<table>
<thead>
<tr>
<th><strong>Title</strong></th>
<th>Living standards in Ireland and Britain, 1800-1850 : the East India Company Army data</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Authors(s)</strong></td>
<td>Mokyr, Joel; Ó Gráda, Cormac</td>
</tr>
<tr>
<td><strong>Publication date</strong></td>
<td>1986-10</td>
</tr>
<tr>
<td><strong>Series</strong></td>
<td>UCD Centre for Economic Research Working Paper Series; No. 44</td>
</tr>
<tr>
<td><strong>Publisher</strong></td>
<td>University College Dublin. School of Economics</td>
</tr>
<tr>
<td><strong>Item record/more information</strong></td>
<td><a href="http://hdl.handle.net/10197/1431">http://hdl.handle.net/10197/1431</a></td>
</tr>
<tr>
<td><strong>Notes</strong></td>
<td>A hard copy is available in UCD Library at GEN 330.08 IR/UNI</td>
</tr>
</tbody>
</table>
LIVING STANDARDS IN IRELAND AND BRITAIN, 1800-1850:
THE EAST INDIA COMPANY ARMY DATA

Joel Mokyr+
and
Cormac O Grada.

Working Paper No. 44

October 1986

Working Papers represent preliminary reports on research in progress and should not be cited without permission from the authors. A complete list of Working Papers published by the Centre for Economic Research is given at the end of this paper.

+Northwestern University

Presented to the Social Science History Meetings, St. Louis, October 16-19, 1986.
This paper is part of a larger study of British and Irish recruits to the East India Company's European regiments during the half-century or so before the Great Mutiny. The study seeks to use data in the Company's enlistment records, particularly height, age, origin, and occupational data, for insight from a new perspective into social conditions in the United Kingdom (including Ireland) during the Industrial Revolution. Hitherto research in this area has concentrated on two-thirds of the U.K. - Great Britain - and relied on mainly on income and consumption data. Our focus is on health and nutritional status, so our findings should complement those from traditional sources. The records carry information on about eighty thousand men in all. Here, however, we concentrate on the 1800-1815 period only. A total of 23,262 records have been collected so far. The period is important and different enough to warrant separate treatment.

The appeal of the kind of data analyzed here to social and economic historians has been effectively canvassed elsewhere (Floud, 1985; Fogel, 1985; Steckel, 1982). In brief, it is held that the well-attested association between a population's mean height and its nutritional status permits the historian to infer much about the health of past populations from such data. The techniques developed to estimate the mean height of an entire population (or a subset of one) from recruitment and similar data are becoming better known (Wachter, 1981; Wachter and Trussell, 1985).

1Roderick Floud and his collaborators have also been working on the issue of health and economic status in nineteenth-century Britain, with samples of regular army recruits (see Floud, 1983; Floud, Wachter and Wachter, 1985).
1982). Because armies tended to be recruited mainly from the working class they would seem a particularly apt target for inferences about the poor.

The state of the labour market in general and pay and conditions in the army were an obvious factor in determining the composition of the army. During the period of the Napoleonic Wars covered in this paper the recruitment officers of the Company's and other forces had to compete fiercely for recruits. By contrast, in the years following Waterloo recruiters could impose almost whatever standards they liked. This point turns out to be important in the context of comparisons over time and across regions (compare Floud, Wachter, and Gregory, 1985).

The East India Company, established as a trading monopoly in 1600, by the mid-eighteenth century had become Britain's imperial arm in Asia. During our period, while its commercial power was under increasing pressure, it was entitled to raise, besides its large Sepoy (native) battalions, several thousand European troops for service in India. Before 1799 these Europeans were confined to Protestants, effectively excluding most Irishmen. Thereafter the Company recruited throughout the United Kingdom on an equal footing with the regular army (Gardner, 1971; Mason, 1974; De Schweinitz, 1983).

Who enlisted in the Company's ranks? Late-eighteenth century accounts often painted an unflattering picture of the recruits. According to one, they were "a shabby-looking stunted set of men . . . dwarfish crooked recruits", to another "the refuse of the streets . . . swept up and shovelled at once into . . . ships" (Bhatia, 1977: 114n; de Schweinitz, 1983: 131). Now the Company's men were not alone in this. In Ireland
those joining the militia in the 1790s were termed "the refuse of mankind" (Bartlett, 1985: 116), while Wellington's famous verdict on his own men - "the scum of the earth" - has not been seriously questioned by historians (Fortescue, vol. 11, 1923: 8-13; Glover, 1963: 175-6, 220-229). Pay was so low in the regular army - one shilling a day before stoppages after 1794 - that why anybody in his right mind should have joined seems at first a mystery. After all menial jobs in England in the 1800s paid far more: farm labourers earned over £40 a year and messengers and porters nearly £70 (Lindert and Williamson, 1982). Some unfortunate were seemingly pushed into the army "from having got bastard children - some for minor offences - some for drink" (Glover, 1963: 175). There was undoubtedly an element of compulsion too: in the Irish militia the men were put through drill and exercises "so tedious and oppressive" that many opted for the regulars (McAnally, 1949: 290).

Yet there is reason to suspect that the Company's recruits were in some sense different from His Majesty's. Both the Company and the Army offered the same pay and bounty money, but service in India was much tougher than in all but the worst of the regular army's outposts. The enormously high death rates - mainly from disease and fever - among the Company's men tell the story. An examination of the muster rolls (E.I.C. L/MIL/10/137-140) suggests that in the early nineteenth century, the annual death rate was one in ten, and this (coupled with much smaller losses from desertions and discharges) explains why the Company had to raise over one thousand men annually to maintain its establishment of about ten thousand. It is likely that there was something special about the men who opted for India. (Heathcote, 1974: 156):
The Company's army was frequently chosen by men who wished to cut themselves off from their own world. As a haven for soldiers of fortune, adventurers, rogues, and petty criminals, where few questions were asked about a recruit's background, and where the authorities were not too fussy about the answers, the Company's European Regiments were very much, in their day, what the French Foreign Legion was to a later generation. They produced, too, much the same sort of hard-bitten, tough soldier.

This suggests that the East India Company's army may have attracted many men who were down on their luck or with something in their past they wished to escape, but they were not necessarily the poorest of the poor.

During the 1790s and after, there was an additional factor at work. Labour markets were tight, and all armies were desperate for men. The excuses offered by some of those charged with raising men locally reflect them. In mid-Wales, "a scarcity of men, and the great wages now given to servants in husbandry" were blamed; in Haddington "a want of hands", in Kincardine "the high wages ... earned by the lower classes, both as labouring servants and manufacturing servants" (Great Britain, 1806(X)). Besides the needs of the army and navy, local militias and volunteer forces competed for recruits. The militia, originally conceived as a quasi-conscript territorial force and thus not envisaged as competition for the regular army, quickly began to mop up the army's pool of recruits through the substitute system (Fortescue, 1899-1930, vol. 5, 200-4; vol. 7, 334; vol. 11, 11-28; vol. 15, 207). Substitutes were paid up to £40 or £50 to replace those who could buy themselves out of being balloted, and "it (could) not be supposed that men who have been offered such bounties would, at any rate for some time, accept of £12 12s., even if paid wholly in cash" (British Parl. Papers, 1806(X), dd). The militia was accordingly forced to become a supplier of volunteers for the regu-
lers (McAnally, 1949: 289-90; Western, 1985: ch. 9). All agencies accepted recruits who would not have been even considered earlier. Boys scarcely in their teens and short men far below the normal height requirements were being recruited. In its desperation the East India Company fell back on convicts and deserters from the regular forces, and was happy to have them at first. Tellingly, these deserters were "in general of much larger size than those we are accustomed to receive" (L/MIL/9/147, 12 April 1805, 26 May 1809).

Our data confirm the poor quality of the Company's recruits during the Wars. In normal times only men 5'5" or above it were accepted; in the artillery units the requirement was 5'7". Men aged 20-30 years were preferred, and at times this amounted to a requirement. During 1800-1815, however, less than one-half of the recruits met these standards. In no year did the median height of recruits reach sixty-five inches, and the median age was nearly always below twenty. The Company recruitment officers seem to have been more willing to relax their age than their height standards, however. As Table I below shows, over a hundred recruits were under fourteen and over 4500 (about 19.5 percent of the total) were under seventeen. On the other hand, very few recruits under the minimum height of 5'0" were accepted.

II

During our period the Company had recruiting offices in London, Liverpool, Dublin, Cork, and Newry. All counties in the U.K. supplied
recruits. Ireland easily out-supplied other areas. In our sample of 23,262, England produced 0.99 men per thousand population, Scotland 0.83, and Wales 0.49, but the Irish rate was 2.02.\footnote{811 populations were used for England, Scotland, and Wales. Ireland’s first successful census was not carried out until 1821, and so national and county totals have been adjusted to allow for an annual population growth rate of 1.5 percent in the interim. For pre-1821 Irish population growth see Daultrey, Dickson, and O Grada, 1981.} Nor was the supply of recruits even within kingdoms. In Ireland, the dozen counties south of Cavan, east of Longford, and north of Tipperary, all quite close to Dublin, provided almost twice as many men per head of population as the rest of the country. Men in Connacht (1.32 per thousand) and Antrim-Down (1.21) were decidedly unenthusiastic about prospects in India. Dublin (6.70) and Kildare (5.81) headed the list in Ireland. No British county approached the same level of eagerness for Company service, but counties not far from London such as Bedford (1.87), Surrey (2.61), and Berkshire (1.64) were over-represented. Middlesex itself (0.91) provided relatively fewer men, however, and the north of England (Westmoreland, Cumberland, Northumberland, and Yorkshire) and the west (Devon and Cornwall) were also under-represented. Table I presents some more details about the sample collected thus far.

The regional pattern contains some puzzles. While Ireland’s over-representation is hardly surprising — being poorer, the Irish had relatively more to gain from service in India — why did the poorer areas within Ireland provide proportionately so few men? Unlike emigration to America, at this stage predominantly an Ulster phenomenon, joining the ranks cost no money. The standard labour supply mechanism thus seems to fit the unit, but not some of its parts. Did information costs play a
Table I: Composition of E.I.C recruits, by age and origin.

<table>
<thead>
<tr>
<th>Kingdom</th>
<th>Aged&lt;14</th>
<th>14-16</th>
<th>17-19</th>
<th>20-29</th>
<th>30+</th>
<th>Total</th>
<th>per 1000 pop.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ireland</td>
<td>57</td>
<td>2,281</td>
<td>3,467</td>
<td>5,296</td>
<td>760</td>
<td>11,861</td>
<td>2.02</td>
</tr>
<tr>
<td>England</td>
<td>50</td>
<td>1,885</td>
<td>3,000</td>
<td>3,817</td>
<td>673</td>
<td>9,425</td>
<td>0.99</td>
</tr>
<tr>
<td>Scotland</td>
<td>3</td>
<td>315</td>
<td>517</td>
<td>644</td>
<td>54</td>
<td>1,533</td>
<td>0.83</td>
</tr>
<tr>
<td>Wales</td>
<td>2</td>
<td>66</td>
<td>91</td>
<td>130</td>
<td>21</td>
<td>310</td>
<td>0.49</td>
</tr>
<tr>
<td>Foreign</td>
<td>--</td>
<td>18</td>
<td>26</td>
<td>74</td>
<td>15</td>
<td>133</td>
<td>n.a.</td>
</tr>
</tbody>
</table>

Source: East India Company Army sample.

role? Perhaps the poorer Irish counties had extra men for the begging, unaware of the Indian service and ignored by the Company's recruiting sergeants? Such poverty trap explanations are familiar in pre-famine Irish historiography. One implication — that those who enlisted from remote, poorer areas would have tended to be higher quality — can only be answered by a closer look at our data.

It must be remembered that the E.I.C. in this period recruited only a small proportion of prospective Irish and British soldiers. Insofar as it was a non-competing group attracting deviants from a single pool of recruits, the regional pattern described here would apply generally. But the different agencies — Company, army, navy — may have had their favourite recruiting areas. At a slightly later date, the Admiralty drew disproportionately from the south of Ireland and England.

If the Company recruits were 'hard men', they were far from being an undifferentiated mass of unskilled labourers. Our sample contains over six hundred job descriptions, and only about one-half of the men are
described as 'labourers' in the records. Focusing on recruits' occupations yields some suggestive pointers. First, we sorted out those with jobs obviously demanding a modicum of literacy. Such jobs - clerks, stationers, teachers, advocates, printers, and the like - accounted for 1094 of those 11,484 recruits aged twenty years and over. The proportion was slightly higher among British recruits than Irish: 9.71 percent versus 9.36 percent. However, jobs requiring literacy were probably far more numerous in Britain in Ireland at this stage. Unfortunately aggregate comparisons cannot be made, for the lack of censal data. However, in Ireland in 1841 jobs obviously requiring literacy accounted only for less than four percent of the total male labour force over fifteen. Even in Leinster, the proportion was under six percent (1841 Census, pp. 152, 440).

The over-representation of such literate workers seems to fit a picture of the Company's army as a receptacle for men down on their luck and not necessarily entirely the dregs of society. While middle-class occupations are rarely represented, the ranks did not consist exclusively of those from the poorest of poor backgrounds, and indeed the occupational mix prompts us later to carry out some analysis of heights by occupation. The results indicate that the job descriptions given by the recruits carry some clout.

III

In Table II we present the first results computed from our sample. To eliminate the effects of age, we have limited the calculations to
Table II: Summary Statistics for recruits aged 20 and older. Standard deviations or errors in parentheses.

<table>
<thead>
<tr>
<th>Sample Description</th>
<th>n</th>
<th>RAW AVERAGES</th>
<th>QBE estimates</th>
<th>% short-fall</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Age</td>
<td>Height</td>
<td>Mean Height</td>
</tr>
<tr>
<td>All Irish &gt; 19</td>
<td>6,056</td>
<td>24.66</td>
<td>66.56</td>
<td>66.03</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(4.05)</td>
<td>(2.29)</td>
<td>(.0126)</td>
</tr>
<tr>
<td>Rural Irish &gt; 19</td>
<td>5,061</td>
<td>24.64</td>
<td>66.57</td>
<td>66.09</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(4.00)</td>
<td>(2.29)</td>
<td>(.0135)</td>
</tr>
<tr>
<td>Urban Irish &gt; 19</td>
<td>995</td>
<td>24.81</td>
<td>66.47</td>
<td>65.99</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(4.32)</td>
<td>(2.24)</td>
<td>(.0209)</td>
</tr>
<tr>
<td>All British &gt; 19</td>
<td>5,428</td>
<td>24.69</td>
<td>66.35</td>
<td>65.69</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(4.19)</td>
<td>(2.34)</td>
<td>(.0221)</td>
</tr>
<tr>
<td>Rural British &gt; 19</td>
<td>4,105</td>
<td>24.87</td>
<td>66.35</td>
<td>65.64</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(4.20)</td>
<td>(2.36)</td>
<td>(.0209)</td>
</tr>
<tr>
<td>Urban British &gt; 19</td>
<td>1,323</td>
<td>24.77</td>
<td>66.36</td>
<td>65.84</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(4.18)</td>
<td>(2.27)</td>
<td>(.0310)</td>
</tr>
<tr>
<td>Poorest eight</td>
<td>982</td>
<td>24.40</td>
<td>66.32</td>
<td>65.85</td>
</tr>
<tr>
<td>Irish Counties</td>
<td></td>
<td>(3.71)</td>
<td>(2.19)</td>
<td>(.0299)</td>
</tr>
<tr>
<td>Richest eight</td>
<td>2,218</td>
<td>24.85</td>
<td>66.61</td>
<td>66.13</td>
</tr>
<tr>
<td>Irish Counties</td>
<td></td>
<td>(4.22)</td>
<td>(2.27)</td>
<td>(.0118)</td>
</tr>
<tr>
<td>British Industrial Counties</td>
<td>604</td>
<td>25.18</td>
<td>66.55</td>
<td>66.07</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(4.40)</td>
<td>(2.34)</td>
<td>(.0260)</td>
</tr>
<tr>
<td>London</td>
<td>547</td>
<td>24.33</td>
<td>65.96</td>
<td>65.46</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(3.73)</td>
<td>(2.14)</td>
<td>(.0300)</td>
</tr>
<tr>
<td>Irish &quot;Literate&quot;</td>
<td>567</td>
<td>24.17</td>
<td>67.60</td>
<td>67.42</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(3.72)</td>
<td>(2.29)</td>
<td>(.0280)</td>
</tr>
<tr>
<td>British &quot;Literate&quot;</td>
<td>527</td>
<td>24.58</td>
<td>87.18</td>
<td>86.98</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(4.04)</td>
<td>(2.22)</td>
<td>(.0265)</td>
</tr>
</tbody>
</table>

Source: Same as Table I.

recruits aged 20 and over. The algorithm used in computing the Quantile Bend Estimators follows to the letter the procedure outlined by Trussell
and Wachter (1982). 3

Table II reveals a number of interesting patterns which, if sustained by further research, would cast some light on living standards as reflected by nutritional status in the British Isles at this time.

1. Overall, despite the much lower level of economic development of Ireland, Irish recruits were taller than British recruits. Although the raw means of the two populations are fairly close, the QBE estimators are about .35' apart, which is more than 20 times the standard error of the estimate. The greater stature does not come as a complete surprise; earlier work by the author based on a different source, suggests a similar difference (Mokyr and Ó Gráda, 1986).

2. The differences between urban and rural areas are complex. In Ireland, the rural population appears to have been taller than the urban population, while in Britain the reverse is the case. This finding suggests that differences between urban and rural regions per se may be less important than differences within urban areas of different types. The Irish towns (Dublin and Cork accounted for the lion's share of these recruits) were mostly religious and administrative centers. These "old" towns had a radically different economic structure from the industrial and harbor towns emerging in Britain.

---

3 The program used in the calculation combines a statistical tabulation package (we used Number Cruncher Statistical Systems, version 4.21) with an econometric package (RATS version 2.00). A copy of the program will supplied upon request from the authors.
3. This conclusion is reinforced by the finding that London's recruits were shorter than the rest of the British urban recruits, and indeed were shorter than the British overall average. On the other hand, recruits from the heavily urbanized three industrial counties (Lancashire, Lanarkshire, and Yorkshire, W.R.) were taller than the average. If, as is sometimes suggested, the Industrial Revolution had a negative effect on the health of the lower classes, the years of the Napoleonic Wars may have been too early to discern that effect.

4. Although the finding that Ireland, the poorest of the kingdoms, had a taller population from which recruits were being drawn is paradoxical, this perverse correlation does not hold within Ireland. The data show that recruits from the eight richest counties in Ireland (Dublin, Carlow, Kildare, Kilkenny, Wicklow, Wexford, Westmeath, and Tipperary) were clearly taller than those from the poorest eight counties (the five Connacht counties plus Kerry, Clare, and Donegal).

5. The two bottom rows in table II pertain to those recruits whose declared occupations suggested a high likelihood of that they were literate and came from "middle class" background. The results suggest a substantial class difference in stature in Ireland and in Britain. In both kingdoms the "literate" recruits were close to 1.5" taller than the average recruit, and the QBE estimated shortfall becomes negligibly

---

4 The population from which the sample was drawn is of course not identical to the population of the kingdom because the recruits were not a random sample drawn from the population. Further work will try, by proper reweighting, to adjust for these selectivity biases.
small. The difference between the two kingdoms is preserved: although the British literates were much taller than the other British recruits, they are shorter than their Irish colleagues.

These findings suggest that the use of stature to approximate otherwise unobservable variables related to "physical well-being" or "nutritional status" holds up well for this period and this source. Clearly, however, the fixed effect of being born in Ireland is positive and large. What it was precisely about the Irish that made them taller is not quite clear. The rural nature of Irish society, a rather obvious candidate at first glance, is more or less ruled out by the results reported in table II. Clearly the predominance of the potato in the Irish diet must remain a strong possibility. It is possible, however, that other factors played a role. The ubiquity of peat may well have helped keep Irish homes warm in the winter and reduced infant morbidity due to air-borne infectious diseases. High infant mortality rates, about 50 percent higher than in England (Mokyr, 1985a, pp. 37-38) may have "weeded out" the weaker children and left a hardier group of survivors. Detailed work on the county level may help cast some light on these questions.
Bibliography


Its Officers and Men, London: Jonathan Cape.


Mokyr, Joel and Cormac Ó Grada (1986), 'From Poor to Poorer ? Irish Living Standards Before the Famine', unpublished manuscript, revised version, Northwestern University.


Working Papers


Policy Papers


