
Military Recruiting and the British Labour Force during the First World War

Author(s): P. E. Dewey

Source: *The Historical Journal*, Vol. 27, No. 1 (Mar., 1984), pp. 199-223

Published by: Cambridge University Press

Stable URL: <http://www.jstor.org/stable/2639348>

Accessed: 01/02/2010 09:12

Your use of the JSTOR archive indicates your acceptance of JSTOR's Terms and Conditions of Use, available at <http://www.jstor.org/page/info/about/policies/terms.jsp>. JSTOR's Terms and Conditions of Use provides, in part, that unless you have obtained prior permission, you may not download an entire issue of a journal or multiple copies of articles, and you may use content in the JSTOR archive only for your personal, non-commercial use.

Please contact the publisher regarding any further use of this work. Publisher contact information may be obtained at <http://www.jstor.org/action/showPublisher?publisherCode=cup>.

Each copy of any part of a JSTOR transmission must contain the same copyright notice that appears on the screen or printed page of such transmission.

JSTOR is a not-for-profit service that helps scholars, researchers, and students discover, use, and build upon a wide range of content in a trusted digital archive. We use information technology and tools to increase productivity and facilitate new forms of scholarship. For more information about JSTOR, please contact support@jstor.org.



Cambridge University Press is collaborating with JSTOR to digitize, preserve and extend access to *The Historical Journal*.

MILITARY RECRUITING AND THE BRITISH LABOUR FORCE DURING THE FIRST WORLD WAR

P. E. DEWEY

Royal Holloway College, University of London

I

During the First World War, Britain was obliged for the first time for over a century to raise a mass army. Initially, this seemed to raise no insuperable problem; by the end of 1914, slightly over one million men had enlisted. Thereafter, however, civilian enthusiasm waned, and the government had to employ other means to stimulate the flow of recruits – alteration of the military service age limits and, later, the introduction of compulsory military service. Taken together, voluntary recruiting and conscription permitted the raising and maintenance of a mass army. By the time of the armistice on 11 November 1918, almost five million men had entered the army, and a further half million had entered the two other services.¹

The loss of this large amount of labour (about one-third of the pre-war male labour force) had important implications for the working of the British economy. In particular, it made it difficult to equip the resulting large armies; a process clearly brought out in the ‘shell scandal’ of early 1915. Thus the attention of historians has been drawn naturally to the problems of labour supply in wartime industry (particularly in industries producing goods directly for military use), and to the ways in which these problems were overcome by drawing in fresh, unskilled labour (chiefly female).²

There are, however, two other, more fundamental questions, which have not been posed so far, and which have implications both for the economic and the military history of the war; from what sections of the economy were these men drawn, and what were the main factors influencing the process of recruitment? In so far as these questions have previously been considered, the tendency has been to assume that the dominant force at work was patriotic feeling (at least, until the introduction of conscription), and that, since this was a universal and uniform phenomenon, each sector of the economy yielded up the same proportion of its male labour to the armed forces (chiefly the army). Writing shortly after the end of the war, the historian of wartime labour supply commented, *à propos* of the rush of recruits to the army in the first few months

¹ War Office, *Statistics of the military effort of the British empire during the Great War 1914–20* (1922), p. 363.

² E.g. H. Wolfe, *Labour supply and regulation* (Oxford, 1923).

of the war; 'all classes, and...all types of industry gave equally'.³ More recently, Correlli Barnett has described the influences behind this initial wave of enlistment in the following terms:

Moved by patriotism, by desire for a bit of adventure, by a desire to escape from poverty and unemployment, the crowds queued outside the recruiting offices.⁴

In the same work he refers to the new, mass army of 1915 as 'a cross-section of the nation'.⁵

The emphasis placed so far upon generalized psychological factors such as patriotism, with the accompanying implication that recruitment impinged equally upon all sectors of the economy, is somewhat unsatisfactory. In the first place, such concepts are subjective, and therefore explanations relying on them tend to be imprecise. In the second place, the idea that recruiting tended to have a uniform impact upon different industrial or occupational groups is suspect; to take an obvious, if neglected point, different occupations may well have had differing proportions of their male labour force within the military age limits. To take a further example, certain industries had a low level of activity during the war, others a much higher one. It might therefore be expected that in certain industries the tendency for labour to leave (either for other occupations or for the forces) would differ from that in others. Whatever the workings of patriotic and other feelings, it seems improbable that recruiting impinged equally upon different sectors of the economy, even in the period of voluntary recruiting, and still less after the introduction of conscription, when certain industries received greater protection from military service than others.

II

There are, therefore, two theses presented here. The first is that recruiting, both before and after the introduction of conscription, differed widely in its impact upon different industries. The second is that the most important factors affecting recruitment were not only generalized ones such as patriotism, but also more specific ones – economic, demographic, medical and institutional. The next step is to test the first of these theses. At first this seems to present some difficulties, since there appears not to exist any direct information on the actual losses of labour suffered by each industry as a result of military recruiting. The government itself did not keep a tally of such losses as they occurred.⁶ Nor would it be feasible to look for the answer in the papers of the recruiting authorities themselves; even if the latter had made an accurate note of the former occupations of their recruits, the research effort involved would be prohibitive. There remains, however, one major source which may be used

³ Wolfe, *Labour supply*, p. 12.

⁴ C. Barnett, *Britain and her army 1509–1970; a military, political and social survey* (1970), p. 377.

⁵ Barnett, *Britain and her army*, p. 379.

⁶ A fact admitted by Lord Derby (Director-General of recruiting) *à propos* of agriculture (Parl. debates, house of lords, 5th series, xxiv, 325 6, 28 Feb. 1917).

to test this thesis. Whilst not actually counting losses of labour from each industry as they occurred, the government did the next best thing; it conducted a continuous sample survey on the matter throughout the war. This was organized by the Board of Trade; from October 1914, and at least quarterly thereafter, the board's statistical branch conducted a survey of employers, with a view to obtaining information on levels of enlistment and employment in various industries in the U.K. The board proceeded by sending a questionnaire to a large number of employers, asking for information as to the numbers of employees who had enlisted, the numbers currently employed, and other matters from time to time. The first of the ensuing reports was issued in respect of the situation at the end of October 1914, and the last in respect of the end of April 1919, being concerned with the post-war position. In all, 20 reports were issued, of which 18 referred to the war period. Of these, 17 have survived.⁷

Whilst this source is of interest in itself, and relevant to our purpose, it should be stressed that it is derived for the most part from samples of employers, and thus is not the same as an actual counting of the number of enlistments or of the number of men employed in the industries concerned. This point needs emphasizing, if only because it has become common practice, when quoting the results of these surveys, to treat them as if they were obtained by actually counting heads. With certain exceptions (i.e. government agencies, or industries coming under government control during the war), this is not the case.⁸

Having obtained information from employers on the number of men who had enlisted from their particular firms since the beginning of the war, the information was processed by the board in what appears to have been the following manner (although the procedure followed is not specifically described in the reports); the figures of enlistments from all employers in each industry were added up, and then expressed as a percentage of the pre-war labour force of those employers. This percentage was then applied to the whole of the industry in question, and converted back into numbers of men. A hypothetical example will make this clear:

Enlistment from industry X

Pre-war labour force of employers		
answering questionnaire	100,000 (a)	
Number of enlistments	20,000 (b)	
Enlistment percentage	20 % (c)	$[(b) \div (a) \%]$
Pre-war labour force of the industry	500,000 (d)	
No. of men enlisted from the industry	100,000 (e)	$[(c) \times (d)]$

⁷ Board of Trade, *Report on the state of employment in the United Kingdom in...* (various dates). This is the main series, of which the first three reports were issued as parliamentary papers (Cd. 7703; Cd. 7755; Cd. 7850). The methodology of these surveys is discussed in Appendix 1.

⁸ Thus, eg., Wolfe, *Labour supply*, p. 12; S. Pollard, *The development of the British economy 1914-1950* (London, 1962), p. 78; A. J. P. Taylor, *English history 1914-1945* (London, 1965), p. 38. It should be said in fairness to these authors that they are all following authorities who had made the same assumption. The source of this error seems to have been A. W. Kirkaldy, in his *Industry and finance* (1917; 2nd edn 1920). The second edition contains a large tabulation of wartime employment in various industries (pp. 96-7), which seems to have been drawn directly from the Board of Trade surveys, and does not mention that the basis of the figures was a sample survey.

The reliability of these surveys clearly depends upon several factors; the representativeness of the sample of employers; the proportion of the national labour force sampled; the proportion of the national labour force in respect of which replies were actually received. About the first there is unfortunately no information, although it seems likely that the board sampled the larger employer for preference. The sample of employees, however, was large; the initial surveys covered about four million employees in manufacturing and agriculture. The third report (February 1915) extended the survey to include some commercial firms in London, but this did not materially affect the size of the sample. The January 1916 report, however, shows a very large increase in the sample, which now rises to 10.6 million employees, that is, the great bulk of the male labour force (which before the war was about 15 millions).⁹ From then on, the surveys cover most manufacturing, service and transport industries in the U.K., as well as British agriculture. The only major occupational groups excluded (apart from employers themselves) were the self-employed, domestic servants, the merchant marine, and Irish agriculture.

The proportion of the national labour force actually represented in the replies to the board's questionnaires is also impressive. Of the initial sample of about 4 millions, replies were received in respect of about 1.7 million men. Of the post-1915 sample of 10.6 millions, replies were received in respect of at least 4 millions, and at most 5 millions, depending on the survey in question. It should be noted, however, that the response to the survey varied considerably between different industries. The lowest rate of response was consistently that of agriculture, which was about 7 per cent throughout the war, whilst central government, mining and metals showed rates which by the end of the war approached 100 per cent, since they were either government agencies *ab initio*, or became controlled by the government during the war. Between these extremes lay the bulk of manufacturing industry, which began the war with response rates of about 40 per cent and finished with about 65 per cent.

What we are presented with, therefore, is a sample survey which indirectly gives information based on a sample of some 1.7 million men until January 1916, when the sample rises to between 4 and 5 million men. These amount to about 11 per cent of the national labour force before 1916, and to between 26 and 32 per cent thereafter. These are very large samples by any standards, but sheer size is not necessarily a guarantee of reliability, and in the absence of any information on how the sample was drawn, it is not possible to apply statistical tests to the survey results to see how reliable they are. All that can be done is to find some external criterion against which to judge the success of the surveys. The most useful test here is obviously the official enlistment

⁹ Fifteen millions is in fact an excessive estimate. The 1911 census of population recorded 12.9 million occupied and 2.5 unoccupied males in Britain. B. R. Mitchell and P. Deane, *Abstract of British historical statistics* (Cambridge, 1971), p. 60. However, the 'unoccupied' group seems to have included some occupied persons. The total labour force was thus between 12.9 and 15.4 millions. In so far as the true figure was nearer to 12.9, the scope of the board's surveys becomes even more impressive.

Table 1. *Enlistment, 1914-18*

Board of trade enlistment estimate to November 1918		Official enlistment totals to 11 November 1918	
A. Reported in board's surveys	4,981,000	Army	4,970,000
B. Additional estimate for unsurveyed industries and employers	797,000	Navy	407,000
Totals	5,778,000	R.A.F.	293,000
			5,670,000

figures themselves. When these are compared to the survey results, the correspondence is very close (Table 1).¹⁰

The correspondence is indeed so striking as to raise the question as to whether it is genuine. However, the actual survey results seem to be quite genuine; they are consistent throughout the war, and there is no sudden break or change of direction in the enlistment rates recorded. If there is a dubious element here, it is estimate B, which seems to be largely guesswork on the board's part, and brings the total estimate up to the official total a shade too neatly. However, even ignoring estimate B, the Board managed to record about 88 per cent of the actual enlistment which occurred. It seems, therefore, that the board's surveys may be accepted as a reliable guide to wartime enlistment rates in different industries. These rates may now be presented (Table 2).¹¹

Differences in enlistment rates appeared early on in the war. By July 1915, rates in the twelve industries surveyed at that time (eleven manufacturing industries and British agriculture) range from 13 per cent (government establishments) to 24 per cent (food, drink and tobacco). Even if one ignores government establishments as atypical,¹² rates still vary considerably, from 15 per cent (agriculture) to 24 per cent. By July 1916 one can consider a much wider range of industries, and the differences are even more marked, not only between individual industries, but between different sectors of the economy. By the end of the war, both these types of difference showed large variations. Amongst individual industries, rates varied from 23 per cent (canals) to 69 per cent (government establishments). These were small industries before the war, and so perhaps unrepresentative, but large industries also show wide variations; in July 1918 they ranged from 28 per cent (railways) to 64 per cent

¹⁰ Board of Trade, *Report on the state of employment... on November 11th 1918 and January 31st 1919*; War Office, *Statistics*, p. 363.

¹¹ Board of Trade, *Report on the state of employment* (1914-18). In order to obtain a clearer picture of trends in enlistment during the war, July figures only have been used here.

¹² See Appendix 1.

Table 2. *Enlistment in the United Kingdom, 1914-1918*

	Male labour force July 1914 (‘000)	Enlistment since July 1914 as % of July 1914 labour force				Enlist- ment to July 1918 (‘000)
		July 1915	July 1916	July 1917	July 1918	
<i>1. Manufacturing</i>						
Building	920	19	33	43	47	430
Mining	1,266	21	24	28	35	448
Metals	1,634	19	25	33	42	681
Chemicals	159	23	34	46	53	85
Textiles	625	16	31	42	47	292
Clothing	287	18	37	52	59	170
Food, drink and tobacco	360	24	40	54	61	221
Paper and printing	261	20	35	47	52	135
Wood	258	21	36	48	53	136
Government establishments	76	13	26	54	69	53
Other trades	393	21	32	41	46	180
Totals	6,239					2,831
Average enlistment rates		20	30	39	45	
<i>2. Agriculture (permanent labour: Great Britain only)</i>						
	800	15	22	30	35	281
<i>3. Transport</i>						
Railways	656	n.a.	18	25	28	184
Docks	100	n.a.	16	26	31	31
Trams (private)	15	n.a.	40	43	51	8
Trams (local government)	57	n.a.	37	46	50	28
Omnibus	20	n.a.	47	60	63	12
Cab	33	n.a.	40	54	56	18
Road	273	n.a.	33	50	57	156
Canal	20	n.a.	n.a.	19	23	5
Totals	1,174					442
Average enlistment rates		n.a.	23	33	38	
<i>4. Commerce, finance, services</i>						
Commerce (wholesale and retail)	1,225	n.a.	41	57	64	784
Banking and finance	176	n.a.	41	52	56	99
‘Professions’*	143	n.a.	43	57	63	90
Entertainment	185	n.a.	44	65	65	115
Totals	1,729					1,088
Average enlistment rates		n.a.	41	57	63	

Table 2. *Enlistment in the United Kingdom, 1914-1918 (cont.)*

	Male labour force July 1914 ('000)	Enlistment since July 1914 as % of July 1914 labour force				Enlist- ment to July 1918 ('000)
		July 1915	July 1916	July 1917	July 1918	
5. <i>Public services</i>						
Central government	52	n.a.	25	39	54	28
Local government	323	n.a.	24	31	34	110
Post Office	188	n.a.	33	40	43	81
Gas, water, electricity	62	n.a.	24	32	35	22
Teaching	54	n.a.	34	39	42	23
Totals	679					264
Average enlistment rates		n.a.	27	35	39	
Grand totals (1-5)	10,621					4,906
Average enlistment rates		n.a.	30	40	46	

* Chiefly clerks in professional firms such as solicitors. n.a. = not available.

Table 3. *Average sector enlistment rates, July 1916 and July 1918 (per cent)*

July 1916		July 1918	
Commerce	41	Commerce	63
Manufacturing	30	Manufacturing	45
Public services	27	Public services	39
Transport	23	Transport	38
Agriculture	22	Agriculture	35

(commerce). It is also noticeable that there are wide variations within broad economic sectors; in manufacturing, for example, from 35 per cent (mining) to 61 per cent (food, drink and tobacco), and in transport from 28 per cent (railways) to 63 per cent (omnibus). The differences between sectors become apparent from the beginning of the war, and continue throughout it, the ranking of the sectors being unchanged (Table 3).

III

It is clear that substantial differences existed in the propensity of different industries to supply men to the forces, and that these differences persisted throughout the war. Further, these differences antedate the introduction of conscription (first effective in March 1916),¹³ being apparent for manufacturing industries in 1915, and for a much wider range of industries at the time of their first inclusion in the survey (January 1916).¹⁴ Thus the observed differences in enlistment rates cannot be attributed to conscription.

To what, therefore, can these differences be attributed? In order to attempt a solution of this problem, it was decided to examine four possible explanations which seemed, *a priori*, to be worth attention. These explanations are economic, demographic, medical and institutional. The economic explanation hinges on the questions of wages and industrial activity levels. As far as wages were concerned, it is clear that for all except the lowest-paid, joining the forces involved a financial sacrifice. Even with the separation allowances which were paid to men's dependants, and the compulsory deductions from pay which were passed on to their dependants, the resulting family income was only slightly above that of the ordinary English agricultural labourer, who on the eve of the war was one of the worst-paid of all manual workers.¹⁵ It may therefore be thought that the desire to enlist would be less in high-wage industries than in low-wage ones. Also, since wages during the war rose much faster in some industries than in others, it may be the case that a similar disincentive existed in the high wage-rise industries; men in such industries who enlisted would be giving up a relative improvement in their wages (both actual and prospective) by doing so. Finally, it is also clear that the levels of activity varied between different industries in wartime; some expanded greatly and some contracted. While it was usually the case that high activity levels were accompanied by high rates of wage increase, and low activity levels by low rates of wage increase, so that the incentive to enlist would be weaker in high activity industries than in low activity ones, it may also be suggested that activity levels had an effect on the perceived prospects of unemployment. A high activity rate meant little prospect of unemployment as long as one remained in that

¹³ Although conscription, in the form of the Military Service Act, passed into law on 27 January 1916, it only came into effect from 2 March, and then only by stages. Full conscription did not appear until the second M.S.A. of 1916, which did not take effect until 24 June – N. B. Dearle, *An economic chronicle of the Great War for Great Britain and Ireland* (Oxford, 1929), entries for 27 Jan.–25 May 1916.

¹⁴ Board of Trade, *Report on the state of employment... January 1916*.

¹⁵ Separation allowances were first paid by the army from 1 October 1914; for the families of corporals and privates they ranged from 12s. 6d. for a childless wife to 22s. for one with four children; these figures include the deduction from pay made by the army. These rates were raised from 1 March 1915 to a range of between 12s. 6d. and 25s.; *Allowances and pensions in respect of seamen, marines and soldiers and their wives, widows and dependants* (P.P. 1914–16, XL, Cd. 7662); War Office, *Regulations for the issue of army separation allowance allotments of pay and family allowances during the present war* (1916), pp. 5–6. These rates may be compared with the earnings figures on p. 208 below.

particular industry, and might well serve to attract labour into that industry from elsewhere. Thus high activity industries would be liable to show low enlistment rates on the grounds of job security; conversely, industries with low activity rates carried with them a greater prospect of unemployment. Since, as ever, a simple and quick way to avoid this was to join the forces, low activity levels may also have served to stimulate enlistment from the industries concerned, quite apart from questions of wages.¹⁶

The demographic explanation is simply that of the relative differences in age-structure encountered in different industries. Clearly, the existence of a high proportion of males of military age in an industry would tend to permit high levels of enlistment; a low proportion would inhibit enlistment. This rather obvious point has been neglected so far.

The medical explanation is that standards of health and physical fitness may have varied amongst industrial groups widely enough to cause enlistment rates to differ appreciably.

The institutional explanation is that of protection from enlistment. This is normally considered as effective only during the conscription period. However, some degree of protection may be found in certain industries at an early stage in the war; later on, such protection was reinforced in some industries and denied to others. Thus protection has an obvious bearing on the differential enlistment tendency which has been observed.

The question of wages and their influence on enlistment rates may be examined first. Data on pre-war earnings are available for seven major industries, and are presented in Table 4.¹⁷

The impression from Table 4 is that the hypothesis of an inverse correlation between earnings and enlistment is unjustified. It is certainly not borne out in the case of the lowest-wage industry of all (agriculture), and the highest-wage industry (building) has a high enlistment rate. The same seems to be true of printing (although compositors' wages may not be a very good proxy for those in paper and printing as a whole). Whilst the case of textiles might seem to support the original hypothesis, the data relate to all employees, of whom a large number were women and young persons, who were paid less than men, so that male textile workers were higher up the scale than the table indicates. Railways have a low enlistment rate, but do not really seem to qualify as a high-wage industry. Only in the cases of engineering ('metals' in the surveys) and mining might there be grounds for thinking that high wages provided some degree of disincentive to enlistment.

The impression that wages played only a minor role in determining enlistment variations is supported by considering the *rate* at which they changed in different industries (Table 5).¹⁸

¹⁶ Barnett, *Britain and her army*, caption to plate facing p. 428.

¹⁷ A. L. Bowley, *Prices and wages in the United Kingdom, 1914-1920* (Oxford, 1921), pp. 113, 127, 149, 159, 163, 172, 179, 183.

¹⁸ *Ibid.* p. 105.

Table 4. *Industrial earnings and enlistment rates*

Industry	Occupation	Pre-war weekly earnings		Enlistment rate (July 1916)
		s.	d.	
Building	Bricklayers (8 cities)	42	10	33
Engineering	Turners (Sheffield)	41	0	25 (metals)*
Mining	All employees	39	0	24
Printing	Compositors (London)	39	0	35 (paper and printing)*
Railways	All employees	26	6	18
Textiles	All employees (cotton and wool)	18	7	31
Agriculture	Ordinary labourers (England and Wales)	16	10	22

* Parent group in Board of Trade surveys.

Here, the only support for the thesis that high rates of wage increase tended to inhibit enlistment comes from docks, coal mining, and perhaps also railways. In the case of the other industries, the link is less clear; thus textiles show a rate of enlistment which is about average for manufacturing, but is split between a high-rise section (woollens) and a low-rise one (cottons). But it is noticeable that the enlistment rate in the Yorkshire textile industry (i.e. woollens) was particularly low, so perhaps the thesis applies in this case.¹⁹ It might be the case that a low rate of increase in printing tended to stimulate enlistment, but the drawback to citing compositors' wages in this context has already been pointed out.

The only example of a major industry which contracted during the voluntary recruiting period, and which thus might be expected to show a high enlistment rate, is building. Here the main problem was the wartime decline in housebuilding. The average number of houses built each year in Britain between 1909 and 1913 was 72,000. On the outbreak of war, the level of housebuilding activity fell immediately, and in 1916 (the last war year for which figures are available) only 17,000 were built.²⁰ Nor was this decline made good by government contracts for barracks, airfields, etc. Raymond Postgate was of the opinion that the decline in activity was the major factor in encouraging building workers to join the forces.

¹⁹ See below, p. 217.

²⁰ Mitchell and Deane, *Abstract*, p. 239.

Table 5. *Wage-rate increases and enlistment rates*

Industry	Wage-rates July 1916 (July 1914 = 100)	Enlistment rate July 1916 (%)
Docks (labourers)	130	16
Coal mining	129	24
Woollens and worsteds	126	31 (textiles)*
Railways	120	18
Bricklayers' labourers	115	33 (building)*
Engineering artisans	111	25 (metals)*
Bricklayers	108	33 (building)*
Cotton operatives	107	31 (textiles)*
Compositors	105	35 (paper & printing)*

* Parent group in Board of Trade surveys.

Unemployment increased with the cessation of private building. Building trade workers poured into the army, and their history from 1914 to 1918 is the history of the British army in Flanders.²¹

This is clearly an exaggerated view; the enlistment rate in building at July 1916 was above the average for manufacturing, but only slightly (33 per cent as compared with 30 per cent). Still, in view of the peculiar problems of building, which were not shared by any other major industry, it may be that a low level of activity did make some contribution to raising the rate of enlistment.

On the whole, therefore, it does not seem that considerations of wages and activity levels go very far to explain enlistment rate differentials except in a few cases; it may be that high wages discouraged enlistment from metals and mining, that high wage-rises discouraged enlistment from docks, railways and coal mining, and that a low rate of activity in building stimulated a slightly higher than average enlistment rate. But for the economy as a whole, the evidence is that such economic factors played a subordinate role in determining enlistment rates.

The second explanatory variable to be considered is the age-structure of the industries concerned. The hypothesis here is simply that industries with a high proportion of their labour force within the military age-limits would be likely to show a high enlistment rate, and those with a low proportion a low enlistment rate; a hypothesis which may seem merely otiose, but which has the distinction of being unexplored so far. In order to test this hypothesis, the relationship between enlistment rates and age (from the 1911 census of

²¹ R. Postgate, *The builders' history* (n.d., ? 1923), p. 423.

Table 6. *Industrial age-structure and enlistment rates*

Industry	Percentage of labour force aged 20-34 (England and Wales)	Percentage of labour force aged 20-44 (Great Britain)	Enlistment rate (%)	
			July 1915	July 1916
Omnibus	44	74	n.a.	47
Other road transport	42	64	n.a.	33
Hotels, etc.	41	61	n.a.	44
Post Office	40	69	n.a.	33
Chemicals	40	62	23	34
Metals	40	60	19	25
Food, drink, tobacco	39	59	24	40
Mining	39	59	21	24
Paper and printing	38	58	20	35
Commerce	38	57	n.a.	41
Woodworking	37	56	21	36
Building	36	57	19	33
Clothing	35	54	18	37
Textiles	34	51	16	31
Docks	34	61	n.a.	16
Agriculture	34	50	15	22
Railways	31	50	n.a.	18

n.a. = not available

population) was examined. The census age-groups selected as most usefully approximating to the military age-limits were 20-34 years (England and Wales) and 20-44 years (Great Britain); Ireland was excluded from consideration. The proportion of each industry's male labour force falling within these age-limits in 1911 was calculated in respect of seventeen industries. The results are presented in Table 6, in conjunction with enlistment rates for July 1915 and July 1916.

Clearly, the proportions of recruitable labour in each industry varied quite widely, and a cursory glance at this comparison does suggest that, at least in certain cases, there did exist a significant relationship between these age-groups and the rate of enlistment. It was decided to see if this presumed relationship was statistically significant by applying Spearman's formula for rank correlation. The results were as shown in Table 7.²²

Generally, the implication of this analysis is that age was the largest single

²² See Appendix II.

Table 7. *Rank order correlation coefficient (r) of age-groups and enlistment rates*

	20-34 group (England and Wales)		20-44 group (Great Britain)
July 1915	$r = 0.81$	July 1915	$r = 0.78$
July 1916	$r = 0.58$	July 1916	$r = 0.37$
July 1917	$r = 0.56$	July 1917	$r = 0.23$
July 1918	$r = 0.56$	July 1918	$r = 0.25$

Table 8. *Percentage of male employees aged 18-40 enlisting*

	April 1915	October 1915	February 1916
Average rate (10 industries)	32	40	46
Highest rate	35	48	58
Lowest rate	27	36	40

determinant of enlistment variations during the first year of the war; thereafter, and especially after the introduction of conscription, age was only a minor factor in determining enlistment variations, although by no means negligible. Thus age correlates quite well with enlistment rates for both age-groups in 1915; there is a moderately strong correlation between the 20-34 age-group and enlistment for the rest of the war, but only a weak correlation between the 20-44 age-group and enlistment after 1915. However, these conclusions are subject to the qualifications expressed in Appendix II.

These remarks are confirmed by the available information on the proportion of young males enlisting from the various industries. This consists of an analysis by the Board of Trade of the proportions of male employees aged 18-40 enlisting at various dates (Table 8).²³

It seems clear that, in the early months of the war, the tendency for young men to enlist was almost uniform between different industries, and thus there is a strong presumption, to put it no higher, that age was the main determinant of enlistment rate variations. But by February 1916 this correlation seems to be weaker, since the enlistment rates clearly vary more widely than before.

The third explanation to be examined is the medical one. Here, the thesis is that standards of fitness and general health may have varied so much between different industries or occupational groups that enlistment rates may have been materially affected.

²³ P.R.O., RECO 1/832, Board of Trade, *Enlistment from the industrial classes and the state of employment on government and other work in mid-February 1916*, pp. 8-9.

In order to test this thesis, what is required is an analysis of the medical categories achieved by recruits throughout the war, and in particular details of those rejected for service, in relation to the occupations or industrial provenance of intending recruits. Unfortunately, no such information exists. The nearest substitute is a report prepared by the ministry of national service on the results of some two-and-a-half million medical examinations in the year November 1917–October 1918.²⁴ While this might seem to be a sample of respectable size, there are certain problems in using the report to test the above thesis. The most obvious defect of the report for this purpose is that it comes late in the war, when presumably the physical condition of recruits was very different from what it was earlier. Also, there is no adequate overall analysis of the results in the report; although it abounds in figures, these are compiled on non-comparable bases, and are of a fragmentary nature. Finally, many of the comments to be found in the general introduction can be either contradicted, or are not substantiated, in the regional reports which make up the bulk of the volume. However, for certain types of labour – i.e. miners, metal workers and agricultural workers – it is possible to extract some general conclusions on the relationship between health and recruitability.²⁵

As far as miners were concerned, there is general agreement amongst the doctors who contributed to the report that they formed the fittest type of recruit everywhere, with the least percentage of rejections. A comment from the Glamorgan area may stand as typical:

As compared with other industries in Wales, mining, apart from certain disabilities peculiar to the calling of a collier, produced an excellent type of recruit.²⁶

In the case of metal workers, opinions were more mixed and, on the whole, unfavourable. In Sheffield, it was pointed out that the iron and steel trades required men of strong physique, the implication being that they were very suitable recruits. But in Wales it was stated that the physique of men drawn from the local metal industries was 'not of a high standard, and in no way approaches that of the miners'. In the West Midlands, adverse comments were passed on the condition of men from the brass trades, and the 'Birmingham trades' generally.²⁷

As for the agricultural worker, he does not emerge as the healthy peasant of popular fiction. While the Cambridge reporter did refer to the healthy nature of farming life, the Norwich reporter spoke of 22 per cent of agriculturalists

²⁴ Ministry of national service, *Report upon the physical examination of men of military age by national service medical boards from November 1st, 1917–October 31st, 1918* (P.P. 1919, xxvi, Cmd. 504).

²⁵ In spite of the deficiencies of the above report, it probably provides a better guide to the relationship between work and military fitness than earlier records; the medical examinations in the first few months of the war were chaotic, and allowed thousands to pass into the army 'without any medical examination worth the name'. P.R.O., NATS 1/14/20, *Report upon the medical department of the ministry of national service*, p. 13.

²⁶ Ministry of national service, *Report upon the physical examination*, p. 147.

²⁷ *Ibid.* pp. 71, 107, 148.

being rejected due to 'deformities, epilepsy, defective intelligence and tuberculosis'. In the Hertford and Watford districts:

The younger agriculturalists are of good physique, but they fall off rapidly after 35. Varicose veins and distorted toes are common...A large percentage have cardiac murmurs.

These defects were not confined to eastern England. In Wales, the farm worker was considered generally a good type of recruit, but it was noted that those from arable and dairying districts tended to suffer to a great extent from bad feet and rheumatism.²⁸

Whether these general impressions from a late stage of the war were reflected in enlistment rates throughout it is another matter. In the case of mining, which had a fairly high proportion of young men, yet an average to low enlistment rate (especially after 1915), it seems unlikely that the alleged fitness of miners did much to increase the rate of recruitment above what it would otherwise have been. More paradoxically, the metal industries, which had a similar proportion of young men to that of mining, yet were supposed to produce a less healthy recruit, show a higher enlistment rate than that in mining (at least after 1915). Again, it seems unlikely that occupational health considerations had much to do with enlistment rates. In the case of agriculture, other considerations seem to have been overshadowed by the strikingly low proportion of men of recruitable age; it can only be surmised that the mixed picture of the agriculturalist's health presented in the above report did not influence recruiting much either way.

The final explanatory variable to be considered is that of protection from enlistment. In this context, it is perhaps natural to think of the moves made in 1915 to protect essential munitions labour, culminating in the work of the newly formed ministry of munitions. However, some degree of protection came much earlier for some industries; thus on 4 September 1914 the body that controlled the railways of Britain, the Railway Executive Committee, stated that men who wished to enlist could only do so if the company that employed them certified that they could be released for military service. This decision, which also applied to canals controlled by the railway companies (about one-third of the canal mileage in the U.K.) was confirmed by the War Office in a subsequent notice to recruiting officers.²⁹ The next organization that acted to protect its labour was the Admiralty, which began to protect its production workers 'in the later months of 1914'. This process culminated in December 1914 in the issuing, for the first time, of badges to denote that the wearer was an essential worker who should not be asked to enlist. This precedent was followed in March 1915 by the War Office, which began issuing badges to its own workers in Royal Factories, and also to those in private firms engaged on War Office work. Badges were issued in large quantities, especially by the

²⁸ Ibid. pp. 117, 120, 149.

²⁹ E. A. Pratt, *British railways and the Great War* (2 vols., London, 1921), 1, 349.

Admiralty, which had issued (perhaps over-issued) some 400,000 by July 1915; the War Office was responsible for the more modest total of 80,000. In May 1915 recruiting officers had been told by the War Office that certain skilled munitions workers were not to be enlisted (although it was up to the employer to decide whether a man was skilled or not). Finally, in July of the same year, the newly created ministry of munitions became the sole badging authority for the munitions industry, although the actual issuing of badges was still the responsibility of the employer. In effect, the latter could retain whom he wished; the ministry did little to check the process.³⁰

There seems no doubt that by the end of 1915 a large number of men of military age were effectively exempt from military service, chiefly those in the munitions industry. Indeed, by early 1916 the large number of badges already issued had become a subject of concern to the government. In an endeavour to find more men for the forces, a process of 'debadging' was initiated, via the cabinet committee on exemptions.³¹ The attempt to debadge was unsuccessful, since the advice tendered by the committee to the ministry of munitions went largely unheeded. By the end of August 1916, reports had been received by the ministry on the cases of some 850,000 badged men (there were in all some 1.1 million),³² but only about 40,000 badges had actually been withdrawn. As the historian of the munitions labour supply aptly commented: 'Mountains had been in labour, but from the recruiting point of view, 40,000 was a ridiculous mouse.'³³

The introduction of conscription did not reduce the amount of protection enjoyed by the British labour force. Indeed, it tended to increase it somewhat, and to make it subsequently more difficult to reduce. The reason for this was that, parallel with the introduction of conscription went the realization that such a scheme would have to be accompanied by some form of systematic exemption, since otherwise conscription would render it impossible to produce the necessary goods for civilian and military use. This realization began as early as August 1915, with the passage of the National Registration Act, which aimed to produce a comprehensive listing of the occupations of all civilians of working age. Subsequently, 'reserved' lists were drawn up which included coal mining, steel production, iron mining, skilled farm work and certain occupations on the railways. In October this work was taken over and continued by the newly created reserved occupations committee, which began to draw up a comprehensive list of occupations that would be exempt from military service. In January 1916 the committee issued its first list of certified occupations, detailing those which should be considered as exempt when the Military Service Act (i.e. conscription) should become law (it did so on 27 January 1916).³⁴

Before the introduction of conscription, protection had been chiefly confined to munitions, via the system of badging. Now it was extended to cover a variety

³⁰ Wolfe, *Labour supply*, pp. 19–28.

³¹ *Ibid.* p. 40.

³² *Ibid.* p. 38.

³³ *Ibid.* p. 40.

³⁴ *Ibid.* pp. 29–33; Dearle, *An economic chronicle*, entry for 27 January 1916.

of other industries in manufacturing, transport, agriculture and the public services. Thus, as well as metals (largely synonymous with munitions, and thus well protected already), substantial protection was now given to mining, textiles, footwear, transport (in the form of railways, canals and docks), agriculture, cement and brick production, chemicals, leather, flour milling and baking, public utilities and local government. The omissions from the list are employers themselves, office workers, the retail trades, most wholesale trades, the bulk of the building industry, 'light' (i.e. non-military) clothing, road transport and central government administration.³⁵

The system of exemption was completed by the introduction of tribunals to decide upon particular exemptions. The main function of these was to decide the cases of men who were not in exempt occupations, but claimed exemption either on the ground of being indispensable to a particular trade or enterprise, or on more personal grounds such as medical incapacity or the existence of dependent relatives. However, tribunals could also consider cases in which the military authorities challenged the exemption of a man who was, in fact, in an exempt occupation; theoretically this did not constitute absolute protection, and each case could be considered on its merits. In practice, however, these were difficult cases to challenge, and if a man's occupation was exempt he was more or less immune from military service.³⁶

The evolution of the exemption system led to a steady rise in the numbers of men protected from conscription. At the end of October 1916 about 1.4 million men were in possession of badges;³⁷ by the end of April 1917 about 2 million were in protected occupations,³⁸ and by the end of October 1918 the figure had risen to 2.3 million. To these should be added tribunal exemptions, which fluctuated at about the three-quarter million mark for the last two years of the war.³⁹ Various attempts were made by the government during these years to reduce the number of exemptions. Thus the list of certified occupations was revised four times in 1916-17 (usually by raising the age at which exemption commenced), and was completely recast in February 1918 (now appearing as the 'schedule of protected occupations'). Finally, in April 1918, whole classes of exemptions were cancelled by royal proclamation, to meet the increased demand for soldiers consequent upon the German offensive. However, the figures above indicate that none of these expedients succeeded in reducing the number of exemptions.⁴⁰

³⁵ P.R.O., NATS I/53, *List of certified occupations* of 4 April 1916 (R. 74); 7 July 1916 (R. 94); 20 Nov. 1916 (R. 105).

³⁶ *Ibid.*; the coal mining industry had its own system of tribunals, the colliery recruiting courts, which were established shortly before the passage of the first Military Service Act – G. D. H. Cole, *Labour in the coal-mining industry (1914-1921)* (Oxford, 1923), p. 39.

³⁷ P.R.O., NATS I/53, memorandum dated 25 October 1916 addressed to the War Committee. However, only 1,050,000 of these were of military age.

³⁸ *General annual reports of the British army (including the territorial force from the date of embodiment) for the period from 1st October 1913 to 30th September 1919, prepared by command of the Army Council* (P.P. 1921, xx, Cmd. 1193), pp. 10-11.

³⁹ *Ibid.* p. 10.

⁴⁰ Dearle, *An economic chronicle*, entries for 1 Jan. 1916; 7 July 1916; 17 Nov. 1916; 20 June 1917; 1 Jan. 1918; 20 April 1918.

Table 9. *Sectoral enlistment rates, July 1918*

Sector	Degree of protection	Enlistment rate (%)
Agriculture	High	35
Transport	High	38
Public services	High	39
Manufacturing	High/moderate	45
Commerce, etc.	Very low	63

Table 10. *Regional enlistment rates (%) , July 1915 (10 industries)*

London	21	Yorkshire	17
South East	22	North West	20
South West	22	North	22
West Midlands	20	Scotland	24
East Midlands	17	Wales	20
Average		20	

The exemption system goes far to explain the differences in enlistment rates between different sectors and industries after the introduction of conscription. The industries which received the greatest protection were metals, mining, agriculture and the railways (with the minor additions of docks and canals). These all show notably low enlistment rates by the end of the war. There is in fact only one case of a highly protected industry showing a high enlistment rate – the chemical industry. The moderately protected ones such as the remainder of the manufacturing sector show moderate enlistment rates; the unprotected ones show high rates. In the case of the commercial sector, which was almost completely unprotected, the rates are all very high, and much higher than those for any other sector of the economy. The sectoral differences are brought out most clearly when the degree of protection is contrasted with the enlistment rate towards the end of the war (Table 9).

In attempting to provide some explanations for enlistment rate differences, it may finally be suggested that there is some evidence to show that all the explanatory variables considered so far – economic, demographic, medical and institutional – were subject to regional influences. The evidence for this is limited to July 1915 (Table 10).⁴¹

Clearly there are noticeable regional variations, which reflect the different influences affecting the same industry in different regions, as well as the differences in industrial structure between regions. The regions whose enlistment rates differ most from the average are the East Midlands, Yorkshire and Scotland. The East Midlands figure is kept down by low rates for building (15

⁴¹ Board of Trade, *Report on the state of employment... July 1915*, pp. 7–9.

per cent) and clothing and textiles (17 per cent); its biggest industry, mining, has also a lower than average rate (18 per cent). The Yorkshire figure is kept down by its largest industry (metals: 16 per cent) and also by an astonishingly low 12 per cent recorded by textiles (the third biggest industry in the region). The Scottish experience is that rates are higher than average for every industry, and although its biggest industry (metals) did not show a recruitment rate much above the British average (21 as opposed to 19 per cent), the Scottish average was raised sharply by the very high rate recorded in the building industry (30 per cent), compared with a British average of only 19 per cent. As far as differences in industrial structure are concerned, the usual rule was that the more unbalanced a region's industrial structure, the more did enlistment rates follow those of the dominant industries. Thus in Wales, 60 per cent of the industrial workforce was in mining, which had an enlistment rate of 20 per cent, so it is hardly surprising that Wales as a whole also recorded 20 per cent enlistment. In the West Midlands the dominant industry was metals, with a 19 per cent enlistment rate, so the regional rate followed this closely. But the dominant industry did not provide the whole explanation; in Scotland, 34 per cent of the workforce was in metals, which had a 21 per cent rate, but the regional average was raised above this by a 24 per cent enlistment rate in mining, and the 30 per cent in building already mentioned. Clearly, the analysis so far made at the national level could be repeated at the regional level, and there is scope for much further work here.

IV

Certain conclusions may now be drawn from this study. The first concerns the tendency of different industries to supply men to the forces. It is clear that this varied considerably. This differential tendency is apparent, as far as our information goes, from the earliest months of the war. Thus by July 1915 enlistment rates amongst the larger industries surveyed by the Board of Trade vary from a low of 15 per cent (agriculture) to a high of 24 per cent (food, drink and tobacco). These early differences did not diminish thereafter; indeed they became greater, both absolutely and relatively, as time went on. By July 1918 the extreme rates were those of canals (23 per cent) and government establishments (69 per cent). These cases may be misleading, since both were small industries before the war, but more reliable examples from larger industries still show marked differences – e.g. railways (28 per cent) and commerce (64 per cent).

The second conclusion is that the immediate factors affecting enlistment rates differed from, and were more complex, than those which have usually been cited. As already mentioned, it is common to assume that patriotic feeling played the dominant part in stimulating enlistment, at least during the pre-prescription period. However, even if this were the case, patriotism had to work within certain constraints, the chief of which was the age-structure of the industry concerned. This could sometimes vary considerably. At the 1911

census the proportion of men aged 20-44 averaged 59 per cent in the seventeen industries studied above (p. 210); this average concealed variations amongst the larger industries from 50 per cent (agriculture) to 64 per cent (road transport). These variations could make a great difference to the capacity of an industry to yield men to the forces. For example, pre-war agriculture and building were not too dissimilar in size, yet agriculture, by reason of its more aged workforce, was much less vulnerable to the forces than was building.

	Agriculture	Building
Percentage of workforce aged 20-44 (1911)	49.8	57.3
Number of men aged 20-44 (1911)	398,000	527,000

Even if both had been exactly the same size before the war, there would still have been a large disparity in the numbers of recruitable men; building would have had some 69,000 more men in this age-group than would agriculture.

It is also noticeable that there are only three major industries in which the proportion of enlistable men is much below the average; textiles, agriculture and the railways. The latter two are notable for a very low rate of enlistment throughout the war, and it seems likely that this was largely due to their having comparatively elderly populations; in the case of textiles, this may have assisted to keep enlistment low in 1915, but may have been outweighed by other factors thereafter.

Generally, age-structure differences seem to constitute the largest single factor affecting enlistment rates in the pre-conscription period. To this may be added two subsidiary factors, which may have had some influence in certain cases; activity levels and wages. Thus, for example, it may be that enlistment from the building industry was stimulated somewhat by lack of employment or employment prospects; it may also be that enlistment was retarded by high wages in metals and mining, and by high wage increases in docks, coalmining, railways and the woollen industry. But for the economy as a whole, neither activity levels nor wages serve to explain enlistment differences to any great extent.

After the introduction of conscription, with its accompanying lists of exempt occupations, it seems clear that the largest single influence on enlistment rates was the degree of protection in particular industries. To a great extent, the new forms of protection reinforced existing differences in enlistment rates. Thus the industries receiving the most protection were four - mining, metals, railways (including docks and canals) and agriculture.⁴² In all these, enlistment

⁴² Thus in October 1918 there existed the following number of exemptions: coal mining, 502,000; metals, 1,032,181; railways, 401,641; agriculture, 340,506. In the case of coal mining and agriculture, these amount approximately to three-quarters of the pre-war male labour force

Table 11.

	Proportion of national male labour force (July 1914) (%)	Enlistment proportion, July 1918 (%)
1 Manufacturing	58.7	57.7
of which: mining	(11.9)	(9.1)
metals	(15.4)	(13.9)
2 Agriculture (Great Britain)	7.5	5.7
3 Transport	11.0	9.0
of which: railways	(6.2)	(3.7)
4 Commerce, etc.	16.2	22.2
5 Public services	6.4	5.4
	99.8*	100.0

* Rounding error.

rates were already on the low side, especially in agriculture and (probably) railways, docks and canals. The introduction of systematic exemption ensured that their enlistment rates continued to be low. On the other hand, certain industries which remained virtually unprotected after 1916 already had high enlistment rates; commerce, road transport and certain manufacturing industries such as food, drink and tobacco.

The final conclusion is concerned with the implications of differential enlistment rates for the composition and history of the forces themselves. In so far as the previous occupations of First World War recruits have received any attention, there has been a tendency to assume that the Forces (i.e. chiefly the army) were a cross-section of the nation.⁴³ Conversely, there is an occasional tendency to assume that the heavy industries such as coal mining contributed disproportionately highly to the creation of the armed forces.⁴⁴ Neither of these suppositions is supported by the present evidence. The Forces were clearly not a cross-section of the nation, and the heavy industries played a rather smaller role in the expansion of the Forces than might have been expected from a consideration of their importance in the pre-war economy. This may be seen by analysing the pre-war sizes of the industries in the Board of Trade surveys, and comparing these to the proportion of total enlistment emanating from each sector of the economy (Table 11).⁴⁵

of military age (taken here as 20-44). Classification problems prevent similar calculations being undertaken for metals and the railways. *Census of population*, 1911; *General annual reports of the British army*, p. 11.

⁴³ Barnett, *Britain and her army*, p. 379.

⁴⁴ (Sir) R. A. S. Redmayne, *The British coal-mining industry during the war* (Oxford, 1923), p. 12.

⁴⁵ Board of Trade, *Report on the state of employment... July 1918*.

It can be seen that the contribution of manufacturing as a whole was almost identical with its importance in the pre-war economy. This, however, conceals important distinctions within the sector. The two largest pre-war industries, metals and mining, made a rather smaller contribution than did other industries. Since these two were by far the largest manufacturing industries, other made a much higher contribution to the Forces than their size might seem to warrant. Had metals and mining made a contribution commensurate with their pre-war size, their enlistment figures by July 1918 should have been higher by 74,000 and 135,000 respectively.

However, enlistment rates for manufacturing as a whole are much higher than those in agriculture and the railways. As a result, both the latter industries made a disproportionately low contribution to the Forces; about two-thirds of what it would have been if commensurate with the pre-war importance of these industries. In both these cases, one can see the influence of two factors – a low proportion of males of military age in the labour force, and a high degree of protection from military service, especially after the introduction of conscription.

Conversely, there were industries which made a disproportionately high contribution to the Forces. Such were those manufacturing industries which received only partial protection from conscription such as food, drink and tobacco, paper and printing, wood and clothing. But the highest contributions relative to size were not made by manufacturing industries at all, but by those appearing here as ‘commerce, etc.’, that is, wholesale and retail trade, banking and finance, ‘professions’ (mainly clerks in professional firms such as solicitors) and entertainment (hotels, public houses, music halls, cinemas, etc.). The enlistment rate for this commercial sector is by far the highest of all. Workers in this sector were not regarded as essential for the prosecution of the war, and thus received no protection from military service, either before or after the introduction of conscription.⁴⁶ Nor did they work in occupations which were particularly active and well rewarded, such as munitions, and so did not even have the lure of high wages to keep them in civilian life in the pre-conscription period. Nor for the most part were employers disposed to put obstacles in the way of their workers’ enlistment.⁴⁷ In addition, there was a ready supply of cheap alternative labour available, in the form of women. The latter could be inducted into the procedures of office and shop with far less difficulty than into those of munitions or other manufacturing industry; it is no accident that after the war the commercial sector was the only one to retain female labour on a

⁴⁶ P.R.O., NATS 1/53, *List of certified occupations*; it was noted by a former official of the shop assistants’ union that shopkeeping became an unprotected occupation during the war. P. C. Hoffman, *They also serve, the story of the shop worker* (London, 1949), p. 245.

⁴⁷ Thus some white-collar employees were protected from financial loss on joining the forces; Scottish bank employees who enlisted had their incomes made up to the level of their previous salary by the banks, and the Royal Exchange Insurance Co. gave those enlisting leave on full pay, with a guarantee of their jobs back on their return, at pro rata increases in salary. S. G. Checkland, *Scottish banking; a history, 1695–1973* (London, 1975), p. 563; B. Supple, *The Royal Exchange Assurance; a history of British Insurance 1720–1970* (Cambridge, 1970), p. 423.

permanent basis to any appreciable extent.⁴⁸ The result was to lay the commercial sector wide open to the pressures making for voluntary enlistment before 1916 and conscription thereafter. The soldiers of the First World War were as likely to have been clerks or shop assistants in civilian life as to have been miners or engineers.

APPENDIX I

The Board of Trade employment surveys, 1914-1918

These surveys were conducted by the Board of Trade industrial (war enquiries) branch between October 1914 and April 1919. This branch was sometimes referred to as the 'Z 8' branch, and thus the surveys are sometimes referred to as the 'Z 8' surveys. Survey results are available in respect of the following months:

1914	1915	1916	1917	1918	1919
Oct.	Feb.	Jan.	Jan.	Jan.	Jan.
Dec.	Apr.	Apr.	Apr.	Apr.	Apr.
	July	July	July	July	
	Oct.	Oct.	Oct.	Nov.	

Prior to 1918, results for manufacturing, government establishments, docks and (occasionally) railways are for the mid-month; for other industries, the end of the month. Thereafter, all results are for the end of the month. The results for November 1918 are for Armistice Day (the 11th). A report for July 1917 was undoubtedly written, but has not survived; the July 1917 results have been drawn from subsequent reports.

Sampling

References in the reports to sampling procedures are rare. It seems likely that the method adopted was simply to concentrate on the employers with the largest numbers of employees; thus in December 1914 the entire sample was described as consisting mainly of 'large firms', and in April 1915 the Scottish agricultural sample was described as one of 'large farmers'. In the case of English and Welsh agriculture, the average size of farms in the sample was about 340 acres, which was very substantial.

Bases

Originally, the 1911 census of population was used in the reports in order to estimate the size of the pre-war labour force of each industry. This was found to be unsatisfactory, and in October 1915 these bases, upon which the enlistment and employment totals were calculated, were altered. The principle followed was not specified, but the operation was described as being intended 'to substitute for the Census figures estimates of the populations to which the percentages in the tables may be safely applied'. (October 1915 report, p. 1.)

⁴⁸ In 1911 there were 157,000 females in commercial occupations in Britain; in 1921 the number had risen to 587,000; Mitchell and Deane, *Abstract*, p. 60.

Geographical scope

Although designed to cover the whole of the United Kingdom, the surveys had one large omission, that of Irish agriculture. Since this was by far the most important occupation in Ireland, the surveys are for all practical purposes restricted to Great Britain alone.

Presentation of results

The way in which the results are presented (above, pp. 204-5) may be misleading in two minor respects.

The table does not show that about half the recruiting losses of the economy were made good by new entrants to the labour force, who would themselves become liable in many cases for enlistment. This fact is of most importance in the case of the industries which showed the greatest rate of expansion during the war; in these cases, the rate of enlistment shown on pp. 204-5 is in reality lower than appears. However, this problem probably only renders the enlistment rates meaningless in the case of government establishments, which were of negligible size before the war, and expanded several times over during the war.

The numbers of men enlisted by July 1918 are shown *gross*; they do not take account of men returning from the forces to civilian life – some 775,000 by July 1918, of whom the bulk probably went into manufacturing industry; N. B. Dearle, *The labour cost of the war to Britain* (London, 1940), p. 16.

APPENDIX II

The correlation of enlistment rates with age-groups

The correlation coefficients derived here suffer from certain sources of error, of which the most important are the following.

1. The enlistment rates are derived from the Board of Trade surveys, which are on the whole reliable, but not perfect.
2. The population census includes employers in the industrial totals, but the Board of Trade surveys exclude employers.
3. The census age-groups are not consistent as between England and Wales, and Scotland, and do not fit in with the military age-limits particularly neatly; the latter were in any case changing during the war.

Census age-groups

England and Wales	Scotland	Military age-limits*	
15-19	18-19	August 1914	19-30
20-24	20-24	May 1915	19-40
25-34	25-44	May 1916	18-41
35-44	45-64	May 1917	18-50
45-54		Apr. 1918	18-51

* Dearle, *An economic chronicle*.

On the whole, it was felt that the most useful comparisons would be with the 20-34 age group (England and Wales) and the 20-44 age group (Great Britain). If there is one particularly unsatisfactory aspect of this selection, it is not being able to

incorporate the 18- to 19-year-olds, who probably provided a high number of recruits.

4. It is possible that emigration in the years 1911-14 changed the relative size of the various industries so as to vitiate the use of the census as a guide to industrial age-structure. The available statistics show that 573,816 U.K. citizens migrated to non-European countries in 1912-14 (intra-European emigration being negligible); N. H. Carrier and J. R. Jeffrey, *External migration, a study of the available statistics* (London, 1953), p. 91. While this seems a large number, it amounts to only some 3.6 per cent of the British population aged 20-44 in 1911 (Mitchell and Deane, *Abstract*, pp. 12-14). Even taking into account the imbalance in the occupations of emigrants (e.g. a large proportion of agriculturalists) it seems unlikely to have substantially affected the industrial structure of Britain, and the statistics of migrants' sex and occupation are in any case imperfect (Carrier and Jeffrey, pp. 103, 124).