (1870).[57] The higher numbers cited in one-off estimates almost certainly represented the situation in the wet zones, whereas the numbers reported in colonial surveys were an average over dryland and wet cultivation. My figure too is an average. A comparison between one-off numbers with such averages cannot produce any sensible result.

The final check involves wages. A peasant family of five members earned Rs. 34 per year from a land area of 5 acres. Not all peasants were rent-paying peasants, and many received wages. 5 acres could be ordinarily tilled with one plough and a pair of bullocks, and would not necessarily need hired workers. However, many landowners and rent-receivers hired workers, not only because they owned larger size of plots but also they did not want to cultivate themselves. Brahman land grantees, for example, routinely relied on wage labour. I have located nine estimates of wages of farm labourers from Bengal and Bihar covering the time-span 1784-1810.[58] These wages, when deflated by average rice prices, do not suggest a trend at all. Projecting the absence of a trend in real wage backward, the average money wage in 1763 could be in the neighbourhood of Rs. 10. In 1763, if the average peasant family earned Rs. 34, the average worker family with two adult workers would earn an income of Rs. 20. There was a wide front where the distinction between a small tenant-farmer and a labourer disappeared.

Outside agriculture, private commerce and manufacturing were important occupations. I leave commerce alone, because of the consistent overlap between trade and government before and

[57] Voelcker, *Report*, pp. 40-41.

[58] 1780s figure an average of three observations on agricultural wages from Bihar and Bengal, one refers to farm servants. Sources, Law, *Sketch*, p. 60 (I convert daily wage of 2d into annual wage assuming eight months full-time work. P.P., 1812-13, (377), *Select Committee*; Colebrooke, *Remarks*. 1810s data based on wages of general labour and agricultural labour from Dacca, Bihar, lower Bengal, Madras, and Dinajpur, average of five observations. Sources are John Stracey's note in P.P., 1812-13 (122), *Select Committee*, p. 48; William Bruce Smith, merchant in Bengal in *Ibid.*, p. 100; Thomas Munro, *Ibid.*, p. 124. In all cases, I assume the rupee was the current rupee (2s) and that workers were fully employed for eight months in a year.

after British takeover. The three most important business houses in the 1750s – Jagatseth, Omichand, and Khwaja Wajid - functioned within a framework of state monopoly and protection, and had the state as their principal client. Whereas they did earn money from independent commercial enterprise, a certain part of their income can be seen as redistribution of tax resources.

The major occupation remaining to be addressed is textile production. The value of cloth produced net of the cost of cotton which has already been accounted for, should bring us closer to a more complete picture of average income of the region. Grant assumed that the production of cotton in Bengal was 4 lakh *maunds* or 10 million kgs, which should reduce to 6.7 million kgs in the weight of yarn. Taking 10 square yards to be the standard output of a kg of yarn, this figure should give us 67 million yards of cloth produced in the region. This is an underestimate, for the total export of cotton textiles in the late eighteenth century was possibly about half this quantity. Grant's implied average consumption, with a population of 10 million and zero export, was 6.7 yards per person, which is more believable considering that in 1900, the average Indian consumption of cotton cloth was 11.5 yards. If we assume export of cloth to be approximately 30 million yards, and average consumption 7 yards, the production of cotton cloth in Bengal could well be 250-260 million yards in the late eighteenth century.[59] In Grant's assumed price, Rs. 0.43 per square yard, the gross output value of textiles becomes Rs. 109 million. Assuming the value-added to be 40 per cent of output value, Rs. 44 million was the income in cotton textiles, to be shared by merchants, spinners, and weavers.

This number can be verified with reference to the production capacity of an average weaver, employment intensity, and the number of weavers. If we assume that 15 per cent of the population of 30 millions lived on textile production, and assume that half that number was actual workers, the work-force in textiles amounted to 2.25 million. Guha argues that for an average fineness of 20s counts, about six hand-spinners were required to supply sufficient yarn to one weaver.[60] An average count of 20s is a reasonable assumption to make for 1763. The numbers of weavers and spinners were 0.32 and 1.93 millions respectively. Sinha compiled data that showed that in the 1760s, weavers earned between Rs. 4 and 7.5 per month depending on the quality of the cloth and the level of skill. Assuming the average income to be Rs. 6, and that they worked full-time for eight months in a year,

[59] The estimate of cloth production, income from textiles, and average cloth consumption are close to the range that Prakash calculates for the turn of the seventeenth century. However, significant differences exist in respect of population and the income attributable to external trade, 'Bullion for Goods', p. 13.

[60] 'Handloom Industry'. See also Prakash, 'Bullion for goods', on this benchmark

a weaver earned Rs. 48 in a year.[61] Sinha reported spinners' earnings to have been much lower, at about Rs. 1 per month, which amounted to an annual income of Rs. 8. Applied to the work-force totals, these incomes yield Rs. 33 million as the net income in textiles.

The range of income we thus derive, Rs. 33-44 million, is a believable one, because the average income that it is based on is consistent with what we get from other sources. Fifty years later, William Fairlie, merchant of Calcutta, stated that ordinary artisans earned between Rs. 3.75 and 11 per month.[62] About the same time, Francis Buchanan found weavers' earnings in Gorakhpur to be Rs. 23 per loom in a year, or in a one-loom household, close to the lower end of the range.[63] These figures hint at an erosion of real earnings of the weaver, but stable, possibly rising earnings, for other kinds of artisan. The average income in textiles, between Rs. 7 and Rs. 10, was marginally higher than that in cultivation, as we would expect.

The last row in Table 1 summarizes the results of the exercise. Although the method is different from that of the early colonial calculations, the results *per head* are not too different, which can be seen as a proof of the reliability of the approach followed in this paper.

Table 1. Income in Bengal in the eighteenth century (Rs.)[a]

		Total (million)	Per head	Per acre
Grant (1785)	Gross product of land	210	25	18
Smith (1791)	Net product of land	117	11	
Kyd (1791)	Gross product of land			12
Colebrooke (1784)	Gross product of land	329	14	11
My estimate (1763)	Income[b]	338	12.3	12.5

Sources and method: See text.

a. The rupee, at 2s, is the current rupee, the other measure *sicca* rupee was 2s 3.84d. In official counts of value, the Rs. 10 exchange rate was more commonly employed.

b. Corresponds to 1.01 acres per person, agricultural income of Rs. 294 million and income from textile manufacture of Rs. 44 million. The implicit shares of the state, landlords, and peasants are 8,

[61] Sinha, *Economic History*, vol. 1, p. 165.
[62] P.P., 1812-13 (122), *Select Committee*, p. 115.
[63] Cited in Ghosal, *Economic Transition*, p. 13.

35 and 57 per cent of agricultural income respectively. Peasant income per capita is Rs. 7. Tax and rent per acre are Rs. 0.97 and Rs. 4.98 respectively.

Implications

The calculations carried out so far have larger implications for comparisons between India and other countries and comparisons between regimes within India.

The results confirm the view that incomes in India and Western Europe were considerably unequal before the Industrial Revolution.[64] The average income in Bengal in 1763, at Rs. 12.5 or £1.25, was one-fifteenth of the income in England and Wales about this time. The silver-equivalent of these incomes diverged in the same fashion. The grain-equivalent income was one-fifth of the income of England.[65]

The average resident of Bengal was not poor in absolute terms in a normal cultivation season. A peasant income per capita of Rs. 7 translated into access to calories that was above that required for nutritional adequacy. Assuming a third of income was spent on clothing and other necessities, the remaining income was sufficient to procure a quantity of rice that would ensure 2200 calories for each adult and about half that for each child. On the point of caloric adequacy, the Bengali peasant was as well-placed as counterparts in Europe and the Yangtze delta were in the mid-eighteenth century.[66] However, subsistence risks were higher in Bengal than in Europe. On the point of price risks, Bengal resembled China more than it did Western Europe. The consumption adequacy fell apart if grain prices increased. Prices more than doubled in 1769 and 1770, turning a scarcity into a violent famine. While workers lost employment during the famine, possession of land was no better security, for poorer peasants were little better than wage workers. The picture confirms Colebrooke's observation, made after a detailed speculation on profitability in cultivation, 'the peasant .. is not so well rewarded for his toil as hired labourers. .. We cannot then wonder at the

[64] Allen, 'Real Wages in Europe and Asia'; Broadberry and Gupta, 'The Early Modern Great Divergence'.
[65] The price of rice in Bengal was Rs. 0.024 per kg, or £0.0024 in 1763. Most records of wheat prices in contemporary England suggest an average in the neighbourhood of 4s per bushel, or £0.008 per kg, Mingay, 'Agriculture', p. 144; Granger and Elliott, 'Fresh Look', pp. 257-265.
[66] Pomeranz, K. 'Standards of Living'.

scenes of distress .. nor that they are often compelled, by accumulating debts, to emigrate from province to province'.[67]

The results also shed light on the problem of how standards of living and state capacity were affected by the passage of empires.

The numbers derived here cast doubt on the 'efficiency' of the precolonial state. The numbers make the state in 1763 a potentially weak political actor in relation to the landlords. The tax-income ratio turns out to be far too low for a powerful state. Such poverty made the state vulnerable to the disaffection of the intermediaries, to the meddling in state affairs by moneyed people including foreign merchants and domestic bankers, and eventually colonization.

What can we say on trends in well-being in the eighteenth century? The method followed in this paper can be projected backward to 1722, when a large-scale tax settlement was conducted upon a substantially similar territory. Between 1722 and 1763, tax collection increased from Rs. 14.3 million to Rs. 25.6 million, an increase of 79 per cent. The price of the chief product rice increased in the same time-span by 80 per cent.[68] Trends in the tax-income ratio can at best be assumed on the basis of qualitative assessments of the authority of the state over zamindars in an earlier era. Such authority was limited in the best of times. Partly reflecting the difficult and varied terrain and the near absence of good roads, Bengal was never easy to govern, whether as an imperial province which it became in the late sixteenth century or as an independent state in the early eighteenth. Although a lucrative tax base, it was a troublesome tax base for the imperial centre. Any ruler would need to overcome constant and huge resistance of a number of great zamindars that had established effectively independent rules. Murshid Quli's fiscal records suggest that state hegemony had improved in the early eighteenth century. But we cannot say what level it had improved from. Based on what we know at present, a constant tax-income ratio in the eighteenth century is as good an assumption as any. On that assumption, aggregate real income did not change.

Trends in per capita income would depend on acreage-per-person and yield-per-acre. Recent research on the eighteenth century observes extensive agricultural growth, settlement of migrant peasants and labourers, and in some cases, their resettlement in regions deserted due to famine or warfare.[69] In all cases, these moves were labour-intensive. Acreage expansion involved either acreage decline somewhere else, or population growth. Acreage expansion, then, should have left acres-per-

[67] *Remarks*, pp. 102-3.
[68] Datta, *Society, Economy*, p. 77.
[69] For a discussion, see Chaudhuri, *Peasant History*, Ch. 2.

capita unchanged, and income per capita should have depended on yield alone. Changes in rice yield required variable application of biological input. All evidence on the matter suggests that the intensity of biological inputs in Bengal agriculture was low and invariable.[70] There is no report of incentives offered by the new states to induce yield-raising actions. On the contrary, the regimes 'did not have much to do with the complex production system, having no institutional basis at all for its planning'.[71] I would side with the view, expressed for northern India by Moreland, Moosvi, and Heston, and generalized to Bengal by Chaudhuri, that the productive capacity of land did not change in the seventeenth and eighteenth centuries in any direction.[72]

The same method can be projected further backward to read fiscal and income trends in the longer run. Between 1582 and 1722, taxes delivered to the treasury in Bengal *subah* increased from Rs. 11 million to Rs. 15 million, an average annual growth of 0.2 per cent per year.[73] Available price indices present conflicting trends. Mukherji's price data yield a fall in grain price in northern India in the seventeenth century.[74] A recent reconstruction of seventeenth century prices suggests a doubling of food prices in northern India in the seventeenth century.[75] It seems reasonable to assume that the average yearly rate of increase in prices in these 140 years exceeded the yearly growth in nominal taxes. In other words, in grain terms, while still a vital resource for the Empire, Bengal contributed steadily less to the Empire. A final speculation on income can be offered. On the assumption that the balance of power between the intermediary and the state was constant, so that the tax-income ratio was constant, aggregate income in grain terms would have fallen too. In order to get the result that the Bengali people gained from Mughal imperial rule, we need to assume that tax-income ratio fell significantly in this time-span, or that the imperial administration empowered the local elite so much that they could retain a larger proportion of income locally. Regional growth was necessarily unequal growth.

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[70] Datta, *Society, Economy*.
[71] Chaudhuri, *Peasant History*, p. 93.
[72] The position that 'no significant change in productivity per unit of area for the major crops between the sixteenth century and the latter half of the nineteenth can really be postulated', Moosvi, 'Note', was earlier stated by William Moreland, cited in Desai, 'Population'. See also Heston, 'Standard of Living'.
[73] Taxes delivered to the treasury for seven time-points available from P.P., 1812-13 (377). *Select Committee*, pp. 221, 228; P.P., 1810 (363). *Select Committee*, p. 183; P.P., 1772b, *Select Committee*, p. 535; Colebrooke, *Remarks*; Marshall, 'Bengal', p. 141.
[74] http://gpih.ucdavis.edu/Datafilelist.htm
[75] Haider, 'Prices and Wages'.

What we can be certain about is that the state was struggling hard to wrest money from the intermediaries in the middle of the eighteenth century. The economic history of Bengal in the period of direct interest to us displayed the syndrome that Marshall calls 'fiscal terrorism'.[76] A great many taxes had been imposed recently and as desperate measures. Out of the Rs. 25.6 million that Mir Qasim had hoped to collect in 1763, *tumar jumma* accounted for only 55 per cent. The remaining 45 per cent was raised from *abwab* imposed by Alivardi Khan's regime, *kifayat* on three articles imposed by Mir Qasim, *towfeer* of Mir Qasim, and increase in the exactions in the *jagir* of Dacca. *Tumar* meant accounts, in practice the land register. The *tumar jumma* meant collections from recorded assesses. *Jam i abwāb* referred to the land rent fixed by Akbar. In practice, *abwabs* referred to any temporary or extraordinary cess. Successive Nazims of Bengal, from Murshid Quli, changed and added *abwabs* upon the zamindars. *Kifayat* literally meant sufficiency or thrift, but was in Mir Qasim's regime a new imposition. *Towfeer* would mean excess or increase, and in practice referred to lands held by individuals unknown to the assessors. That is, *towfeer* was levied to cover the possibility that the local assessors and collectors fraudulently excluded some names from the registers. There was no radical change in the situation for several years after the Company took charge.

When the Company took charge, the need for a simple yet effective fiscal system was keenly felt, and led to the removal of the chief of finance, Muhammad Reza Khan.[77] The Company's military offered a credible threat when the Company put pressure upon the intermediary groups to deliver more. The increased pressure showed up in the financial market. The highest interest rates recorded in Bengal in the 1770s, 36-60 per cent per year, were charged on money advanced by indigenous bankers to *zamindars* to enable them to meet their tax obligations. In some present-day accounts, these interest rates reflected a shortage of specie in Bengal. But interest rates were not high in all transactions. Secured loans and mercantile debts carried the more conventional interest rates of 12 per cent.[78] The banker-*zamindar* transaction was complicated by the particular demands made on the *zamindars*.[79] Defaults among zamindars rose, bankers formed cartels against them, and eventually some of the bankers set up as landlords.[80]

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[76] *Bengal*, p. 72.
[77] On the rise and fall of Reza Khan, see Khan, *Transition in Bengal*.
[78] Interest rates were 10-12 per cent on ordinary debts, 9 per cent on the Company's loans on average, and 12-36 on mercantile loans depending on the length of the term, P.P., 1812-13 (306), *Papers*, p. 56; and P.P., 1772b, *Select Committee*, p. 329.
[79] On these conflicts, see also Sinha, *Economic History*, pp. 134-5.
[80] P.P., 1772a, *Select Committee*, p. 335.

If the average real income in Bengal did not change very much between 1722 and 1763, nor did it change between 1763 and 1881. In 1881, two calculations produce a nominal agricultural income per head in Bengal in the range of Rs. 16-17.[81] Between 1763 and 1881, the price of rice in Bengal, and average income, both increased 35-38 per cent. In the face of such income stability before and after colonization, we can conclude that natural production conditions, and not colonialism, influenced trends in per capita income in the long run.

Conclusion

The paper reconstructs income of late eighteenth century Bengal using the income of the state as the basis. The results carry lessons on the origins of inequality in the early modern world, and living standards, political economy, and economic growth in early modern India.

The picture drawn here suggests a weak state, dependent on livelihoods that earned a smaller income than Western Europe. The income was sufficient to secure consumption adequacy on average, but not food security in the presence of more unstable grain prices. The paper does not find evidence to infer either growth or decline in per capita income between the early eighteenth century and the late nineteenth. Transition to colonial rule made little visible difference to the peasants. More plausibly, real income per head did not change because natural resource endowments rigidly constrained potential land yield.

In the view of early colonial civilians, the signal difference between Britain and Bengal in the late eighteenth century was that British citizens supported a larger government than did their counterparts in Bengal. About 1800, the average tax burden in Britain was £2.2, in Bengal it was £0.1. Whether a reflection of the mercantilism of the state, or any other factor, average trades per person were £5.3 and £0.3 respectively. [82] The evidence of this paper suggests the hypothesis that the poverty of the state in Bengal owed to the dependence of livelihoods on land, and the dependence of cultivation on natural factors. These conditions were relatively invariant to the rise and fall of empires.

[81] Cited in Heston, 'National Income', p. 455.
[82] P.P. 1812-13 (306), *Papers*, p. 57. I take from the original estimates of the population, trade, and taxation of Britain in 1804. The India data come from the data presented in this paper.

References

Alam, M. and S. Subrahmanyam. 'Introduction'. In Alam and Subrahmanyam, eds., *The Mughal State 1526-1750*. Delhi: Oxford University Press, 1998.

Allen, R.C. 'Real Wages in Europe and Asia: A First Look at the Long-Term Patterns.'In *Living Standards in the Past: New Perspectives on Well-Being in Asia and Europe*, edited by R.C. Allen, T. Bengtsson, M. Dribe, 111-130. Oxford: Oxford University Press, 2005.

Allen, R.. 'India in the Great Divergence.' In *The New Comparative Economic History: Essays in Honor of Jeffrey G. Williamson*, edited by J.G. Williamson, T.J. Hatton, K.H. O'Rourke, A.M. Taylor 9-32.Cambridge Mass.: M.I.T. Press, 2007.

Ali, A.. 'Recent Theories of Eighteenth Century India.'*Indian Historical Review* 13, no. 1 (1986-7): 102-110 .

Bagchi, A.K. 'De-industrialization in India in the Nineteenth Century: Some Theoretical Implications.' *Journal of Development Studies* 12, no. 2 (1976): 135-164.

Bayly, C.A. *Rulers, Townsmen and Bazaars: North Indian Society in the Age of British Expansion 1770-1870*. Delhi: Oxford University Press, 1983.

Bayly, C.A.. 'Epilogue to the Indian Edition.' In *Eighteenth Century in India*, edited by Seema Alavi, 165-198. Delhi: Oxford University Press, 2002.

Bengal. *Season and Crop Report of Bengal*. Calcutta: Agricultural Department, 1901.

Beverly, H. 'The Census of Bengal.' *Journal of the Statistical Society of London* 37, no. 1 (1874): 69-113.

Blyn, G. *Agricultural Trends in India, 1891-1947: Output, Availability and Productivity*. Philadelphia: University of Pennsylvania Press, 1966.

Bose, S. *Peasant Labour and Colonial Capital: Rural Bengal since 1770*. Cambridge: Cambridge University Press, 1993.

Broadberry, S., B. Gupta. 'The Early Modern Great Divergence: Wages, Prices and Economic Development in Europe and Asia, 1500-1800.' *Economic History Review* 59, no. 1 (2006): 2-31.

Chaudhuri, B.B. *Peasant History of Late Pre-Colonial and Colonial India*. New Delhi: Pearson Longman, 2008.

Chaudhury, S. 'European Companies and the Bengal Textile Industry in the Eighteenth Century: The Pitfalls of Applying Quantitative Techniques.' *Modern Asian Studies* 27,no. 2 (1993): 321-40.

–. *From Prosperity to Decline: Eighteenth Century Bengal*. Delhi: Manohar, 1995.

Colebrooke, H.T. *Remarks on the Husbandry and Internal Commerce of Bengal*. Calcutta: Government Press, 1804.

Datta, R. *Society, Economy and the Market. Commercialization in Rural Bengal c. 1760-1800*. Delhi: Manohar, 2000.

Deb Roy, R. 'Population of the Province of Bengal, 1751-1801.' http://www-census.ined.fr/epc2001_history/Authors/Rama/RamaRoy.htm, 2001.

Desai, A.V. 'Population and Standards of Living in Akbar's Time.' *Indian Economic and Social History Review* 9, no. 1 (1972): 43-62.

Embree, A.T. 'Grant, James.' In *Oxford Dictionary of National Biography*, Oxford: Oxford University Press, 2004.

Frank, A.G. *ReOrient: Global Economy in the Asian Age*. Berkely and Los Angeles: University of California Press, 1998.

Ghosal, H.R. *Economic Transition in Bengal Presidency*. Calcutta: Firma KLM, 1966.

Gombrich, R. 'Colebrooke, Henry Thomas.' In *Oxford Dictionary of National Biography*, Oxford: Oxford University Press, 2004.

Granger, C.W.J., C. M. Elliott. 'A Fresh Look at Wheat Prices and Markets in the Eighteenth Century.' *The Economic History Review* 20, no. 3 (1967): 257-265.

Guha, S. 'The Handloom Industry of Central India: 1825-1950.' *Indian Economic and Social History Review* 26, no. 4 (1989): 297-318.

–. 'The Population History of South Asia from the Seventeenth to the Twentieth Centuries: An Exploration.' In *Asian Population History*, edited by Cuirong Liu, Ts'ui-jung Liu, James Lee et al, 63-78. Oxford: Oxford University Press, 2001.

Habib, I. 'The Eighteenth Century in Indian Economic History.' In *Eighteenth Century*, edited by Marshall..

Haider, N. 'Prices and Wages in India (1200-1800): Source Material, Historiography and New Directions.' Paper presented in Towards a Global History of Prices and Wages, Utrecht, August 19-21 2004.

Hamilton, Walter. *The East India Gazetteer; containing Particular Descriptions of the Empire, Kingdoms, Principalities, Provinces, Cities, Towns, Districts, Fortresses, Harbours, Rivers, Lakes, &c. of Hindostan and the Adjacent Countries*. London: John Murray, 1815.

Harley, C. Knick. 'British Industrialization before 1841: Evidence of Slower Growth during the India Office Records (IOR). Mss Eur F331/35, 1767. *Journal of a Circuit of the Midnapore and Jallesore Provinces*, April-May.

–. IOR/H/392. 1785. George Smith, Observations on the English possessions in India, their government, population, cultivation, produce and commerce', 20th September.
–. IOR/H/434, 1781-1791. Papers of George Smith.
–. IOR Mss Eur F95, 1791. Miscellaneous papers of Robert Kyd.
Industrial Revolution.' *Journal of Economic History* 42, no. 3 (1982): 267-289.
Heston, A. 'The Standard of Living in Akbar's Time: A Comment.' *Indian Economic and Social History Review* 14, no. 4 (1977): 391-396.
Heston, A. 'National Income.' In *The Cambridge Economic History of India, vol. 2, 1750-1970*, edited by Dharma Kumar, Cambridge: Cambridge University Press, 1983.
Hickey, William, *Memoirs*, 4 volumes. London, 1913–1925.
Hunter, W. *Famine Aspects of Bengal Districts*, London: Trübner, 1874.
India. *The Imperial Gazetteer of India: Vol III Economic*. Oxford: Clarendon Press, 1908.
Khan, Abdul Majed. *The Transition in Bengal 1756-1775. A Study of Saiyid Muhammad Reza Khan*, Cambridge: Cambridge University Press, 1969.
Landes, D.S. *The Unbound Prometheus: Technological Change and Industrial Development in Western Europe from 1750 to the Present*. Cambridge: Cambridge University Press, 2003.
Law, Thomas. *A Sketch of Some Late Arrangements and a View of the Rising Resources, in Bengal*. London: John Stockdale, 1792.
Maddison, A. 'A Comparison of Levels of GDP per capita in Developed and Developing Countries, 1700-1980.', *Journal of Economic History*, 43, no. 1 (1983): 27-41.
Madras, *Season and Crop Report of the Madras Presidency*, Madras: Board of Revnue, 1906.
Marshall, P.J. *Bengal: The British Bridgehead*. Cambridge: Cambridge University Press, 1987.
–. 'Introduction.' In *Eighteenth Century in Indian History: Evolution or Revolution?*, edited by P.J. Marshall, 1-30. Delhi: Oxford University Press, 2003. .
Marshall, P.J., ed.. *The Eighteenth Century in Indian History: Evolution or Revolution?*. Delhi: Oxford University Press, 2003.
Mingay, G.. 'Agriculture and Rural Life.' In *A Companion to Eighteenth-century Britain*, edited by H.T. Dickinson, 141-157 London: Wiley Blackwell, 2004.
Moosvi, S. 'Note on Professor Alan Heston's 'Standard of Living in Akbar's Time - A Comment'.', *Indian Economic and Social History Review* 14, no. 4 (1977): 397-401.
Narain, Brij. *Indian Economic Life: Past and Present*. Lahore: Uttar Chand Kapur, 1929.

Parliamentary Papers, United Kingdom. 1772a. *Select Committee on Affairs of East India Company Fourth Report*.

–. 1772b. *Select Committee on Affairs of East India Company Seventh Report*

–. 1812-13 (122). *Select Committee, and Committee of Whole House of Commons, on Affairs of East India Company Minutes of Evidence (Trade and Shipping, and Renewal of Charter)*.

–. 1812-13 (306), *Papers relating to Revenues of India, and on Growth of Hemp and Cotton*.

–. 1810 (363). *Select Committee on Affairs of East India Company Second Report, Appendix*.

–. 1812-13, (377). *Select Committee on Affairs of East India Company Fifth Report, Appendix (Appendix 4, James Grant, 'A Historical and Comparative Analysis of the Finances of Bengal; Chronologically arranged in different periods from the Mogul Conquest to the present time:- Extracted from a political survey of the British Dominions and Tributary Dependencies in India')*.

–. 1812-13 (377). *Select Committee on Affairs of East India Company Fifth Report, Appendix (Appendix 13, Minute of the Governor General in Council; dated the 7th December 1792. Extract Bengal Revenue Consultations; the 7th December 1792)*.

Parthasarathi, P.. 'Rethinking Wages and Competitiveness in the Eighteenth Century: Britain and South India.' *Past and Present* 158 (1998): 79-109.

–. 'Agriculture, Labour, and the Standard of Living in Eighteenth-Century India.' In *Living Standards in the Past: New Perspectives on Well-Being in Asia and Europe*, edited by R.C. Allen, T. Bengtsson, M. Dribe, 99-110. Oxford: Oxford University Press, 2005.

Perlin, F. 'Proto-industrialisation in Precolonial South Asia.' *Past and Present* 98 (1983): 30-95.

Pomeranz, K. *The Great Divergence: China, Europe, and the Making of the Modern World Economy*. Princeton: The Princeton University Press, 2000.

Pomeranz, K. 'Standards of Living in Eighteenth Century China: Regional Differences, Temporal Trends, and Incomplete Evidence.' In *Living Standards in the Past: New Perspectives on Well-Being in Asia and Europe*, edited by R.C. Allen, T. Bengtsson, M. Dribe, 23-54. Oxford: Oxford University Press, 2005

Prakash, Om. 'Bullion for Goods: International Trade and the Economy of Early Eighteenth Century Bengal.' *Indian Economic and Social History Review* 13, no. 2 (1976): 159-186.

–. 'Trade and Politics in Eighteenth Century Bengal.' In *Eighteenth Century in India*, edited by Seema Alavi, 136-164. Delhi: Oxford University Press, 2002

–. 'The Great Divergence: Evidence from Eighteenth Century India.' Seventh Global Economic History Network Conference at Istanbul, 2005.

Raychaudhuri, T., Habib, I., eds., *The Cambridge Economic History of India, Vol. I: c. 1200–1750*. Cambridge: Cambridge University Press, 1983.

Rickards, R.. *India, vol. I*. London: Smith Elder, 1829.

Roy, T. *The Economic History of India 1857-1947*. Delhi: Oxford University Press, 2006.

Seton-Karr, W.S.. *Selections from Calcutta Gazettes*, vol. 2. Calcutta: Military Orphan Press, 1865.

Shakespear, A. *Memoir on the Statistics of the North Western provinces of the Bengal Presidency*. Calcutta: Government Press, 1848.

Sinha, N.K.. *The Economic History of Bengal*, vol. 1. Calcutta: Firma KLM, 1962.

Sivasubramonian, S. *National Income of India in the Twentieth Century*. Delhi: Oxford University Press, 2000.

Stein, B. 'A Decade of Historical Efflorescence.' *South Asia Research* 10 (1990): 125-138.

Studer, R. 'India and the Great Divergence: Assessing the Efficiency of Grain Markets in Eighteenth- and Nineteenth-Century India.', *Journal of Economic History*, 68, no. 4 (2008): 393-437.

Tripathi, A. *Trade and Finance in the Bengal Presidency, 1793-1833*. Delhi: Oxford University Press, 1979.

The Oriental Herald and Journal of General Literature, vol. 12. London: Hurst Chance and co, 1829.

Voelcker, J.A.. *Report on the Improvement of Indian Agriculture*. London: Eyre and Spottiswoode, 1893.