

Many economic histories have been written using only male data, as if men made up the entire socioeconomic realm. Over the past few decades, there have been growing and welcome efforts to bring the work experience of the 'missing half' into the broad economic and social historiography. This paper aims to expand these efforts by offering a detailed study of the female labour force participation rate (hereafter LFPR) in the context of labour demand and supply in nineteenth-century England and Wales.¹

The female LFPR has been a useful perspective through which historians have attempted to examine the effect of changing economies on women's socioeconomic positions both at home and in the market. But rarely did the early historians agree on how women's labour force participation responded to fundamental economic changes such as British industrialisation. For example, on the one hand, McKendrick asserted that industrialization expanded women's employment opportunities and increased their labour force participation.² On the other hand, Richards argued that industrialization adversely affected women's employment prospects. He suggested that the British female LFPR probably reached its highest level in the pre-industrial period, and declined dramatically during the industrial revolution.³

These over-simplified views were effectively rebutted by subsequent scholarship. Horrell and Humphries, echoing Ivy Pinchbeck's classic work,⁴ find that there was no continuous or uniform trend in the female LFPR during the industrial revolution. Timing, location and occupational categories all had different effects.⁵ Following their influential work, the literature duly started paying more attention to the regional and occupational characters of female LFPR as well as its determinants.

Labour force participation logically must be determined by the interplay between labour demand and supply. Most analyses of the determinants of female LFPRs have been undertaken in such a framework. On the supply side, the effects of a few conventional variables have been identified. Marriage had a restraining effect on women's labour force participation on average.⁶ Children in general had a negative effect on women's labour force participation.⁷ Women's participation decisions responded positively to their own real wages but negatively to other family members' incomes.⁸ However, the effect of these supply side factors and their associated neoclassical interpretations did not hold true universally. For instance, while a husband's income explained some women's lack of participation in the labour market, it made little difference for others in areas where employment opportunities were ample.⁹ For some women, their husband's occupation even opened up new employment opportunities.¹⁰ With regard to the negative effect of children,

¹ This paper only focus on adult women, namely those aged 15 or above.

² McKendrick, 'Home demand', p. 186.

³ Richards, 'Women in the British economy'.

⁴ Pinchbeck, *Women's workers*.

⁵ Horrell and Humphries, 'Women's labour force participation', p.113

⁶ Humphries and Sarasúa, 'Off the record', p. 55.

⁷ Garret, 'The trials of labour', pp. 146-8; Atkinson, 'labour force participation'.

⁸ De Vries, *Industrious revolution*, pp. 199-205; Goldin, 'Household and market production'; Horrell and Humphries, 'Women's labour force participation', pp. 111-2.

⁹ For example, see Dupree, *Family structure*; and Anderson, *Family structure*.

¹⁰ Humphries and Sarasúa, 'Off the record', pp. 55-6.

there are also studies showing the household strategies in place to utilise or even increase mother's participation in light of intensified demand on family resources.¹¹

On the demand side, a reappraisal is gathering momentum. Early attempts to link the demand side factors with female LFPR overwhelmingly focused on institutional, cultural and ideological constraints. Chauvinist unions, Victorian domestic ideologies and patriarchal capitalism have all been identified as being responsible for forcing women out of the labour market.¹² Subsequent scholarship takes a more materialistic approach, focusing on the effect of underlying economic structures and the resulting demand for female labour on female LFPRs. Horrell and Humphries suggest that part of the regional variation in women's relative contribution to family income can be explained by different economic structures. In regions dominated by agriculture, women's willingness to participate was dwarfed by local demand side constraints.¹³ Numerous local studies, on the other hand, have shed light on how the availability of female industries with ample demand for female labour led to high levels of LFPR.¹⁴ Shaw-Taylor provides a general cartographical account, covering the whole of England, demonstrating the link between the regional economic structures in terms of labour demand on female LFPR.¹⁵

As informative as they are, the aforementioned studies from both camps share a common shortcoming. They tend to focus only on a single side, either demand or supply, of the female labour market, and argue for its importance on the basis of evidence coming from only the respective side. For example, de Vries, in his influential framework of 'breadwinner-homemaker household', attributes the decline in married women's LFPR entirely to supply side factors such as male wages and child labour, without any consideration of demand side conditions.¹⁶ Shaw-Taylor, in his study, is able to link the regional patterns of labour demand to that of the female LFPR. But he does not offer any possible explanations from the supply side such as marriage, children and husband's work.¹⁷ Furthermore, most of these studies treat LFPR, labour demand and labour supply as a static state and fail to demonstrate their adjustments to each other through labour migration. This misses an important dynamic aspect in play. This single-sided methodology is inadequate in delineating the interaction between demand and supply that affected female LFPR. While the effect of each side as a separate entity has become clearer, there is still doubt about which side is more decisive in affecting female LFPR.

This one-sided methodology is not historians' natural preference. Rather, it is a necessary choice in face of limited data availability. For example, de Vries' data are concerned with national trends. Hence, variations in demand side conditions within a country cannot be assessed. Shaw-Taylor's data come from published census reports. While the regional economic structures can be gauged, little information is available on supply side conditions.

¹¹ Horrell and Humphries, 'The origin and expansion'; Horrell and Humphries, 'Women's labour force participation', p. 112.

¹² Tilly, 'Women'; Secombe, 'Patriarchy stabilized'; Rose, 'Gender antagonism'.

¹³ Horrell and Humphries, 'Women's Labour Force Participation', pp. 105-6.

¹⁴ Lown, *Women and Industrialization*; Dupree, 'Women as wives and worker'; Anderson, 'Mid-Victorian censuses'; Goose, 'The straw plait'.

¹⁵ Shaw-Taylor, 'Diverse experiences'.

¹⁶ De Vries, *Industrious revolution*, pp. 168-238

¹⁷ Shaw-Taylor, 'Diverse experiences'.

This paper uses a large sample of data with much finer resolutions - the 100 percent sample of the 1881 Census Enumerators' Books (hereafter CEBs). This source can help address the drawbacks discussed above. The benefit is not just a matter of more observations yielding greater statistical significance. With nominal data on birth place, residential place, age, marital status, family structure and occupation, rich information can be obtained concerning both the demand and supply sides of the labour market. This makes direct comparisons between the effects of labour demand and labour supply possible. Hence, their relative importance in affecting women's labour force participation can be sensibly assessed.

The contribution of this paper to the existing literature, therefore, is threefold. First, it will enrich the previous studies with results of much greater resolution. This can help validate or falsify some of the previous arguments on the female LFPR. Second, it will add the dimension of migration to the analysis of the female LFPR. This will lead to a better understanding of women's participation in the context of the dynamic interaction between labour demand and supply. Third and most importantly, it will ascertain the relative importance of the demand and supply variations in affecting female LFPR. The main argument of this paper is that the demand for female labour played the most important role in determining female LFPR and its spatial patterns.

The rest of the paper will be organised as follows. Section I will introduce the source materials. Section II will demonstrate the spatial patterns of female LFPR by marital status on parish level. Section III will analyze the LFPR of women subject to similar demand conditions but different supply variations, and *vice versa*. Section IV will examine the effect of migration on female LFPR by considering different counterfactuals. A short conclusion follows in Section V.

I

The source materials utilised in this paper are the 100 percent sample of the 1881 CEBs in England and Wales. It contains around 26 million records. The CEBs were the census manuscripts containing individual level data on name, sex, age, marital status, 'Rank, profession or occupation', place of birth, and place of residence etc. The occupational recording under the 'Rank, profession and occupation' column in the CEBs are the core information this paper relies on. It had the greatest conceptual complexity and often came under frequent criticism. The census recording of women's occupations draws particularly heavy criticism from historians.¹⁸ However, most of the criticisms only rely upon comments made by Higgs in an influential paper published in 1987¹⁹ with little factual evidence to show the censuses are 'demonstrably inaccurate'.²⁰ In a very recent publication, Higgs revisits many of the comments he made in 1987 and argues that his initial criticisms were either exaggerated or misinterpreted. In light of recent literature development as

¹⁸ Higgs, 'Women, occupations and work'; Higgs, 'Occupational censuses'; Higgs, 'tabulation of occupations'; Davidoff and Hall, *Family Fortunes*, p. 273; Bourke, 'Housewifery' p. 167.

¹⁹ Higgs, 'Women, occupations and work'.

²⁰ Higgs and Wilkinson, 'Women, occupations and work', p. 18-9.

well as new empirical evidence, Higgs emphasises his increasing confidence in the CEBs as a reliable source that can be used profitably to study the history of women's work.²¹

The overwhelming majority of the criticism has its roots in the disparity between what historians would ideally want to know about women's work and what the census tried to capture about women's work. The nineteenth-century censuses only aimed to record women's *regular* employment. For example, the instruction concerning the enumeration of women's occupation in the 1881 census reads 'WOMEN AND CHILDREN. --- The occupation of those who are regularly employed from home, or who follow any business at home, is to be distinctively recorded'. Admittedly, the *regular* employment formed only part of women's total labour activities. But should women's irregular employment be reported in the census in a similar fashion by which their regular employment was recorded, we are most likely to encounter a countervailing bias of an even bigger size. Irregular, seasonal and casual employment was an important component of women's overall labour activities,²² but the census is not fit for this purpose. More relevant sources must be sought elsewhere. Humphries' and Griffin's study of diaries and autobiographies,²³ Horrell and Humphries' exploration of household budgets,²⁴ and Burnette's examination of farm accounts²⁵ all show the great potential of using these sources to shed light on different dimensions of women's employment. Despite its shortcomings, at least women's regular employment seems to have been faithfully recorded in the census.²⁶ And it is an issue worthy of investigation. Throughout this paper, the female LFPR is derived only from women's regular employment.

The full sample of CEBs possess two obvious advantages over other sources. First, the sheer volume of data make it the most comprehensive source to study women's employment in the nineteenth century. Any potential statistical artefact associated with the 'small sample problem' is not a major concern in this study. Second and most important, the individual level data contained in the CEBs makes analysis with fine-grained details possible. They allow us to link each woman to a set of socioeconomic conditions arising from her own, familial, and local settings. This enables us to discover new patterns of female labour force participation in the context of labour demand and supply.

The Genealogical Society of Utah first transcribed the 1881 CEBs.²⁷ Kevin Schürer and Matthew Woollard subsequently enhanced the transcriptions at the University of Essex. Their enhancement included reformatting the input data, performing consistency checks, coding the non-standardised textual occupational strings with the occupational classification schemes used by the Registrar General in 1881,²⁸ and adding a number of enriched variables relating to household structure.²⁹ The Essex enhanced version of the 1881 CEBs has been available at the UK Data Archive since 2000. Leigh Shaw-Taylor and Tony Wrigley *et al.* at the Cambridge Group for the History of

²¹ *Ibid*, p. 24

²² Snell, *Annals*, pp. 49-66; Burnette, 'The wages and employment', pp. 47-51; Verdon, 'Women's work', p. 93.

²³ Humphries, *Childhood and Child labour*; Griffin, *Liberty's Dawn*.

²⁴ Horrell and Humphries, 'Women's labour force participation'; Horrell and Humphries, 'The origins and expansion'.

²⁵ Burnette, 'The wage and employment'.

²⁶ You, 'Women's employment'; Shaw-Taylor, 'Diverse experiences'; McGeevor, 'Women's 'regular' employment'. Higgs and Wilkinson, 'Women, occupations and work'.

²⁷ For details of the GSU database, see Woollard, 'Creating a machine-readable version', p. 98-101.

²⁸ For details of the coding process, see Woollard, 'The classification', pp. 16-8.

²⁹ For details of the Essex enhancement programme and a list of fields included in the dataset, see Schurer and Woollard, 'National sample'.

Population and Social Structure (hereafter Cambridge Group) made further enhancements by linking the dataset to the Geographic Information System (hereafter GIS) parish boundary data.³⁰ In addition to this, revisions to the occupational coding were implemented and all the occupations were coded into the PST occupational classification scheme.³¹

II

Both qualitative and quantitative accounts of the general regional diversity of the female LFPR are available in the literature.³² The most important message emerging from these accounts is that female LFPRs were highly responsive to the local demand for female labour. Historians often find remarkably high levels of female LFPR in the textile manufacturing districts, pottery manufacturing districts and domestic industry areas, where there were ample female employment opportunities.³³ By contrast, women's LFPRs in agricultural and mining areas are found to be much lower. Shaw-Taylor provides the first systematic presentation of such regional diversities covering the whole of England.³⁴ His mapping of the adult female LFPR on the Registration District level are suggestive of the fact that the demand for female labour is an important determinant of female LFPR.

This section extends the existing literature by considering the spatial patterns of female LFPRs by marital status at parish level. The benefits of adding the dimension of marital status to the analysis are threefold. First, whilst the spatial pattern of female LFPRs in general is now known, an account by women's marital status is still absent. Second, whilst the place of residence, e.g. parish, is indicative of the socioeconomic conditions outside the household (i.e. demand factor), marital status is indicative of the socioeconomic conditions within the household (i.e. supply factor). Hence, this analysis can, to a certain degree, highlight how labour demand and supply interact to affect women's LFPRs. Finally, by identifying women's LFPRs by marital status in every parish in England and Wales, we can assess how much the parishes with different levels of employment opportunity collectively contributed to total female employment for different marital groups. This

³⁰ The GIS parish boundary data used in this article is Satchell, Kitson, Newton, Shaw-Taylor, and Wrigley, *1851 England and Wales census parishes, townships and places*. [data collection]. UK Data Service. It is an extensively corrected, extended and enhanced version of Burton, Westwood and Carter, *GIS of the ancient parishes of England and Wales, 1500-1850*. [data collection]. UK Data Service. SN: 4828. It is in turn a GIS version of Kain and Oliver, *Historic Parishes of England and Wales : an Electronic Map of Boundaries before 1850 with a Gazetteer and Metadata*. [data collection]. UK Data Service. SN: 4348. A brief account of the linking process can be found in Kitson *et al.*, 'The creation of a 'census''.

³¹ Under the PST scheme, occupations were categorized into three broad sectors: primary, secondary and tertiary. The primary sector included all extractive economic activities such as agriculture, fishing and mining etc. related to the production of raw materials. The secondary sector refers to economic activities associated with the transformation of raw materials produced by the primary sector into other commodities. The tertiary sector refers to occupations associated with all types of services including domestic service, retailing, wholesale, transport and professions etc. Within each of these three sectors, in descending order in terms of the level of sophistication of occupational categorisation, there are also sub-sectors and occupational sections, see Wrigley, 'The PST system'.

³² Roberts, *A woman's place*; Shaw-Taylor, 'Diverse experiences'.

³³ See for example, Lown, *Women and Industrialization*; Dupree, 'Women as wives and worker'; Anderson, 'Mid-Victorian censuses'; Goose, 'The straw plait'.

³⁴ Shaw-Taylor, 'Diverse experiences'.

question has not been answered by existing studies that rely only on evidence from a limited number of places. It is only possible with the 1881 CEBs examined in this article. This exercise highlights the importance of demand for female labour on female LFPR.

Figures 1 to 3 show female LFPRs by marital status at the parish level in England and Wales in 1881. Three messages become clear. First, female LFPRs were regionally diversified across all marital groups. Second, regardless of women's marital status, the range over which female LFPRs varied across different parishes is large. Most importantly, although the absolute level differed, relative spatial patterns of female LFPRs were largely the same across different marital groups.

{Insert Figure 1}

Single women's LFPRs were high almost everywhere. More than half of single women were reported active in the labour market in most parishes. This can be explained by the widespread availability of employment opportunities for 'life cycle servants'³⁵ in domestic service. Even within this general context, a few clusters with much higher levels of single women's LFPR still manage to stand out. These were the areas bordering Lancashire and Yorkshire, a large part of Bedfordshire and Hertfordshire, the parishes on the Essex-Suffolk border, part of Warwickshire and Leicestershire, certain parts of Worcestershire, and the parishes on the Devon-Somerset-Dorset border.

{Insert Figure 2}

Widow's LFPRs were lower than single women's LFPRs in most parts of the country. Their older age profile in general accounts for a large part of this disparity. However, the relative spatial patterns of widows and single women's LFPRs shared similarities. The hitherto identified areas still saw much higher levels of widows' LFPRs than the rest of the country. However, two notable exceptions can be found. In south-west Wales where single women's LFPRs did not stand out in the national context, small farm holdings kept many widows active in farming. On the Northumberland-Scotland border, independent female labourers worked in agriculture in return for a rent-free cottage.³⁶ This, along with the employment opportunities in domestic service, led to high levels of single women's LFPR. Widows' LFPRs in the same region, however, were lower than the national average. These suggest that there were economic activities that displayed bias towards women in certain marital groups within the local economic environment.

{Insert Figure 3}

Married women's LFPRs were, not surprisingly, much lower than those of single women and widows across the country. This is consistent with the general negative effect of marriage on women's labour force participations so well documented in the literature.³⁷ However, this negative effect was not observed everywhere. Evidence of exceptions, both qualitative and quantitative, have already come forward from local studies, particularly focusing on the textile manufacturing

³⁵ Laslett, *Family Life and Illicit Love*; Horn, *The Rise and Fall*, p. 32; Pooley, 'Domestic servants', p. 405.

³⁶ Long, *Conversations*, pp. 81-8.

³⁷ Perkin, *Women and marriage*; Roberts, *Women's work*, p. 64; Zimmeck, 'Jobs for the girls', p.162; Rose, *Limited livelihood*, p.45-7; Lewis, *Women in England*, pp. 146-9.

districts in Lancashire and Yorkshire.³⁸ What the existing literature could not inform us is how exceptional their chosen locations were in comparison with the rest of the country. **Figure 3** shows that the spatial patterns of married women's LFPRs took the form of two extremes. In most parts of the country, married women's LFPRs were below five per cent. By contrast, in areas that have been previously identified with higher levels of single and widowed women's LFPRs, it is not uncommon to find parishes with more than half of married women reported as regularly employed in the labour market. There were few parishes with married women's LFPRs between these two extremes.

It is immediately clear that the hitherto identified clusters of parishes with higher levels of female LFPRs were all centres of female industries – cotton in Lancashire, woollen in the West Riding of Yorkshire, lace and straw plaiting in southeast Midlands, silk on the Essex-Suffolk border, and nail making in Worcestershire, among others. Given the presence of these female industries, demand for female labour in these clusters were naturally much higher than the rest of the country. Meanwhile, the supply side conditions, though with variations, must have been more homogeneous across the country for each marital group. The fact that women, regardless of their marital status, all had higher levels of labour force participation in these clusters suggests that the demand for female labour played the most important role in determining female LFPRs and their spatial patterns.

The spatial patterns presented above illustrate how greater demand for female labour led to higher female LFPRs in certain locations relative to others. However, they are limited in showing the overall effect of demand for female labour on the national totals. This is especially the case since parishes vary considerably in size.³⁹ Hypothetically, if most of the parishes with high female LFPRs were small in population, then the overall effect of localised high labour demand on women's total employment can only be limited. So another way to assess the importance of demand-side factors is to demonstrate how the parishes with ample or limited demand for female labour collectively contributed to the national employment totals.

{Insert Table 1}

Table 1 shows different parishes' share of the total adult female employment in England and Wales. The parishes are distinguished by their levels of demand for female labour. High-demand parishes are defined as those with female LFPRs above the national 85th percentile. Low-demand parishes are defined as those with female LFPRs below the national 15th percentile. It shows that low-demand parishes collectively covered only three percent of the total adult female employment in England and Wales. On the other hand, parishes with high demand for female labour account for more than forty percent of the national total. The overall effect of localised high demand for female labour becomes even more apparent when we consider married women's employment. **Table 2** shows that high-demand parishes covered sixty percent of all married women's recorded employment in England and Wales, while the corresponding figure for the low-demand parishes is zero.

³⁸ See McKay, 'Married Women and Work', pp. 170-1; Anderson, 'Mid-Victorian Censuses', pp. 189-202; Garrett, 'The trials of labour'; Roberts, *A woman's place*.

³⁹ The average population size of an 1881 parish was c.1721 with the maximum of greater than 160,000 and median of 380.

The fact that no employment was recorded for married women in the low-demand parishes is an example of the census under-recording of married women's occupations.⁴⁰ It should not be interpreted as evidence of no labour input from married women in those parishes. However, it is unlikely that their labour input in the form of non-regular employment in those low-demand parishes could lead to a similar level of labour input with that of their counterpart in the high-demand parishes. Moreover, referring back to **Figure 3**, it suggests that, in line with other studies,⁴¹ the census under recording of married women's employment should not be taken as an unchallenged truth. At least in areas where there was high demand for female labour and married women's employment was consequently more likely to be regular, census recording seems to be reasonably faithful.⁴² Therefore, the argument made about **Tables 1 and 2** still hold.

{Insert Table 2}

Two further remarks need to be made about **Tables 1 and 2**. First, the method of identifying high- or low-demand parishes based on female LFPRs may seem circular. However, as **Figures 1 to 3** show, the areas identified with high levels of female LFPR were self-evidently areas with established female industries and hence greater demand for female labour. For example, it would be unnecessary to prove, independently of female LFPR, that cotton manufacturing districts in Lancashire offer a great number of female employment opportunities. Ideally, we would want more direct indicators, such as the amounts of tools and raw materials utilised for female employment, for each parish. However, obtaining such indicators is beyond the scope of the present study.

Secondly, it is clear from **Tables 1 and 2** that high-demand parishes had greater population sizes. With regard to adult women in general, the high-demand parishes were about five times the population size of their low-demand counterparts. With regard to the population of married women, the former group was more than ten times larger than the latter group. Taking population size as an indicator of urban characteristics, these two tables also show that urban areas and population centres accounted for a disproportionately large proportion of women's total employment. From a static point of view, urban areas and population centres had a diverse economic profile. This in turn created ample employment opportunities for both men and women locally. From a dynamic point of view, urban areas were also magnet attracting an influx of population.⁴³ Their high labour demand environment managed to attract men and women seeking potential employment opportunities away from other areas. This created a dynamic interaction between the demand and supply through labour migration. The relationship between female migration and female LFPRs will be the focus of section IV. But before that, a closer examination of how the interaction between demand and supply affected female LFPRs in a static state will be presented in greater detail.

⁴⁰ Horrell and Humphries, 'Women's labour force participation', p. 95; Sharpe, 'Continuity and change', p. 333.

⁴¹ See for example, McGeevor, 'Women's 'regular' employment'. Higgs and Wilkinson, 'Women, occupations and work'.

⁴² Some case studies have made similar point. For instance, Lown, based on the comparison of employment records at the Courtauld silk factories in Halstead with the corresponding CEBs, found that 'there are not a great many married women... who evaded classification'. See Lown, *Women and Industrialization*, p. 91.

⁴³ Long, 'Rural-urban migration'; Boyer, 'Labour migration'.

III

The previous section offered comprehensive empirical evidence highlighting the effect of demand for female labour on female LFPRs. However, the effect of supply-side factors should not be dismissed completely. As alluded to in the introduction, any single-sided analysis cannot effectively gauge the relative importance of labour demand and supply in affecting female LFPRs. What is needed is an analysis covering both sides with greater resolution.

A large sample of data, such as the one used in this article, can fill the gap. With the data covering everyone throughout the entire country, one can comfortably select and compare groups of women exposed to similar demand and yet different supply side conditions, and *vice versa*. It will be argued in this section that the supply side had a clear effect on female LFPRs. But it did not have an unchecked positive effect beyond the limits imposed by the demand for female labour. In that sense, labour demand is argued to have greater relative importance in determining female LFPRs.

The rest of this section will focus only on married women. The number of children, ages of children, number of working children and husband's employment have all been identified as key supply-side variables affecting married women's LFPRs.⁴⁴ Since many couples married and had children at significantly different ages, married women's LFPRs can perhaps be better understood in the context of life stage analysis. This section will adopt the categorisation of six life stages in Anderson's study of family structure.⁴⁵ The definitions of stages are as follows:

Stage I: Wife under 45, no children at home.

Stage II: Wife under 45, one child under one year old at home.

Stage III: Children at home, but none in employment.

Stage IV: Children at home, and some, but under half, in employment.

Stage V: Children at home, and half, or over half, in employment.

Stage VI: Wife 45 and over, no children, or one only aged over 20, at home.

The life stage analysis focuses on the variations of the supply-side conditions within the family. The variations arise from different levels of childcare and child labour. This in turn leads to different levels of constraints and incentives for married women's labour force participation. For instance, young married women with no children, hence without childcare duties, at Stage I would have had far fewer time restrictions to participate in the labour market than those in Stages II or III.⁴⁶ On the other hand, married women at Stage V, with the supposed substitution effect of child labour for their own,⁴⁷ would have been less compelled to regularly participate in the labour market than those in the previous stages.

⁴⁴ See various references in the introduction.

⁴⁵ Anderson, *Family structure*.

⁴⁶ Roberts, *Women's work*; Ross, *Love and toil*.

⁴⁷ De Vries, *Industrious revolution*, p. 219.

Figure 4 shows married women's LFPRs by life stages. In England and Wales, married women's LFPR declined until Stage III, at which point it reached the lowest level before increasing again until stage V. It then declined again at stage VI. This pattern shows the clear effect of supply-side conditions on married women's labour force participation. Between Stages I and III, there were more children born into marriages. As the children were young and needed constant childcare, they imposed great time constraints on mothers' ability to regularly participate in the labour market.⁴⁸ Even with domestic help within the family or from the community,⁴⁹ married women with small children could not expect to have the same level of freedom to work as their counterparts with no children. Furthermore, as the children had not reached working age, with enlarged family size and no increase in the number of working hands, these families were most prone to life cycle poverty.⁵⁰ For example, it can be shown that there are on average three co-resident children per household in both stage III and V in England and Wales. The household budget required for families in either stage may be similar. However, despite the lower ratio of wage earners among household members at Stage III and hence the greater necessity for married women's participation, the supply side constraint from childcare made it much more difficult for married women at Stage III than for those at later life stages.

{Insert Figure 4}

Between Stages III and V, more children reached working age. As more children entered the labour market, married women's LFPRs actually increased. This result marks a stark contrast with the existing literature on the organisation of the household economy that highlights the labour substitution between mother and children. Horrell and Humphries find that, in the mid nineteenth century, children's labour, although not a clear substitute for their fathers' earnings, was very much a substitute for that of their mothers in the household economy.⁵¹ De Vries, in his 'breadwinner-homemaker household' framework, goes even further. He places child labour in a pivotal role in explaining married women's voluntary withdrawal from the labour market and hence their low LFPR. He argues that child labour was substituted for that of adult women in the creation of the breadwinner-homemaker household⁵² – 'The breadwinner-homemaker household is an awkwardly long name, but it is not long enough to reveal the role that child labour played, alongside rising adult male wages, to make possible the redeployment of women's labour from the market to the home'.⁵³

The only empirical evidence in de Vries' work is a rather patchy set of data documenting changes in women's LFPRs over time.⁵⁴ But to validate his argument directly, one has to track changes in married women's LFPRs over life stages. The increase in married women's labour force participation between Stages III and V contradicts his argument. Married women intensified rather than withdrew from the labour market as children entered labour market. The fact that more working children were retained at home is highly suggestive of the family's need to increase its income. As household members tried to utilise as many labourers as possible, married women's

⁴⁸ Humphries, *Childhood and child labour*, p. 109; Burnette, *Gender, work and wages*, pp. 171-85

⁴⁹ Anderson, *Family Structure*, pp. 74, 105, 142; Davin, *Growing up poor*, pp. 97-102; Humphries, *Childhood and child labour*, p. 110-1.

⁵⁰ Rowntree, *Poverty*; Williams, *Poverty, gender and life-cycle*.

⁵¹ Horrell and Humphries, 'Women's labour force participation'.

⁵² De Vries, *Industrious revolution*, p. 200.

⁵³ *Ibid*, p. 219.

⁵⁴ *Ibid*, pp. 212, 218.

participation was also needed to enlarge the household budget. In this case, the incentives from the supply-side led married women's LFPR to higher levels.

This result suggests that married women's incomes, no matter how small they might be, were crucial in working class family survival even when children made a substantial contribution to the household budget. But it begs some questions: if women's work was needed, why did the majority of families still have no married women with a recorded occupation; and how did families in early life stages survive with married women's LFPRs at lower levels? If some married women, even with their husband's and children's income, still had to regularly participate in the labour market to make ends meet, others with more pressing financial situations surely must have worked just to survive. The answer again lies in the fact that the census only tried to capture women's *regular* employment. Having no occupational title in the census does not mean married women did not work *at all*. It is only that their non-regular form of labour input, most likely as a result of the lack of regular employment opportunities, failed to qualify as occupations from the perspective of the census. However, the mechanism by which supply-side conditions affected married women's different forms of labour input cannot differ drastically. The aforementioned effects of supply-side conditions, as interpreted from the LFPRs, hold true for married women's labour force participation, regular or not.

The effects of supply-side conditions, however, are not the same across the country. This is mainly due to the different demand environments within which the supply-side of the labour market was operating. By repeating the same exercise for different types of parishes, characterised by different levels of demand for female labour, we can obtain a better understanding of how the labour demand and supply interacted to affect women's labour force participation. I focus on three types of parish to capture the different demand environments for female labour – agriculture areas, mining areas and cotton areas. Agriculture areas are defined as a group of parishes each of which had more than 70 percent of adult male employed in agriculture in 1881.⁵⁵ Mining areas are defined as a group of parishes each of which had more than 50 percent of adult males employed in mining.⁵⁶ Cotton areas are defined as a group of parishes each of which had more than 30 percent of adult male employed in the cotton manufacture.⁵⁷ It can be reasonably asserted that, due to the nature of the economies in these three parish clusters, the demand for female labour was higher in the cotton areas than that in the agriculture and mining areas.

The results are also presented in [Figure 4](#). The trajectory of married women's LFPRs by life stage in agriculture areas tracked closely that of England and Wales. And the same arguments pertain. Comparison with the trajectory in the cotton areas show that married women's LFPR in the cotton areas was about seven times higher than in the agriculture areas up to stage III. Even by stage VI, the former was still about four times higher than the latter. The great demand for labour from factories in the cotton areas could meet either men or women's willingness to enlarge the household budget and lead LFPRs to a much higher level than in the rest of the country. If we compare married women's regular employment in the mining areas, where the demand for female

⁵⁵ The national average for the share of adult male employed in agriculture in 1881 was 15 percent. There are 2,489 parishes in this group with a population of 510,239.

⁵⁶ The national average for the share of adult male employed in mining in 1881 was 6 percent. There are 262 parishes in this group with a population of 896,563.

⁵⁷ The national average for the share of adult male employed in cotton manufacture in 1881 was 2.1 percent. There are 90 parishes in this group with a population of 687,885.

labour was sparser than in agriculture areas, with that in the cotton areas the difference is even more pronounced.

The difference in married women's LFPRs across different life stages within the same area demonstrates the effect of supply side conditions. However, as shown in the cases of the agriculture and mining areas, the variations of LFPR were small in scale. They only fluctuated around the low level that the demand for female labour could generate in these areas. The effect of labour supply conditions on married women's LFPRs in the cotton areas was much larger. However, it was due to the generally high levels of labour force participation that were only made possible by the availability of ample employment opportunities. Even the lowest point of married women's LFPRs at stage VI in the cotton areas was still much higher than the highest point at stage I in other areas. This difference clearly reflects the greater effect of demand side conditions on married women's LFPRs.

Husband's occupations and earning capacities form another important part of the supply side conditions. De Vries suggests that rising male real wages were one of the main reasons behind married women's increasing absence from the labour market from the mid-century.⁵⁸ However, taking husband's occupation into the life stage analysis for different demand environments, the greater importance of demand, in comparison with the supply-side of the labour market, on women's LFPRs becomes even clearer. **Tables 3 and 4** show married women's LFPRs by life stage and husband's occupation in cotton and mining areas, respectively. A few important messages can be drawn from these two tables.

{Insert Tables 3 and 4}

First, within the cotton areas, married women's LFPRs were at similarly high levels for each life stage regardless of husband's occupations, except for those whose husbands were employed in agriculture and professions. Wage rates as well as the operation of household economy varied for men employed across different industries.⁵⁹ However, given the high demand environment in the cotton areas, the effect of these important supply-side variations became indistinct. Furthermore, the high levels of married women's LFPR in the cotton areas were indeed sustained by the demand for female labour in cotton factories. Up until Stage IV, nearly half of married women's regular employment was to be found in the cotton manufacture.

Second, in contrast to the cotton areas, within the mining areas, married women's LFPRs were at similarly low levels for each life stage almost regardless of husband's occupation. As was the case in the cotton areas, the supply-side variations arising from husbands' different occupations hardly had any discernible effect on married women's LFPRs. Whether there were strong supply-side incentives or not, the supply-side conditions operated only within the limit imposed by the demand-side conditions in the mining areas. The only notable exception was married women whose husbands were employed in textiles. In this case, the husband's occupation actually indicated the availability of textile factories in close geographical proximity to the married couple's residence. This made it easier for some married women to regularly participate in the labour market.

⁵⁸ De Vries, *Industrious revolution*, pp. 186-238.

⁵⁹ Hunt, *Regional wage variations*.

Third, comparing married women in the same life stage and with the same occupation for her husband, it shows that their LFPRs in the mining areas were always much lower than that in the cotton areas. Life stage and husband's occupation capture the supply-side variations arising from children and spouse. These are arguably the two most important supply-side conditions. Holding them constant, the striking difference in married women's LFPRs between these two areas can almost entirely be explained by the different demand environments.

Finally, a more specific comparison can be made between married women from mining families in the cotton areas and those in the mining areas to reinforce the argument. Mining families had two distinct characteristics – intensive requirements for married women's domestic work⁶⁰ and relatively high adult male wages.⁶¹ Whether they lived in the cotton areas or the mining areas, the time constraint for married women from mining families to regularly participate in the labour market must have been equally severe, and the financial disincentives from husband's high wage rates may be equally strong. However, their LFPRs were markedly different in these two areas. Again, this can be almost entirely explained by the differing demand environments. As mentioned before, to have as many family members as possible working to enlarge the household budget was probably at the top of the agenda for most working class families, even if they enjoyed relatively high male wages such as those that were available in mining. Whilst high demand for female labour made women's regular labour force participation possible in the cotton areas, it was difficult, given the low demand for female labour, in mining areas. For those married women in the mining areas, their low LFPRs were not a sign of their willing withdrawal from the labour market. Nor was it, as de Vries suggests, persuaded by heavy domestic duties and enabled by high male wages. Rather, it appears to be an unwelcome consequence caused by low demand for female labour.

IV

This paper so far analyses female LFPRs in the context of demand and supply in a static state. What it has been observing are women who were resident in certain locations, either local born or migrants. This by default ignores an important factor that leads to our observations, migration. This section uses counterfactual analysis to examine the effect of migration on female labour force participation. Migration could affect female LFPR by both responding to the labour demand in the destinations and altering the labour supply in the origins. Depending on which levels of employment female migrants achieved in the destinations and could have obtained in the origins, the counterfactual spatial patterns of female LFPR may look markedly different from those observed. However, this section will show that, even with very different assumptions, the observed and counterfactual spatial patterns of female LFPR would remain similar. It will reinforce the argument that labour demand was the most important factor in determining female LFPRs.

The analysis of migration is particularly important because a substantial part of the British population in the nineteenth century moved away from their birthplaces at some point during their lives. It has been estimated that the rural areas of England and Wales lost more than four million

⁶⁰ Dennis, Henriques and Slaughter, *Coal is our life*.

⁶¹ For example, for comparison between agricultural and mining wages, see Hunt, *Regional wage variations*, pp. 62, 72.

people as a result of intercounty migration between 1841 and 1901.⁶² In a single decade between 1861 and 1871, nearly two million people moved to a county away from their birth county. This is considerable number given the whole population was just over 20 million.⁶³

There is a large body of literature on migration in Victorian England and Wales. Three main strands of argument emerge from the literature – patterns of migration, causes of migration, and the effects of migration. With regard to the patterns of migration, two main findings can be briefly summarised. First, there was a clear direction of movement from rural to urban areas.⁶⁴ Second, migration was a forward-looking process. As such, migrants tended to have a young age profile.⁶⁵ With regard to the causes of migration, three important factors have been identified. First and most important, the wage differential and labour demand differential between birthplaces and possible destinations were major factors leading to migration.⁶⁶ Second, shorter distances between birthplaces and possible destinations made people more likely to relocate.⁶⁷ Third, people were more likely to migrate to certain places where they had strong links with the previous migrants, the so called ‘family and friends effect’.⁶⁸ With regard to the effects of migration on the wider economy, the existing studies have mainly focused on labour market integration in the form of real wage convergence. It is found that there was no significant wage convergence over the nineteenth century between different areas in England and Wales.⁶⁹ However, Long recently argued that had migration not happened, the wage differential across the country would have been much larger.⁷⁰

Most of the studies mentioned above use only male data or combined male and female data, however the main arguments from these studies should hold for women alone too. But, given the clear link between the employment opportunities and migration discovered by existing studies, it is surprising that there have been few studies on the effect of migration on female LFPR. This section is not an attempt to study female migration *per se*. Rather, it will focus on how female migration affected female LFPR.

The basic mechanism identified by the existing studies shows that a high-demand environment such as a textile town pulled women in while low-demand environments such as agricultural and mining areas pushed women out. The process is largely initiated and sustained by women’s search for employment opportunities.⁷¹ For example, using family history records, Pooley and Turnbull find that economic pressures and restricted female labour market opportunities forced women to migrate at a young age.⁷² Saville finds that while several coalfields attracted men in large numbers, they lost a great number of women because of the scarce employment opportunities.⁷³ Others find that female migrants were mainly attracted to destinations with demand for domestic servants and

⁶² Cairncross, ‘Internal migration’, p.83

⁶³ Friedlander and Roshier, ‘A study of internal migration’, p. 267; Friedlander, ‘Occupational structure’, p. 296

⁶⁴ Friedlander, ‘Occupational structure’; Boyer and Hatton, ‘Migration’.

⁶⁵ Redford, *Labour Migration*; Baines, *Migration*.

⁶⁶ Long, ‘Rural-urban migration’; Boyer and Hatton, ‘Migration’.

⁶⁷ *Ibid.*

⁶⁸ *Ibid.*

⁶⁹ Hunt, *Regional wage variations*, p. 4.

⁷⁰ Long, ‘Rural-urban migration’.

⁷¹ Another mechanism is women’s marriage considerations. See Dribe et al, ‘Marriage’; Pooley and Turnbull, ‘Leaving home’; Southall and Gilbert, ‘A good time to wed?’

⁷² Pooley and Turnbull, ‘Leaving home’, p. 406

⁷³ Saville, *Rural depopulation*, pp. 32-3.

textile workers.⁷⁴ Similar evidence can also be found outside England and Wales. Anderson, in his recent book, provides evidence for Scotland. In his selected mining parishes, there was a net loss of young men and women when the industry was just getting under way. But during the mining boom, while young men moved in to obtain jobs, there continued to be a net loss of young women as female employment opportunities became extremely limited.⁷⁵ In fact, the local demand for labour and resultant migration is perhaps the key factor explaining varying sex ratios and age structures between different places in Scotland.⁷⁶

This section uses the migration data Joe Day extracted and coded from the 1881 CEBs.⁷⁷ In his dataset, a person's residential place and birth place are coded to a specific Registration Sub-District (hereafter RSD). A person can be identified as a migrant if his or her residential RSD is different from the birth RSD. Otherwise, he or she will be identified as a 'stayer'. One limitation of this dataset is that the within RSD movement cannot be identified. However, given the fine-grained geographical resolution at the RSD level, it suffices for the purpose of this paper – there were 2,175 RSDs in England and Wales in 1881 as opposed to just over 40 Registration Counties and just over 620 Registration Districts. Not surprisingly, some people failed to give sufficiently clear information in the census to allow their birth place to be coded to a specific RSD.⁷⁸ However, **Table 5** shows that, regardless of women's age and place of residence, the success rate of identifying birth RSD is more than 90 percent.

{Insert Table 5}

Figure 5 shows the patterns of adult female 'net migration rates' in 1881. It is calculated in this article as $(I_{i,1881} - O_{i,1881})/P_{i,1881} * 1000$ where $I_{i,1881}$ is the number of women who lived in RSD i in 1881 but were born elsewhere, $O_{i,1881}$ is the number of women who were born in RSD i but lived in elsewhere in 1881, and $P_{i,1881}$ is the female population size in RSD i in 1881. A few messages become clear from **Figure 5**. First, as suggested by the existing literature, there were more places which were net losers of population through migration than places which were net gainers.⁷⁹ Second, whether we are concerned with all adult women or women who were more likely to move, such as young single women, the geographical patterns of female net migration are almost identical. Third and perhaps most importantly, the hitherto identified geographical pattern shares certain similarities with that of female LFPRs presented in Section II. Most of the places identified with high female LFPRs had large female net migration as well. This is particularly clear in Lancashire, the West Riding of Yorkshire, and certain parts of the Midlands. By contrast, in most parts of the country where employment opportunities were limited, many more women migrated out than in. This again highlights the overwhelming importance of the demand-side of the female labour market. High demand created high female LFPRs in a static stage at a given time and place. It also managed to alter observed female labour supply behaviour by inducing women's migration through labour demand differentials between places.

⁷⁴ Baines, 'Population, migration and regional development', p. 53. Cairncross, 'Internal migration', p. 74.

⁷⁵ Anderson, *Scotland's populations*, p. 175

⁷⁶ *Ibid*, p. 161, 198.

⁷⁷ Day, 'Lifetime migration', and 'Enriching the I-CeM database'.

⁷⁸ For example, someone just reported their birth place as 'London' without giving further specific information.

⁷⁹ Friedlander, 'Occupational structure', p. 296.

A few notable exceptions, however, can be found. First, in parts of Bedfordshire and Hertfordshire, despite the ample employment opportunities from lacemaking and strawplaiting, there was a significant loss of female population through migration. It appears that the high demand for female labour in this area managed to offer plenty of jobs to women once they decided to stay, but it failed to persuade many women to stay at the first place and certainly failed to attract women from other places to move in. This is likely to be the result of low male agricultural wages.⁸⁰ In contrast, mining districts in Durham and South Wales offered very limited employment opportunities for women. However, these places nevertheless attracted a large number of female net migrants. The influx of female population, in this case, cannot be explained by the demand for female labour. Instead, women were likely attracted to the mining areas mainly due to the marriage possibilities, given the high male wages in mining. Finally, some urban centers, coastal towns and London may not have female LFPRs as high as those in the industrial hubs. However, they still witnessed high female net migration rates. This reflects the fact that large urban towns were often attractive destinations for rural populations. For example, nearly 90 percent of male migrations from rural Southeast England went to London between 1861 and 1901.⁸¹

{Insert Figure 5}

The geographical pattern presented above hints at the importance of female labour demand, male wages and urban attraction, among other factors, in affecting women's net migration. But the question remains: how did female net migration affect female LFPRs? This question can be answered most effectively through counterfactual analysis. Figure 6 shows one possible scenario. The counterfactual female LFPRs are constructed as follows. First, the absolute number of adult women employed in each RSD in 1881, E_{1881} , is calculated from the CEBs. Second, a counterfactual adult female population size, $CounterPop_{1881}$, is constructed by deducting the female in-migrants from and adding the female out-migrants to the reported female population for each RSD in 1881. Then, the counterfactual female LFPR is calculated as $E_{1881}/CounterPop_{1881}$.

It is assumed, in this calculation, that E_{1881} was the equilibrium level of female employment in each RSD. It was the direct result of the economic realities such as number of factories, workshops and employers in each RSD. Its level was independent of female population size. That is to say, given the level of employment the underlying economy could generate, an increase or decrease in the population size would not lead to a higher or lower level of employment respectively. This is based on a further assumption that capital, in the form of factories and workshops, was not as mobile as labour. That is to say, labour demand did not respond to labour supply with great speed or flexibility.

{Insert Figure 6}

It is clear from Figure 6 that, had there been no female migration, the regional concentration of high female LFPRs in England and Wales would have been even more apparent. Without the creation of extra demand for female labour, the larger counterfactual population sizes would lead to lower female LFPRs in most places. On the other hand, as argued in the previous sections, the observed clusters of high female LFPRs, say over 60 percent, all had industries with high female labour demand. Had women in other places not responded to such demand, the female labour

⁸⁰ Verdon, *Rural women worker*.

⁸¹ Boyer, 'Labour migration', p. 197.

market would have become much tighter in some of these clusters. This is particularly the case in Lancashire, the West Riding of Yorkshire and the west Midlands. This is unsurprising given the assumptions. However, what is more interesting is that, without a positive net migration, the number of locals born in some of these places would not have met the level of female labour required in the local economy. Namely, $CounterPop_{1881}$ would be smaller than E_{1881} . There are in total nearly one hundred such RSDs in England and Wales. Apart from the aforementioned clusters, many of these RSDs can be found in London. The observed female LFPRs in London do not stand out in the national context, but through comparison with its counterfactual, it is clear that this is not due to the lack of demand for female labour. Rather, it is that existing demand could not absorb the huge influx of female labour supply.

The aforementioned assumption that labour demand, that is firms and capital, did not move to places with greater labour surplus may sound restrictive. But it is probably not far from the reality. Even so, it is worth considering an alternative scenario with the opposite assumption to establish the bounds between a range of possibilities. The results are presented in [Figure 7](#). In this calculation, the counterfactual population size $CounterPop_{1881}$ is constructed in the same way as before. But the observed employment is no longer regarded as the equilibrium level of employment, instead, a counterfactual employment level, $CounterE_{1881}$, is constructed for each RSD as follows. First, the number of in-migrants employed in each RSD, IE_{1881} , is calculated from the CEBs. Second, the number of employed among out-migrants from each RSD, OE_{1881} , is calculated from the CEBs. Then $CounterE_{1881}$ is constructed as $E_{1881} - IE_{1881} + OE_{1881}$. The counterfactual female LFPR is then calculated as $CounterE_{1881}/CounterPop_{1881}$. It is implicitly assumed in this calculation that had women not migrated, they could have found equivalent employment in their birth RSD as they found in their residential RSD. That is to say, there was a mobile market of factors of production with minimal transaction costs. The labour demand from factories and workshops could relocate and respond to labour supply flexibly.

{Insert Figure 7}

[Figure 7](#) shows that, even with this generous assumption, there is still a remarkable similarity between the relative spatial pattern of the counterfactual female LFPRs and that of the observed ones. On the one hand, female LFPR would increase from below 20 percent to below 30 percent in many low-demand RSDs had women not migrated. On the other hand, it would show only a slight decrease in those high-demand RSDs in areas like Lancashire, the West Riding of Yorkshire and Bedfordshire. But neither the increase nor decrease was large enough to change the relative spatial patterns of female LFPRs dramatically. The areas identified as having female industries and high demand for female labour would still have generated the highest levels of female labour force participation across the country.

The similarity between spatial patterns in [Figure 7](#) can be explained as follows. On the one hand, ample demand for female labour in areas like Lancashire led to high LFPRs among both those born locally and in-migrants. Had the migrants never moved in, it would affect both the numerator and denominator proportionately in the LFPR calculation. The counterfactual population would still witness a relatively high level of female labour force participation. On the other hand, because female employment was spatially concentrated, the benefit of a re-distribution of opportunities for female employment from high-demand areas to low-demand areas is dispersed. Hence, a great

number of RSDs which experienced net out-migration would only have witnessed a small increase in female LFPR among their counterfactual populations.

It has been argued throughout this paper that, in a static state, the demand for female labour played the most important role in determining female LFPRs and their spatial patterns. This section places women's employment in a dynamic context. It demonstrates how socioeconomic environments shaped women's migration decisions and how female migration in turn affected the spatial patterns of female labour force participation. It shows that, even with very different assumptions about how labour demand and supply interacted, the spatial pattern of counterfactual female LFPRs would remain similar to those actually observed. The similarity between the observed and counterfactual patterns again highlights the overwhelmingly important role of labour demand for female labour force participation.

V

The individual level information contained in the CEBs help delineate the interaction between labour demand and supply that affected female LFPRs in nineteenth-century England and Wales. The spatial patterns of female LFPRs show an unmistakable link between the demand for female labour and female LFPRs. Higher levels of female labour force participation were to be found in areas with industries that generated greater demand for female labour. Supply-side conditions such as life stage, number of children and other household members' employment had clear effects on female LFPRs as well. However, these effects were limited by the demand-side conditions. Utilising the labour of as many household members as possible, including women, was perhaps always at the top of the agenda for working-class families, even if adult males and children could obtain relatively high wages. But, despite this supply-side incentive, demand-side limitations made regular employment difficult for women in many places. Even taking into account female migration as a supply-side response, the effect of demand on female labour is still clear. In nineteenth-century England and Wales, demand-side factors were more important than supply-side factors in affecting female LFPRs.

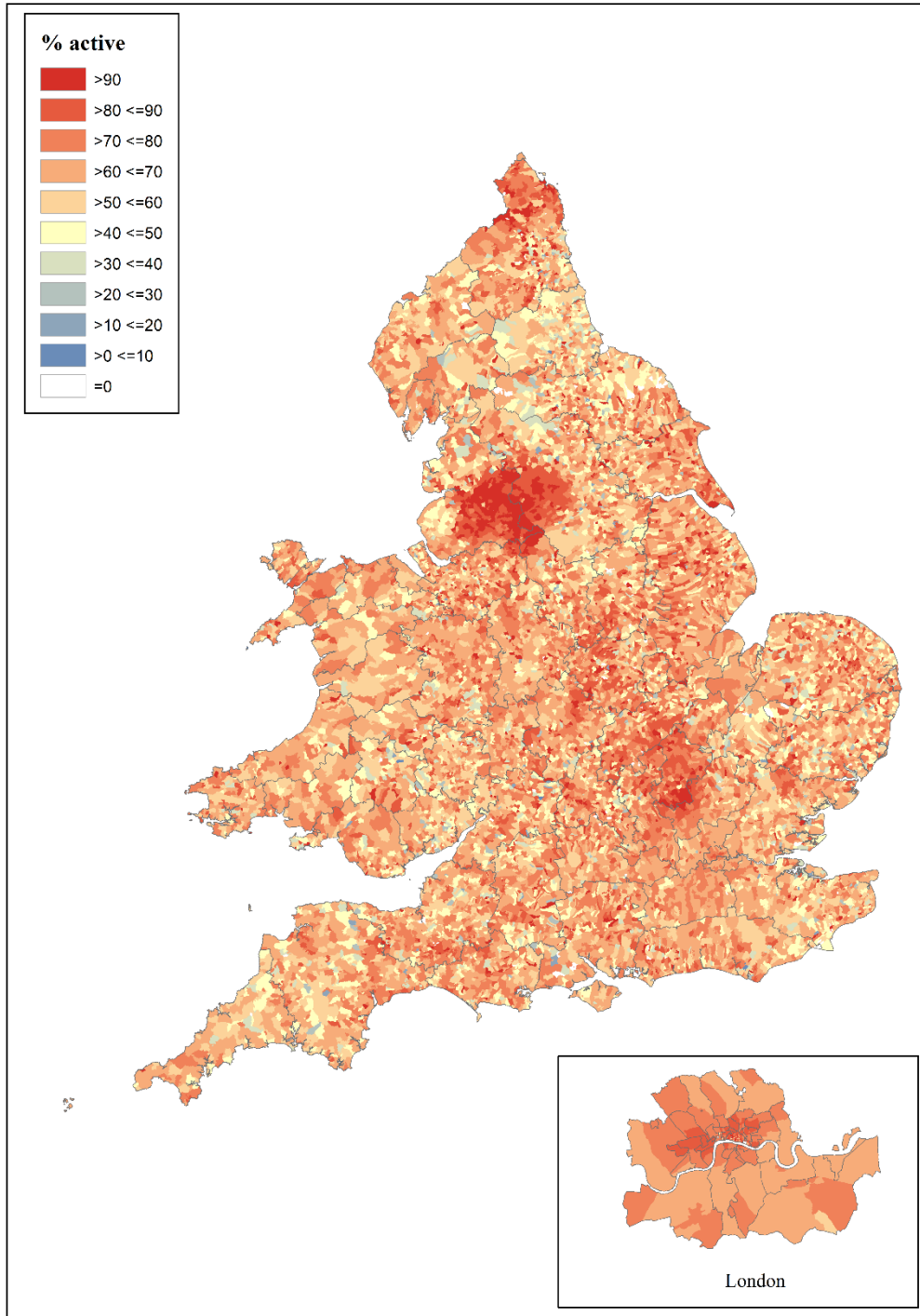


Figure 1. Labour force participation rates of adult single women in England and Wales in 1881

Source: 100 percent sample of 1881 CEBs in England and Wales.

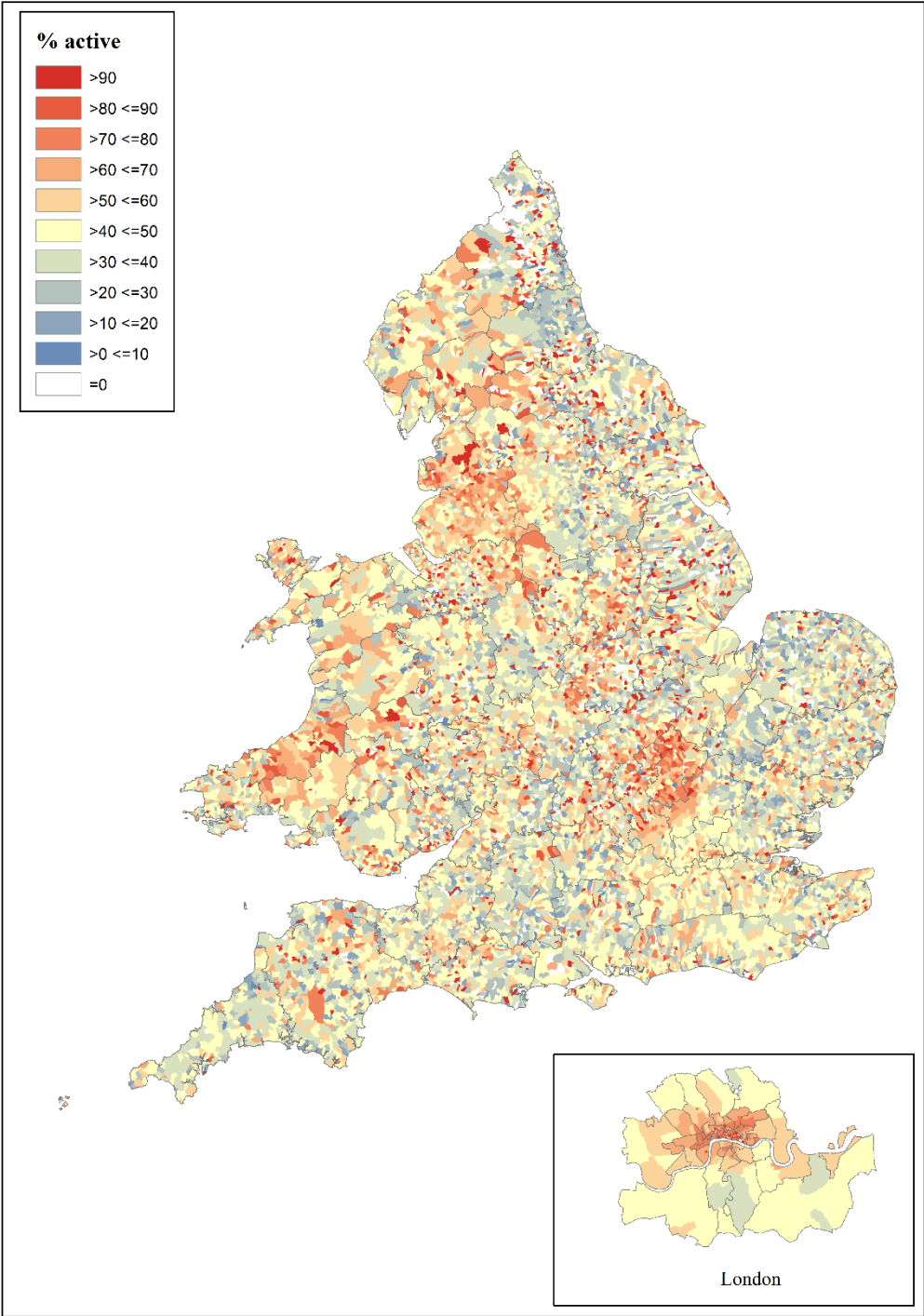


Figure 2. Labour force participation rates of widows in England and Wales in 1881

Source: 100 percent sample of 1881 CEBs in England and Wales.

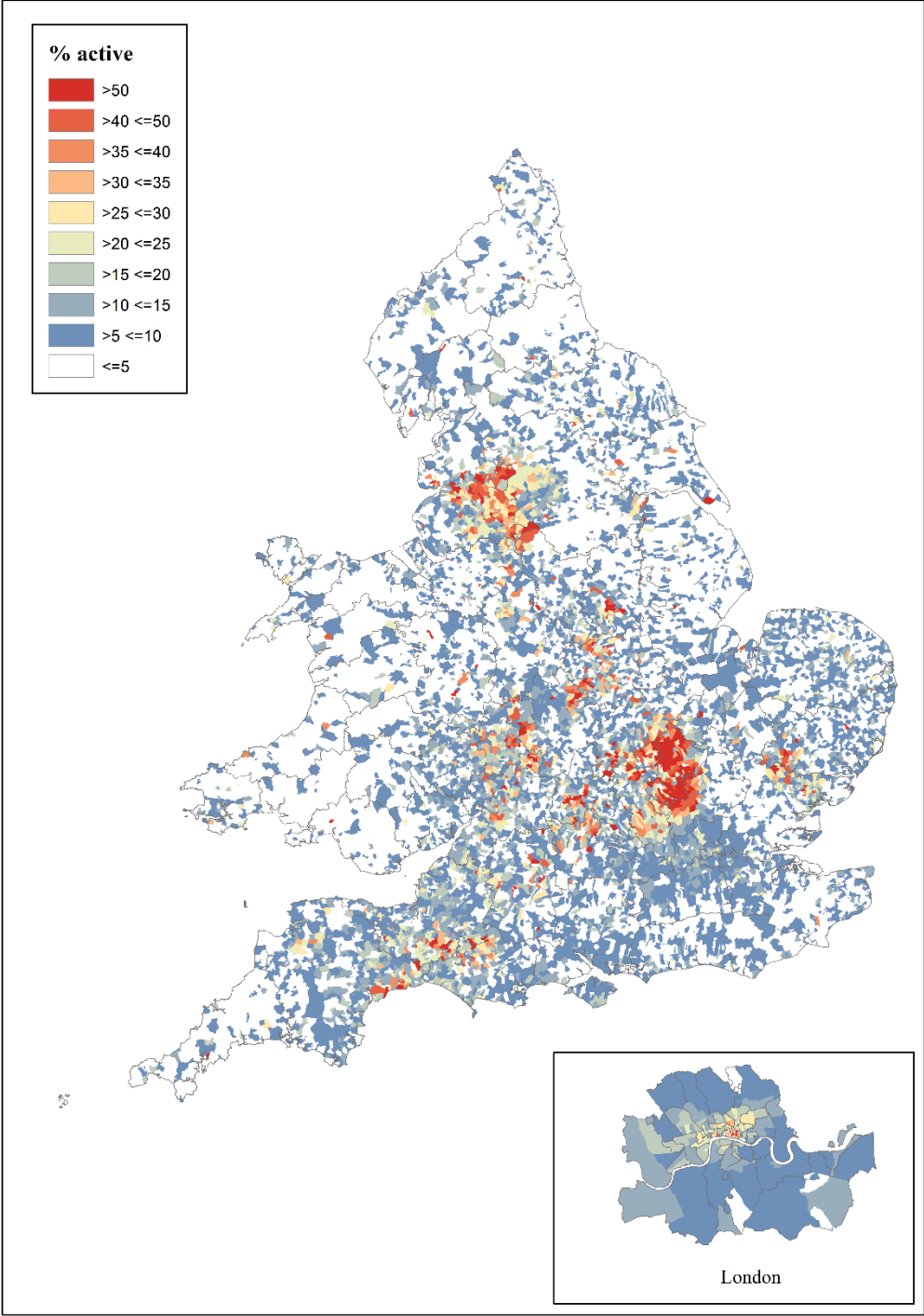


Figure 3. Labour force participation rates of married women in England and Wales in 1881

Source: 100 percent sample of 1881 CEBs in England and Wales

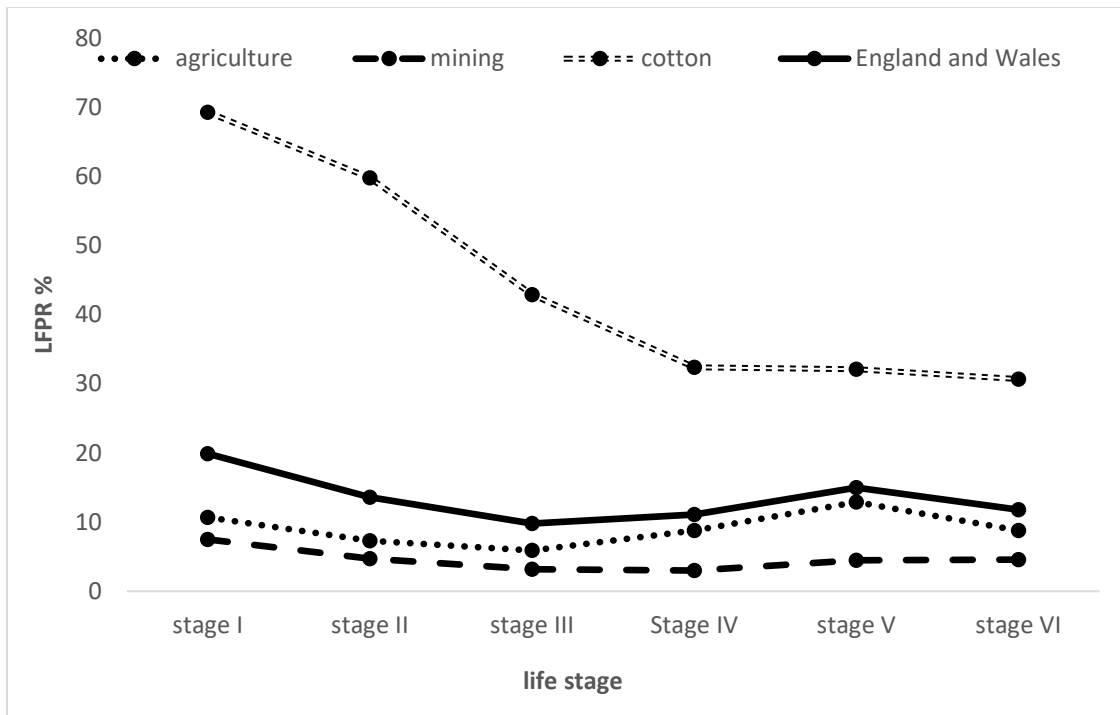


Figure 4. Married women's LFPR by life stage in different areas in England and Wales, 1881

Source: 100 percent sample of 1881 CEBs in England and Wales.



Figure 5. *Female net migration in England and Wales, 1881*

Source: 100 percent sample of 1881 CEBs in England and Wales

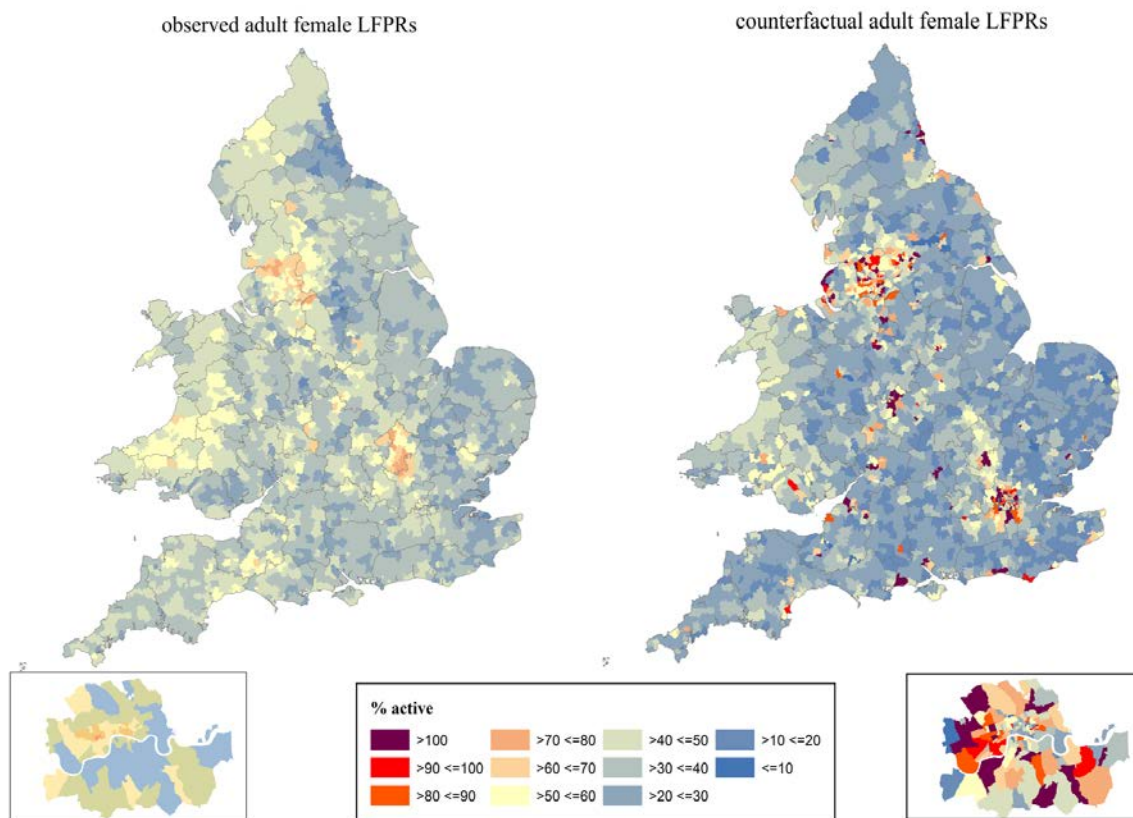


Figure 6. Comparison between the observed and counterfactual female LFPRs in England and Wales, 1881: counterfactual $E_{1881}/CounterPop_{1881}$

Source: 100 percent sample of 1881 CEBs in England and Wales

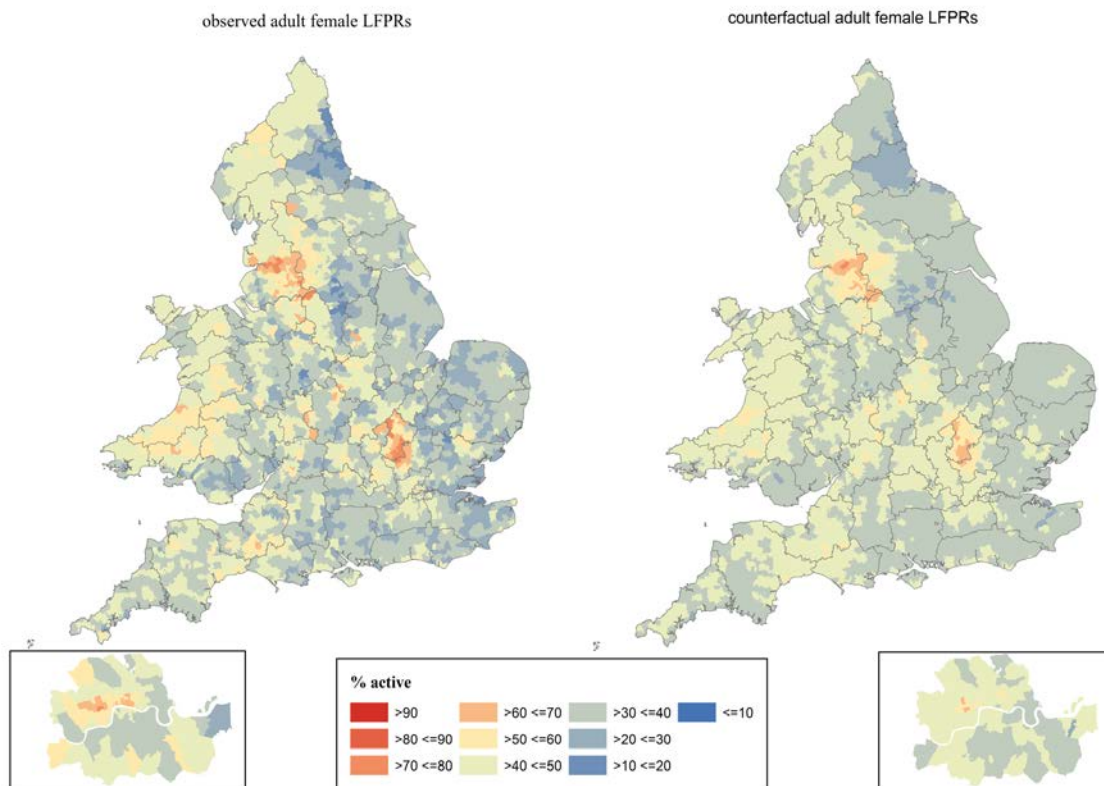


Figure 7. Comparison between the observed and counterfactual female LFPRs in England and Wales, 1881: counterfactual $CounterE_{1881}/CounterPop_{1881}$

Source: 100 percent sample of 1881 CEBs in England and Wales

	No. of parishes	No. of employment	No. of population	% of total employment	% of total population	average No. of obs per parish
below 15 th percentile	2,272	94,891	523,716	3.2	6.9	230.5
above 85 th percentile	2,269	1,262,820	2,322,194	42.3	30.5	1023.4
all	15,124	867,186	1,493,052	100	100	553.8

Table 1. *Concentration of female employment in England and Wales, 1881, all adult women.*

Source: 100 percent sample of 1881 CEBs in England and Wales

	No. of parishes	No. of employment	No. of population	% of total employment	% of total population	average No. of obs per parish
below 15 th percentile	2,264	0	70,986	0	1.7	31.4
above 85 th percentile	2,273	303,467	1,119,210	60	27.4	492.4
all	15,097	237,198	742,393	100	100	270.3

Table 2. *Concentration of married women's employment in England and Wales, 1881*

Source: 100 percent sample of 1881 CEBs in England and Wales

	Stage I	Stage II	Stage III	Stage IV	Stage V	Stage VI
Agriculture	32.5 (59.5)	28.1 (46.0)	15.1 (28.4)	13.6 (22.4)	17.3 (14.7)	16.6 (19.0)
Mining	73.1 (87.8)	64.9 (87.6)	48.0 (70.7)	35.9 (52.3)	31.4 (45.1)	34.0 (42.6)
Textiles	85.0 (89.4)	74.2 (89.8)	57.7 (80.6)	40.9 (64.8)	40.6 (59.1)	43.5 (57.5)
Iron and steel	72.1 (82.4)	58.5 (87.6)	42.4 (68.2)	31.9 (58.8)	31.3 (47.1)	32.4 (43.1)
Machine making	70.2 (79.3)	53.7 (79.9)	41.3 (56.4)	25.0 (44.8)	28.7 (39.6)	31.9 (37.4)
Building and construction	66.9 (73.7)	49.0 (80.9)	37.2 (63.8)	27.6 (44.2)	27.2 (39.7)	28.1 (36.7)
Professional services	33.0 (53.2)	28.3 (47.4)	19.9 (32.4)	20.3 (22.6)	22.9 (19.6)	18.4 (7.2)
Transport	67.2 (79.0)	50.5 (76.5)	40.6 (61.7)	26.5 (49.0)	29.2 (36.8)	28.5 (25.8)

Table 3. *Married women's LFPR by life stage and husband's occupation in cotton area, 1881*

Note: Figures in bracket are cotton's share of married women's total employment in the corresponding life stage by husband's occupation.

Source: 100 percent sample of 1881 CEBs in England and Wales.

	Stage I	Stage II	Stage III	Stage IV	Stage V	Stage VI
Agriculture	8.3	3.6	2.6	2.4	4.3	4.4
Mining	6.7	4.1	2.7	2.5	3.3	3.5
Textiles	53.6	31.7	25.3	22.4	30.9	28.1
Iron and steel	8.7	3.9	3.4	1.7	4.2	3.0
Machine making	10.7	7.5	3.2	2.8	5.6	4.2
Building and construction	6.3	7.9	4.4	3.8	5.4	3.5
Professional services	8.1	8.7	5.9	7.9	7.6	6.2
Transport	6.8	3.4	3.8	4.1	5.7	3.7

Table 4. *Married women's LFPR by life stage and husband's occupation in mining area, 1881*

Source: 100 percent sample of 1881 CEBs in England and Wales.

	England and Wales %	textile regions %	mining regions %
15 - 25	94.1	95.7	95.2
25 - 35	92.0	94.5	93.4
35 - 45	90.2	92.4	91.4
45 - 55	90.2	92.6	91.1
55 - 65	91.0	93.6	91.7
65 - 75	92.0	94.6	92.5
75up	92.3	94.3	91.9

Table 5. Proportion of women who can be linked to a specific birth RSD by age and residential area in England and Wales, 1881

Source: 100 percent sample of 1881 CEBs in England and Wales