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The end of destitution: Evidence from British working households 1904-1937

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Abstract: This paper estimates and investigates the reduction, almost to elimination, of absolute poverty among working households in Britain between 1904 and 1937. To do this, it exploits two newly-digitised data sets. The paper is a statistical generalisation, to working families in the whole of Britain, of the finding that absolute poverty declined dramatically over the early part of the twentieth century in the towns studied by, among others, Bowley and Rowntree. The paper offers a number of pieces of corroborative evidence that support the estimates. It simulates a decomposition of the poverty reduction into the effects of three proximate causes. The first two causes are the decline in family size and the rise of real wages and these were of roughly equal importance for poverty reduction. The third cause is a decline in wage inequality, but this is of relatively minor importance for poverty reduction among working households. It concludes with a discussion of deeper causes.

JEL Classification: N3, O12

Key Words: poverty, living standards, Britain, demographic change, real wage growth.

The end of destitution[1]

1. Introduction

In the mid-1920s Bowley and Hogg (1925) found that local poverty rates had diminished in five English towns since the pre-WW1 period. In this paper we present the first estimates of the change in the national incidence of absolute poverty among working households in Britain over a slightly longer period, between 1904 and 1937. We take a 'bare subsistence' poverty line due to Bowley and Burnett-Hurst (1915), Bowley hereafter, which was a mildly adjusted version of Rowntree's (1901) standard, as our measure of the brink of destitution. We then report the application of this standard to two British data sets. First we present the results of Gazeley and Newell (2010), who use micro data for 1904 to estimate a Bowley headcount poverty rate of 21.7 percent among British working households. The second data set is part of a 1937 household survey and we estimate a headcount rate of 3.6 percent of people in working households below the Bowley standard. This large fall is not unique to the method we employ. We try a range of different methods of measurement and the estimated falls in poverty are all of a similar magnitude.

This finding is evidence that despite the disruption of the First World War and the macroeconomically disastrous interwar years, households became substantially better off over the period, so that Rowntree-Bowley type destitution more-or-less disappeared, among working households at least, well before the establishment of the post WW2 Welfare State. For some, this may seem a major revision of received wisdom. For instance, the classic contemporary account that stressed the persistence of poverty into the late 1930s is M'Gonigle and Kirby (1936). More recently, the ill-health consequences of poverty in the 1930s were addressed by Webster (1982) and Laybourn (1990), who went as far as to conclude, of depressed towns in the 1930s, that 'there can be little doubt that the conditions of working-class families were much worse than they had been in the pre-war years'(1990, p65). Therefore, such a revision would only be accepted if the evidence was compelling. As a consequence, much of this paper is taken up with discussions of the quality of the data and the adjustments we make to render it as representative as possible, as well as offering corroborative evidence from alternative sources.

To many others this central finding will be less controversial. It is possible that neither Rowntree nor Bowley, for instance would have been too surprised, since there own findings were similar. Rowntree (1901) found that a 15.5 percent poverty headcount among working class households in York in 1899. He reinvestigated poverty in York in 1936 (Rowntree, 1941) and when he applied his 1899 poverty standard, adjusted for price changes, the poverty rate had more than halved, falling to 6.8 percent. [2] Bowley and his co-workers estimated poverty in working-class households in a group of industrial towns in 1912-13 and again in 1923-4. They found poverty rates of 5.4% in Stanley, rising a little to 6.4% in 1923-4, 7.6% in Northampton falling to 2% in 1923-4, 11.6% falling to 3.3% in Warrington and 20.4% falling to 8.1% percent in Reading (Bowley and Burnett-Hurst,

[1] We thank Gemma Mills and Theresa Jennings for research assistance, the Nuffield Foundation for their Social Science Small Grant SGS/1220, which funded the digitisation of the 1904 data and Professor Peter Scott of the University of Reading, who kindly allowed us to use the 1937-8 data analysed in the paper. We also thank Robert Eastwood and Alex Moradi for stimulating discussions as well as participants at the University of Sussex/Institute for Development Studies Development Economics Seminar and at the Economic History Society Annual Conference. The usual disclaimer applies.

[2] He also used a significantly more generous 'human needs' poverty line and found 31.1 percent of working class households in poverty using this new standard.

1915, Bowley and Hogg, 1925). Inevitably, perhaps, the degree to which these findings of reduced poverty are typical for the whole country has been open to question. In this paper we supply national estimates of this change.

This reduction in absolute poverty for working families over the period has not been heavily emphasised in the literature on the progress of poverty in Britain. It has been obscured partly because poverty studies of the period used different thresholds and seemed difficult to compare. We will discuss these below. It has also been somewhat obscured for two other reasons which we discuss here. First there is the rise of unemployment as a cause of economic misery in the interwar years and secondly there has sometimes been lack of clarity in the poverty literature over the distinction between absolute and relative poverty.

On labour market conditions, it is certainly true that both Rowntree and Bowley note that unemployment was much more frequently citied as a primary cause of poverty in their post-WW1 follow-up studies than in their pre-WW1 studies. In their earlier studies low wages and large families were much more likely to be citied as causes of poverty. But, to invalidate a comparison between 1904 and 1937, the two years have to be different enough in terms of labour market conditions seriously to distort a comparison of poverty rates. The best aggregate statistics suggest that differences were minor. According to Hatton and Boyer (2002), the British unemployment rate stood at 8.0 percent in 1904, a peak unemployment year in a relatively mild economic downturn. GDP growth was 0.6 percent in 1904. 1937 was part of a period of recovery from the Great Depression of the early 1930s. GDP growth was 4.3% and the Hatton-Boyer unemployment rate for that year was 8.5 percent. Participation rates were also similar in the two years, at 71.1 percent of the population of working age in 1904 and 70.6 percent in 1937. Of course the similarity in employment rates of *individuals* might mask a difference in the employment rates of *households* that might be relevant for poverty comparisons. It could be, for instance that by 1937 employment was concentrated more narrowly among households than it was in 1904. If that were the case we would expect, given similar unemployment and participation rates, a higher proportion of multiple-worker households in 1937 than in 1904. In Table 11 below, we show that this is not the case in our data sets. The impression that unemployment is a more frequently-cited cause of poverty in the 1930s than in the 1900s is not wrong, however. But it comes about because of the reduction in working poverty. Thus, in conclusion, the evidence suggests that 1904 and 1937 are highly comparable in terms of labour market conditions.

On relative versus absolute poverty, some argue, from a concern with the adverse consequences of economic inequality, that the right way to define a poverty line is relative to a chosen quantile in the distribution of equivalised household income. In their discussions of 20th century British poverty, Glennester *et. al.* (2004) and Piachaud (1988) strongly advocate the use of such relative poverty measures. Current British official and quasi-official measures of poverty or deprivation also reflect this position and are mostly of the relative type. On the other hand, the World Bank tends to use absolute poverty measures, such as their 'a dollar a day' standard, for international comparisons. In long historical perspective a relative measure of poverty creates a serious distortion, as it does in international comparison, since it masks, for instance, the massive improvement in living standards that took place in Britain over the last one hundred years or so.

Why did poverty fall? In the later parts of the paper we use independent evidence from wage surveys and demographic data to corroborate our findings. We also use these independent data to parameterise a simulation of the change in poverty rate. We ascribe roughly equal shares of the fall in poverty to changes in the size distribution of real wages on the one hand and changes in family size on the other. We also speculate on deeper causes. The main relevant change in the wage distribution is the rise in the mean real wage, with a minor role for declining wage inequality. We discuss the likely sources of productivity growth and the possible impact of changes to the system of wage bargaining over the period. On changes in family size, we show that the main fall is in numbers of children. This was part of a long-term decline in completed family size, but includes an accelerated decline for marriages formed during and after WW1.

The article is set out as follows. In section 2 we discuss the definitions of poverty that we employ. In section 3 we introduce the two household-level data sets that we use for our analysis. Because neither of these household surveys are scientifically-designed samples, we also discuss how we adjust these data to be more convincingly representative of working households in the population. In section 4 we present our results. In section 5 we compare our results with those of in a number of town studies from the 1930s. In section 6 we present corroborative evidence on the reduction in family size and the rise of real wages, which strongly supports the findings from the two household data sets, and allows us to quantify the impacts of these proximate causes. In section 7 we conclude with some discussion of the deeper causes of the reduction in poverty.

2. Poverty lines

We recognise that all measures of poverty are influenced by the social context, even those that utilise extrinsic standards of consumption behaviour (for example, dietary intakes based upon a scientific understanding of minimum physiological needs).[3] Bowley's poverty line was aimed at defining the level of expenditure below which physical survival was seriously impaired. He adopted most of the assumptions embodied in Rowntree's earlier measure.[4] Rowntree had devised a deliberately harsh measure of poverty that was comparable to standards of consumption experienced in Victorian workhouses. We prefer Bowley's poverty line, as he includes meat in the diet, and this better reflects consumption norms of the period, and his equivalence scale is better supported empirically by contemporary data (see Gazeley and Newell, 2000).

Table 1: Poverty line equivalence scales by Bowley and George (Bowley couple =100)

	Bowley	*George*
Couple	100	115
Additional adult	43	48
Child aged 14-16	39	48
Child aged 6-13	26	40
Child aged under 6	19	30

Source: R.F. George (1937). Notes: (1) To simplify presentation, we take and average of the male and female expenditures. (2) Bowley's allowance for a couple cost 15s 4d at 1936 prices.

[3] See, for instance Townsend (1970) and Sen (1979).

[4] See Rowntree (1901) for a discussion of what living at poverty-line income meant.

In Table 1 we present the Bowley equivalence scale that we shall employ, and well as a more generous scale suggested by George (1937). During the interwar years many investigators made upward revisions of Bowley's and Rowntree's standards, as living standards improved. These revisions partly reflect the tension between the relative and absolute poverty concepts. George (1937) re-formulated Bowley's requirements, in line with the British Medical Association recommendations with respect to minimum food requirements. Satisfying these new recommendations increased the poverty-line cost of food for all family types.[5] In what follows, we employ Bowley's and George's definition to examine the time path of poverty between the turn of the twentieth century and the beginning of the Second World War. These two poverty-lines provide simple lower and upper bound measures for how contemporaries defined poverty over the course of two generations.

3. Household Expenditure Surveys and Wage Censuses

Although there was a large number of poverty enquiries carried out in Britain before and after the First World War, none of them attempted to provide a national picture. There were a few household expenditure surveys, however, that collected data suitable for the analysis of poverty and attempted to provide national coverage. These are set out in Table 2, with details of the number of households taking part and the proportion of the original returns recovered.[6]

The Board of Trade undertook the first large-scale national expenditure survey of urban households in the United Kingdom in 1904. The design and execution embodied much of what had been learnt in the previous recent smaller-scale Board of Trade enquiries.[7]

The survey was repeated in 1918, using the same questionnaire, as part of the Sumner Committee's investigation of the impact of WW1 on the cost of living of working class households, but none of the 1,300 returns from this later enquiry are known to have survived. In 1937-8 a more extensive national survey was undertaken by the Ministry of Labour. The purpose of these enquiries was to ascertain weights for the official cost-of-living index. Because of this, both surveys focussed on collecting expenditure records from working-class households where the head of household was working. In 1937-8, the Ministry of Labour commissioned a separate complementary survey of middle-class

[5] See George (1937) p.91 Bowley's standard was especially inadequate compared with BMA recommendations, with respect to milk consumption.

[6] An earlier survey was carried out by Carroll Wright, the United States Commissioner of Labor in 1890-91. We initially proposed to employ that survey in this study. The households taking part in the survey were located in eight manufacturing export industries: pig iron; bar iron; bituminous coal; coke; glass; cotton textiles and woollen textiles. Szreter (1996) describes how the families of textile workers, about one-third of the USCL sample, tended to have much smaller families than others. For example, cotton workers' families had, on average 2.1 children in USCL, while steel workers' families had on average 2.7 children. Thus the USCL data contains too limited a sample industrially to represent the wage distribution, but crucially it is also composed of a very un-representative group of families, and thus cannot be employed here.

[7] Wilson-Fox collected a smaller number of agricultural workers' household expenditure records in 1902. The report of this survey was published as Cd. 1761 and provides details of the consumption of food of 114 agricultural labourer's families. Cd. 1761 also report includes the results of the Labour Department of the Board of Trade undertook a survey of about 400 urban working families in 1903. 286 of these families provided returns, 88 of which were sufficiently detailed to provided for the analysis of food expenditures. 68 of these were from London and the suburbs.

expenditure patterns.[8] The 1904 survey was exclusively urban in focus, whereas the 1937-8 Ministry of Labour survey also collected expenditure records from households where the head of household was employed in agriculture.[9]

Table 2: Urban Household Expenditure Surveys of the UK, 1904-1938

Year	*Organisation*	*No. budgets*	*No. recovered*	*Remarks*
1904	Board of Trade	1,994	1,021 (also includes some budgets not included in published report)	Non-random sample of wage-earners used to derive expenditure weights for the Ministry of Labour Cost of Living index, including Eire. (aggregate results published as Cd. 2337)
1918	Sumner Committee	1,306	Zero	Re-application of 1904 BoT survey in order to investigate changes in food consumption resulting from the First World War (aggregate results published as Cd 8990)
1937-8	Ministry of Labour	10,762	623	Working-class Cost-of-Living Enquiry, reported in Ministry of Labour *Gazette* December 1940, January & February 1941 (includes agricultural workers). Stratified random sample from NIS register, plus representative earning <£250

Source:

The 1904 enquiry collected details of household income, rent and food expenditure from workmen's families in the British Iles (including southern Ireland), recorded for one week between July and September 1904. A total 2,283 returns were collected via workmen's organisations, co-operative societies and individuals, though only 1,994 were deemed to be useable.[10] The degree to which it is representative of the urban population needs to be established. Some aggregate statistics derived from the 1904 enquiry were published in British Parliamentary Papers as Cd 2337 in 1905.[11] Until recently, it was believed that the

[8] Massey's middle class survey

[9] Number of agriculture budgets in 1937-8 and Wilson Fox had already collected and analysed the expenditure records of rural workers households at the turn of the century.

[10] *Ibid* Cd 2337 1905 p.3.

[11] The enquiry made use of a fixed format questionnaire. The forms provide information on locality (often given very precisely); number and age of children; occupation of the head of household; household weekly income, including earnings of the head and average additional weekly family income; weekly house rent and

original returns from this enquiry had been destroyed, but about half (1,078) are extant. Gazeley and Newell (2010) compare various statistics of the surviving sample with the aggregate published results for the entire survey and they find that the surviving sample is biased towards Scotland, Ireland and Northern England. Other biases, such as differences in family size and in income and expenditure were found to be minimal.

12,967 working class household expenditure records were collected for the week beginning 17 October 1937. These were collected from a target stratified random sample of about 22,000 households with a currently- employed head earning less than £250 per annum.[12] The target sample was mostly drawn from the unemployment insurance register, but was supplemented by households where the head of household was not currently insured against unemployment (particularly railway workers, local authority and public utilities employees and those employed by government departments).[13] The Ministry of Labour set rules to ensure national coverage.[14] A separate complimentary enquiry was carried out by the Women's Institute on behalf of the Ministry, where the head of household was employed in agriculture.[15]

The full survey was repeated for single weeks in each of January, April and July 1938. The subsequent quarterly investigations for the three weeks in 1938 produced, respectively 11,518, 11,126 and 10,920 useable household budgets. The total number of households supplying expenditure records for all four weeks of the enquiry was 10,762.[16] Of these, 623 are extant (about 5.8 percent) and have been digitised.[17] This small number of surviving returns appears to have very similar characteristics to the full sample. In Tables 3, 4 and 5 we compare the 'surviving 600' returns with the Ministry of Labour's analysis of the full survey. As can be seen, the 'surviving 600' are a very good approximation of the entire sample with respect to regional coverage, the size distribution of households and the distribution of children.

The Ministry of Labour used a random sample of 2225 households to analyse the distribution of household income. In Table 6 we compare the distributions of total household expenditure in the surviving sample with that of the random sample of 2225.[18] The key point to take away is that the surviving sample has a much greater proportion of low expenditure households than the random sample.

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number of rooms occupied. Fully half the questionnaire is concerned with expenditure and quantity of food consumed by the family, but no details of non-food expenditures were requested other than rent.

[12] Approximately 31,000 households were identified and visited, but about 9,000 were found by the enquiry investigators to fall outside the scope of the enquiry. TNA LAB 17/7 99338, p.7

[13] TNA LAB 17/7 99338 p 5

[14] For example, to ensure that all regions were adequately covered the Ministry required that it received responses from households amounting to at least two-fifths of the total number of households in random sample from any district. If less than this were received, further questionnaires were sent to households on a reserve list in the under-represented district. Indeed the sample mirrored the regional distribution of the insured workforce almost exactly. *Ibid*, p.5

[15] *Ibid* p.7

[16] TNA LAB 17/7 99338 p.8

[17] 524 of these are extant at the University of Bangor and 99 at TNA under LAB 17. These surviving returns were digitised under the supervision of Prof. Peter Scott of the University of Reading and we are extremely grateful to him for making the extracted data from available to us.

[18] TNA LAB 17/7 99338

Table 3: The regional distribution of households in the 'surviving 600' and in the full 1937/8 survey

Percentage shares of households by region	*Surviving 600*	*Full Survey*
London and South-East	30.2	25.7
South-West	10.0	8.7
Midlands	11.2	14.3
North-East	12.8	12.9
North-West	15.1	14.4
North	5.1	6.4
Wales	3.7	4.8
Scotland	5.8	11.0
Northern Ireland	3.0	2.9

Source, own calculations and TNA LAB 17/7 99338, page 64.

Table 4: The size distribution of households in the 'surviving 600' and in the full 1937/8 survey

Percentage shares of households by number of people in the household	*Surviving 600*	*Full Survey*
One	2.2	2.0
Two	18.5	20.9
Three	26.2	27.7
Four	23.0	22.9
Five	16.1	13.6
Six	6.9	6.2
Seven	4.2	3.5
Eight	1.4	1.6
Nine	1.0	0.8
More than nine	0.7	0.8

Source: authors' calculations and TNA LAB 17/7 99338, page 11.

Table 5: The distribution of children in households in the 'surviving 600' and in the full 1937/8 survey

Percentage shares of households by numbers of children present	*Surviving 600*	*Full Survey*
Zero	44.3	47.0
One	27.6	25.9
Two	15.7	15.4
Three	7.1	7.0
Four	3.9	2.9
Five	0.3	1.1
Six	0.6	0.5
Seven	0.2	0.1
Eight	0.3	0.1

Source, authors' calculations TNA LAB 17/7 99338, page 11.

Table 6: The distribution of total expenditure among households in the 'surviving 600' and in the full 1937/8 survey

Percentage shares of households by total expenditures in shillings	*Surviving 600*	*Random sample of 2,225*
Under 40	8.5	2.8
40 and under 50	9.2	5.9
50 and under 60	13.7	10.3
60 and under 70	13.0	15.7
70 and under 80	13.5	14.7
80 and under 90	9.5	12.8
90 and under 100	6.8	9.5
100 and under 110	6.1	7.7
Over 110	19.8	20.6

Source: authors' calculations TNA LAB 17/7 99338, page 80

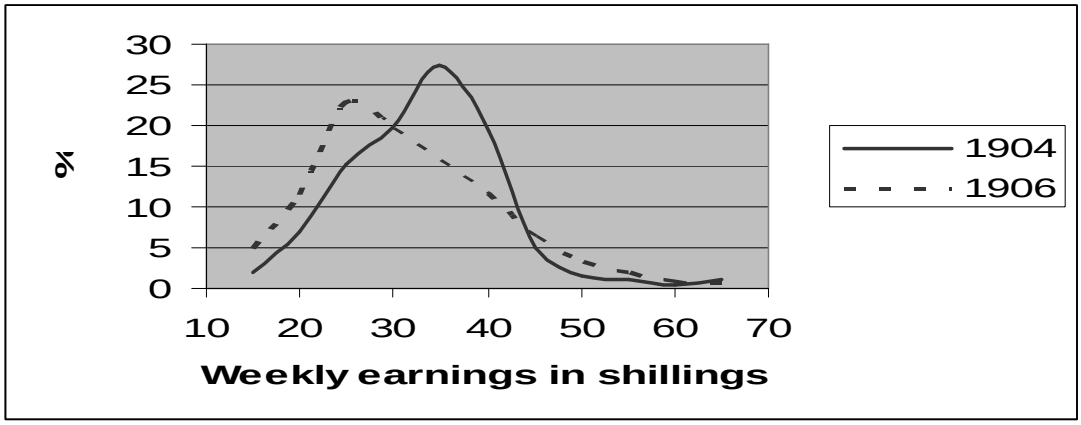
In our poverty estimation, reported in the next section, and in the simulation work in Section 6, we exploit data from a number of large wage censuses, taken in 1886, 1906, 1938 and 1960. Appendix Table 1 summarises these censuses.

4. Poverty estimates 1904 and 1937

In this section we present our estimates of poverty among working households from the 1904 and 1937 data sets. We also discuss various aspects of our estimates: for instance, changes in the composition of the poor and sources of bias.

Gazeley and Newell (2010) calculate that Bowley's 'bare subsistence' poverty line generated a poverty rate among working households in our 1904 data set of 12% and a 15.5% headcount rate. However, when considering these rates as potential estimates of national poverty, Gazeley and Newell acknowledged various sampling biases, the most important source of which was the over-sampling of households headed by skilled manual workers, leaving too few households with less-skilled heads.

Chart 1: Earnings frequencies for men in the 1904 data set and the 1906 census



Source: Gazeley and Newell (2010)

This is illustrated in Chart 1, which plots the frequency distribution of head of household's earnings from the 1904 Board of Trade survey and the earnings distribution for adult men derived from the 1906 wage census (dotted line).

We compare household weekly income net of rent with the appropriate adult-equivalent poverty line in order to calculate poverty rates.[19] In Table 7a we present 1904 and 1906 wage frequencies and 1904 household poverty rates by wage group, using both Bowley and George lines. In first column of Table 7b we present the unadjusted poverty rates generated by applying the Bowley and George poverty lines to the data. In the second column of Table 7b we present rates constructed by re-weighting the poverty rates by the wages census frequencies. These are, of course quite a lot higher than the unadjusted rates.

Table 7a: 1904 and 1906 earnings distribution and poverty rates

Wage in shillings	*% frequency among heads of households in 1904*	*% frequency among adult male workers in 1906*	*Poverty rates using Bowley line (%)*	*Poverty rates using George line (%)*
<15	1.9	4.7	53	65
15 and <20	6.9	11.5	57	73
20 and <25	15.3	22.7	27	47
25 and <30	19.7	19.6	11	30
30 and <35	27.5	15.7	3	12
35 and <40	19.3	11.6	1	6
40 and <45	5.0	6.3	0	4
45 and <50	1.4	3.3	0	0
50 and <55	1.1	1.9	0	0
55 and <60	0.3	1.0	0	0
60 and <65	1.1	0.7	0	0
>65	0.6	1.1	0	0

Table 7b Poverty rates for 1904

Poverty rates	*Unadjusted*	*Adjusted*
Bowley headcount	15.5	*21.7*
Bowley household	12.1	*17.9*
George headcount	29.4	*35.8*
George household	24.0	*30.8*

Source: Gazeley and Newell (2010). For reference, the standard error of an estimated poverty rate lies between 1 percent and 2 percent for samples between 500 and 1,000. If, for comparison with the 1937 data, we exclude the Irish cases, the poverty rates either remain unchanged or fall by very small amounts. For instance the unadjusted and adjusted Bowley household poverty rates become, respectively 11.9% and 17.9%.

This adjustment is appropriate if the distribution of households, with respect to family structure, of workers in each wage bracket in the 1904 survey can be taken to be representative of UK households with heads whose earnings are in that wage bracket. Given that we find little variation in the 1904 data in family structure by wage group, the

[19] The 1904 survey questionnaire asked about rental payments for accommodation and for details of food expenditure only. Other expenditures are sometimes, but not always, recorded as comments but not frequently enough to use here.

chances are very low that this assumption causes a significant distortion. The main potential bias in these data is the over-representation of Scottish households and the under-representation of households in London and the south-east of England. This could bias results if wages, prices or family sizes were differently distributed in Scotland. However, as Gazeley and Newell (2009) show, Scottish cities had wages and prices very similar to those prevailing in the South of England. Indeed the two regions were similarly placed in the national wage distribution of the period. Gazeley and Newell (2009) also show that there is no difference between Scotland and the rest of Britain in terms of the main parameters of the distribution of family size.

We estimate greater levels of destitution than found by Rowntree in York in 1899 and by Bowley in most of his towns 1912-13. But as Gazeley and Newell (2010) show, this is not surprising given that York and Bowley's towns were middle-ranking cities in Britain in terms of affluence.

Next we employ the surviving 1937 data. No income is recorded among these households but expenditures are very carefully recorded, so in this case we compare non-rent expenditures with the appropriate adult-equivalent poverty line to estimate poverty incidence. Our approach to re-weighting is similar to that described for 1904.

We use the adult male wage distribution from the 1938 earnings survey to re-weight the sample. In Table 8a we present 1937 expenditure frequencies and 1938 wage frequencies, as well as Bowley and George poverty rates by income/expenditure class. In the first column of Table 8b we give unadjusted poverty rates, while wage-frequency adjusted rates are given in the second column. In this case the wage adjustment actually lowers the estimated poverty rates. This is perhaps surprising, since we had expected the frequency of lower incomes to be higher than the frequency of lower expenditures.

To see how the adjustment fails to raise estimated poverty, we examine the frequencies of expenditures in the first column of Table 8a. Critically there is a smaller percentage of men recorded as receiving wages under forty shillings per week in the wage census, than there is of households spending less than forty shillings in the surviving 1937 household survey records. We can think of two possible explanations for this. Firstly the 1938 wage census excludes agricultural workers, who were mostly poorly paid, but the 1937 survey does not exclude the households of these workers. Secondly, the 1937 survey does not exclude households headed by women and women's pay was much lower than men's pay at the time[20]. The inclusion of female-headed households would, as with agricultural households, raise the frequency of low-spending households. The big result, though, is more-or-less unaffected, since whether we adjust or not, we find very little Bowley poverty among working families in 1937 data.

Even these low rates are probably upper-bounds for the incidence of persistent poverty. We can assert this because the survey contains a question about days of work supplied by the household in the reference week. All the heads of household were employed. About 75% of all heads of household said they had worked either 5.5 or 6 days. But just fewer

[20] For instance Ainsworth (1949, p4) shows that three-quarters of women who worked 44 hours or more per week earned less that forty shillings per week.

than 11% of all households in the sample supplied, in total, less than 5.5 days of work in the reference week. Among the few Bowley-poor households, this fraction was 57%. Thus a large fraction of those we measure as poor are households in which for one reason or another, for instance sickness or temporary layoff, a full week of work has not been supplied. This may well have affected the spending plans of these households and it follows that some part of measured poverty we find in these data is likely to have been temporary in nature.

Table 8a: 1937 poverty rates, raw and adjusted using 1938 wage survey

Weekly expenditure or earnings level in shillings	*Share of households with this level of expenditures in 1937 survey*	*Percentage of men aged over 21 with this level of earnings*	*Poverty rates using Bowley line (%)*	*Poverty rates using George line (%)*
<40s	8.5	6	22.6	28.3
40 and <50s	9.2	8.3	3.5	9.3
50 and <60s	13.7	18.5	0.6	2.1
60 and <70s	13.0	21.7	0	0.7
70 and <80s	13.7	19.8	0	0
80 and <90s	9.5	12.1	0	0
90 and <100s	6.7	6.5	0	0
100 and <110s	6.1	3.2	0	0
110 and <120s	3.7	1.8	0	0
Over 120	9.6	2.1	0	0

Table 8b Poverty Rates in 1937

Poverty rates	*Unadjusted*	*Adjusted*
Bowley headcount	3.6	*1.8*
Bowley household	2.7	*1.8*
George headcount	6.5	*6.6*
George household	4.6	*3.0*

Notes and sources: 1.The poverty rates in the first column are calculated using the full sample (N=591). For single-earner households (N=340) the household poverty rates, using Bowley's and George's poverty lines are 2.8% and 5.3% respectively.

How much credibility should we give our finding of large-scale poverty reduction? We have re-weighted our samples using contemporary wage surveys. If this was sufficient to render the samples representative, then we could infer, for instance, that the estimated fall of over 9 percentage points in the percentage of Bowley-poor households was significantly different from zero (t = 6.5) and assert with 95% confidence that the fall is between 6.6 and 12 percentage points.

One question is whether we are comparing like-with-like. In particular, we use household income net of rent from the 1904 sample and household expenditure net of rent for the 1937 sample. This difference is caused by the lack of many categories of non-food expenditure data for 1904 and a lack of income data for 1937. It is possible that consumption-smoothing behaviour might exaggerate the fall in measured poverty between to the two samples.[21] We develop an alternative, common method on the two samples to

[21] Note, however that many respondents in 1904 made it clear they were reporting their normal weekly earning, rather than their actual earnings.

overcome this possible difficulty. Both surveys record food expenditures in detail, so we take the food element of Bowley's poverty line[22] and adjust it for changes in food prices 1904 to 1937, and then measure the proportion of households spending less than their Bowley food allowance. In this way we measure poverty in exactly the same way in the two samples. We find a household food poverty rate of 10.7% in 1904, which rises to 15.0% if re-weighted by the 1906 wage distribution. Similarly, we find a food poverty rate of 3.5% for 1937, which falls to 3.0% if re-weighted by the 1938 wage distribution. This exercise confirms the suspicion that the income data for 1904 generate greater poverty rates than expenditure data would, but the difference is quite small and the reduction in poverty over time is almost as large as we found earlier, so this bias accounts for no more than a small fraction of the fall in poverty.

Next we check if our result could be due to shifts in the relationship between family size and income between the two samples. Could it be, for instance, that the reduction in family size was heavier among lower-earning families? We find that the reduction in family size is more-or-less uniformly distributed over households grouped by food expenditure per capita, see Table 9. We also examine the extent to which differences in recorded poverty rates may have been influenced by the preponderance of secondary workers between the 1904 and 1937 household expenditure surveys. Table 9 shows that the proportions of secondary workers are almost identical across different income groups in the samples, except for a rise in the share of single-worker families among the low-spending families. Note that this difference moves in a way that would increase rather than decrease poverty, so differences in the distribution of household structure across income groups seem not to be causing our results.

Table 9: Average family size and the preponderance of secondary workers in 1904 and 1937/8

	Household size		*Proportion with only one worker*	
Households in percentiles of the food expenditure per capita distribution	1904	1937/8	1904	1937/8
Lowest decile	7.3	5.5	.55	.71
Between 10th and 25th percentile	6.8	4.6	.62	.63
Between 25th and 50th percentile	6.2	4.1	.60	.52
Between 50th and 75th percentile	5.5	3.7	.52	.46
Between 75th and 90th percentile	4.9	2.9	.51	.51
Highest decile	4.0	2.5	.56	.60
Full sample	5.8	3.9	.56	.55

Source: authors' calculations from 1904 and 1937 survey returns.

Table 10 shows that the fall in family size between 1904 and 1937 derives from falls in numbers of people at all ages, but especially of younger children. Average household size had fallen by nearly two persons, from 5.8 in 1904 to 3.9 in 1937. We investigate the extent to which this fall was responsible for the reduction in poverty in the next section.

[22] Bowley's food allowance for a man aged 18 or more was 4s 6d. Setting this to 100, he allowed 90 for adult women, 85 and 80 for young men and women respectively aged 16 and 17, 85 and 70 for boys and girls respectively aged 14 and 15, 50 for children aged 5 to 13 and 33 for children under 5 years old Bowley and Burnett-Hurst (1915, page 80).

Table 10: Household structure and food expenditure in 1904 and 1937 compared

Average Household statistics	*1904*	*1937*
Number of children under 6	0.9	0.4
Number of children aged 6 to 13	1.3	0.6
Number of people aged over 13	3.6	2.8
Number of people	5.8	3.9
Food expenditure per capita in 1904 prices.	45.5 pence	58.7 pence

Source: authors' calculations from 1904 and 1937 survey returns.

Note how the average number children under 14 in a household fell by 1.2 between 1904 and 1937. We conclude this section by stating that it seems to us that there were two proximate forces driving the *per capita* income distribution among working households between 1904 and 1937: real wage (i.e. economic) growth and falling household size, and these two forces were the main proximate determinants of the fall in poverty among working households. We do not find evidence that the fall in poverty is likely to be associated with either changing work patterns within households or by differential shifts in family size across income groups.

5. Comparison with the town studies of the interwar period

Interwar studies of living standards, mostly town or city studies, varied in the poverty line they applied, see Table 11, and so, as we have mentioned, their results are difficult to compare. In addition to the studies by Rowntree and Bowley, there were a large number of local poverty enquiries. Most of these regional enquiries used Bowley's 'bare subsistence' poverty line modified in various ways. Poverty among working-class households, thus measured, ranges between 21.3 percent in Southampton in 1931 and 6.9 percent in Bristol in 1937 (see Gazeley 2003:98).

The poverty rates in Table 11 mostly refer to populations of all households, in contrast to our poverty rate, that refer only to working households. It turns out that when one digs below the headline poverty rates for these studies, as given in Table 11, the rates for working households, that is, households with at least one wage earner, the town poverty rates are a lot lower. We calculate that for the Ford study of Southampton, the poverty rate among working households is 3.1%. Similarly for the Caradog-Jones study of Merseyside, 11% of working households are in poverty. For the Owen study of Sheffield we calculate a lower bound of 1.8% poverty among working households, and similarly for the Llewelyn-Smith study of London and the Tout study of Bristol we calculate lower bound estimates of poverty rates for working households of 3.5% and 2.5% respectively. Thus, apart from Merseyside at the onset of the Great Depression, the poverty rates for working households are not far away from our estimate for Britain in 1937.[23]

[23] The studies are Ford (1934), Jones, (1934) Llewelyn-Smith (1932,1935) Owen, (1933), Tout (1938).

Table 11: Poverty among working-class households, 1899-1937

Investigator	*Date*	*Poverty-line*	*locality*	*Poverty (percent)*
Rowntree	1899	primary poverty	York	15.46
Bowley	1912-13	bare physical efficiency	northern towns	5.4-20.4
Bowley	1924	bare physical efficiency	northern towns	3.9-11.3
Llewelyn-Smith	1929-30	modified Booth	London	9.1
Caradog Jones	1929-30	modified Bowley	Merseyside	16.0
Owen	1931	modified Bowley	Sheffield	15.4
Ford	1931	modified Bowley	Southampton	21.3
Rowntree	1936	human needs (version 2)	York	31.1
Rowntree	1936	primary poverty	York	6.8
Tout	1937	modified Bowley	Bristol	6.9
Tout	1937	George	Bristol	10.7

Source: adapted from Gazeley (2003)

6. Corroboration of the poverty reduction from other sources of data

In this section we present evidence on the changes in family size and in the distribution of wages from sources other than the 1904 and 1937 household surveys.

6.1 Changes in household size.

The Sumner Committee of 1918 (BPP Cd 8980, p.14) reports the average family size for manual workers in 1917, as 5.6 persons, of whom 3.2 people are over 14 years, 1.6 are aged between 6 and 14 years and 0.8 are children under 6 years. This is very similar to the pattern evident in the surviving returns from the 1904 enquiry and suggests that the reduction in family size 1904-1937 mostly took place later than 1917. The statistics presented in Table 12 are consistent with this hypothesis, and show how the largest part in the fall in completed family size in the period occurred between marriages started 1900-1909 and marriages started 1915-1919.

Table 12: The total fertility rate by marriage cohort 1900-1929

Date of marriage	*Average completed family size, manual heads*
1900-09	3.94
1910-14	3.35
1915-19	2.91
1920-24	2.73
1925-29	2.49

Table derived from the *Royal Commission on Population*, (1948-9) Table XXV, p.29. Data based on the Family Census of Great Britain, 1946.

It seems the decline in family size in this period was a speeding up of a longer-term process. The causes of this long-term demographic transition, a slow-moving aggregate phenomenon, remain the subject of research. In the 1949 Report of the Royal Commission on Population, the main discussion focussed on: (i) the impact of economic growth, in particular the increase in job opportunities for women and the raised ability of

householders to provide for their own old age; (ii) the changing nature of work and the introduction of compulsory education, which changed the costs of raising children. The major modern addition to this list of potential causes is the reduction in infant mortality. The apparent speeding up of the trend through the Great War has been explained as a diffusion of the technology of birth control, discussed by Winter (1986, p.271) who argues as follows:

> 'It is possible the distribution of rubber sheaths among soldiers in the First World War, as a protection against venereal disease, helped popularize contraception among some men. The wartime increase in female employment, which required substantial internal migration, may have exposed more women to currents of opinion or propaganda favourable to contraception. But whatever the source, it is clear more couples were using contraceptives after the war than before it. In a survey conducted for the Royal Commission on Population after the Second World War, Lewis-Faning found that while 16 percent of women married before 1910 said they used birth control during their married life, fully 41 per cent of those married 1910-1919 and 59 per cent of those married in 1920-4 did so.'

Thus, according to Winter, a side effect of WW1 may have been that it acted as a massive family planning programme and reduced unwanted fertility during a long-term fertility transition. It seems such events may well have occurred more recently in developing countries (Bongaarts, 1997). The oral history study of Fisher (2006) finds that traditional methods of birth control, such as withdrawal were still common among married couples in the 1920s and 1930s, but this does not rule out the possibility that Winter is right.

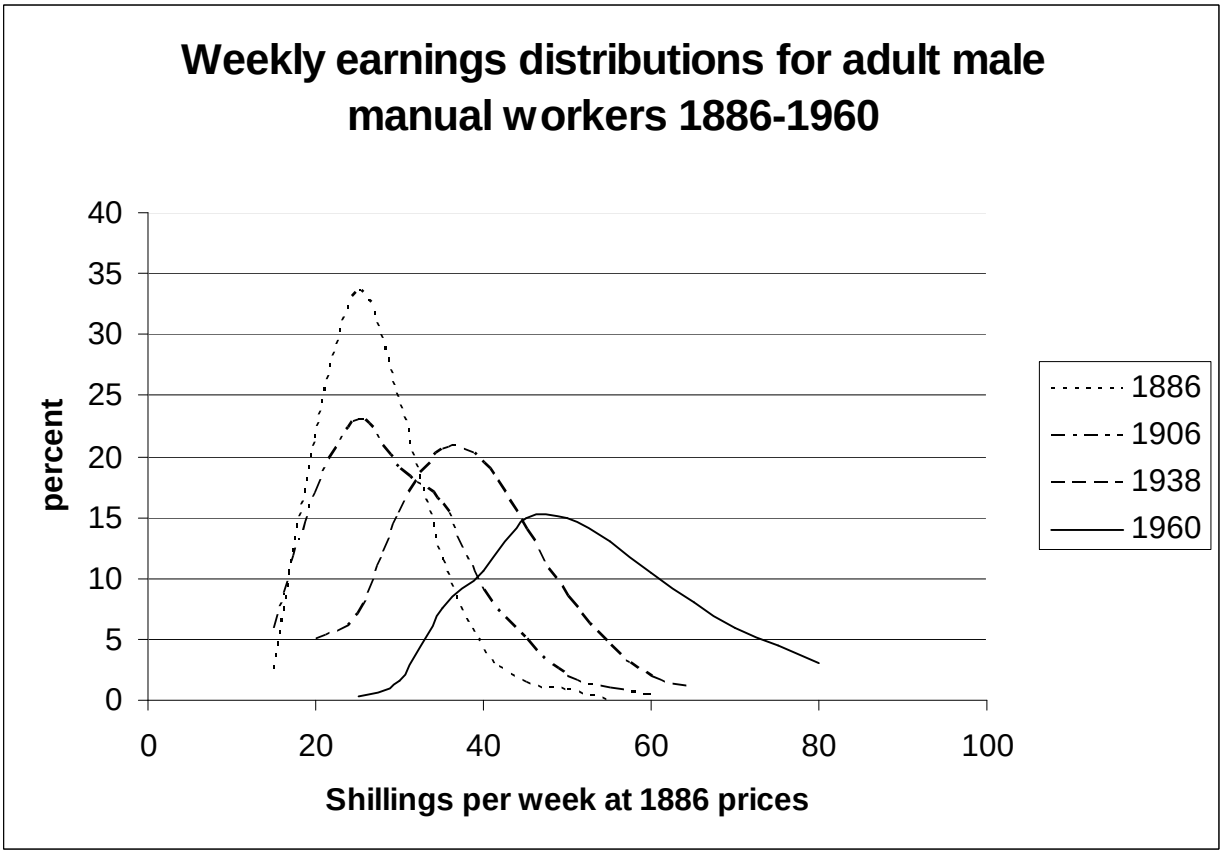
6.2 Changes in the wage distribution

To discuss shifts in wages we compare the distributions in wage censuses. Chart 2 compares real weekly wage distributions for adult men, 1886 to 1960. All are converted to 1886 shillings. The Bowley poverty line for a typical family was just under twenty 1886 shillings (£1) in both 1886 and 1906. The graph in Chart 2 illustrates that twenty shillings cuts off a large fraction of the tail of the adult male weekly wage distribution in both years. In the 1886 and 1906 wage censuses respectively 24 and 16 percent of adult men earned less than a pound. By 1938, however, not only had wages risen substantially in real terms (on average by 10s at 1886 prices (30%), but also, because family size fell over the period, the Bowley line for the typical 1938 family falls by one-third, to about 13s at 1886 prices. The 1938 wage census records no weekly earnings at or below that level for adult men.

Ainsworth (1949) provides comparative distributional data for full-time workers from the 1906 and 1938 wage surveys. His calculations are taken from more detailed sources than ours and his results differ a little, but the main picture is the same. Deflating his results we find he calculates a 30% real increase in the average weekly wage for full-time men, with declining wage inequality. For his evidence on inequality, see the last column of Table 13. This shows lower-quartile wages growing faster than average wages.[24]

[24] Bowley provided comments on Ainsworth's paper that are included in the published version. In those notes Bowley confirms and remarks upon the decline of wage inequality over this period.

Chart 2: Weekly Earnings Distribution 1886 - 1960



Sources: 1886:British Parliamentary Papers ;1906:British Parliamentary Papers (1909a, 1909b,1910a, 1910b,1911, 1912-13b,1912-13c); 1938: Ainsworth (1949); 1960: British Labour Statistics Historical Abstract. All four curves are derived from grouped data. Data deflated by the cost of living index for the ONS website.

Table 12: Descriptive statistics of the distributions of male full-time manual weekly wages 1906-1960

	sd log wages	*Coefficient of variation of wages*	*Mean real wage*	*Annual growth rate between dates*
1906	0.31	0.31	107	0.4%
1938	0.27	0.26	137	0.9%
1960	0.26	0.25	195	1.9%

Notes and sources see Chart 2.

Table 13: Descriptive statistics for male full-time manual weekly wages on normal hours 1906 and 1938 (1906 mean = 100)

	1906	*1938*	*1938/1906*
Lower quartile	72.4	107.2	1.48
Median	92.7	128.5	1.39
Mean	100.0	130.4	1.30
Upper quartile	119.5	148.7	1.24

Source, Ainsworth, 1949, p39, deflated to 1906 prices, see Chart 2 for details. .Data exclude mine workers.

Next we perform a simple simulation that allows us to ascribe the fall in poverty to its proximate causes. We assume a log-normal statistical model for men's wages[25], and parameterise it for 1906 and 1938 using the statistics in Table 12. This allows us to simulate the impact of a changing mean or variance on the position of any wage in the wage distribution. In particular, we can calculate the wage that is required to support an averaged-size family at the Bowley poverty threshold for each of our wage survey dates and the proportion of wages below that threshold for 1906 and for 1938. In this way we can attribute the reduction in the proportion of wages below the poverty line between its proximate determinants: real wage growth, declining wage variance and changes in family size. We find a simulated fall in the proportion of wages below the poverty threshold from 20 percent in 1906 to just over 2 percent in 1938, which is reassuringly similar to the estimated falls in poverty we found in the household survey data sets. We estimate that about half of the shift that caused the near-elimination of Bowley-poverty among working households in the period is due to real wage growth plus a smaller effect from the decline in wage inequality, and about one-half of the shift is due to the fall in family size. [26] [27]

We have characterised the change in the wage distribution over the period as a rise in the mean wage and a reduction in dispersion, with the former being much more important for the fall in poverty. It is possible, even likely, the deeper causes of these shifts operated on both parameters. In the long run, real wage growth is underpinned by productivity growth. However, over this period, though both are growing, there is little correlation at the aggregate level between real wages and productivity. Matthews, Feinstein and Odling-Smee (1982, p31) show that labour productivity growth was very slow, around half of one percent prior to 1924, but sped up significantly to about one percent a year 1924-1937. Feinstein's aggregate time series data for earnings and the consumer prices (1972, Table 65) show two surges in real wages in this period. The first was from 1916-1919 in the rapid inflationary period during and after WW1. The second was from 1929 to 1933. In the first case, wage inflation outstripped price inflation. In the second case falls in consumer prices were not reflected in wage falls.

The most likely cause of the 1916-19 changes in the mean and variance of real wages were the wartime changes in wage bargaining. During and after WW1, as real wages rose, skill differentials fell. Collective bargaining was promoted by the Ministry of Labour as a means of regulating increases in pay arising from wartime inflation. During 1917 there was

[25] This assumption has recently received strong empirical support, see Battistin, Blundell and Lewbel (2009).

[26] Here is the reasoning. Since the shift in family size and the rise in real wages happen simultaneously, we cannot apportion the fall in the poverty rate proportionally to each cause. We can, however separately calculate the falls in the proportion of below-poverty wages for (a) changes in the wage distribution and (b) changes in family size, by using a lognormal wage distribution. The 50-50 split we find comes from these calculations. If we change the parameters of the wage distribution and leave the poverty threshold constant, the wage poverty rate falls to about 5%. If we then leave the wage parameters constant and simply reduce the poverty line wage by one-third, again the wage poverty rate falls to 5%. If we make both changes simultaneously the wage poverty rate falls to just about 2%. Thus the simulated fall in wage poverty is due to shifts in the wage distribution and changes in family size in roughly equal measure. Note finally that the fall in wage variance has a relatively minor simulated effect, at about one-tenth of the effect of the rise in the mean wage.

[27] We also performed shift-share analyses of the contributions of changes in family structure and income. We found the decompositions to be very sensitive to the method, because of the large magnitude of the changes.. The decomposition that weighted changes in shares of families of different types by their 1904 poverty rates ascribed 55% of the fall in poverty to demographic shifts and the rest to rising incomes. On the other hand, the alternative decomposition ascribes only 16% of the fall to demographics. Our simulated result sits between these extremes.

a *de facto* move from local to national wage agreements in many manufacturing industries as '...wages of a large proportion of British workers were prescribed by government decree' (Sells, 1939 p.26). This process of wage equalisation was augmented by the action of statutory authorities that specified minimum wages under the Whitely Councils and Trades Boards in the immediate post-WW1 period. Knowles and Robertson (1951) found that the adult male unskilled-skilled wage-rate ratios, in five industries (engineering, shipbuilding, building, railways and police) narrowed from about 50-60 percent in 1914 to about 80-85 percent in 1920. Average money wages doubled during the five years of war and the majority of these advances were brought about by flat-rate cost-of-living bonuses that undermined the traditional differential between skilled and unskilled adult male work.

The simplest explanation of the second rise in real wages, from 1929 to 1933, is provided by Keynes's idea of downward nominal rigidity in wages combined with falling prices during the worst years of the Great Depression. In short, though technological change leading to productivity growth must drive real wage growth over the long term, the timings of the hikes in real wages suggest short-run roles of the events outlined above.

7. Conclusions

Our headline is that the elimination of grinding poverty among working families was almost complete by the late thirties, well before the Welfare State reforms of the post-WW2 government. We find this irrespective of how we measure poverty, whether using total expenditure, or using food expenditure only. We perform a simulated decomposition of the fall in poverty over the period, and this attributes about half of the poverty reduction to real wage growth combined with a small effect from the decline in wage inequality, and about half to demographic change, principally a reduction in number of children. The widespread adoption of contraception during and after WW1 seems the most likely proximate cause of this acceleration in the demographic transition. The shifts in real wages seem to have been mostly bunched into two periods 1916-1919 and 1929-1933; corresponding to the date of the widespread adoption of national bargaining and the beneficial impact of falling consumer prices during the Great Depression. Our findings strictly relate only to working households, but the data at hand offer circumstantial evidence that there was no substantial rise in the frequency of workless households to offset the poverty reduction among working households, though it may be that there were greater concentrations of workless households in the 1930s.

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Appendix

The Board of Trade conducted the first wage census of employers in Britain in 1886. This was followed by a similar enquiry by the Labour Department in 1906.[28] The Ministry carried out another survey in 1938, but the results were not published until 1943. All these enquiries were voluntary and are generally restricted to data relating to one week in the month of the survey.[29] Bowley claims that the early surveys exclude out-workers and those working in small workshops, as well as the industries named in Table 8.[30] They were carried out with the full co-operation of the National Confederation of Employers' Organisation and it is likely, therefore, that the survey focussed on larger employers who were affiliated to the employers' federation. Given that it is more-or-less universally found that larger employers tend to pay better wages (see for instance, Oi and Idson, 1999) the likely bias of the omissions is to reduce the frequency of earnings that are lower in the distribution.

In 1938 113,000 forms were issued and 74,500 were completed (about 66%).[31] It distinguished between adults and juveniles (males over 21 years, youths and boys 16-20, women over 18 years, girls less than 18 years), but does not distinguish between earnings in large and small firms (based on numbers employed). In terms of employment, several important industries are excluded, including agriculture, coal mining, railway service, shipping, port transport and dock labour, distributive trades, catering, entertainment, commerce and banking and domestic service. Among these omitted industries are those that are traditionally low-paying (agriculture, catering) and high-paying (mining, commerce and banking), so the direction any bias to the wage distribution is unclear. The October 1938 survey covered about 5.5 million workers and stands as the culmination of the experience gained by the Ministry of Labour during the interwar period.[32]

[28] See Bowley (1937), p 100-106 for a full discussion.

[29] The 1924 enquiry was actually conducted in 4 separate weeks in January, April, July and October 1924. The reports published in 1926 and 1927, present separate details of earnings in these 4 weeks as well as average figures. The 1928 enquiry is restricted to one week in October 1928 and makes comparison with the October figures for 1924. The 1931 and 1935 surveys collected information on earnings and hours for one week in October, but also data on numbers employed for a different week in October and the total wage bill for 1930. This information was required to compliment the Census of Production. See *Gazette*, January 1933, p.8

[30] Bowley (1937) p100

[31] Ministry of Labour *Gazette*, January 1933, p.8

[32] See 'The Case for the Enquiry' PRO file LAB 17/135

Appendix Table 1: Wage and Earnings' Census of the Board of Trade and Ministry of Labour

Year	*Number of male workers (except * which is 'all workers')*	*Data used*	*Remarks*
1886	355,838	Distribution of weekly earnings of manual workers over 21 years of age	Excludes workshops, outworkers, shop assistants and agriculture
1906	1.9m	Distribution of weekly earnings of manual workers: men over 21 years of age	Excludes coal mining, railways, agriculture (includes Eire). No general report ever published. Distribution of male earnings derived from aggregating distribution by industry from each report.
1938	5.5m*	Distribution of weekly earnings of manual workers: men over 21 years of age	All employers with >10 workers & random sample of 1:5 of all those with <10 workers (excludes coalmining & agriculture)
1960	4.4m	Distribution of weekly earnings of manual workers over 21 years of age	Repeat of 1938 survey, but based on 1948 industrial classification and limited to full-time workers only.

Notes: 1906: British Parliamentary Papers 1909 (Cd.4545) *Report of an enquiry by the Board of Trade into the Earnings and Hours of Labour of Workpeople of the United Kingdom, Textile Trades in 1906:*British Parliamentary Papers 1910 (Cd.5196) *Report of an enquiry by the Board of Trade into the Earnings and Hours of Labour of Workpeople of the United Kingdom, Part IV, Public Utility Services in 1906;*British Parliamentary Papers 1911(Cd.5814) *Report of an enquiry by the Board of Trade into the Earnings and Hours of Labour of Workpeople of the United Kingdom, Part VI, Metal Engineering and Shipbuilding Trades in 1906;*British Parliamentary Papers 1909(Cd.4844) *Report of Departmental Committee on the Checking of Piece-work Wages in Dock Labour; Part II. Clothing Trades in 1906;* British Parliamentary Papers 1910(Cd.5086) *Report of an enquiry by the Board of Trade into the Earnings and Hours of Labour of Workpeople of the United Kingdom. Part III. Building and Woodworking Trades in 1906;*British Parliamentary Papers 1912-13(Cd.6053) *Report of an enquiry by the Board of Trade into the Earnings and Hours of Labour of Workpeople of the United Kingdom. Part VII. Railway Service in 1907;* British Parliamentary Papers 1912-13(Cd.6556) *Report of an enquiry by the Board of Trade into the Earnings and Hours of Labour of Workpeople of the United Kingdom. Part VIII. Paper, Printing, &c., Pottery, Brick, Glass and Chemicals Food, Drink and Tobacco; and Miscellaneous Trades;*; 1938: 5.5m represents 70% of industries covered, based on figure for men, women, girls and boys. Separate totals are not recorded (see Ainsworth, R.B., *Journal of the Royal Statistical Society* (A), Vol. 112 (1949) p.49).