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CONSUMPTION OF COTTON CLOTH IN INDIA, 1795-1940

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ABSTRACT

Consumption of cotton cloth in India, 1795-1940*

Using data on the production and usage of cotton, the paper develops estimates for the production and consumption of cotton cloth in India during 1795-1940, and based on these numbers, revisits three issues central to interpretations of economic change in colonial India. These are: (a) trends in levels of living, (b) the correlation between production of textiles and consumption of textiles, and (c) consumption of clothing in India in relation to the rest of the world.

JEL Classification: N35 and N95

Keywords: consumption, India, standard of living and textiles

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A recent scholarship exploring the origins of international economic inequality in the modern world has made comparative living standards a subject of interest. The conjecture that Asians were once as well off as the Europeans, before modern economic growth ushered in a dramatic ‘reversal of fortune’, has inspired many attempts to measure levels of living in Asia before 1800.¹ Quantitative studies have mainly analysed real wages, cautiously stepping into Angus Madison’s GDP measures, which leave room for refinement especially for periods prior to 1820.²

For a number of reasons, it is necessary to broaden the set of measures used in the literature. Real wages are too institutionally determined to lend themselves easily to a comparison across regions and over time-spans that represent different institutional conditions.³ Measures of wages and incomes often fail to reflect human welfare. Adequate price and cost of living data are usually unavailable. GDP is difficult to define and measure for regions that did not exist as nation states until recently and, in the case of South Asia, saw a reconfiguration of the political map. Direct measures of welfare, such as the Human Development Index or its predecessor the Physical Quality of Life Index, involve fewer conceptual problems, but the data are harder to get.

For all of these reasons, efforts to measure consumption can be especially promising. Consumption is also of interest in view of the finding that, in Western Europe, a disparity developed between trends in income and trends in the quality of life (approximated by consumption) on the one hand, and between income and trends in inequality on the other, during the transition from preindustrial to an industrial economy.⁴ An optimist position on the link between economic

¹ For statements and tests of the conjecture, see Parthasarathi, *Rethinking wages*, and Pomeranz, *Great Divergence*. For subsequent tests using wages, see Broadberry and Gupta, *Early modern great divergence*, and Allen, *India in the great divergence*. Broadberry and Gupta, *Lancashire, India, uses wages to analyse comparative advantage in cotton textile production*. For a measure of GDP, see Roy, *Economic conditions*. The cited phrase comes from Acemoglu, Johnson, and Robinson, *Reversal of fortune*.

² van Zanden, *Rich and poor*. Also, Maddison, *The World Economy*.

³ For example, one feature of premodern wages in India is that money wages changed little over time. The constancy in monetary payment suggests the possibility that non-monetary payments, such as provision of subsistence during famines, were variable. Little is known about such ‘implicit contracts’ – if they were present, how they changed over time and space, when they dissolved, and why.

⁴ The literature is large. A brief selection of recent surveys and critiques might include Mokyr, *Is there still life in the pessimist case?*; Feinstein, *Pessimism perpetuated*; Komlos,

modernization and levels of living claimed that the effect was positive and immediate. A pessimist view argued that, for a few generations, modernization depressed the workers' standard of living. Recent research on the subject using heights as a proxy for standard of living seems to confirm the pessimist position, while also qualifying the effect in the case of proto-industrializing regions. Another strand in the literature suggests a disparity between demographic transition and income transition, with marriage practices and fertility lagging behind income growth by a considerable margin.

India experienced a different sort of modernization in the eighteenth through the early twentieth century. The variables that came into play in this time can be categorized into three classes, global, colonial, and social. In the nineteenth century, the Industrial Revolution and the first globalization reduced craft employment and depressed artisan incomes. The same forces also made manufactured consumer goods cheaper to buy than before. The transition to colonialism and the attendant warfare may have reduced trade and consumption in some regions. Consolidation of colonialism led to an impoverishment of the formerly ruling elite, and a fall in aristocratic consumption of luxuries. The early phase of new property regimes often saw over-taxation of the peasants. But the legal definition and enforcement of property rights also made it easier, if riskier, to finance consumption by loans.⁵ New cultural influences on consumption were present too, for example, caste-based dress codes were in decline.⁶ A demographic transition began from the interwar period, and for about twenty years population did grow as fast as income.

These elements should exert contradictory pulls upon consumption. But what was the net effect? The present paper develops a set of measurements of the consumption of cotton cloth in the subcontinent between 1795 and 1940, in order to answer that question. Along with measuring the level and changes in the consumption of cotton cloth, the paper addresses two subsidiary questions often asked in relation to the Indian history. How closely were trends in domestic

Secular trend; van Zanden, Wages and the standard of living; and Angeles, GDP per capita or real wages?.

⁵ These developments – reduction in aristocratic consumption, the effect of taxation on peasant welfare, and the effect of credit markets and legislation on peasant indebtedness – form large literatures within the regional historical scholarship. For further discussion and readings, see Roy, *Economic History*, pp. 59, 113, 133-6.

⁶ See, for example, Yanagisawa, Handloom industry.

production and domestic consumption correlated? And, how distinctive were the trends in Indian consumption?

Cotton cloth is a particularly relevant consumption item for making inferences about general welfare. There are three reasons for this. First, it figured prominently in the innovations that constituted the Industrial Revolution. The average price of cotton cloth fell in the nineteenth century worldwide, so that measures of well-being and cost of living are sensitive to how cotton cloth is treated in the estimates. Second, the Indian subcontinent was both a producer and a consumer of cotton cloth. Cotton was relatively more the fibre of choice in India than in contemporary Britain or China. Third, as Kenneth Pomeranz observes for China, a rising consumption of clothing can be taken as an indirect measure of food security.⁷

The paper constructs cloth consumption in nineteenth century India by making use of the cotton production and trade dataset. Statistics on the production of cloth and yarn begin to be available from the end of the nineteenth century. For any earlier period, the only dataset it is possible to use for the purpose is that on raw cotton. The possibilities of using cotton data to measure textile consumption are quite substantial, as Albert Feuerwerker showed in a paper on late-nineteenth century China.⁸ These possibilities have not yet been fully utilized for India.

Although consumption has not been researched much, production of textiles has drawn considerable attention. It is useful to begin with a review of the scholarship.

The literature

Previous estimates of the scale of nineteenth century Indian textiles have been made with the purpose of measuring the effects of industrialization, colonization, and trade on the handicraft industry. The default hypothesis is that the effects were serious and adverse, happened in the nineteenth century, and followed from three causes: decline in aristocratic consumption of finer textiles like muslins (roughly 1765 onward), decline in export of Indian cloth (1790 onward), and importation of machine-made yarn and cloth from Britain to India (1820 onward). The accent falls on employment, whereas the accent in the present paper falls on levels of living. The two effects should not be conflated, for the textile sector was relatively a small

⁷ Standard of living.

⁸ Handicraft and manufactured cotton.

employer for employment trends within it to impart a large effect on average levels of living. Nevertheless, for measurement purposes, the literature is relevant. I will, therefore, discuss the literature, and identify the points of departure from it.

In principle, it is possible to derive three testable questions from the stylized narrative on textile employment, (1) how much decline was there in the crafts?; (2) when did it happen?; and (3) why did it happen?

How much decline was there? The interest of present-day historians in aggregate textile data began from an article by Morris David Morris, which called for a revision in the belief that colonialism and globalization had ‘de-industrialized’ India.⁹ Import of cheaper British goods substituted handloom cloth. But the underlying reason, Morris suggested, could have a positive income-effect too. Further, increasing income in the peasant export sector could lead to an outward shift of the demand for clothing. If the positive effect was sufficiently strong, the handicraft textiles could gain in the net. In either case, consumption should increase, tempered perhaps by job loss in the craft sector. The magnitude is sensitive to the strength of the substitution and income effects. A partial test found the demand for imported cloth to be price elastic, but the test neither included the relative prices between handmade and machine-made cloth, nor used a reliable income.¹⁰

The question of the scale of decline was taken up by a paper that estimated the scale of job loss in the nineteenth century in one region.¹¹ The paper used employment data rather than textile data. Employment data have problems, the most serious one being the mix between part-timers and full-timers, which was very large in textiles.¹² Another statistical work approached the issue from a different angle.¹³ This paper compiled a set of useful trade data for the early and the late nineteenth century, and read off production and consumption in 1850 from a demand equation not unlike the one cited above. The demand equation itself used data that pertained to a later period, incorporated national income statistics of an earlier and now largely discarded vintage, and for a proxy of relative prices, deflated import price by a consumer price index that is very unlikely to have included handloom cloth. The production figure for the early nineteenth century was then converted into notional

⁹ Towards a reinterpretation.

¹⁰ Desai, Demand for cotton textiles.

¹¹ Bagchi, De-industrialization of India.

¹² Thorner, “De-industrialisation”; see also Vicziany, De-industrialization.

¹³ Twomey, Employment.

employment using a method and parameters developed by Om Prakash.¹⁴ A recent paper approached the subject with different methods, and showed that the job loss in one major region, Bengal, was possibly of a smaller order than the range implied by earlier calculations.¹⁵

Finally, an unpublished article used a method somewhat similar to the one the present paper uses, and estimated cotton cloth production from raw cotton statistics.¹⁶ This paper by Amalendu Guha covered a period (1852-1900) that forms a segment of the time-span of interest. The main finding of the paper, that there was a continuous fall in the extent of local production of textiles, is neither surprising nor disputable for much of this period. The extent of the fall, however, was overstated in the paper. The acreage under cotton, for example, was assumed to be improbably large; the yield per acre assumed to have fallen; and the conversion of cotton to yarn done under unrealistically low ratio of conversion loss. The overall result suggested exceedingly high levels of handicraft activity in 1850, and therefore, a far too rapid decline in the next half a century. These numbers underscore the need to take a more cautious look at cotton cultivation as well as conversion figures.

The fact of a decline in domestic textiles cannot be disputed. There is no disagreement on this issue in the literature. But when it happened, by how much, and why, remain shrouded in speculation, partly because the major variables thought to be responsible were active in different time-spans. The early statements of the episode of a decline used impressionistic data and timed it in the first half of the nineteenth century.¹⁷ The earlier timing has one virtue. It is consistent with the belief that there was a general economic depression in the Deccan region in the 1820s.¹⁸ But there is little concrete evidence from the textiles side to confirm that de-industrialization had any role in this episode. Census data (1872-1931) suggest a fall in craft employment in the last quarter of the nineteenth century and the first half of the twentieth. Based on these findings, some authors locate de-industrialization in

¹⁴ Bullion for goods.

¹⁵ Ray, Identifying the woes.

¹⁶ Guha, Decline.

¹⁷ The pre-1970 historical scholarship on craft unemployment usually dealt with the early nineteenth century. The important authors were Romesh Dutt, A. Sarada Raju, R.D. Choksey, H.R. Ghosal, and A.V. Raman Rao. This corpus is discussed more fully in Roy, *Economic History*, p. 59.

¹⁸ See Bayly, *State and economy*, for a discussion.

the late-colonial times.¹⁹ The correct reading of the census data is a debated issue, as we have seen. Further, in the first half of the twentieth century crude measures of labour productivity in craft textiles increased. Reconstruction of national income data used wage statistics as the basis for estimation of income from small-scale industries; the wages show a pattern consistent with the productivity trends.²⁰ Regional histories of textile production show that the handloom industry was quite resilient in the nineteenth century, and the hand-spinning industry did not begin to decline until the railway network penetrated deeper from the 1870s.

What factors led to decline? Mechanical inventions were the most important factor causing a fall in craft textiles. But it was not the only one. There were also fall in export demand and in elite consumption. A recent paper adds to these factors adverse climatic and political conditions of the eighteenth century that might have affected the supply conditions of Indian textiles.²¹ I have not seen enough evidence in the sources either for or against this thesis to form an opinion. However, trade historians might raise the objection that the formation of the East India Company state and consequent political control on terms of trade could potentially offset the effects of climate on productivity that this paper considers important. The entire literature on causation overlooks the more obvious effect of disorder and warfare on the internal trade and cultivation of cotton, on which there is some evidence in the sources on trade. Whatever the origin of a supply shock, the idea deserves attention for this very reason.

The employment literature makes the data processed here more intelligible, to which subject I now turn.

Method

By definition,

Total consumption of cloth = Production + Net import.

There is trade statistics of good quality for the early nineteenth century. Production can be approximated by the following identity:

Production of cloth = [(Cotton acreage x yield of cleaned cotton per acre – export of cleaned cotton) x (proportion of output of cleaned cotton used in textile uses) x (1-

¹⁹ Patel, *Agricultural Labour*, Chattopadhyay, De-industrialization.

²⁰ Sivasubramonian, *National Income*.

²¹ Clingingsmith and Williamson, De-industrialization.

proportion of cotton lost in conversion to yarn) - (net import of yarn)] x (cloth/yarn conversion)

Many of the elements entering the expression are ratios that are structural or technical in nature, and should not change quickly. Still, the values of the conversion ratios represent some openness. A brief discussion of the elements is in order.

The first reliable official statistics on acreage under cultivation did not become available before 1880. However, a series of Parliamentary enquiries on the state of cotton cultivation in India, in the wake of the American civil war and cotton export boom in India, led to compilation of data on acreage under cotton cultivation for the 1860s, based on returns submitted by district collectors.²² I have totalled the numbers that are available for the year 1860. These numbers are shown in Table 1. It is immediately clear that the numbers for 1860 are too low even when we account for a large increase in cultivation in the next quarter of a century in response to the cotton famine. The differences between 1860 and 1885 are especially large for central and southern India. It is unnecessary to go into the details of why there might be large discrepancy for these provinces.²³ In the absence of any other basis for correcting the data, I raise the acreage figures of these two large cotton-growing provinces by using the ratio of 1885 and 1865 acreage for the other main provinces, excluding Punjab. Punjab is excluded because in this region new canal projects raised cultivable land frontier substantially. The revision is shown in the 1860 (revised) column.

²² See under Table 1, and Forbes Royle, *Culture and Commerce*; Wheeler, *Hand-book*; Medlicott, *Cotton Hand-book*.

²³ One possibility is that the railways, which connected the cotton districts of the Deccan plateau with Bombay only in the 1870s, had a disproportionately large effect on cotton trade and production in this region, where pre-railway overland transportation was very expensive. It is unlikely, however, that cotton acreage increased by a factor of 5-8, as suggested in the Parliamentary enquiries. My revision will still leave a large expansion in acreage, but of a more credible magnitude.

Table 1. Cotton acreage, 1860-1885, millions

	1860 (before revision)	1860 (revised)	1885 (used for 1880)
Madras	0.31	0.82	1.36
Bombay	1.37	1.37	2.22
Northwestern Provinces, Agra and Oudh	0.96	0.96	1.66
Punjab	0.42	0.42	1.03
Central Provinces and Berar	0.38	1.47	2.45
Other	0	0	0.02
Total	3.44	5.04	8.74

Source: India, *Statistical Abstracts*, for 1885, and British Parliamentary Papers (B.P.P.), Cotton (India); B.P.P., Calicoes, &c.; B.P.P., Cotton goods, for 1860 (before revision). For the revision, see text.

Acreage did not change much between 1840 and 1860. I base this conclusion mainly upon one careful survey of cotton cultivation in the biggest cotton producing province, Bombay Presidency. The survey compiled district statistics.²⁴ For Broach, Surat, Kaira, and Khandesh – three of them principal cotton regions – there was no change at all in the acreage under cotton between 1840 and 1860. In the case of Ahmedabad, there was a small increase, but the levels were low for this district in both years. If these regions most accessible from Bombay port and located close to clusters of old spinning industries did not experience a large shift in overall production, it is unlikely that any of the other regions in India did either.²⁵

Inferring the 1820 figure requires cautious speculation. In the second quarter of the nineteenth century, land was abundant, and agriculture in most parts of India was labour-constrained. Expansion in cultivation, then, should entail either population growth or migration. Neither of these changes occurred to a significant extent. A fall in cultivation or shift of cotton to grain production, is possible because the derived demand for cotton from spinners would have fallen due to import of yarn, and possibly import of cloth as well. The ground for a large shift is not very

²⁴ Cassels, *Cotton*. As one author observes, during the Civil War, when India supplied over half of the demand for cotton in Lancashire, 'the bulk of India's cotton was cultivated in Western India and within a radius of three hundred miles of Bombay', Logan, 'India's loss'.

²⁵ A later work (Guha, *Raw cotton*) reckoned that in 1851, cotton acreage was 4 million in Bombay and Gujarat, which I find improbable considering that the acreage in these regions in the earliest reliable official measure, for 1885, was placed at 2.2 million.

strong, however, since relative price of cotton and grain in the domestic market did not change at all. On these grounds, I assume absence of a major shift in cotton acreage, except to the extent of the area equivalent of additional import of yarn, which is 207407 acres. I add this number to the 1840 figure to get the 1820 figure. My assumed figure of roughly three million acres between 1820 and 1840 receives indirect support from contemporary informed discourse. The Secretary to the United States Treasury had placed the cotton crop of India in 1834 at 185 million lbs. The number translates into an area a little over two million acres. A careful discussion of this number rejected it for being too low, and inconsistent with export trade volumes.²⁶

The productivity of cleaned cotton per acre varied across space and according to what kind of seeds was taken. The problem of adopting an average yield is that cotton yields were notoriously variable and unpredictable. In the period in question, much experimentation was going on with foreign varieties, especially Bourbon or Mauritius, Sea Island, and most importantly, Georgia and New Orleans. While the official interest in these projects and the voluminous documentation that it produced, might lead us to believe that they were successful, in fact the diffusion was very limited. But even though the new varieties did not change the average yield very much, they added manifestly to dispersion. An 1840s survey found per acre yields in one district in Bundelkhand to range from as low as 50 lbs./acre to 150 lbs./acre.²⁷ In one influential opinion, these variations owed to the effect that soil and moisture exerted on the local varieties of seeds, leaving little scope to human labour, knowledge, or biological inputs to alter the yield.²⁸ The indigenous varieties did not usually fail, but on average produced a poor crop. The higher figures came from the American, Mexican and Mauritian varieties. These seeds were poorly adapted to the Indian environment and susceptible to pest attack, too much heat as well as too much rain, when commercially cultivated. In the nineteenth century a number of experimental farms modelled after the indigo plantations of Bengal and owned or managed by American 'practical men' tried these seeds, and with some exceptions, failed to make a profitable business out of them. Any average we adopt, therefore, is

²⁶ Forbes Royle, *Culture and Commerce*, p. 18.

²⁷ Forbes Royle, *Culture and Commerce*, p. 285.

²⁸ The view that the yield of Indian cotton varied greatly by location, and that it was, therefore, influenced more by soil and climate than by cultivation practices, originated in the opinions of the nineteenth century cotton planters in India. See, for example, the discussion in Forbes Royle, *Culture and Commerce*, pp. 168-87.

subject to a margin of error produced by the huge variations and the increase in overall risk. On the other hand on the plausible assumption that cotton yields were determined by the environment, the average yield should change little in the long run, so that it is possible to confirm the earlier values with reference to later and more reliable survey-based values.

A previous scholarly work considered an average of 75 lbs/acre a reasonable number for the Bombay Presidency in 1850.²⁹ I have found many numbers from the experimental farms of the 1830s, which usually placed the yield of Indian varieties at above this figure.³⁰ The American and Mauritius seeds produced between 90-100 lb of clean cotton, sometimes higher. Although susceptible to failure, these seeds did define an upper end of the range of yields. That upper end was somewhere above 100 lbs. Parliamentary committees on Indian cotton placed the overall average yield for Punjab at 91 lbs/acre and that for United Provinces at 103 lbs/acre in the 1840s.³¹ But they also placed Bombay yields at considerably less than the 75 assumed by Guha. That the Bombay yields were on average smaller than the Indian average seems to be confirmed by another work that reported estimates for 1868-1940.³² The Royal Commission on Agriculture collected more reliable averages for a later period (1914-27), which figures show much variations from year to year and place to place, and a modal number of 90 lbs/acre of cleaned cotton. I adopt this number.³³

I have used a rough benchmark proportion of 10 per cent to account for cotton that went into non-textile uses, and hold it constant. This is not much more than a guess; surely the textile use of cotton was far more lucrative than cotton going into quilts so that the non-textile proportion should be low, and since quilts were a matter of utility rather than fashion, the proportion should change little. The extent of loss involved in conversion of cotton into yarn is based on the results of experiments made in Lancashire with Broach cotton, which showed that a pound of Gujarat cotton converted into 0.75 lbs weight of yarn on average.³⁴ I use this proportion.

²⁹ Guha, *Raw cotton*.

³⁰ Mr. Hughes 'was well content with one hundred pounds per acre, of fine clean cotton'. Forbes Royle, *Culture and Commerce*, p. 220. See also, pp. 285-6 for yield figures pertaining to Bundelkhand and Rohilkhand districts.

³¹ B.P.P. *Cotton (India)*.

³² Guha, *Agrarian Economy*, pp. 105-06, 110.

³³ India, *Royal Commission*, p. 76.

³⁴ Forbes Royle, *Culture and Commerce*, p. 24.

The ratio of harvested to cleaned cotton is ignored. This is based on the following reasoning. A long-time grievance of Lancashire about India was the high admixture of dirt and seeds in the cotton exported. Cotton production deviated by as much as 25 per cent from the weight of the cotton usable by the mills. A great deal of cleaning in the mid-eighteenth century was done by manual methods, single rollers usually operated by village women, or a double rollers and string method operated by a specialist team of two men. The former produced the cleanest cotton it was possible to be made by hand, but was exceedingly labour-intensive. No sizeable cotton trader could possibly wait for the whole cargo to be cleaned by this method. The second method worked faster, but wasted much cotton. The Whitney saw gin took a long time to become generally acceptable, and was accepted eventually in locally adapted variations. The problem of dirt, therefore, was quite a serious one. Precisely because it was a serious matter, most yield figures used, as far as I can ascertain, were stated in terms of cleaned cotton.

The last ratio, which transforms yarn into cloth, is less innocent than it might appear, being extremely variable between apparels and countries. One cotton enthusiast, a Major Briggs, actually brought a bundle of cotton cloths before a Parliamentary Committee as evidence of the wardrobe of Indian families. Briggs' bundle contained 32.5 square yards of clothing for an adult male and female, and weighed 5 lbs. Briggs was possibly working on the basis of a normative measure. What about the *quality* of the bundle that he had submitted? Almost a century later, a major government Committee assumed an average cloth-yarn conversion of 4 yards/lb for 1900-30, adjusting it upward slightly to 4.6 for the 1930s, in acknowledgment of some increase in the average counts spun in the Indian mills after tariffs were imposed on the finer counts.³⁵ It is not implausible that the average fineness of cotton yarn in the 1830s was above the levels observed a century later. There was still a considerable domestic and export demand for muslins, and a persistence of production of the cotton varieties that led to these goods. Elsewhere the figure of 5.2 square yard per pound has been used as a conversion ratio between weight of yarn and length of cloth for the 1930s (for handloom cloth only), and the Committee's and other contemporary estimates criticized for not being too mindful of the sensitivity of this ratio to time.³⁶ We can assume that the average ratio, which

³⁵ India, *Fact-finding Committee*.

³⁶ Roy, *Size and structure*.

is mainly sensitive to yarn counts, fell between 1800 and 1920, but the rate of fall slowed owing to the tariffs thereafter. Accordingly, Briggs' implicit conversion ratio, 6.5 yards/lb, is adopted for 1820-1840; 5.2 yards/lb is adopted for 1860-1920; and the Committee's 4.6 yards/lb is taken for 1940.

A good test of the reliability of any new procedure in measurement is to compare the old and the new measures for one benchmark year. I do this test for 1900, and compare the 1900 cloth production derived from cotton data with an alternative measure available for 1900 derived from yarn production data. A 1942 survey used the second method to create a dataset on cloth production for 1900-1939.³⁷ This alternative involves dividing the yarn production by Indian mills into three parts, 'retained', or converted into cloth by the mills; yarn exported; and 'free' yarn, or the part sold to the handloom weavers. These datasets, combined with trade data, have long been used for the measurement of production, consumption, and market-shares. For one year, 1900, my approach yields aggregate numbers (yarn production 330 million lbs; and cloth production 1284 million yards) that are close to those registered by the second method (yarn 353 million lbs.; cloth 1347 million yards). The proximity between the two sets of numbers should assure us of the reliability of the nineteenth century estimates in this paper.

The correspondence breaks down in the interwar period. The results we get with the cotton cultivation method, and those we obtain by using yarn production statistics, begin to diverge. They differ far too much for 1940, if not 1920. I have not been able to identify the exact reason behind a growing discrepancy. There is a crucial printing error in the official statistics for cotton export in the 1930s; but the discrepancy remains after appropriate corrections. The obvious answer is that some of the parameters assumed constant, began to change value. But which ones changed value?

Three hypotheses suggest themselves. First, a long run of exceptional good weather, and the newly established government laboratories and extension work succeeded in raising the average yield of cotton (a rise by a third, from 90 to 120 lbs./acre, eliminates the discrepancy).³⁸ Second, the desperate 'rationalization' drive in interwar Bombay, as well as the new mills that were started in the smaller towns, managed to improve the cotton-to-yarn conversion ratio (a 5 per cent improvement

³⁷ India, *Fact-finding Committee*.

³⁸ On evidence of a rise in Bombay yield, see Guha, *Agrarian Economy*, p. 110.

in the ratio adds 40 million lbs. to the output). Third, a controversial argument advanced by Alan Heston, that the official agricultural statistics in the interwar period displayed a cumulative downward bias in yield, merits another look.³⁹ Fortunately, we have the option of switching to the yarn dataset from 1920 onwards.

For population data, I rely on one study that used an indirect procedure to infer population between 1801 and 1871.⁴⁰ This study worked from the first census in 1872 backward, adjusting for under-enumeration, under-coverage, and the presence of 'disturbing factors' in the nineteenth century. The figures show a small but positive growth rate of population in the nineteenth century, and somewhat larger population totals than those customarily used. This is the only systematic attempt to create a series for the period in question and, therefore, the best resource for the purpose.

It is necessary to comment on the 1795 figures. Cotton cultivation statistics is unavailable for 1795, when much of the Indian land area did not belong to one political unit. We do have reasonably good data on trade. It would be logical to test the waters by making assumptions on the extent of cotton cultivation. One assumption is that production remained constant between 1820 and 1795. This is reasonable since population, the main variable resource in the cultivation of land, remained unchanged between these years. This assumption gives us an upper bound on the extent of cultivation. On the other hand, there are reasons to consider that the extent of cultivation was smaller in 1795. The major areas of cotton production in 1795 formed parts of territories that faced collapse of state power, warfare, and reshuffling of territories. This was the case in all over the Deccan plateau. The major north-south and east-west roads had armies and Banjara caravans carrying military provisions pass often enough to cause disruption to commercial traffic. Cotton export regions outside of Deccan, the Narmada Valley and Berar, for example, were in disarray under the tottering rule of the Holkar and Bhonsla chiefs. Reports of contemporary travellers, who were stopped every few miles by local landlords seeking toll, suggest that the trade routes connecting Nagpur, and possibly Hoshangabad, with northern and southern India were as good as cut off. In northern India, the Awadh territory yielded small and unstable revenues, suggesting anarchic agricultural conditions. Taking these disruptions into consideration, I assume

³⁹ National income.

⁴⁰ Mahalanobis and Bhattacharya, Growth of population.

constant average consumption of cotton cloth between 1795 and 1820, which places the extent of cultivation at a level 25 per cent smaller than that in 1820.

The results

The results of the exercise are set out in Tables 2 and 3. The tables show that the average consumption of cotton cloth about trebled between 1795 and 1940. The finding implies limited substitution between imported cloth and domestically produced cloth. There was a decline of 20 per cent in the domestic production of cloth. But the decline was outweighed by the increase in import. Much of the imported cloth, in other words, added to consumption.

A subsidiary finding merits a discussion. Even as there was a decline in hand-spinning, it had little impact on the economy of cotton. In fact, cotton cultivation and production registered growth between 1840 and 1880. Relatively speaking, the extra output was destined for the export market. But the output that entered domestic markets held steady. In agrarian history, we do not hear reports that the de-industrialization seriously affected the peasants growing cotton. There was an agrarian depression in the Deccan in the early nineteenth century, but it occurred before the acceleration in yarn and cloth imports.

Domestic cotton availability appears less responsive to the decline in textile production because the decline was of moderate extent to begin with. Textile history of the nineteenth century notes with surprise the tenacity of hand-spinning in the face of rising import of yarn. The hand-spinning industry was not dealt a mortal blow by Lancashire yarn, which came in particular counts and moderate extent. The high cost of internal transportation of the pre-railway era joined with the overseas trade costs before Suez to shelter producers. The decline of hand-spinning accelerated after 1860, as a result of the combined effect of the railways and the Indian mills. Therefore, as far as the cotton-growing peasant was concerned, the fall in hand-spinning was almost immediately compensated for by the rise of mill production of yarn.

Table 2. Conversion of cotton into yarn, 1795-1900

	Acreage under cotton (millions)	Net export of cotton (million lbs.)	Yarn from locally available cotton, million lbs. ((column 1 x 90 - column 2) x (0.9) x (0.75))	Export of cotton yarn (million lbs.)	Import of cotton yarn (million lbs.)	Net import of cotton yarn (million lbs.)
	1	2	3	4	5	6
1795	2.8-3.7	1	170-221	0	0	0
1820	3.7	90	161	0	3	3
1840	3.4	100	142	1	17	16
1860	5.0	204	168	0	31	31
1880	8.0	442	188	67	33	- 34
1900	9.6	376	330	118	35	- 83

Notes: see text and below Table 3.

Table 3. Consumption of cotton cloth, 1795-1940

	Domestic production of cotton cloth, million square yards ^a	Net import of cotton cloth (million square yards) ^b	Total consumption of cotton cloth (1 + 2)	Population (millions)	Per head consumption of cotton cloth, square yards (3 ÷ 4)
	1	2	3	4	5
1795	1102-1437	- 22	1080-1415	200	5.4-7.0
1820	1065	- 23	1042	205	5.1
1840	1026	173	1199	212	5.7
1860	1035	825	1860	232	8.0
1880	799	1334	2084	254	8.2
1900	1284	1935	3220	294	10.9
1920	2985	1314	4299	319	13.5
1940	5620	358	5978	400	15.2

a. 1820-1900: Columns 3+6 in Table 2 x conversion ratio. 1920-1940: based on yarn production and trade data.

b. The 1795 figure is based on the following information: 'Imports into the United Kingdom during the ten years 1791-1800 of calicos and muslins averaged 2.2 million pieces of about 10 sq yds. each per annum.' Robson, *The Cotton Industry*, p. 1. Other trade data from B.P.P., Cotton (India); B.P.P., Cotton goods; *Statistical Abstracts*.

c. Population data come from Mahalanobis and Bhattacharya, Growth of population, and *Statistical Abstracts*, later years.

A useful by-product of this exercise is a revised set of numbers showing the contrasting experiences of the craft and mechanized methods of textile production. Tables 4 and 5 present the numbers. There are four major findings. First, as mentioned above, the timing of the decline in hand-spinning was later than is usually thought to be the case.⁴¹ Second, cloth production in handlooms fell to a relatively moderate extent, and revived to exceed the early nineteenth century levels. Third, the fall in hand-spinning was more than offset by the rise in mill spinning, thanks to export markets and the emerging handloom market. And fourth, when all sources were combined, consumption was protected.

If we follow the conservative scenario, average consumption of cotton cloth was by assumption constant between 1795 and 1820, and the trend deserves no further comment. If the other parameters are kept unchanged, cotton exports being much smaller in 1795 than they became later, a constant level of the crop results in a substantially higher domestic yarn and cloth production (and average consumption) in 1795 than in 1820. If we follow this optimistic scenario, then average consumption fell between 1795 and 1820. Could such a fall occur?

If it did, it could not happen because of trade, the trade volumes being so small. Nor could it happen because of a fall in the export of cloth, which was always too small in quantitative extent to cause a major disruption by its absence. Rather than looking at the demand for textiles, we should look at the supply of cotton. There was great interest in Gujarat cotton from the East India Company in the second decade of the nineteenth century. The Company's correspondence complained that the procurement of Indian cotton was slow because the pull of domestic demand, especially in Bengal, was quite strong. The Napoleonic wars changed the relative prices sufficiently to cause some diversion from local markets to foreign markets. The conditions led to a small-scale cotton famine. Underlying the cotton famine was a structural problem, poor condition of the roads in western Deccan. After the Anglo-Maratha wars ended, production should have become more responsive to trade. The scenario of revived cotton export and reduced availability for domestic producers in 1820 is a plausible one.

⁴¹ Commercial hand-spinning had a mild revival in 1940. India, *Fact-finding Committee*, measured the extent of production, a number cited in Table 4.

Table 4. Production of yarn by origin, 1795-1940 (million lbs)

	Hand-spun yarn ^a	Indian mill yarn ^b	Imported yarn ^c
1795	170-221	0	0
1820	161	0	3
1840	142	0	17
1860	168	0	31
1880	107	81	33
1900	0	353	33
1920	0	660	47
1940	30	1235	41

a. Column 3 in Table 2 minus Indian mill yarn.

b. Sources: Gandhi, *Indian Cotton Textile Industry*, p. 53, for 1880, India, *Fact-Finding Committee*, remaining years.

Sources: See below Table 3, and India, *Fact-Finding Committee*.

Table 5. Production of cloth by origin, 1795-1940 (million yards)

	Handloom cloth ^a	Indian Mill cloth ^b	Imported cloth ^c
1795	1102-1437	0	0
1820	1065	0	26
1840	1026	0	199
1860	1035	0	825
1880	677	122	1334
1900	646	421	2005
1920	931	1563	1511
1940	1945	3905	579

a. 1795-1860: Domestic production of yarn (Table 4) converted. 1880-1940: Based on free yarn data, for sources see under Table 4.

b. See under Table 4.

The exercise yields a set of numbers showing the percentage of export in production of cotton cloth. Cotton cloth was the largest export of early modern India. In 1795, the percentage of export in total production fell in the range 1-2 per cent, which was much smaller than the proportions in the late nineteenth century, 5-6 between 1880 and 1900. The percentage fell in the interwar period, only to rise again during World War II. In 1700, the total textile import by all European companies from India amounted to 25-35 million square yards. Based on data on bullion supplies, we can surmise that the scale of the business increased slightly in the middle of the century to decline again. If we assume roughly constant scale of cotton cultivation in the century, the export-production ratio for 1750 should be higher than those at the beginning or the end of the century, but perhaps not by more than one or two percentage points. The implication of these calculations is that the early-modern Indo-European trade was largely irrelevant to both producers and consumers in the subcontinent as a whole.

A final set of results concerns the shape of the demand function for textiles. The average unit-value of machine-made cloth can be read off from trade statistics. Such procedure breaks down in 1920 because of war-time inflation and exchange crisis. The decision of the official reporting system to switch from sterling to rupees in recording trade statistics confuses matters more. Needless to add, there is no source that delivers nineteenth century handloom cloth price directly. It is possible, however, to estimate the prices with reasonable accuracy by taking a weighted combination of cotton prices (proxy for hand-spun yarn prices), and mill yarn prices. This step might give us wrong results if the only other variable cost in hand-spinning, wages, showed a contrary trend. But the industry of hand-spinning mainly used non-marketed household labour at very low wage. Even trends in real wage of unskilled manual workers do not show a significant change. It is unlikely that the wages exerted any influence on the price of hand-spun yarn. These assumptions permit me to add more data-points to this series by assuming uniform change in handmade yarn and handloom cloth productions between the points for which estimated values exist. All other data necessary to calculate output and prices are available from trade and mill production statistics. The results are shown in Table 6.

Table 6. Prices, 1795-1900

	Imported yarn (£/lb)	Export of cotton (£/lb)	Derived price of handloom cloth (£/yard) ^a	Imported cloth (£/yard)	Price of handloom cloth (1820=100)	Price of imported cloth (1820=100)	Relative price (handloom cloth to imported cloth)
1795	0.000	0.020	0.020		96		
1820	0.100	0.020	0.021	0.042	100	100	1.00
1830	0.071	0.010	0.013	0.048	62	114	0.54
1840	0.047	0.013	0.017	0.015	80	34	2.31
1850	0.044	0.019	0.022	0.013	106	31	3.42
1860	0.059	0.028	0.032	0.013	154	30	5.12
1870	0.085	0.034	0.053	0.018	251	42	6.04
1880	0.082	0.025	0.054	0.013	258	30	8.62
1890	0.075	0.025	0.066	0.014	314	32	9.84
1900	0.048	0.017	0.048	0.009	226	21	10.52

a. Derived as an average of prices of cotton and mill yarn, weighted by the proportion of handspun and mill yarn used in handloom production. All other prices are from sources on trade statistics cited below Tables 3 and 4.

Purchases of handloom and imported cloth responded negatively to changes in relative prices, shown in the last column of the table. However, the price elasticity of demand for handloom cloth was negative and insignificant (-.14), whereas that for imported cloth was negative and large (-1.46).⁴² The result explains why handloom cloth production changed the way it did at the turn of the twentieth century. Demand for cloth had a large fixed component, in which handloom cloth dominated. Substitution happened within a relatively small price-sensitive component. But even here, income effect of cloth prices may have been the dominant influence rather than substitution. These findings confirm a hypothesis well-known in textile history scholarship, consumers of handmade and machine-made cloths responded to different kind of stimulus. The demand for handloom cloth was especially sensitive to ritual, status, occasion, and the gender of the wearer. With such segmented preferences, handloom cloth could retain a market for itself, though on a diminished scale, whereas mechanized cotton cloth took over only those segments where ritual,

⁴² Desai, Demand for cotton textiles, and Twomey, Employment, also find import demand to be price elastic.

status, occasion, and gender mattered less than the cheapness of the cloth, usually male utilitarian apparel.⁴³

Comparisons with other estimates

How do the numbers derived here compare with some of the contemporary surveys on levels of living? About 1780, a civilian James Grant prepared a report on the state of the economy of Bengal.⁴⁴ Grant assumed that the production of cotton in Bengal was 22 million lbs, which should reduce to 14.7 million lbs in the weight of yarn. Applying the conversion ratio adopted in this paper, this figure converts into 76 million yards of cloth produced in the region. This is very low; evidently Grant needed to include the cotton imported from elsewhere. On the other hand, he underestimated population too. In the end, Grant thought his estimate was acceptable because the average consumption that he arrived at, 6.7 yards assuming a population of 10 million was a reasonable one. The average lies close to my estimate for India a little later.

In 1810, another civilian Thomas Munro submitted before a Parliamentary Select Committee a paper containing the family budgets of a Madras labourer. In the same committee, a Madras civil servant Thomas Cockburn submitted the family budget of a merchant (dubash or agent of an European firm), whom he called 'a superior sort of person'.⁴⁵ Both budgets contained estimates of cloth consumption per family, and converted into per head, these numbers were £0.12 and £0.63 respectively. A further cross-check on these numbers is available from the same source. A merchant F.C. Brown gave an estimate of the 'minimum clothing annually required by a family of five' in value, which translated into £0.18 per capita. The volume of cloth purchases by these families was given in numbers, types, and values. Using the level of detail available on the types, it is possible to convert the values into average quantities.⁴⁶ These calculations suggest that the per head cloth consumption in the labourer family was 4 yards, and that in the richer family near 9.6 yards per person. The average again lies near the other numbers derived in the paper (Table 7).

⁴³ On segmented markets, see Roy, *Traditional Industry*.

⁴⁴ Historical and comparative analysis.

⁴⁵ B.P.P., *Select committee*, evidence of Thomas Munro, p. 124, and Thomas Cockburn of Madras service, p. 270.

⁴⁶ I assume, for example, that an adult female garment consists of 6 square yards, and a male garment of 2 square yards.

Table 7. Comparisons between estimates of per capita cloth consumption (yards)

	Derived in the paper (India)	Derived in other works
1780		6.7 (Bengal) ^a
1795	5.2-6.7	
1810		6.8 (Madras) ^b
1820	5.1	
1840	5.7	
1860	8.0	
1880	8.2	9.5 (Bengal) ^c
1900	10.9	
1920	13.5	
1931-40		13.8-15 (India) ^d
1938-40	15.2	

a. Based on data available in Grant, Historical and comparative analysis.

b. Based on data available in B.P.P., *Select committee*.

c. Derived from estimates of regional GDP, Heston, National income.

d. Derived from aggregate consumption estimates, Desai, Consumer expenditure.

There are two more clusters of cloth consumption numbers available in the older sources. The former relates to Bengal in the 1870s. An estimate of the GDP in agriculture in Bengal (£64 million), adjusted for population, translated into £1.6 per person.⁴⁷ The first comprehensive statistical paper on aggregate consumption placed the proportion of total budget spent on clothing at 7-9 per cent in the 1930s.⁴⁸ With the share of agriculture in GDP at 70 per cent, and the budget ratio invariant between 1880 and 1930, Bengal consumption of cloth comes to £ 0.19 per person in 1880. The quantity of consumption depends on how we divide cloth consumption between handloom and imported cloth. If we use an average unit value weighted by the overall market-shares of these cloths (Table 7), consumption was 9.5 yards, 15 per cent above the all-India average, but near enough to it for both figures to be considered plausible.

The second cluster was prepared in the interwar period. The aggregate consumption paper cited above had an estimate of the total consumption of cloth in the 1930s; the implied average consumption was £0.55. A range of plausible prices can be applied, depending on assumptions about the degree of convergence between handmade and machine-made cloth prices. Applying these prices the quantity of consumption ranges between 13.8 and 15 yards. Around this time, a number of

⁴⁷ Heston, National income.

⁴⁸ Consumer expenditure.

government-sponsored surveys of working class budgets were also carried out. These datasets allow us to cross-check the aggregate number, and make some observations on inequality in cloth consumption.

One set of numbers for peasants is shown in Table 8 retaining the original distinction between the rich and the poor.⁴⁹ To these data are added the Munro-Cockburn numbers for 1810, and the result of one interesting survey of a village done by a surgeon in Chittagong in 1851. The population consisted of small-holders, fishermen, and 'coolies', and can be taken to represent the rural poor.⁵⁰ The table confirms that average consumption increased. The datasets that it is based on allow us to comment on the long-term pattern of clothing preference. Over 120 years (1810-1930), the share of clothing in total family expenditure remained quite stable. The 1810 expenditure surveys in Madras showed that the proportion varied in the range 6-7.5 per cent. The survey of poor households in Bengal in 1851 suggested the range 5-9 per cent. In 1931, the proportion for all of India was 7.2 (the share seemed to increase slightly in the decade). Clothing preferences must have changed in response to the availability of cheaper and plainer cotton cloth, but only in a moderate extent.

However, the table also suggests that rich-poor differences widened at the same time. That the gap was wider in northern India than in the south can be understood with reference to the higher soil fertility and asset inequality in the north. Stray surveys of cloth purchases by the rich peasantry also yield quite large numbers. For example, a rich Jat peasant family near Delhi in 1929 purchased 28 yards of cloth per person.⁵¹ It is necessary to qualify that we cannot distinguish average prices in north and south India, which should vary because climatic variations imposed some difference on cloth types. On the whole, commercialization of agriculture possibly increased rural consumption inequality in the Gangetic plains relatively more than in the arid Deccan.

Between 1810 and 1930, an urban industrial working class had formed in the port cities. The working class consisted of skilled artisans and mill workers, who earned wages that were significantly above rural wages and peasant incomes. Nine

⁴⁹ The implicit price deflator from Desai is used on the peasants surveyed in Madras and Bihar in the late-1920s. The implicit deflator is the value of cloth consumption in the aggregate, divided by the quantity of per capita consumption available from free yarn dataset.

⁵⁰ Bedford, Contributions.

⁵¹ India (Centrally Administered Areas), *Banking Enquiry Committee*, p. 316.

families of relatively well-off urban handloom weavers were surveyed in 1925, and these families purchased 8-9 yards of clothing per person. The figure lies close to the Indian average of the time. The variation between the families derived from income and family size: average consumption increased with family income, and fell with family size.⁵² Another set of budget surveys of industrial workers carried out in the Madras and Kanpur cities in 1929 show again that the north Indian worker spent a larger sum of money on clothing than the south Indian worker, and in both regions, the average expenditure on clothing by industrial workers, falling in a range of 4-9 yards per head, was somewhat smaller than the Indian average in this time.⁵³

These findings, of course, are of little use in addressing the question of long-term changes in patterns of inequality, but they do suggest that any answer to that question should be sensitive to the region we are looking at.

Table 8. Inequality in cloth consumption

	1810 Madras ^a	1851 Bengal ^b	1930-8 Madras ^c	1930-8 Bihar ^c
Poor	4.0	3.5	6.1	3.9
Rich	9.7		12.0	22.1
Indian average	5.1-7.0	6.8	15.2	15.2
Ratio of poor to Indian average (%)	57-74	51	41	26

a. Based on data available in B.P.P. *Select committee*.

b. Based on Bedford, Contributions.

c. India, *Royal Commission*; India (Madras), Standard of living.

Comparative history

If the extent of increase in the average consumption in India seems too high, it pales in comparison with the order of increase in consumption in the nineteenth century world. It is hard to be exact on the point, but based on spindles and looms installed, Lancashire and New England mills increased the world's capacity of cotton cloth consumption from 40-50 million yards in 1790 to 3-4 billion yards in 1850. In the second half of the century, capacity in Europe, USA, Japan, and India should add several billions yards more. Even assuming large-scale decline in craft textiles, and divergence in average consumption, the world's capacity to consume cotton cloth far

⁵² Sastry, Some figures.

⁵³ India, *Royal Commission*; India (United Provinces), Report; India (Madras), Standard of living.

outstripped population growth (about doubled) and real per head GDP growth (increased by 2-3 times).

The increase in cotton happened partly at the expense of other fibres. The Indian average consumption of cotton cloth (above 1 lb/person) was above the English average ($\frac{1}{4}$ lb/person in 1773) for the last quarter of the eighteenth century.⁵⁴ Cotton was cheap in India relative to other fibres, and more suited to the environment. Linen and wool dominated English consumption. All fibres considered together, however, English consumption was larger than India's. The comparative situation changed in the next fifty years, as English consumption of plain cotton increased very rapidly. This gain was at the expense of all other fibres and printed cotton, which had an import component. But the net increase was of a very large order. Nevertheless, the fact that cloth consumption increased in Europe and India suggests that the gains from trade and machinery had been shared, even if not equally.

A more interesting comparison would be the one between India and China. Such a comparison should tell us whether or not political regimes affected the non-western region differently in respect of consumption. Most previous estimates of Chinese consumption pertained to the late nineteenth century. Feuerwerker's numbers for the 1870s (3.6-6.0 square yards depending on the population) were smaller than the Indian average, and for 1901-10 (4.1-6.5 square yards) smaller still.⁵⁵ Chao found that the average consumption for 1905-09 was 5.7 yards, and that adjusted for the use of cotton in padding, the yard equivalent should be nearer 15.⁵⁶

Recently, Pomeranz has made an unorthodox claim about living standards in China in comparison with Europe in the eighteenth century.⁵⁷ Cloth consumption per capita forms an important piece of the evidence. The prospect of a meaningful comparison based on these numbers, however, are not optimistic. Pomeranz's estimate of consumption offered for 1750 is above 6 lbs/capita cotton cloth for all of China. If converted to yards using Indian ratios, the figure suggests that the average consumption in China was five times that in India, whereas the two regions had similar GDP per head in the early nineteenth century. One reason to expect a difference is the different manner of use of cotton in apparel. But adjustments on

⁵⁴ Cited in Twomey, *Employment*.

⁵⁵ Feuerwerker, *Handicraft and manufactured cotton*.

⁵⁶ *Development*, pp. 237, 239.

⁵⁷ *Great Divergence*.

that account will not eliminate the gap. The method adopted in this work involved projecting a cotton output figure a century backward, while population grew significantly between these dates. Criticizing this method, Huang cites an alternative estimate for the early nineteenth century, which is a little less than double the number derived for 1795 India.⁵⁸ The consumption per capita in China exceeded India's, but possibly only to the extent explained by differences in climate and technology of apparel production. This debate should be treated as inconclusive. But it is worth noting that, if the Huang alternative is considered together with the figures delivered by Chao, the pattern of consumption in the two countries would look very similar. Both countries experienced a rise in per capita consumption of cotton cloth, India's rise being slightly faster than that of China.

Conclusion

The paper offers three sets of results, concerning consumption of cotton cloth, the link between production and consumption, and international comparisons, respectively.

One of the more robust findings about long-term trends in levels of living in India is that of a rise in the average consumption of clothing. The time-series derived in the paper leads us to discount the importance of cessation of exports and fall in aristocratic fortunes in the long-term trend in consumption. However, another factor was potentially important, supply of raw cotton. The role that it played in the earlier part of the period remains under-researched. If we allow for the possibility that warfare depressed production and trade around 1800, a disruption in consumption is highly likely.

Crises in artisanal production left little or no effect on mass consumption of textiles. There were three reasons for this. Unemployment concentrated in narrow segments; the peak period of unemployment coincided with the rapid expansion in peasant export and growth in new incomes; and demand for handloom cloth had low price elasticity. The Morris conjecture, that a fall in global price of cotton cloth increased the purchase of handmade cloth in India, finds a qualified support. The timing of a decline in artisanal production of textiles was quite late. The late occurrence enabled the positive changes to cushion the adverse ones. Some of these

⁵⁸ Development of involution?.

conclusions and magnitudes concur with those derived earlier by Twomey, which lends credence to the empirical methodology used in this paper.⁵⁹ Overall, the finding that consumption of cotton textiles did not suffer a significant shock at any time in the nineteenth century, and in fact, experienced an almost continuous rise is a fairly robust one, and calls into question a number of common presumptions about nineteenth century Indian development, including the widely held idea of an economic depression in the 1820s.

International comparisons confirm the position recently advanced by research on trends in real wages and GDP, that the ‘great divergence’ had pre-industrial roots.⁶⁰ India, and possibly China, consumed less clothing than did Britain before the Industrial Revolution began. The gap was relatively small, however. The ratio of per head cloth consumption in Britain and India was perhaps not very different from the ratio of the respective grain wages about 1800. Thereafter, inequality in respect of incomes and wages increased greatly. The trend was present in cloth consumption too, but the extent of the increase in inequality was smaller in clothing, and there may have been a narrowing of the gap between 1880 and 1940. Throughout, real income in India grew much more slowly, if at all, than the consumption of clothing.

The increase in the consumption of clothing was subdued during 1795-1880, and accelerated during 1880-1940. Why was there a difference over time? Until the mid-nineteenth century, the trend in cloth consumption owed mainly to a global factor, decline in cloth prices. In turn, the decline derived from fall in production and trade costs. From the mid-nineteenth century, the mix between global and local factors changed to bring about a faster rise in cloth consumption in India. Real income started growing somewhat faster than before. The income-growth as well as specific technological and institutional changes imparted a positive effect upon handloom weaving. At the same time, Indian merchants used their access to raw cotton to set up factories, and progressively replaced imported cloth. These two local factors joined the global factor of continued decline in cloth prices (until 1900) to begin shaping Indian markets. The new mix also aided the textile-based industrialization in India, in which both handlooms and mills played positive roles.

⁵⁹ Employment. There are also agreements and minor differences in trends and levels of production between this paper and Broadberry and Gupta, Lancashire, India.

⁶⁰ Broadberry and Gupta, Early modern great divergence, and *idem.*, Indian GDP, 1600-1871.

Decomposition of these effects and a measurement of their relative importance should be the subject of another paper.

International comparisons also tell us that India did not experience a distinctive pattern of consumption growth in the contemporary world just because it was a colony of Britain. If clothing alone is a benchmark, then levels of living improved in both India and the West during the nineteenth century modernization, whereas domestic inequality in consumption may have increased in both regions. India, and possibly China, consumed less clothing than Britain before the Industrial Revolution began. Following one set of estimates from China, both regions experienced rise in the consumption of cotton cloth, India's rise being somewhat faster than China's. This is an intuitively acceptable result, given the political and physical proximity of India to the world's biggest source of cheap cloth in the nineteenth century. In view of these increases, 'reversal of fortune' would seem to be too strong a description for the global history of consumption in the nineteenth century.

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