Globalization, Factor Prices, and Poverty in Colonial India

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Abstract
Analytical accounts of South Asian economic history often suggest that the principal effects of nineteenth century globalization on the region were de-industrialization and agrarian expansion. Seemingly contradicting the story, available wage datasets show that artisans did relatively well and rural workers badly in the period in question. I discuss the wage statistics to show this, and propose that, in order to complete the globalization story, we need to consider three local factors: limits to de-industrialization, limits to labour mobility, and limits to agrarian expansion.

March, 2006
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I

Nineteenth century India experienced integration with the world economy in the shape of a decline in industrial prices and rise in agricultural prices. These trends were consistent with India’s situation then as a region abundant in land and unskilled labour, and scarce in skilled labour and industrial capital and knowledge. If we assume labour was mobile between land and industry, globalization would have raised the share of agricultural workers, and possibly the share of landless labourers, in the work-force. Both predictions find apparent support from census statistics.

Where this story falters is wages. Available wage datasets invariably show that artisans did relatively well and rural workers badly. So badly indeed that between 1875 and 1960, agricultural labourers consistently earned an income well below the amount needed to purchase the basket of goods required to be above the official poverty line defined in 1973 (Table 1). At the same time, the number of labour families grew, from three and a half million in 1875, to 6-9 million in 1931, to 20-25 million in 2001.

Did globalization make the poor poorer? According to the Indian nationalist historiography, such was indeed the case. De-industrialization pushed unemployed artisans to agriculture, and created surplus labour in land. The nationalist account was later joined by a Marxist one, which suggested that agriculture did badly despite exports and favourable changes in agricultural-industry terms-of-trade. For, the risks attendant on shifting from subsistence production to exports, together with colonial policies on taxation, weakened the ability of poorer peasants to command land and credit, whereas it also made the non-cultivating moneylenders richer and in command of land.

In the end, we get an explanation for rising landlessness as well as stagnant real wages, mediated jointly by the world market and colonialism. The story of a state-induced agrarian crisis has not stood up well to evidence. The crisis in artisan industry was at best a partial process. Moneylender dominance over agrarian production was largely a fiction. For part of the period, both peasant profits and wages increased.

In several stylized accounts of the historical origins of rural poverty in India, de-industrialization plays a pivotal role. Analytical accounts of divergence, such as the trade theories that incorporate the idea of increasing returns to scale in manufacturing and combine these with a historical fact, declining ‘trade costs’, have the same implication. However, these

1. The de-industrialization that followed was not completely trade-induced, but also a result of technological change.
2. Such an account was tested mainly by observing the ratio of labour in the rural work-force, see Patel, Agricultural Labourers. Given the well-known problems of interpretation of census occupational data, the project has not reached any definite consensus, see Krishnamurty, ‘Occupational structure’; Thorner, D., “Deindustrialization”.
3. Postwar surveys found that while labour-dependency increased, pure landlessness declined somewhat. See Sanyal, ‘Trends in landholdings’. There are two ways of explaining this apparent anomaly. First, the pure landless workers tend to leave agriculture more readily than those in possession of some land. Second, as rural population increased given a near-constant land size, fragmentation of landholdings increased, pushing many peasant households to labour-dependency.
5. For example, Dutt, ‘Origins’; Eswaran and Kotwal, Why Poverty Persists.
accounts do not satisfactorily explain the trends in relative wage within India, and ignore the evidence on significant agrarian expansion.

The foregoing has two implications. The link between globalization and poverty is open to reinterpretation. And in that interpretive task, wage datasets have a role to play. What do the wages show? What was the precise link between globalization and poverty? The paper suggests tentative answers to these two questions.

What do the wages show? This question opens a statistical can of worms, which needs some attention first.

II

The standard sources on agricultural wages provide contradictory information. There are two major sources for wage statistics pertaining to the last quarter of the nineteenth century: the *Prices and Wages Statistics of India* (annual publication; 1873-1910 volumes report agricultural wage), and the *Report on an Enquiry into the Causes of Rise in Prices in India* conducted by a team of senior officers of the statistical department (publication year 1914; coverage 1892-1912). The former source, which I shall call the *Prices and Wages* from now on, displays a great deal of money wage invariance and real wage variability (declining real wage between 1890 and 1907), whereas the latter, which I shall call the *Enquiry* from now on, displays money wage increase and possibly rising real wage in the same period (Figures 1 and 2). Both datasets share a common feature. In both, money wages responded poorly to price fluctuations, which were very large and caused violent real wage fluctuations especially during famine years. But there is clearly a difference in trends. The last quarter of the century saw some rise in average labour productivity in agriculture (Table 5), induced by expansion in land area. In one dataset, real wages did not respond to the shift in labour demand, in another these did.

How has the historian handled the contradictory picture? Scholars who have used official wage statistics have tended to use one of the two, the consideration behind the choice not being always explicit, at best merely noting the existence of the other. A.K. Bagchi, for example, uses the *Prices and Wages* dataset to illustrate emiseration in colonial India. Simon Commander uses the *Enquiry* dataset to suggest that colonial rural India did not suffer a Malthusian subsistence crisis. W. Collins, testing for wage convergence, observes the contradiction, but does not offer a solution. Deepak Lal does not notice the contradiction. M. Mukherjee estimated national income based on *Prices and Wages* without a clear justification. Later estimates of national income by S. Sivasubramonian and A. Heston followed the production method and did not need to use or to comment on agricultural wages.

It is not easy to make a simple judgment on the reliability of these sources. Even though the government eventually discontinued the *Prices and Wages*, implicitly admitting that the system was not producing sensible data any more, it would be unwise to reject the source. These data were published for 40 years before being discontinued. Either we assume that it was bad all along, but it took the Department of Statistics 40 years to realize that. Or more realistically, we

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8 Section II draws on the treatment of the subject in Roy, *Rethinking Economic Change*, but extends the discussion in respect of both data and argument.
9 Bagchi, ‘The Great Depression’.
10 Commander, ‘Malthus’.
11 Collins, ‘Labour mobility’.
13 Mukherjee, *National Income*.
assume that the data did make sense once and stopped making sense because something had changed in the agrarian environment. If we take the second view, where does that lead us?

There are details on construction of the dataset, but not sufficient detail. The *Prices and Wages* tell us very little about who was being observed when the wage data were collected; we know more about who was observing the wage-earner. On the other hand, the *Enquiry* data give sufficient indication of who was being observed, but not enough details on how the data were collected. Between these two aspects, the latter is perhaps less worrisome. From regional agrarian history, we know that a number of agencies at random or systematically did collect wages and prices data, but these were not always published. It is more important to know who was being observed.

The data in the *Prices and Wages* were reported by village-level administrative officers. These officers were relics of the precolonial regime who survived as minor appendages of the *ryotwari* system. They were part-time peasants who received very small salaries from the government in exchange for their services in supplying information on the quality of the season, prices, and wages. The data they supplied were colored by their limited fields of vision and by their own perceptions about the norm or tradition - this is a well-known problem that has been written about quite extensively. These offices were hereditary. The observers were rooted in the village, usually an old *ryotwari* village that had been ‘settled’ as far back as the second quarter of the nineteenth century. The system was good at observing neighbors, namely, settled peasant populations. It was good at recording what happened in specific plots long under cultivation, and observing the workers who were in a sense ‘fixed’ on to these plots of land. It was not good at observing new lands being broken, such as the Punjab canal colonies, or the more mobile component in the agricultural work-force who moved between places, employers, and occupations, and who migrated seasonally in search of work. The *Prices and Wages* data were reported in the form of monthly earning per person, rather than by task, which makes one suspect that at least some of these wages were actually paid by time.

Now, a substantial part of the fixed settled population in the village by 1890 consisted of workers who had been working for the same employers year after year. These wages were not negotiated as often as those of the more mobile, migratory, part-time workers, in new agrarian regions. The largest body among the former was called ‘farm servants’ by the censuses. These people did usually receive payment by time. Others among them received grain-share wages. Others still were tied to plots of land and were *quasi*-slaves. The common feature of such relationship was the presence of caste-based hierarchy, infrequent wage negotiations, hereditary employment, and perhaps some form of implicit contract where employment off-season was ensured against lower than market wages.

On the other side, who might the *Enquiry* be observing? The independent field-work conducted by its authors focused on a very specific group. In its own language,

> It is necessary to remember that the wages shown under rural areas are the wages paid to *free* labourers by cultivators who have *no special claim* to their services.\(^\text{15}\)

The report was making an explicit contrast with ‘a ploughman who serves one master a lifetime’. The *Enquiry* consciously avoided collecting data on what was widely perceived as a disappearing custom, namely the ‘farm servants’, and looking at casual labour, mobile labour, and wage by task. In short, there was both a market-decided wage and a custom-driven wage in rural India at the time, *Prices and Wages* observed mainly the latter, the *Enquiry* observed the former exclusively.

\(^{15}\) *India, Report*, Volume I: 162-3, emphasis added.
What would ‘custom’ mean in this case? Some customary contracts involved payment of a fixed share of the grain output. There are many references to grain-share wages in nineteenth century sources that either disappeared later or were reclassified and merged into share-tenancy after reforms of tenancy laws. In that case, a negative association between real wage and prices is likely to develop, and money wages are likely to remain stable. For, bad seasons raised prices and also reduced grain wages. If wages were paid mainly in cash, as some authors believed to be the case, we need a different mechanism to get real wage decline with agrarian expansion. If all wages are equilibrium wages, and prices rise, money illusion can produce such a result. But would money illusion work for fifteen years? Another option was that population growth or de-industrialization eased labour supply so much that wages fell. This is possible, but doesn’t explain why the two sources would give us two different trends.

The most plausible account for the Prices and Wages invariance in money wage is the presence of what I called the fixed component in the labour pool, the presence of customary hierarchical farm servant arrangements, wherein wages were infrequently negotiated. Now, the turn of the century saw a steady inflation. In a period when prices were rising as steadily as prices did in the late-nineteenth century, a change in customary labour services would be likely. From the employer’s side rising prices would make grain payments potentially costly, and might well encourage a shift to cash wages or hiring in from the spot market, as some contemporary analysts suggested was happening in northern India. From the worker’s side, rising prices would induce more frequent bargaining on cash wages. We do have evidence suggesting that the customary arrangements began to dissolve from about this time.

One of the best researches available on payment systems and wages before the period considered in the paper is V.D. Divekar’s work on wages and prices in the Poona region between 1805 and 1830. Divekar suggests at least five important features of living conditions of ordinary people in the early nineteenth century. First, most earners received wages in money, with a small component paid in kind that was often used to adjust for changes in cost of living. Second, the kind component tended to disappear after British takeover of the region in 1818. Third, ‘wages for specific jobs rarely changed over the period’. Fourth, wages were also remarkably similar for similar workers across regions. From these two observations, Divekar concludes that ‘traditionally fixed, or, stagnant wage rates, was perhaps a common phenomenon throughout India’. Fifth, the period having seen a steady decline in prices, real wages increased, though it is also possible that employment intensity fell at the same time because of agrarian depression in western India. Divekar’s dataset reveals no sign of a decline in artisan wages. ‘This was a latter day phenomenon, outside the period under our present consideration’.

16 Radhakamal Mukherjee’s evidence in India, Royal Commission.
17 The percentage of farm servants in agricultural labour households was in decline in the first half of the twentieth century. In Madras, which had long been the principal concentration of long-term contracts, the proportion of farm servants among labourers fell from half to about a third. It declined further to just 1 per cent in 1951, see India, Agricultural Labour Enquiry. Reddy notes that annual farm servants in coastal Andhra became transformed into seasonal farm servants, see ‘Labour relations’. On decline of product wages and long-term arrangements generally, see Radhakamal Mukherjee in India, Royal Commission, pp. 390, 397, evidence taken in the United Provinces. Keatinge placed the decline of long-term contracts called saldari in west-central India well before 1921: ‘The tendency nowadays is for the labourers to prefer to work for daily wages’, Agricultural Progress, p. 141. Kessinger placed the decline of sepidari in Punjab from about the early-1920s, but this was based on recall, Vilayatpur, pp. 123-4. Mukhtyar wrote of the decline of the hali system of Gujarat, Life and abour. And Darling mentioned a ‘a new wind’ in the 1920s Punjab whereby customary payment obligations tended to be discarded and questioned even in the most traditionalist settings, Wisdom and Waste, p. 272.
18 Divekar, ‘Prices and Wages in Pune Region’.
There is a subsidiary point about wage convergence or divergence. Collins tests for convergence in rural wages as labour mobility increased between regions owing to extension of the land frontier, migration, railways, and modern communications. He finds no evidence of convergence or divergence in the Prices and Wages dataset. And he concludes that there was insufficient labour mobility. With wages that are so invariant, in the aggregate and also at provincial level, convergence is hardly to be expected. If my interpretation of the invariance is correct, then, any observed wage-cluster was a mix between market wages and customary wages, and since custom changed relatively slowly, the presence of customary wages in the cluster made the dataset less sensitive to labour mobility. In short, the dataset is possibly an insufficient test of mobility. On the other hand, as custom weakened, in the long run there should be convergence, which is indeed the result we get from comparing the coefficient of variation from the Enquiry data c. 1900 with that based on the first major sample survey of rural labour after independence.

How do we extract a trend in real wage from these contradictory datasets? Once we resolve that the sources were really not contradictory, we can join the two series together, converting Prices and Wages into approximate daily rates, and use the series that results, with the understanding that over time the representative rural labourer was negotiating more often and harder than before. The principal conclusions from the table do not really hinge on how the contradictory dataset problem is resolved. But the resolution proposed above gives us useful numbers to work with.

The long-term trend in real wages is shown in Figure 3. The chart combines data from four sources, the Prices and Wages, the Enquiry, the later quinquennial wage surveys in major provinces, and Mukherjee’s estimates of average real wages from 1950 to 1968. Comparing 1873 with 1968, we observe that the average rural labour appears to have earned a real wage that did not change very much, if at all, over as long as a century. If there was a mild gain between 1890 and 1925, it was taken away after the Depression.

The evidence on poverty is also clear. In 1875, a family of four would have needed £10 in a year to purchase the consumption basket required to be above the official poverty line defined in 1973. The average income of a rural labour family was between one-third and one-half the norm (assuming 180-260 days of work per year, and one earner per family). A labour family barely emerged from acute poverty, and it seems that a few families did so emerge, in the presence of exceptional employment intensity and at least two earners in the family. The distance between average income and the poverty line did not change significantly in colonial India, or the poorest did not become poorer, but more people joined their ranks.

III

What factors explain the wage-stagnation and the rise of rural poverty in the region? Does globalization explain the phenomenon? The thesis that unemployed artisans crowded out rural wages can be tested by the presence of three types of effects. First, it should depress average product, and therefore wages, in agriculture. Second, it should lead to urban-rural wage-convergence. If initially urban wages were higher than rural wages, as indeed was the case, the two should come closer. If there are barriers to labour transfer, convergence should be even faster. If rural wages did not rise enough and the wage-depression in industry was sufficiently

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19 Collins, ‘Labour mobility’.
20 India, Agricultural Labour Enquiry.
21 ‘Share’. See Roy, Rethinking Economic Change, for construction of this data series.
strong, then these circumstances can explain the origins of rural poverty.\textsuperscript{22} Third, such a process should depress the wage-to-rent ratio in agriculture, and give rise to increased income inequality, in general as well as in the rural economy.

Now, evidence on the first of these predictions is mixed. There are signs (Table 5 and Figure 3) that in the last quarter of the nineteenth century, while peasant export was doing particularly well, there was expansion in agricultural production, expected increase in average product, and expected increase in rural wages. Regional evidence suggests that the boom probably lasted until the early-interwar period.

Second, whereas the globalization story predicts intersectoral wage-convergence, we see no sign of such convergence occurring. Wages in the urban industrial occupations for groups closely comparable to agricultural workers were increasing at the same time, relative to rural wages (Table 4). Wages in all modern forms of enterprise, such as mills, mines and plantations, were higher than rural unskilled labour wages. Further, the distance was increasing. Rising wages in such occupations as the cotton textile mill industry reflected the fact that the colonial connection had enabled Indian industry to overcome its supposed disadvantage in capital and skilled labour, and achieve a measure of industrialization. But wages were rising in artisanal industry as well, the supposed site for de-industrialization. Why, then, would anyone move out of industry and enter agriculture?

The evidence on inequality is ambiguous for the nineteenth century, but suggestive of increasing inequality in the twentieth century. Two major works on rents suggest that rents in real terms increased on all qualities of land.\textsuperscript{23} Guha’s sample from north India shows that nominal rents increased manifold between the early twentieth century and mid-twentieth century, but the south Indian evidence is ambiguous. Reddy’s sample from agriculturally prosperous coastal Andhra show that grain rents more than doubled between 1860 and 1940. The Enquiry collected a great deal of rent data that do not show a clear change in the wage-rental ratio in agriculture, which reflects its bias for new frontiers, where land was plentiful and tenancy limited. Land price or the present value of future rents also increased sharply in most provinces after 1900. In Punjab, average land price increased more than tenfold between 1900 and 1945.\textsuperscript{24}

Studies on inequality in land-holding generally find no significant change in colonial India.\textsuperscript{25} The finding does not mean an absence of change, however. In general, the precolonial non-cultivating elite with control over land but no well-defined proprietorship either switched occupations or converted themselves into land-owners. On the other hand, cultivating peasants with reasonable quantity of land and secure proprietary or tenancy rights strengthened themselves. At the other end, many small peasants with insecure rights were pushed towards labour from the interwar period. A rising middle and flattening ends produced the absence of a significant trend in asset inequality.

\textsuperscript{22} While de-industrialization should always lead to wage convergence, why would it depress rural wages if excess land was available in the nineteenth century? A simple answer to this is that in general, for an outsider, it was easier to enter the labour market than to ownership of secure property rights in India after the major nineteenth century agrarian settlements were over. The degree of difficulty varied because the nature of property rights varied by region, the difficulty being the greatest in cases where zamindari or joint rights were in existence. The difficulty also reflected the fact that capital markets were imperfect, and artisans losing livelihood would not have enough capital of their own to buy land. Lastly, new lands were available in regions that were not necessarily regions of artisan concentration.


\textsuperscript{24} Mukerji, ‘The growth of the land market’.

\textsuperscript{25} Kumar, \textit{Colonialism}; Rao and Rajasekhar, ‘Commodity production’.
As for personal income inequality, observe first the short-hand used by O’Rourke and Williamson, namely, real wage rate to average income ratio (Figure 4). I track real wage rate in agriculture against NDP per worker. The actual percentages seem too low, and are obviously sensitive to assumed employment intensity for the agricultural worker. But that assumption does not affect the trend. There are two interesting lessons here. First, in the long run, the trend is downward, suggesting that the poor did become poorer compared to those at the middle. But there is a significant twist to the story. In periods when prices changed quickly, inequality changed quickly. The two significant illustrations are the 1880s and the 1910s, which saw inflation and rise in inequality, and again the early 1930s, which saw deflation and decline in inequality. In periods of rapid rise in prices, peasants gained more than the workers and the rentiers because wages and rents were poorly indexed. Equally, in the Depression decade, peasant incomes were squeezed on both sides, rise in real wages and real rents, consequently this measure of inequality did not show further fall. Table 2 reports estimated wage-share, which, if the unusual 1931 is excluded, suggests a mild decline between 1875 and 1920s. Again, peasant distress seems to have arrested the trend and introduced a leveling tendency after 1931.

As against this broad picture of rural India, overall inequality probably declined. Gini concentration ratios can be estimated for 1875 (with the database compiled by Atkinson), again for the interwar period when the quality of income and work-force statistics improved, and finally for 1950 during the first major compilation of the national accounts. These measures show decline, from a level well over 0.3 to nearer 0.3. A closer look shows that the earlier high inequality derived to a large extent from a feature that the British rulers of India had emulated from the Mughals - the presence of tiny governmental elite that received fantastically large incomes. Tapan Raychaudhuri shows that in Mughal India, a few hundred families had access to nearly half the income of the nation. In British India, a few hundred European civil and military officials earned salaries a thousand times higher than that of the poorest wage-earner. The differential in wages declined in the twentieth century, to about 20:1 in 1950. Further, the middle was rising throughout. Lower-level officials, commercial elites, bankers and moneylenders, clerks in commercial houses, and middle-to-richer peasants – all improved their economic position between 1860 and 1930. To express in other words, nineteenth century Indian economy and society showed signs of emerging from a condition where government offices had been the most promising field of investment, to one in which investment avenues progressively diversified.

Globalization and History, p. This ratio measures the distance between what the poorest workers earned and what the average worker located at the middle of the income distribution did. O’Rourke and Williamson justify this measure on the ground that it is usually correlated with trends in inequality.

Atkinson, ‘Statistical review’. See also the note below.

These levels are well below those Simon Kuznets reported for the 1950s, which ranged between 0.4 and 0.5, and were possibly the first concentration ratios estimated for India, see Kuznets, ‘Quantitative aspects’. Ojha and Bhatt revised these figures and produced ratios that ranged between 0.3 and 0.4, ‘Patterns of income distribution’. My ongoing research on standards of living in colonial India gives rise to a few estimates for much earlier periods, including these based on Atkinson’s dataset. This dataset does not allow measuring inequality within agriculture, and are thus underestimates. However, considering that rural inequality is consistently found to be less than the urban one in India, the more realistic figures should not be very different from the ones I find. Comparisons between these measures and the post-independence ones are not advisable for a number of reasons. However, comparisons between Atkinson’s two datasets, 1875 and 1895, are possible, and these comparisons suggest a decline in inequality. At any rate, it is hard to argue, combining all the ratios we now have for 1875-1955, and allowing for some increase in inequality within agriculture, that overall income inequality significantly increased during early industrialization in India.
We, then, have the following set of stylized facts to be explained:

a. The average product of rural workers possibly declined in the long run.

b. Crowding-out by urban workers does not explain why rural wages remained stagnant.

c. Rural inequality increased.

d. Overall inequality did not.

I propose that this set of observations can be explained better if we combine globalization with a few significant local variables.

IV

First of all, the assumption that labour did move from industry to agriculture, I believe, is untenable. At first glance, labour did move between sectors. The proportion of the work-force engaged in agriculture increased, and the proportion of work-force in industry decreased, even as the size of the work-force expanded (Table 3). And yet, we cannot really read from this that urban workers physically relocated to rural areas. The Thorner critique of de-industrialization needs to be considered. 29 If we observe only the male workers, the proportions of agriculture and industry do not change significantly. If we observe the women’s work-force figures there is a relative decline in industry and a rise in agriculture (Fig. 5). Was it the case that men did not move about much, but women did? That would be completely contradictory to everything we know about the pattern of migration, especially the pronounced male bias of all forms of spatial shift of population in the region. Critiques of de-industrialization did not ask the question, for they believed women’s work-force data were unreliable. 30 But that is just a conjecture, and there must be another better reading to these trends.

I explain the gender angle elsewhere with reference to the experience of a particular kind of rural households that once combined agricultural labour and artisanal occupations, and that saw emigration of males to urban labour and conversion of women to rural labour from the late-nineteenth century. The decline in farm servant arrangements allowed easier entry into wage labour by other rural classes, chiefly women. Women in agriculture tended to work as casual labour rather than as farm servants. The kind of contract that Daniel Thorner called ‘beck-and-call’ did not suit the particular work-rhythm that women could adopt. As long-term contracts began to disappear, women began to enter labour increasingly. Further, artisanal industry in the period was experiencing an institutional change that Ester Boserup called, in a pan-Asian context, relocation of work ‘from the hut to the factory’. 31 Household industry declined, and wage-labour increased. For a number of reasons, men could take part in the transition much more successfully than could women. In the end, fewer workers were supplying the same quantity of artisanal labour because of a rise in average hours of work.

The second point ties up with the first. Recent scholarship has argued that in this period of rising rural poverty, de-industrialization had been arrested, and small-scale and artisanal industry began to expand again. The revival was enabled by segmented markets between machine-made and craft products, increasing industriousness, change in organization from the family to the factory, technological change, and very limited influx into artisan occupations from the rural agricultural labour pool. 32

29 Thorner, D., “Deindustrialization”.


31 Woman’s Role.

Third, if labour mobility was indeed restricted, then in order to explain average product and wages in agriculture, we need to pay closer attention to agriculture itself. The nineteenth century globalization induced a short-lived increase in wages because average product increased. But in the long run, real wage trends followed the stagnant or declining average product closely enough (Table 5 and Figure 3). Average product has two components, population density (area per worker) and land yield (output per area). Both these indices are difficult to estimate accurately, especially because area figures are unreliable, and the derived land-yield figures do not always match independent estimates of land yield. Table 6 uses the area figures that we have, and two other independent variables, (a) growth of irrigation, which, being the most important variable to predict multiple cropping, is the nearest proxy for land yield, and (b) population growth. The table suggests that in the colonial period, increase in area (or declining density) supported agrarian expansion, and in turn, rise in average product and wages. These effects, however, were weakening in the interwar period. In twenty years after independence, density played a strongly negative role, though land-yield as beginning to accelerate.33

In short, in the colonial period, land-yield having grown only slowly, trends in population density can explain well trends in average product. In rural India, rents were beginning to squeeze not only wages but also profits. The stagnation in land-yield even as the number of workers increased and land ran out, ‘diminishing returns’ in short, needs a geographically and historically informed explanation. Why did land-saving innovation have to await the Green Revolution in the 1970s? Was the answer institutional or ecological? I believe that the ecological answer deserves at least as much attention as the more famous institutional approach. The environment of monsoon-dependent tropics made irrigation capital-intensive, and therefore, multiple cropping too expensive for the ordinary peasant. In other words, the monsoon made subsistence easy but risk-prone. The pace of average product in agriculture in the last 150 years can be largely explained in terms of the severity or slackening of scarcity of water for the dry seasons. And the pace of private investment in agriculture can be partly attributed to the risk factor.

**Conclusion**

The paper addresses two themes: reconciling datasets, and explaining poverty between 1875 and 1975. In particular, it asks whether or not globalization can explain the historical roots of poverty in the region.

The paper argues that the database problem can be ignored if we assume that the datasets observed different segments of the rural labour force at a time when the profile of the labourer was in fact changing. The paper also argues that globalization does not explain historical roots of poverty because there was no de-industrialization in this period. In fact, there was something quite the opposite, a consolidation of urban artisanal industry. Divergence in urban and rural wages suggests that labour mobility was limited in both directions, urban to rural and rural to urban.

The stagnation in rural wages, therefore, must be explained with reference to factors internal to the rural economy. Generally, real wages followed average product, in which correspondence population density played an important role. In the colonial period, rural-rural labour mobility also influenced labour supply. Institutional changes such as the decline of long-

33 The positive and significant response of real wage to farm yield has been noted in recent studies on poverty in rural India, see Ravallion and Datt, ‘Growth and poverty’.
term contract in agriculture and the decline of household industry tended to push women and semi-industrial rural groups into agricultural labour.
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Fig. 1: Money Wages

Fig. 2: Real Wages
Fig. 3. Real Wage (Rs./day)

Fig. 4. Wage-Income Ratio (%)
### Table 1. Intensity of Poverty among Agricultural Labourers, 1875-1961

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<th></th>
<th>Annual per head income&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Annual per head income&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Poverty line&lt;sup&gt;c&lt;/sup&gt;</th>
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<td>202.2</td>
<td>0.24</td>
<td>0.65</td>
</tr>
<tr>
<td>1961</td>
<td>45.3</td>
<td>120.4</td>
<td>192.1</td>
<td>0.24</td>
<td>0.63</td>
</tr>
</tbody>
</table>

<sup>a</sup> Assuming one earner per family, 180 days of work in a year, four members in a family

<sup>b</sup> Assuming two earners per family and 240 days of work in a year, four members in a family.

<sup>c</sup> Planning Commission poverty line announced in 1973-4: Rs. 49 per person consumption expenditure in rural India.

### Table 2. Share of wages in agricultural income

<table>
<thead>
<tr>
<th></th>
<th>Atkinson</th>
<th>Estimate-I</th>
<th>Estimate-II</th>
<th>National Accounts</th>
</tr>
</thead>
<tbody>
<tr>
<td>1875</td>
<td>9.9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1881</td>
<td></td>
<td></td>
<td>16.4</td>
<td></td>
</tr>
<tr>
<td>1895</td>
<td>8.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1901</td>
<td></td>
<td>16.7</td>
<td>9.8</td>
<td></td>
</tr>
<tr>
<td>1911</td>
<td></td>
<td>14.1</td>
<td>11.3</td>
<td></td>
</tr>
<tr>
<td>1921</td>
<td></td>
<td>7.6</td>
<td>6.6</td>
<td></td>
</tr>
<tr>
<td>1931</td>
<td></td>
<td>14.4</td>
<td>11.5</td>
<td></td>
</tr>
<tr>
<td>1951</td>
<td></td>
<td></td>
<td></td>
<td>9.1</td>
</tr>
<tr>
<td>1961</td>
<td></td>
<td></td>
<td></td>
<td>8.4</td>
</tr>
<tr>
<td>1971</td>
<td></td>
<td></td>
<td></td>
<td>10.3</td>
</tr>
</tbody>
</table>

Notes. See below Table 5 for explanations on the two estimates.
Table 3. Sector-shares in work-force (%)

<table>
<thead>
<tr>
<th></th>
<th>1875</th>
<th>1900</th>
<th>1925</th>
<th>1946</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>73.4</td>
<td>74.9</td>
<td>76.5</td>
<td>74.8</td>
</tr>
<tr>
<td>Industry</td>
<td>13.6</td>
<td>10.6</td>
<td>9.0</td>
<td>9.6</td>
</tr>
<tr>
<td>Modern</td>
<td>0.2</td>
<td>0.5</td>
<td>1.2</td>
<td>1.8</td>
</tr>
<tr>
<td>Small-scale</td>
<td>13.4</td>
<td>10.1</td>
<td>7.8</td>
<td>7.8</td>
</tr>
<tr>
<td>Work-force (%)</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Work-force: millions</td>
<td>117.7</td>
<td>131.3</td>
<td>138.3</td>
<td>158.2</td>
</tr>
</tbody>
</table>

Source: Heston, ‘National income’ for 1875, Sivasubramonian, National Income, for the other years.
Table 4. Urban wages: Semi-skilled artisan labour (Rs./day)

<table>
<thead>
<tr>
<th>Year</th>
<th>Money wage</th>
<th>Real wage</th>
<th>Money wage as ratio of agricultural wage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1875</td>
<td>0.314</td>
<td>0.563</td>
<td>1.95</td>
</tr>
<tr>
<td>1895</td>
<td>0.373</td>
<td>0.537</td>
<td>1.97</td>
</tr>
<tr>
<td>1900</td>
<td>0.410</td>
<td>0.493</td>
<td>2.33</td>
</tr>
<tr>
<td>1916</td>
<td>0.688</td>
<td>0.511</td>
<td>2.25</td>
</tr>
<tr>
<td>1920</td>
<td>1.082</td>
<td>0.509</td>
<td>3.25</td>
</tr>
<tr>
<td>1925</td>
<td>1.497</td>
<td>0.894</td>
<td>3.25</td>
</tr>
<tr>
<td>1937</td>
<td>0.834</td>
<td>0.777</td>
<td>3.43</td>
</tr>
</tbody>
</table>

Source: Atkinson, ‘Statistical review’ and Sivasubramonian, National Income. These wages usually refer to the average daily earnings of three categories of general purpose artisans: blacksmiths, carpenters, and masons. The official sources and later national income estimates often take these incomes as proxy for the health of the urban informal sector as a whole. That assumption can be challenged. However, the most important direct estimate of earning potential in informal manufacturing that we can get, average product in handloom weaving, would suggest an even more impressive increase in the ratio.

Fig. 5. Women workers in Agriculture and Industry (4 major provinces)
Table 5. Real product per agricultural labourer, 1875-2001 (Rs. at 1948-9 prices)

<table>
<thead>
<tr>
<th></th>
<th>Atkinson$^b$</th>
<th>Estimate-I$^c$</th>
<th>Estimate-II$^d$</th>
<th>National Accounts</th>
</tr>
</thead>
<tbody>
<tr>
<td>1875</td>
<td>2125.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1881</td>
<td></td>
<td>1035.3$^e$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1891</td>
<td></td>
<td></td>
<td>964.6$^f$</td>
<td></td>
</tr>
<tr>
<td>1895</td>
<td>2176.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1901</td>
<td>617.0</td>
<td>1048.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1911</td>
<td>907.9</td>
<td>1138.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1921</td>
<td>1105.1</td>
<td>1280.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1931</td>
<td>993.8</td>
<td>1241.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1951</td>
<td></td>
<td></td>
<td>1877.0</td>
<td></td>
</tr>
<tr>
<td>1961</td>
<td></td>
<td></td>
<td>1815.9</td>
<td></td>
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<td>1971</td>
<td></td>
<td></td>
<td>1465.0</td>
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</tr>
<tr>
<td>1981</td>
<td></td>
<td></td>
<td>1618.5</td>
<td></td>
</tr>
<tr>
<td>1991</td>
<td></td>
<td></td>
<td>1584.3</td>
<td></td>
</tr>
<tr>
<td>2001</td>
<td></td>
<td></td>
<td>1519.1</td>
<td></td>
</tr>
</tbody>
</table>


a. Exchange rates between the Indian rupee and pound sterling varied in the range Rs. 13-15 per pound in colonial India, with unusual depreciation (16-19) in 1894-6, and unusual appreciation (11) in 1919-20.

b. Atkinson reports population of females, but not women workers. I apply population/agricultural work-force ratio for women in 1881 and 1901 respectively to derive an estimated female worker figure consistent with the other data in Atkinson. In 1901, approximately 40% of women agricultural workers were wage-labourers, and approximately 14% among men were labourers. These ratios are applied to derive the figures for women wage-workers.

c. Uses actual census figures for agricultural labourers. ‘General labourers’ are added to agricultural labourers.

d. Uses Krishnamurty’s (‘Growth of agricultural labourers’) adjusted labour-ratios.

e. 1881 census cannot be trusted because persons ‘unclassified’ is almost as large as agriculturists. I apply the 1901 labourer/work-force ratio on work-force.

f. 1891 census does not report workers. I apply the 1901 work-participation rate
### Table 6. Factors affecting average product

<table>
<thead>
<tr>
<th></th>
<th>Average annual change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Population (%)</td>
</tr>
<tr>
<td>1881-1911</td>
<td>0.6</td>
</tr>
<tr>
<td>1911-1931</td>
<td>0.6</td>
</tr>
<tr>
<td>1951-1971</td>
<td>2.7</td>
</tr>
</tbody>
</table>