Labour frictions in the turbulent twenties in Britain; *A story of industrial reshuffling and regional divergence*

Abstract

This article examines the labour frictions in the 1920s in Britain, which are quantified using a matching function framework and estimating the matching efficiency for the period 1920-1934.

In the 1920s, the British labour market witnessed a major industrial reshuffling as a consequence of the adoption of mass consumption and the decline of international trade which led to significant employment decline in those industries oriented to exports and opened a lot of job vacancies in those oriented to the domestic market. As the inter-industrial mobility is not automatic, this huge industrial composition change had a profound impact on the degree of labour frictions.

The econometric results show that matching efficiency had very different periods in the 1920s. Between 1921 and 1925, there were significant improvements in the matching efficiency. This is explained by the development of the modern retail industry which was able to absorb a large share of the low-skilled unemployed. However, in the middle of the decade a structural break which led to a significant decline in the matching efficiency was observed. This fact is associated with the increase in the regional labour market dispersion. Unlike the first half of decade, after April 1925, the unemployed were concentrated in the Northern districts, Scotland and Wales while job vacancies were observed mainly in the South and the Midlands. This increased the distance between the two sides of the labour market. The core of this process was the decay of the coal mining industry.

Keywords: labour frictions, unemployed, Interwar Britain

JEL codes: J63, J64, N14, N34

1. Introduction

Unemployment was high and persistent in Britain in the twenties, unlike other industrialised countries at the time such as the United States or France, which experienced *The Roaring Twenties* and *Les Année Folles* respectively. This situation was very particular due to the fact that the income per capita experienced significant growth. Considering this situation, several observers sustain that unemployment in interwar Britain was determined by reasons beyond the variation in the aggregate demand such as labour frictions (Booth and Glynn, 1975) (Benjamin and Kochin, 1979) (Echengreen, 1988) (Hatton and Thomas, 2012). However, the actual degree of labour frictions has not yet been estimated, and the literature has focused on only one side of the labour market hitherto.

Labour frictions are the transaction costs between the two sides of the labour market; unemployment and vacancies. These prevent the full employment even when an economy is expanding at full capacity. Some examples of labour frictions are the skill or location mismatch between unemployed and vacancies, or the regulation which increases the transaction costs in the labour market. This article estimates the degree of labour frictions through the matching efficiency of the matching function, which could be defined as technology at what new matches (new labour relationships between unemployed and vacancies) are made.

At the beginning of the 1920s, Britain experienced important institutional changes in the labour market such as the implementation of the Unemployment Insurance and the strengthening of the board of trades, which some authors link with a higher degree of labour rigidities in the interwar period (Benjamin and Kochin, 1979) (Hatton and Thomas, 2012). According to this view, these regulatory changes increased wage

rigidity, moving wages to a level greater than equilibrium wages, inducing a decline in employment. However, institutional changes once implemented early in the 1920s remained essentially constant for the rest of the interwar period, which is why they can explain the labour frictions relative to the time before 1914 but not the fluctuations within the period, which were significant as shown in this article.

On the other hand, Britain in the 1920s experienced a significant industrial reshuffling as a consequence of the incorporation of mass consumption and a change in the international economic environment. During this decade those industries oriented to exports, mainly the great staple trades (coal mining, textiles, iron and steel, shipbuilding and engineering) suffered a significant decline as a consequence of the reduction of international trade, which led to the unemployment of many workers who used to work in these industries. At the same time, the arrival of mass consumption increased the job vacancies in the services sector, especially in the distributive trades which experienced outstanding expansion in this period.

As inter-industrial mobility is not automatic, industrial reshuffling potentially had a negative effect on the labour frictions, although this depends on the characteristics of the unemployed and vacancies and their distance regarding skills and location. For example, if the newly unemployed are in the same area as the job vacancies, labour frictions are expected to be lower than in cases where the two sides of the labour market are in different locations.

This article examines the influence of this industrial reshuffling on labour frictions in the British twenties. The most significant result is the fact that matching efficiency had two very different periods. The first was from 1921 to 1925 when there were significant improvements in matching efficiency. This fact is explained by the development of the

modern retail industry, which had a lot of job vacancies available to low-skill workers in the whole country, although its presence was more intense in the South. Many of these new employed used to work in engineering, iron-founding and metal trades industries which were successful in the inter-industrial mobility process.

In the middle of the 1920s, there was a structural break in the matching efficiency. After April 1925, when the Gold Standard was restored, there was a significant deterioration of the matching efficiency associated with the decline of the coal mining and to a lesser extent of the textile industry. Unlike the case in the first part of the decade, now the unemployed and vacancies were located in different regions, since the high geographical concentration of the coal mining and textile industries in Northern districts, Scotland and Wales contrast with the continuity in the prosperity of the South, Midlands and London. The regional divergence in the labour markets was the main reason behind the structural break of the matching efficiency.

This article is organised in five sections in addition to the introduction. Section 2 presents a literature review of the matching efficiency and interwar unemployment. Section 3 shows the historical context of the British labour market in the 1920s. Section 4 presents the theoretical framework, the econometric estimation of the matching efficiency and a set of structural break tests. Section 5 examines the drivers of the matching efficiency. Finally, Section 5 presents some conclusions.

To the best of my knowledge this paper is the first to estimate the matching function and the matching efficiency in interwar Britain.

2. Literature review

2.1 Matching efficiency literature

The literature about the matching efficiency is extensive, although most of it focuses on analysing the Great Recession of 2008-2009 (Hall and Schulhofer-Wohl, 2013) (Şahin, Song, Topa, and Violante, 2014). The use of the matching efficiency has become an essential aspect of labour economics with the emergence of search and matching literature developed by Diamond, Mortensen and Pissarides. This approach lays in the existence of labour frictions (mismatch between the unemployed and firms), which lead to the existence of unemployment even in the presence of a competitive market-clearing wages (Pissarides, 2000). Within this literature, the matching function is a fundamental part. This function can be defined as a production function where unemployed and vacancies are the inputs and the matches (new labour relationships are the outcome). In this context, the matching efficiency is technology in which these new matches produces. In other words, the matching efficiency is a measure of the labour frictions, which could make it easier or more difficult to establish the match between the unemployed and firms.

There are several potential drivers of the matching efficiency such as: unemployment duration (Baker, 1992) or mismatch between unemployed and vacancies in skills, location or industry (Lilien, 1982) (Attanasio, O. P., & Schioppa, 1991) (Layard, Nickell and Jackman, 2005). One of the most completed frameworks about the determinants of the matching efficiency was carried out by Barichon and Figura (2015). These authors split the determinants of matching efficiency into two kind of factors: heterogeneity across workers and segments' dispersion. The former measures how the unemployed individual's personal characteristics (such as age, gender, education

or duration in unemployment) affect the matching efficiency. Due to the labour force, members' heterogeneity (a worker's personal characteristics determine their job-finding rate[1]), the composition of the unemployment pool is an essential determinant of the matching efficiency. For example, if the unemployed pool is composed to a large extent by low-skill workers and these workers have a lower job-finding rate, the matching efficiency will be lower than in cases where the unemployed pool is more balanced with a larger share of high-skilled unemployed.

Diamond and Sahin (2015) found that matching efficiency declined in almost all economic crises in the United States since the 1950s, as was indeed the case in the last Great Recession. A plausible explanation for this lower matching efficiency during a crisis recovery is the presence of long-term unemployed. Assuming that these workers have a lower job-finding rate, they will cause a decline of the matching efficiency since they become overrepresented within the unemployed pool during the recovery. In this context, the larger the crisis, the larger the share of the long-term unemployed and the greater the decline in the matching efficiency.

The second driver of the matching efficiency in Barichon and Figura's (2015) theoretical framework is segments' dispersion. This refers to the friction between the unemployed and the firm caused by geographical and skill mismatch. Economic crises affect some sectors more than others, which is why some workers in certain segments (an industry in a specific location) will have a job-finding rate higher or lower than others. The economic shocks increase the variance between job-finding rates, which is why Barichon and Figura (2015) refer to this as the segments' dispersion factor.

[1] The rate at what an unemployed find a job

The main constraint of the matching efficiency literature is that in most the cases it focuses exclusively on the Great Recession of 2008-2009. This is because after 2000 more detailed information about vacancies in the United States were recorded. This is also due to the significant decline of the matching efficiency in the recovery of the Great Recession (also observed in the upward shift in the Beveridge curve[2] for this period), which could be interpreted as a change in the nature of labour frictions and unemployment. However, as Diamond and Sahin (2015) assert, the decline in the matching efficiency is common after all economic crises in American history since the 1950s with the notable exception of the 2001 crisis. However, Diamond and Sahin (2015) do not provide an explanation for the variations in the matching efficiency.

Barichon and Figura (2015) estimate the drivers of the matching efficiency in the United States during the period between 1976 and 2014 using the decomposition between heterogeneity across workers and segments' dispersion factor. The authors find that the former by far dominated (especially the permanently laid-off and long-term unemployment) the movements in the matching efficiency until 2006, when segments' dispersion started to become more important (accounting for 60% of the matching efficiency variance). This latter aspect is due to the divergence in economic performance in the United States, characterised by the good performance of the services sector and the bad performance of the industry in regions such as the Mid-West. The exceptionality of the period after 2006 in the American labour market is relevant to understanding the nature of the labour frictions and it is one of the motivations behind comparing how the labour market operated in other turbulent economic times, such as during the interwar period.

[2] The Beveridge curve is graphical representation of the relationship between the unemployment rate and the vacancy rate.

There are several papers on the matching efficiency during the Great Recession 2008-2009 in Britain with similar results to those of the United States. Patterson, Sahin, Topa, Violante (2016), found evidence of a significant decline in the matching efficiency after the Great Recession. They also sustain that occupational mismatch accounted for between 0.25% and 0.33% of the rise in unemployment since 2007. In addition, Patterson *et al* conclude that the occupational mismatch is higher between skilled occupations. In a similar paper, Smith (2012) estimates that around half of the unemployment observed in Britain after the Great Recession was due to occupational and geographical mismatch.

Structural unemployment was also a popular topic in labour literature in the 1980s in Britain due to a large extent on the high unemployment rates observed in that decade. Jackman, Layard and Pissarides (1989), analyse the shift in the Beveridge curve for the period 1959-1987. The authors find a significant decline in the *efficiency of job search*, a concept analogous to the matching efficiency. This fact, according to the authors, is linked with social security benefits and long-term unemployment. The increase in the rise of the flexibility of the public administration to entail the unemployment benefits led to a decline of the *efficiency of job search* (in other words, a significant decline of the matching efficiency) which ultimately increased the structural unemployment. This perspective was supported by most of the literature at the time, which also emphasised the role of trade unions (Jackman and Roper, 1987) and reduced wage flexibility to adapt to the business cycle.

2.2 Literature review about unemployment in the interwar period

The economic history literature has linked the labour frictions to the high and persistent unemployment in interwar Britain, although its actual influence has not been directly estimated. One of the most complete works about this topic was carried out by Hatton and Thomas (2012), who studied the impact of the regulatory change on the structural unemployment in a comparison between the United States and the United Kingdom. According to the authors, the several regulatory changes introduced in the United Kingdom early in the 1920s, such as Unemployment Insurance (1920) or The Trade Boards Act (1918), raised the degree of labour frictions and prevented the economy from returning to a level of full employment as was observed before the First World War. Due to these elements being absent in the case of the United States in the 1920s, the labour market was able to recover to the pre-war levels. Nevertheless, the new regulations which were introduced with the New Deal in the 1930s increased the rigidity of the American labour market and this was an essential factor in the high unemployment experienced in this decade. In the United Kingdom as well as the United States, the rise in the rigidity of the labour market introduced during the 1920s and 1930s, prevented a full recovery from the 1921 crisis and the Great Depression, respectively.

One of the first papers in this line was conducted by Benjamin and Kochin (1979). According to the authors, the high unemployment in interwar Britain is explained by unemployment benefits' generosity. They sustain that unemployment benefits reduced the efforts of the unemployed to search for a job. Benjamin and Kochin (1979) support to a great extent their hypothesis in the fact that unemployment incidence was lower in women and juveniles workers, who also had a lower benefit than adult male unemployed. However, this could be explained by the fact that depressed industries

such as coal mining were intensive in male workers. On the other hand, women participation in the labour market is significantly pro-cyclical, what means that many of them leave the labour force in an adverse context.

In addition, Benjamin and Kochin (1979) do not consider heterogeneity across workers. The fact that unemployment condition is determined, up to some point, by unemployed' personal characteristics rather than gender and age such as occupation or location. The interwar unemployment incidence was characterised by large differences between occupations, industries and regions Hatton (1988).

In Benjamin and Kochin (1979) hypothesis more important than specification problems, is the fact that most of regulatory changes once introduced at the beginning of the period remained essentially constant for the rest of interwar period, except for some modifications in the size of unemployment benefits early in the 1930s. Considering this fact, it is likely that regulatory or institutional changes explain the change of the labour frictions relative to the time before 1914, but no the fluctuations within the interwar period, at least in the 1920s. For this reason is important to explore other potential drivers of the matching efficiency such as skill or geographical mismatch, which was noted by several observed (Eichengreen, 1988) (Booth and Glynn, 1975), but not directly quantified.

Interwar Britain was characterized by a significant reshuffling in the industrial composition, what had a deep effect on the labour market. A relevant study concerning structural unemployment in the very long run was made by Hatton (2007). In his paper, the author evaluated the impact of variations in productivity on the non-accelerating inflation rate of unemployment-NAIRU or the natural rate of unemployment in the period 1871-1999. The outcome of this study indicates that the changes in productivity

had only a very moderate impact on the natural rate of unemployment, what means that natural unemployment was moved by other factors.

In the same article, Hatton (2007) uses an index of short-run structural change as a control variable. This indicator aims to capture the importance of variation in the relative importance of difference industries assuming a no perfect inter-industrial mobility of the labour force. This indicator shows a significant variation during the interwar period, which is explained by reshuffling in the industrial composition, which will be shown in depth in section II.

The importance of skill mismatch generated by industrial reshuffling was noted Eichengreen (1988). The 1921 crisis led to a decline of the great five staple industries (coal mining, cotton, shipbuilding, mechanical engineering and iron) and the emergence of light engineering and services sector in the South. This fact led to a reduction in the share of depressed industries within the unemployment pool, and due to migration to other industries is not automatic, this fact contributed to the high and persistent unemployment rate in the 1920s.

Eichengreen (1988) also identified the regional divergence as a source of labour frictions. As it will be discussed in depth in Section 3, unemployment was concentrated in Northern districts, Scotland and Wales. This fact was studied in more detail by Booth and Glynn (1975), which consider that unemployment was primarily a regional problem. According to the authors, the depressed areas influence the regional economies through the linkages effect what ultimately led to a decline in the whole regional economic activity. As it is presented in Section 5, the regional dispersion was the main determinant of the matching efficiency in the second half of the 1920s, although the reasons for the low internal immigration are still not well established.

To the best of my knowledge, the only study that directly addresses the matching efficiency for the interwar period was carried out by Lee (2016), who estimates the matching function of the United States for the period 1924-1932. Using city-month level data about unemployed, vacancies and hires, the author does not find evidence of matching efficiency deterioration with the Great Depression of 1929, at least in its early phase. This is a significant difference with the situation experienced by most developed economies in the Great Recession of 2008-2009 and evidenced by Diamond and Sahin (2015) also for the United States for the period 1950-2014. However, it must be pointed out that matching efficiency declines are mainly observed during the recovery from economic crises, when the effect of the long-term unemployed starts to be registered. Since Lee (2016) stops his estimation in 1932, it is reasonable to expect a decline in the matching efficiency in the latter part of the 1930s.

On the other hand, Lee (2016) estimates that the elasticity of the unemployed over the number of matches is 0.1. This estimation means that the matching function largely depends on the number of vacancies in the case of the United States. This indicates that the high unemployment during the Great Depression was a consequence of the adverse business cycle rather than a worsening in the labour frictions. The elasticity of the unemployed over the number of matches is estimated for the period 1920-1934 in this article as 0.356. This supports the perspective of Thomas and Hatton (2012) concerning the higher degree of labour frictions in Britain as opposed to the United States in the 1920s.

3. Historical context

Significant economic changes took place in the 1920s which deeply impacted the labour market and determined the fluctuation of the labour matching efficiency in this period. Two of the most relevant dynamics in this period were the adoption of important technological innovations and significant changes in the international economic environment. Concerning the former, it is important to mention that during the 1920s the implementation of mass production, and electricity in some industries, which had gradually begun before 1914, accelerated and increased productivity in some sectors (such as motor construction or processed food) and boosted the development of others (such as distributive trades). As it will be shown in Section 5, the development of modern retail industry was the main driver of the positive performance of the matching efficiency in the first half of the 1920s.

On the other hand, the 1920s presented a different international economic situation, which had adverse implications for British strategic sectors. The emergence of protectionism in international trade and the industrialisation of countries such as the United States and Japan affected industries which were at the core of economic prosperity during the Victorian and Edwardian eras such as coal mining, textiles or shipbuilding. In regards to textiles, Japan emerged as a large supplier to the Asian markets (Bowden and Higgins, 2004). The British coal industry was also affected by the exploitation of competitive fields in the United States and Germany, as well as economies in the use of coal (Supple, 1992). The bad structural performance of these industries was aggravated by the restoration of the Gold Standard in April of 1925 which increased the cost of British exports, leading to an economic downturn which even led to a structural change of the matching efficiency. The Gold Standard restoration was the starting of a phase of sustained decline in the matching efficiency

for the all second half of the 1920s. The main reason for the increase in the degree of the labour frictions would be the coal mining industry, due to unemployed in this industry not being able to migrate to other industries in a large scale.

The implementation of new technologies and the adverse international economic environment deeply impacted labour frictions, since it increased the dispersion in the job-finding rates. Those workers in segments (an industry in a specific location) with good performances would had a high job-finding rate while these segments facing a negative perspective would had low job-finding rate. Due to workers' skills and location being specific, the final effect of the technological changes and changes in economic conditions on the labour frictions was dependent on the ability of the workforce to migrate from segments with a low job-finding rate towards those with a high job-finding rate. To increase the matching efficiency, segments with job vacancies need a *permeability* condition (Barnichon and Figura, 2015). This condition could be defined as a segment ability to hire unemployed independently of their skills or location. The higher the *permeability* in segments with job opportunities, the higher the matching efficiency.

In the case of Britain, the trend of labour frictions in the 1920s was mixed. The first half of the 1920s experienced a significant improvement in the matching efficiency due to the capacity of the industries with a high job-finding rate, particularly the distributive trades, to absorb a significant share of the workforce. Nevertheless, this process slowed and stopped in 1925 when the matching efficiency shows a structural break from the long-term trend for the interwar period.

The deterioration in the matching efficiency had a very marked geographical pattern. The industries which received the negative impact of the new economic conditions

were located mainly in the North, Scotland and Wales, while those with positive perspectives were in the South and to a less extent in the Midlands. The story of the labour frictions in Britain in the 1920s is the story of how the workforce adapted from the decline of traditional industries in the North and outer Britain and moved, or not, to the emergent industries in the South.

3.1 Geographical and industrial differences in unemployment

The unemployment series in Britain in the 1920s is well known. Graph 1 shows the unemployment rate between 1920 and 1929 for the whole workforce and the population covered by the Unemployment Insurance scheme. It can be observed that the unemployment rate started at a very small base in 1920, increased after the 1921 crisis and gradually reduced to its minimum level in 1927.

There were significant regional differences in unemployment rates in Britain during the 1920s. In most cases trends were observed for the whole decade. Table 1 shows the unemployment rates for the month of July for the insured population for the nine geographic districts used by the Ministry of Labour. Table 1 is split into two periods: 1923-1927 and 1926-1929. The difference between those two periods is that the latter accounted for the insured population between the ages of 18 and 64 years old, while the latter accounted for all individuals older than 16.

It can be observed that London and the others two Southern districts registered a significantly lower unemployment rate than the national average. In the case of London, the unemployment rate declined consistently during the whole decade and likely reached the natural unemployment rate in 1929 just before the Great Depression. This is largely due to the firm development of the service sector. On the other hand, the Northern- East, Scotland and Wales, which already had a high

unemployment rate in 1923, increased their difference in relation to the national average in 1925. It was in this last year that acceleration in the divergence between British regions began and continued for the rest of the decade and the whole interwar period. The variance between regional unemployment rates shows a sharp increase in 1925, which remained at least until 1929.

The worsening of employment conditions in the outer regions was largely associated with the decline of the coal mining industry. The unemployment rate in the Northern-East, the core of coal mining industry, increased from 9.4% in July of 1924 to 15.5% in July of 1925 and continued growing up to 19.4% in July of 1926. Despite some improvements since 1927, the unemployment rate never returned to a single digit level in the rest of the decade. Nevertheless, a worse situation was experienced in Wales, another coal mining region. In this district, unemployment escalated from 6.5% in July of 1924 to 21% in July of 1926.

Geographical differences were the outcome of industrial locations and spatial agglomerations. The industries negatively affected by the new economic conditions of the 1920s were concentrated in the North (especially in the North-East), Scotland and Wales, while the industries able to take advantage of the new conditions were in the South and to a lesser extent in the Midlands.

Table 2 presents the unemployment rates for the main twenty-four industries for the month of July between 1921 and 1929. At the beginning of the period, shipbuilding and glass industries had the highest unemployment rates with 32.8% and 31%, respectively. Those sectors were significantly affected by the 1921 crisis and maintained high unemployment rates for the rest of decade. On the other hand, services sector (for example, commercial, insurance and banking and professional

services) had very low unemployment rates, probably very near to the full employment level for the most of the 1920s.

Nevertheless, the industries mentioned above accounted for a small share of the insured population. Table 3 shows the breakdown of the unemployed insured population with the share of the four top industries by the number of unemployed. It can be observed that in 1921 four industries, engineering, iron-founding and metal trades, textile trades, construction and transport accounted for 55.7% of the unemployed. This fact is associated evidently with the size of the industry but also with the adverse impact of the crisis in those industries largely dependent on the external market.

In the case of engineering, iron-founding and metal trades this was due to the capacity of the workers to adapt to the adverse economic situation. Starting at a high level of unemployment (25.4% in July of 1921), many workers in these industries successfully migrated to other industries with better prospects. In 1921, the engineering, iron-founding and metal trades industry workers accounted for 17.2% of the insured population, but in July of 1925 this percentage decreased to 13.8%. More than 451,000 workers were able to move to other sectors or to leave the labour force, which surely had a positive impact on the improvements in the matching efficiency in these years.

In addition, the improvements in the matching efficiency in the first half of the 1920s were also due to the development of the retail industry. In the 1920s, Britain, like most of the industrialised countries at the time, experienced a revolution in the distributive trades industry. The implementation of mass production technology in the economy required the development of a more sophisticated distribution channel in order to reach

a wider consumer base. In this context, the British retail industry developed outstandingly in the 1920s which had profound consequences on the labour market. In July of 1921, the distributive trades employed 7.9% of the insured population. Nevertheless, in July of 1929, this share increased up to 13.9% becoming the largest industry in regards to the number of employees, overtaking the engineering, iron-founding and metal trades, mining and textile industries in July of 1925 which were Britain's leading employers hitherto. In fact, it was in the first half of the 1920s when the distributive trade industry had its largest expansion and it was able to incorporate around 490,000 new workers in its workforce.

In general terms, the first half of the 1920s was characterised by a relatively high inter-industrial mobility which coincided with significant improvements in the matching efficiency. This situation ended in 1925 when a structural change occurred leading to a significant decline in the matching efficiency. The contrast between the first and the second part of the decade is essential in understanding the nature of labour frictions in interwar Britain. Unlike the relatively high industrial mobility between 1921 and 1925, high rates of unemployment arose in large industries in the second half of the 1920s without a subsequent migration to sectors with better perspectives. This situation led to an increase in the structural unemployment and the core of this process was the mining sector and to a significantly less extent, the textile industries. These two sectors were likely negatively affected by the restoration of the Gold Standard in April of 1925, but despite their bad performances, a significant share of their workers did not move to other industries.

In 1921, the mining sector was in a relatively good position with an unemployment rate of 9.7%, lower than the national average (14.8%). However, in July 1925 and 1928 the mining unemployment rate reached 14.3% and 26.8% respectively, leading to a

reshuffling of the composition of the unemployed pool. The share of unemployed coming from mining increased from 6.7% in July 1921 to 15% and 24.6% in July 1925 and 1928, respectively. This situation indicates that the structural unemployment problem in interwar Britain started with the bad performance of the mining sector. The intensity of the General Strike in May 1926 and coal stoppage for most of the year are indicative of the relevance of the mining industry for the labour market in the 1920s.

The case of the textile industry is also significant, although less dramatic than the mining industry. In July of 1921, the textile industry was the main employer[3] in Britain accounting for 10.4% of the insured workforce with an unemployment rate slightly lower than the national average (13.4% versus 14.8%). This situation remained relatively stable up until July of 1926 when the unemployment rate rose up to 25.4% in this industry. Despite a notable improvement in July of 1927, the unemployment rate in this industry remained over the national average in 1928 and 1929. The worsening in the employment conditions in this industry did not lead to a significant migration of workers toward other industries. The textile trades accounted for around 11% of the insured workforce in the 1920s, without any major change after July of 1926.

3.2 Heterogeneity across workers

Possible factors in the matching efficiency are the personal characteristics of the labour force (such as age, gender, socio-economic background), unemployment duration and whether the worker was temporary stopped or wholly unemployed. The latter is usually the primary driver of the matching efficiency during the economic crisis. As explained in Section 2, usually during economic downturns, the share of the long-term unemployed increase. Due to long-term unemployed have a lower job-finding

[3] Excluding engineering, iron-founding and metal trades, which actually aggregate three industry

rate than the average of the workforce and their overrepresentation at the unemployed pool leads to a decrease in the matching efficiency (Barnichon and Figura, 2015).

Unfortunately, there are no records on unemployment duration in Britain during the 1920s. These only started to be registered in the 1930s as a consequence of the massive rise in unemployment during the Great Depression. However, According to Craft (1987 p. 420) in the 1920s long-term unemployed was probably less than 10% in the 1920s, but it rose to more than 25% in 1936, which is why it was probably an important driver of the matching efficiency after the Great Depression but no in the 1920s.

Since 1926 the Ministry of Labour categorised the unemployed between wholly unemployed and temporarily stopped. The latter remained linked with their firms but were asked not to work as a result of the temporary negative performance of an industry. Nevertheless, once the economic conditions improved the workers returned to their positions. This arrangement was common in industries with a high sensitivity to the business cycle such as mining.

It is plausible to consider that the rise in the share of the wholly unemployed led to an increase in the labour frictions if it is assumed that these kinds of workers had a lower job finding rate than the temporarily stopped ones. Nevertheless, the register which split the unemployed pool between wholly unemployed and temporarily stopped only started in 1926 and it is not possible to evaluate the impact of this variable for the whole of the decade. Table 4 presents the actual number and share of the wholly unemployed and the temporarily stopped for the month of July between 1926 and 1929. It can be observed that the proportion of those temporarily stopped started at a very high level in 1926 but declined in 1929. The relative improvement of the

employment conditions during the decade made that many of these workers returned to work.

Between workers' personal characteristics, the most important potential driver of the matching efficiency was the gender composition of the labour force. If there are a difference in the job-finding rate by gender, the share of female unemployed could be a determinant of the matching efficiency. It is widely documented Benjamin and Kochin (1979) (Thomas, 1988) that the incidence of unemployment in the interwar period was larger among male than female workers. The reason for this situation could be that industries which were negatively affected by the economic cycle (such as mining) employed a large proportion of male workers. On the other hand, women participation in the labour force is largely pro-cyclical, which is why variations in the matching efficiency can be observed if women have a different job-finding rate the men.

Graph 2 shows the share of the female workers in relation to the total insured population for the month of July for the period between 1921 and 1929. It can be observed that the average share of women in the insured workforce for this period was 27.1%, which remained very stable. The great incorporation of women into the British labour market occurred during the First World War and could have had an effect on the matching efficiency for the whole period (relative to the time before 1914). It likely did not influence the variation in the labour frictions in, at least in a decisive way, within the interwar period.

3.3: Institutional changes: Unemployment Insurance and wage rigidities

At the beginning of the interwar period there were significant regulatory changes, which likely increased the degree of labour frictions in Britain. The changes possibly impacted matching efficiency for the whole interwar period rather than its fluctuation

within the period. Once these regulation changes were introduced early in the interwar period, they remained stable for the 1920s and 1930s, which is why they were likely not the source of variations in the matching efficiency in this period.

One of the major changes in the interwar period was the implementation of the Unemployment Insurance scheme in the 1920s, which replaced the National Insurance Act of 1911. The new system expanded weekly payment from 15 to 39 weeks for unemployed insured workers (Garside, 1990 pp 36-43) as well as increased the number of industries and workers covered. The coverage of Unemployment Insurance was approximately 66% of the labour force (Thomas, 1988, p 99) which remained very stable for the whole interwar period. Some sectors, such as agriculture or domestic service, were excluded from Unemployment Insurance because they were not considered sensitive to the business-cycle (Thomas, 1988 p 99).

Another relevant regulatory change to consider during the interwar period was a potential increase of wage rigidity as a consequence of a higher membership in trade unions and the establishment of minimum wages by the Boards of Trade. The Trade Boards Acts of 1918 expanded the coverage of the Trade Boards Act of 1909. According to Hatton and Thomas (2012) in trades and occupations without proper structure, the board trades acted to fix a minimum wage, which is plausible to assume a higher degree of wage rigidity in the interwar period relative to the age before 1914, when the power of the Boards of trade was more limited. Nevertheless, as in the case of Unemployment Insurance, this change was introduced at the beginning of the interwar period without significant change in the next decades. It is very unlikely that this could have explanatory power to analyse the variation of the labour frictions within the interwar period.

On the other hand, the membership to trade unions started at a high level in 1920 (44% of the labour force), but declined consistently since 1924 for the rest of the 1920s. This is why an improvement in the matching efficiency after this year is expected. However, the econometric results show just the opposite: a significant improvements in the first half of the 1920s and a decline and structural change after April of 1925.

4. Theoretical Framework and econometric estimation

4.1 Theoretical framework

The matching function could be represented by the equation 1:

$$M(U_t, V_t) = \Omega U_t^{\xi} V_t^{1-\xi} \quad (1)$$

Where M is the number of matches, Ut is the number of unemployed, Vt the number of vacancies, Ω an efficiency factor and ξ is the elasticity of the unemployed over the number of matches. The equation 1 has a Cobb-Douglas structure[4], which implies that it has constant return of scales. This assumption is supported by evidence raised by Petrongolo and Pissarides (2001) about the structure of the matching function.

The constants Ω and ξ are essential parts of the matching function. The former is the matching efficiency, what captures the degree of labour frictions or the number of matches which are not explained by unemployed and vacancies. This constant could be interpreted as the technology at what unemployed and vacancies become new

[4] This theoretical framework is largely used in the literature, see (Shimmer, 2005) (Anderson and Burgess, 1995) (Barnichon and Figura, 2015).

matches. On the other hand, ξ measures the sensitiveness of the number of matches to change in the number of unemployed.

Equation 2 denotes the job-finding rate, which is the rate at unemployed are hired:

$$f_t = \frac{M_t}{U_t} \text{ (2)}$$

Combining equation 1 and 2, we have

$$\text{Where } f = \frac{M(U_t,V_t)}{U_t} = \left(\frac{V_t}{U_t}\right)\left(\frac{M_t}{V_t}\right) = \Omega\theta_t^{1-\xi} \text{(3)}$$

Where $\theta_t = \frac{V_t}{U_t}$, called the market tightness

Taking log in 3

$$\log(f) = \log(\Omega) + (1-\xi)\log(\theta_t) + u_t \text{ (4)}$$

The monthly matching efficiencies are calculated as the deviations from the average aggregate matching efficiency Ω. This is described by the equation 5:

$$\mu_t = \text{Log}\Omega_t - E_t\text{Log}\Omega_t \text{(5)}$$

Where $E_t\text{Log}\Omega_t$ is the expected value of Ω_t, in which Ω is estimated in equation 6.

4.2 Data and econometric estimation

The equation 4 was estimated using an Ordinary Least Square model. The data used in the estimation (unemployed, unemployed flows and vacancies) were taken from *the Labour Gazette,* a publication made by the Ministry of Labour about statistics related

with labour market in Britain and abroad. As it was mentioned in the introduction, the data used in this estimation came from the labour exchanges, which were government's offices in charge to facilitate the matching between unemployed and firms for the population affiliated to Unemployed Insurance. The coverage of this scheme was around 66% and remained stable for all interwar period. For this reason is plausible to assume that is a sample large enough to be representative of the labour force.

It was used monthly data between January of 1920 and June of 1934. In this last month the *Labour Gazette* stopped to present information about unemployment flows, which is essential. The labour Gazette does not shows information about unemployment flows between May 1926 and May 1930, what this variable was estimated using the exponential smoothing technique of Holt-Winter. Alternatively, it was run a model excluding this model, but it was no observed a significant difference in the coefficients.

For both series, the logarithm of the job finding rate and the logarithm of market tightness was applied the Dicky-Fuller test in order to evaluate the stationary. In both case, the null hypothesis cannot rejected signalling that they are stationary in grade zero.

As can be observed in the Graph 3, after April of 1925 (when the government restored the Gold Standard), there is a significant decline in the matching efficiency. After applied a set of structural break tests, it was found evidence about a matching efficiency' trend shift in the second half of the 1920s. The first indicator is an unknown date structural break test, which estimates the month with the highest structural break value or when the Wald's coefficient is maximum. The second indicator is a standard

Chow test, which examines if there is a structural break test in April 1925. Finally, the third test examines the existence of a structural break test in the period between April 1925 and April 1929.

4.3 Econometric results

The econometric results are showed in table 5. As it was mentioned in the literature review, the coefficient of the elasticity of unemployed is 0.356, indicating that the number of new matches is mainly sensitive to the variation in the number of vacancies as it was expected. However is important to indicate, as it was mentioned in section 2, that this coefficient was significantly higher than in the United States (0.1) for a similar period according to Lee (2016), what support a fact largely mentioned in the literature about a lower degree in labour frictions in this country in the 1920s than Britain (Hatton and Mark, 2012).

The series for the matching efficiency can be observed in Graph 3. The matching function started in low level as a consequence of the 1921 crisis level and had a significant recovery and improvement up to April of 1925. In this latter month started a declining path which extended for the rest of decade before to a further decline after 1929 as a consequence of the Great Depression.

The improvements in the matching efficiency in the first half of the 1920s appears as the key behind the fast employment recovery after 1921 crisis. This is a significant difference with the Great Depression, what as it can be observed in Graph 3 had a significant decline in the matching efficiency. This process coincide with the development of the service sector in the South of Britain, especially the distributive trades.

To evaluate the existence of a structural break after April 1925 it was implemented a set of tests, which results are showed in Table 6. The results show that there is a matching efficiency's trend shift in the second half of the 1920s. According to the first test, the highest structural break occurred in April 1929, what means that labour market was deteriorating before the Great Depression. On the other hand, the second and third tests confirm that the two halves of the 1920s were different, and the second one had a lower degree of matching efficiency. This outcome is coherent with the fact that in the second part of the 1920s there was a coexistence of high unemployment rate in the Northern districts, Wales and Scotland and a low unemployment rate in London, the Southern districts and to a less extent in the Midlands.

There are at least two relevance questions about the trend of the matching efficiency in the 1920s; why, 1921 unlike the case of the Great Depression of 1929, the matching efficiency recovery very fast after? And how the restoration of the Gold Standard in April of 1925 led to a structural change in the matching efficiency?

5. Drivers of the matching efficiency

To understand why the matching efficiency recovered from the 1921 crisis at such a fast rate, unlike the Great Depression, it is essential to consider the drivers of this indicator. Barnichon and Figura (2015) develop a theoretical framework on the determinants of the matching efficiency splitting the drivers in two groups: heterogeneity across workers and segments' dispersion. The former considers the effect of the job-finding rate of the groups' shares within the unemployed pool, composed of different groups determined by gender, age or unemployment duration. For example, the long-term unemployed usually have a lower job-finding rate than the

average members of the labour force. If these workers become overrepresented as a consequence of a long economic crisis, the whole job-finding rate of the unemployed will decline due to the share of this group reducing the unemployed pool average.

This paper mainly focuses on the segment dispersion drivers. This is because the qualitative information indicates that they were more intense in the 1920s, while the heterogeneity across workers was mainly stable. In addition there is not enough statistical information, besides gender, to evaluate how the changes in heterogeneity across workers had an impact on the matching efficiency.

Usually, the most important variables within heterogeneity across workers are permanent layoff and the long-term unemployed. Unfortunately, there is no information about the latter for the 1920s. However, there is qualitative information to consider that long-term unemployment only started to be significant in Britain after the Great Depression, which is why it would not be a determinant of the matching efficiency during the 1920s. According to Craft (1987, p.420) in the 1920s long-term unemployment was probably less than 10% and it increased up to 25% in 1936.

A second important factor within heterogeneity across workers is the permanent layoff. As explained in Section 3, the interwar unemployed were split between the *wholly unemployed* and the *temporarily stopped*. Unfortunately, this information only started to be recorded in 1926, when the latter accounted for 38.5% of the unemployed. It is plausible to assume that *temporarily stopped* have a higher job-finding rate than the *wholly unemployed* since the former preserve a link with their firms. However, the share of *temporary stopped* declined between 1926 and 1929, which coincided with a reduction in the matching efficiency. This fact could indicate that matching efficiency moved for reasons different to the share of *temporarily stopped* or that these kinds of

workers generated a negative influence on the matching since its condition prevented the unemployed from moving towards industries with better perspectives.

Segment dispersion measures the effect of skill and geographical mismatch. A segment could be defined as the workers in a specific industry, with a type of skill and within a specific region. The dispersion in the job-finding rates between segments affect the matching efficiency since it measures the distance between the location of the unemployed and the vacancies. Usually the economic crises affect some segments rather than others, which means an increase in the dispersion between labour segments. Due to the inter-segment mobility not being automatic, an increase in the segments' dispersion raises the labour frictions. In other words, an increase in the segments' dispersion means that the unemployed and vacancies are more distant since they are in different locations, which is why there is a decline in the matching efficiency.

In the case of interwar Britain, the 1921 crisis affected mainly workers with low skills in five great staple trades (coal, iron and steel, textiles, shipbuilding and engineering) in the North of Britain and Wales. Since the job opportunities were located in the service sector in the South and the Midlands, an increase in the dispersion in the 1920s could be assumed.

However, the actual increase in the segments' dispersion depends on the *permeability* of the labour segments with job opportunities. If the segments with job opportunities are able to quickly absorb the unemployed from the segments with bad performance, a temporal increase in the segments' dispersion could be easily reverted and even increase the matching efficiency. This latter is caused because the permeability of segments with good performance reduces the distance between the unemployed and

the vacancies, which increases the resilience of the labour market. In this new scenario, the unemployed are better located for an economic shock, which is why it is more likely a fast reduction in unemployment rate once the demand recovers.

In summary, the existence of permeable segments with good performance is essential for the improvements in the matching efficiency. Between 1920 and 1925 his role was played by the retail industry and to a lesser extent by the processed food and drinks industry. This industry had not only the permeability condition, but also a size large enough to influence the behaviour of the matching efficiency in the first half of the 1920s. The development of modern retail in Britain made possible the significant improvements in the matching efficiency and a partial recovery from the 1921 crisis.

On the other hand, the inexistence of permeable segments near to segments with bad performance triggered the adverse effect of the segments' dispersion on the matching efficiency. If the unemployed are located in segments very distant than those where the job opportunities are, the segments' dispersion will have a negative and significant effect on the matching efficiency. This was the case after April 1925, when problems in the segments located in the North in the great staples trades began, especially in coal mining and to a lesser extent in the textile industry. The concentration of the unemployed in certain areas and the inexistence of permeable trades around led to a structural break and a significant reduction in the matching efficiency in the second half of the 1920s.

5.1 Retail revolution and matching efficiency improvements

The retail industries experienced outstanding development in the interwar period, moving from local shops towards national chains. The increase of the purchasing power and the development of the mass consumption required the development of a

sophisticated distribution channel able to reach a wide consumer base. The mass production led to a separation between the production and distribution tasks due to an increase in the firms' size, standardisation of products and the reduction of customised goods (Jefferys, 1954). In addition, the arrival of a higher diversity of products to consumers' baskets[5], such as electrical appliances, artificial silk or chemical products boosted the importance of the retail industry role (Jefferys, 1954).

There were also demand drivers which favoured the development of modern retail. The decline in family sizes, as well as a higher incorporation of women in the labour force, led to a decline in the volume of goods made or cooked at home and increased the demand for processed food (Jefferys, 1954). Small quantities of increasing diversity of products also required a more complex distribution channel.

The 1920s saw a change in the economic orientation from exporting industries as a centre of prosperity, toward an economic focus in the internal market. Industries oriented to the latter took advantage of the mass production, the development of a new range of products and higher purchasing power. All these factors set up the conditions for the emergence of modern retail in the interwar period and especially the first half of the 1920s. This fact is supported by table 8, which shows the share of insured workers by industry. It can be observed that this share of insured workers in retail industry moved from 7.9% in 1921 to 12.2% in 1925 and 13.9% in 1929. In this last year, the distributive trades became Britain's main employer, a role traditionally occupied by the textile trades.

What was the effect of the development of modern retail on the matching efficiency? The hypothesis of this article is that distributive trades are the reason behind the

[5] Beyond food and dressing, what concentrated consumers spending hitherto.

improvements in the matching efficiency in the first half of the 1920s, due to their high permeability.

The first reason why the development of the modern retail was a positive influence on the matching efficiency is the existence of employment opportunities in this industry. As presented in table 2, the unemployment rate in this industry was significantly lower than the national average. This fact together with the fast increase in the insured population indicates the existence of a lot of vacancies in distributive trades.

However, the existence of vacancies is not enough to influence the behaviour of the matching efficiency, but what actually matters is the *permeability* of the segments in this industry. There are at least two necessary conditions for an industry to be considered permeable: being permeable in skills and geography. The former indicates that the industry is able to absorb low-skill or unskilled workers, which at the time composed most of the labour force and the unemployed. According to Routh (1965), based on the 1931 census, 76.5% of the labour force were manual workers, including skilled (26.72%), semi-skilled (35%) and unskilled (14.81%) workers. The former could be considered medium skill workers since they required some training but not at the same level as a professional occupation, while Semi-skilled could be considered low skilled workers. The highest unemployment incidence was between unskilled workers, who had an unemployment rate of 21.53% in male workers while the rate for whole male insured workers was 11.9%.

Since the human capital requires time, it is plausible to assume that the higher the skill requirements the lower the industry permeability. In this context, an emerging industry with a high demand for low-skill or unskilled workers will improve the matching efficiency.

Geographical spread is also another requirement for an industry that has a positive impact on the matching efficiency. Since workers' mobility has a cost, it could be assumed that the geographical proximity between segments has a positive impact on the matching efficiency. In that case, the nearer the vacancy the lower the labour friction.

Table 11, presents a summary of this theoretical framework. The interception of the two necessary conditions for an industry has a positive impact on the matching efficiency. This industry should be oriented to medium or low skill workers and be geographically spread, which means job opportunities in the largest area possible.

Table 12 classifies the potential driver industries in the 1920s, which means those industries which could have a positive influence on the matching efficiency. A potential driver is essentially an industry with an unemployment rate lower than the national average, which is a proxy of a higher job-finding rate of workers located in that industry. In this article, the criteria to define an industry as a potential driver was to have an unemployment rate lower than the unemployment rate for the whole insured population in at least five years between 1921 and 1929, which are the years with information available.

For the classification of skill categories the occupation distribution by industry in 1951 was elaborated by Routh (1965), based on the 1951 census (See Table 7) was used. Despite this occupational distribution corresponding to the time after the interwar period, there are reasons to think that the occupational distribution was very stable in the first half of the twentieth century Routh (1965). The occupations classified as professional (category 1) and clerical workers (category 3) are considered as high skilled workers. The occupations classified as foremen, supervisors and inspectors

(category 4) and skilled manual workers (category 5) are considered mid-skilled workers, while semi-skilled (category 6) and unskilled (category 7) are considered low-skilled workers. Category 2 (employers and propitiators) was excluded from the analysis due to its inclusion of high and low skill workers6.

Considering the shares at Table 7, the difference between the share of workers in each occupation and the share of workers in each occupation in all the insured population, was estimated and normalised (at this latter value) for each industry. For instance, the share of clerical workers in the chemical industry is 16.02%, while this share for all the insured population is 10.85%. The difference between two values (normalised in the latter) was estimated at 47.6%. This means that the chemical industry has 47.6% more clerical workers than the average of all other industries. This mean that these kinds of workers are over-represented in this industry in relation to the average of the labour force.

This paper considers the occupation with the highest over-representation in each industry. For example, in the finance industry clerical workers are over-represented by 515.9%, which means that this is an industry intensive in high-skill workers. On the other hand, in the distributive trades semi-skilled workers are over-represented by 32.2%, which means that this is an industry intensive in low-skill workers. The classification for each industry can be observed in Table 9.

For the classification of geography, the geographical distribution in the number of insured workers by industry in December 1926 (see Table 10) was used. As a consequence of the General Strike in May 1926 and the coal stoppage, which lasted most of 1926, the Ministry of Labour conducted a study about the impact of this shock

[6] The range of workers in this group move from small farmer proprietors to large firms' owners

on other industries at the time. The outcome of the study was published in the Labour Gazette7 of January 1927. According to this study the following is the distribution of insured workers between the three main regions in Britain: group 1 is composed of the Northern Districts, Scotland and Wales, group 2 is composed of the South-West and the Midlands and group 3 is composed of the South-East and London. These groups had a worker share on the insured population of 52.5%, 22.2% and 25.3%, respectively. The difference between the share of insured workers in each industry and the share of all insured workers was estimated. Then the variance of these three values for each industry was estimated. If the variance for an industry was higher than the average for all industries, this industry was considered geographically concentrated, which has a negative impact on the matching efficiency.

According to the definition of Table 11, among sixteen industries which could be potential drivers, only eight could have a positive impact on the matching efficiency. There is an additional condition to observe this effect, which is an increase in insured workers within such industry, which means that it is an emerging or growing industry. For example, the dress industry had a job-finding rate higher than the average of the labour force; it is intensive in mid-skill workers and geographical spread. However, it is an industry which requires a lower number of workers as can be observed in Table 13 which shows the variation of insured workers by industry. It can be observed that in most of the years between 1921 and 1929, the insured workers in these industries grew below the average of all insured workers classified as potential drivers. The share of workers employed at the clothing industry declined constantly during the 1920s, from 5.5% in 1921 to 4.8% in 1929. For this reason, it could be assumed that an

[7] A monthly publication of the Ministry of Labour

industry which is reducing the number of workers is not able to absorb the unemployed.

Excluding the potential drivers growing rates in insured workers below the growth rate of all the insured population for most of the years in the 1920s, mean that there were only five industries which were actual drivers of the matching efficiency: brick and tiles, printing and paper trades, hotel and club services, laundry services and distributive trades. It is evident that the services sector has a major relevance in this group. In other words, the improvements in the matching efficiency observed in the first half of the 1920s was mainly a consequence of the development of a services sector able to absorb middle-skill and low-skill workers.

Between the actual drivers of the matching efficiency the most important industry is the distributive trade or retail. This industry increased its insured worker share in the group of actual drivers, from 53.8% in 1921 to 64.17% in 1929. In this case, the size of the distributive trades was large enough to produce a fluctuation in the matching efficiency.

This fact supports the hypothesis that the development of the modern retail industry was the main driver of the matching efficiency in the 1920s. In fact, this industry had its highest growth rates in the first half the decade, and despite it continuing to expand after 1925, it did so at a significantly slower pace. Between July 1921 and 1925, the number of insured workers in distributive trades increased 51%, while between July 1925 and 1929 it only increased by 15.1%. This moderation in the expansion of retail, in insured workers terms, coincides with the structural break of the matching efficiency in the second half of the 1920s. It is likely that distributive trades continued being a positive influence on the matching efficiency in the second half of the 1920s, however

they were not strong enough to prevent a significant decline after April 1925. After this month, the matching efficiency would start to deteriorate largely influenced by the bad performance of the great staples trades, but essentially by the decline of coal mining.

5.2 Coal mining's decay and deterioration in the matching efficiency

The bad performance of the great staples trades was constant during the whole of the 1920s, starting with the 1921 crisis. However, it was after April 1925, with the restoration of the Gold Standard which had a negative impact on the industries oriented to export, when the problems in these industries started to have a significant negative impact on the matching efficiency.

Following the same methodology of the *potential driver*, it will be defined as *potential brakes* of the matching efficiency as those industries with unemployment rates higher than the average of the insured population. These *potential brakes* will be classified following the same scheme of Table 11, using skill and geographical criteria. If it is assumed that the degree of skill is related with specialisation, those workers with higher skills will be more specialised and therefore will have more distance (a higher degree of frictions) with other industries. This means that the higher the skill the lower the inter-industrial mobility due to the sunk cost to develop the abilities required to work in an industry. The geographical concentration also works as in the case of drivers; the unemployed coming from industries highly geographically concentrated will face a higher cost of mobility than those industries where there were job opportunities, due to the distance between the two being larger.

Table 14 shows the potential brakes classified according to skill and geographical criteria. There are nine *potential brakes* in the table and it can be observed that most of them are classified as intensive in mid-skill workers, with the exception of pottery

and glass trades which were intensive in low-skill workers. This relative homogeneity between industries in skills, implies that the main difference between industries was the geographical concentration. There were industries such as mining and textiles which were significantly concentrated precisely in the depressed areas in the North, Scotland and Wales. On the other hand, there were potential brakes such as engineering and iron-founding or building and works construction, largely spread over the whole of Britain. It could be assumed that the job finding rate was higher in the latter due to a higher degree of proximity to industries with vacancies, in contrast with textiles and mining where inter-industrial mobility involves a migration cost. This difference in geography explains the difference in the unemployment dynamic in the two halves of the decade.

Between 1921 and 1925, a significant share of the unemployed came from industries with low geographical concentration, which is favourable for the matching efficiency due to its proximity with these industries with job opportunities. On the other hand, in the second half of the 1920s the unemployed came from industries with a high degree of geographical concentration, which led to a deterioration of the matching efficiency since they had a higher distance with those industries with vacancies located in the South. What explains the structural break of the matching efficiency after April 1925 are the regional divergence and the lack of inter-regional mobility.

Table 8 presents industries' shares in insured workers between July 1921 and 1929. It can be observed that in 1921, engineering, iron-founding and metal trades were the industries with the highest share in the insured unemployed pool with 29.5%. However, this share was declining and in July 1925, the share of insured unemployed in engineering, iron-founding and metal trades was only 16.9% and continued declining in the second half of the decade to up to 13.3% in July 1929. This industry reduced its

number of insured workers by more than 450.000 between 1921 and 1925. Although many of them left the labour force, others probably migrated to industries with better perspectives such as retail. In the same period, distributive trades increased their number of insured workers by more than 490.000 individuals.

In the second half of the 1920s, the unemployed came mainly from other kinds of industries, the most important being coal mining. In the first half of the decade, the unemployment rate in this industry was below the national average. However, in 1925 problems in this industry began, leading to the general strike in May 1926 and the coal stoppage in most of the 1926.

In the second half of the 1920s, the unemployed come from industries highly concentrated in depressed areas. Two industries, mining and textiles, accounted for around 30% of the unemployed between July 1925 and July 1929. It is evident that the unemployed in the first half of the decade had a different profile than those in the second half. They came from different industries, which essentially means from different regions. This is a relevant point, as Table 14 indicates that the relevant difference between the two groups was the geographical concentration rather than skills. In the whole decade, the unemployed came from mid-skill groups, but after 1925 they started to a large extent to emanate from specific regions. In this sense, the structural break of the matching efficiency in the second half of the 1920s is associated with regional divergence in Britain, which significantly increased the mobility cost between industries.

Considering that regional divergence was the main factor behind the decline of the matching efficiency, there are two relevant questions to explore: why was the inter-

regional migration very low despite the significant difference in the performance of the labour market and what was the dynamic of the intra-regional mobility?

The first question is recurrent in the literature (Hatton and Thomas, 2012) (Eichengreen, 1988), although there is still not a clear hypothesis. The analysis of the matching function drivers and brakes indicates a potential factor to consider; the skill differences, and ultimately the wage differential between the original-depressed industries and the destiny-job opportunity industries. To move from an industrial job in the North to a potential job in retail in the South, was not only less attractive because of emigration costs, but also because the wages offered were probably lower than those earned in the past. In this context, there is a higher incentive to try to recover the previous position or wait for a recovery in the depressed industry before taking the decision to migrate.

The second question has been covered less in the literature, although Booth and Glynn (1975) mention its relevance. If the development of the service and particularly the retail industry occurred in the whole of Britain, maybe there was no necessity for inter-regional mobility but intra-regional mobility was enough to improve the efficiency of the labour market. However, the high persistence of unemployment in the Northern districts, Scotland and Wales, indicate that there were no enough vacancies within these regions or there was a low intra-regional workers mobility between depressed and relatively prosperous areas. This question will be addressed in Chapter 2, where it will the regional matching efficiency for each region will be estimated in order to establish if the matching efficiency had a national trend or whether it was regional dependent.

6. Conclusion

This article estimates the number of labour frictions in interwar Britain through the matching efficiency of the matching function which is essential for understanding the dynamic of unemployment in the 1920s. The matching has a high degree of variability within this decade, which is why it was determined by reasons beyond the institutional changes introduced at the start of the decade. Between them, the industrial reshuffling which brought about the introduction of mass consumption and changes in the international economic conditions played essential roles. These facts led to a significant change in the distribution of the labour force between British industries, increasing the demand for workers in those industries oriented to the internal market and reducing those oriented to exports which had formed the core of economic prosperity since the time of the Industrial Revolution.

The matching efficiency presents a structural break at the middle of the decade, which is why there are two very different periods in this decade. The first is between 1921 and 1925, characterised by significant reductions in the number of labour frictions boosted by a high degree of inter-industrial mobility. The driver of this process was the emergence of the modern retail industry, which was able to absorb a significant share of the unemployed from industries negatively affected by the 1921 crisis and newcomers of the labour force. It is especially notorious for the reduction of insured workers in engineering, iron-founding and metal trades, which is why it is plausible to assume that a significant share of these unemployed moved to the expanding distributive trades.

In the middle of the decade, probably after April 1925, the second period characterised by a significant decline of the matching efficiency began. This reduction was due to a

rise in the regional divergence between regional labour markets, largely influenced by the problems in coal mining and to a less extent in the textile industry. The high incidence of the unemployment of workers in these industries explains the high and persistent unemployment rates in the Northern districts, Scotland and Wales which contrast with the resilience of the Southern districts, London and the Midlands. In this period the unemployed and job vacancies were separated by geography, presenting a significant difference with the first half of the decade when the unemployed were more geographically spread. After 1925, the unemployed were concentrated in outer Britain and job opportunities were found in inner Britain.

The low level of internal migration in interwar Britain remains a relevant question in the literature of labour economic history. However, the fact that the unemployed and vacancies were in different occupational levels is a potential explanation. The former came from industries intensive in mid-skill workers, which probably means higher wages than those offered for low-skills job vacancies in the emerging service sector in the South. This potential wage difference could amplify the natural cost of immigration.

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Table 1
Insured unemployment rates by District. Unemployed older than 16
July, 1923-1929

District	1923	1924	1925	1926	1927	1926	1927	1928	1929
London	9.7%	7.8%	6.5%	6.2%	4.7%	6.2%	4.8%	4.9%	4.5%
South-Eastern	7.7%	5.7%	4.3%	4.3%	3.5%	4.3%	3.6%	4.3%	3.8%
South-Western	9.1%	7.3%	6.7%	7.0%	5.4%	7.1%	5.6%	7.2%	6.9%
Midlands	9.5%	8.0%	8.6%	14.4%	7.6%	14.3%	7.8%	11.7%	9.6%
North-Eastern	11.3%	9.4%	15.5%	19.4%	13.1%	19.4%	13.5%	16.7%	13.0%
North-Western	13.9%	11.6%	11.0%	17.4%	9.7%	17.3%	10.0%	13.3%	12.9%
Scotland	13.2%	11.5%	15.2%	17.3%	9.2%	17.3%	9.5%	11.8%	11.2%
Wales	5.4%	6.5%	13.1%	21.0%	19.0%	21.1%	19.7%	24.0%	19.8%
North-Ireland	15.4%	15.3%	24.3%	22.0%	10.9%	22.0%	11.1%	19.5%	13.2%
Total	10.8%	9.1%	10.7%	14.0%	8.8%	13.8%	8.9%	11.4%	9.8%
Variance	0.1%	0.1%	0.3%	0.4%	0.2%	0.4%	0.2%	0.4%	0.2%

Insured unemployment rates by District. Unemployed between 16 and 65
July, 1923-1929

District	1927	1928	1929
London	4.8%	4.9%	4.5%
South-Eastern	3.6%	4.3%	3.8%
South-Western	5.6%	7.2%	6.9%
Midlands	7.8%	11.7%	9.6%
North-Eastern	13.5%	16.7%	13.0%
North-Western	10.0%	13.3%	12.9%
Scotland	9.5%	11.8%	11.2%
Wales	19.7%	24.0%	19.8%
North-Ireland	11.1%	19.5%	13.2%
Total	8.9%	11.4%	9.8%
Variance	0.2%	0.4%	0.2%

Source: It was estimated using insured unemployed from Department of Employment (1921-1936) *The Ministry of Labour Gazette* and insured population from Department of Employment. (1971) *British labour statistics: historical abstract 1886-1968*

Table 2

Insured unemployment rates by industry, July 1921-1929

Industry	1921	1922	1923	1924	1925	1926	1927	1928	1929
Building and Works Construction	15.4 %	15.8 %	13.2 %	10.8 %	9.1%	11.0 %	8.4%	11.7 %	10.4 %
Shipbuilding	32.8 %	36.8 %	43.2 %	28.2 %	34.9 %	41.5 %	22.3 %	28.3 %	23.0 %
Engineering, Ironfounding and metal trades	25.4 %	22.4 %	17.2 %	13.4 %	13.7 %	23.0 %	10.6 %	11.5 %	9.8%
Construction and Repair of Vehicles	11.7 %	14.6 %	9.1%	7.8%	6.9%	11.9 %	7.4%	9.7%	7.6%
Sawmilling and machined woodwork	15.2 %	11.2 %	10.4 %	8.7%	8.2%	10.4 %	6.0%	7.3%	7.0%
Explosives, Chemicals, etc.	14.5 %	11.7 %	10.5 %	8.5%	8.1%	11.5 %	6.3%	6.0%	5.9%
Rubber and leather trades	13.5 %	11.7 %	11.2 %	10.0 %	10.9 %	14.3 %	6.7%	7.2%	7.8%
Brick, tiles, etc.	15.1 %	15.3 %	7.5%	5.6%	5.7%	22.1 %	4.9%	10.3 %	8.0%
Pottery, Earthenware, etc.	12.6 %	14.5 %	13.2 %	11.4 %	19.1 %	57.3 %	16.4 %	17.6 %	14.9 %
Glass trade (excluding optical scientific)	31.0 %	18.8 %	18.1 %	14.2 %	13.0 %	23.4 %	13.0 %	13.6 %	10.7 %
Hotel College, Club, etc., Service	11.8 %	6.8%	9.9%	8.3%	8.0%	7.2%	5.4%	5.9%	6.3%
Laundry Service	6.0%	4.8%	5.0%	5.1%	4.9%	4.2%	3.2%	3.5%	3.7%
Commercial, Clerical insurance and Banking	4.1%	4.9%	5.0%	5.7%	3.3%	3.0%	2.1%	2.2%	2.5%
Transport Service	18.0 %	13.4 %	15.3 %	13.8 %	15.0 %	18.8 %	10.4 %	14.1 %	13.0 %
Mining Industry	9.7%	9.0%	3.7%	7.0%	14.3 %	10.4 %	19.9 %	26.8 %	17.5 %
Printing and paper trades	9.8%	6.5%	6.3%	5.3%	5.0%	6.1%	4.4%	4.1%	3.8%
Textile trades	13.4 %	6.9%	15.7 %	12.1 %	15.9 %	25.4 %	9.2%	14.3 %	13.3 %
Dress	10.9 %	5.4%	8.0%	6.7%	9.0%	9.3%	6.4%	9.8%	7.3%
Food, Drink and Tobacco	9.5%	8.4%	8.8%	7.8%	7.4%	8.2%	5.8%	6.8%	6.6%
Public utility services	8.3%	7.6%	7.1%	5.8%	5.5%	5.9%	4.7%	5.7%	5.4%
Distributive trades	6.7%	5.8%	5.9%	5.7%	5.8%	6.6%	4.4%	5.2%	5.4%
National and local governments	7.1%	8.2%	8.1%	7.6%	7.3%	7.7%	6.1%	7.0%	7.3%
Professional Services	3.5%	3.0%	4.1%	3.7%	3.2%	2.9%	2.4%	2.5%	3.0%
Other industries and services	30.9 %	18.9 %	17.2 %	16.1 %	14.5 %	18.2 %	11.0 %	11.8 %	11.7 %
Total	14.8 %	12.3 %	11.5 %	9.9%	11.2 %	14.4 %	9.1%	11.6 %	9.7%

Source: It was estimated based on Department of Employment (1921-1936) *The Ministry of Labour Gazette*

Note: * Include Fishing, Non-matalliferous mining products and cark carpets

Table 3
Industries' share in insured unemployed pool, 1921-1929

Industry	1921	1922	1923	1924	1925	1926	1927	1928	1929
Building and Works Construction	8.8%	9.7%	8.4%	8.2%	6.2%	6.1%	7.7%	8.3%	8.7%
Shipbuilding	6.3%	8.9%	8.9%	6.3%	6.3%	5.4%	4.3%	4.2%	4.0%
Engineering, Ironfounding and metal trades	29.5%	29.6%	21.8%	19.3%	16.9%	21.8%	15.5%	13.1%	13.3%
Construction and Repair of Vehicles	2.1%	2.1%	1.9%	1.9%	1.5%	2.1%	2.1%	2.2%	2.1%
Sawmilling and machined woodwork	2.2%	1.7%	1.5%	1.5%	1.2%	1.2%	1.1%	1.1%	1.3%
Explosives, Chemicals, etc.	2.5%	2.0%	1.7%	1.5%	1.3%	1.4%	1.2%	0.9%	1.1%
Rubber and leather trades	1.3%	1.1%	1.1%	1.1%	1.1%	1.0%	0.8%	0.7%	0.9%
Brick, tiles, etc.	0.7%	0.8%	0.4%	0.3%	0.3%	1.1%	0.4%	0.6%	0.6%
Pottery, Earthenware, etc.	0.4%	0.7%	0.7%	0.7%	1.1%	2.4%	1.1%	0.9%	0.9%
Glass trade (excluding optical scientific)	0.7%	0.6%	0.6%	0.6%	0.4%	0.6%	0.5%	0.4%	0.4%
Hotel College, Club, etc., Service	2.0%	1.5%	1.9%	2.1%	1.8%	1.2%	1.5%	1.3%	1.8%
Laundry Service	0.3%	0.3%	0.4%	0.5%	0.4%	0.3%	0.4%	0.3%	0.4%
Commercial, Clerical insurance and Banking	0.7%	0.7%	0.5%	0.5%	0.5%	0.4%	0.4%	0.4%	0.5%
Transport Service	8.0%	8.2%	9.1%	9.5%	8.9%	8.6%	7.5%	8.0%	8.9%
Mining Industry	6.7%	7.8%	3.9%	8.6%	15.0%	8.3%	24.3%	24.6%	18.3%
Printing and paper trades	1.9%	1.5%	1.7%	1.7%	1.4%	1.3%	1.5%	1.1%	1.2%
Textile trades	9.4%	6.2%	15.7%	13.9%	16.0%	19.6%	11.0%	13.6%	14.8%
Dress	4.0%	2.5%	3.5%	3.4%	3.9%	3.1%	3.5%	4.1%	3.6%
Food, Drink and Tobacco	2.6%	2.8%	3.3%	3.5%	2.9%	2.5%	2.7%	2.5%	2.9%
Public utility services	1.0%	1.3%	0.9%	0.9%	0.7%	0.6%	0.7%	0.7%	0.7%
Distributive trades	3.6%	4.0%	5.6%	6.8%	6.4%	5.8%	6.3%	6.1%	7.7%
National and local governments	1.5%	2.2%	2.6%	2.7%	2.4%	1.8%	2.2%	1.9%	2.4%
Professional Services	0.3%	0.4%	0.3%	0.4%	0.3%	0.2%	0.3%	0.2%	0.3%
Other industries and services	3.5%	3.3%	3.4%	4.0%	3.1%	3.1%	3.0%	2.6%	3.1%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%
Top 4 share	55.7%				56.8%				55.3%

Source: It was estimated based on Department of Employment (1921-1936) *The Ministry of Labour Gazette*
Note: * Include Fishing, Non-matalliferous mining products and cark carpets

Table 4
Split insured unemployed between *Wholly Unemployed* and *Temporarily Stopped*, 1926-1929

Year	Wholly Unemployed	Temporarily Stopped	Total	Share Wholly Unemployed	Share Temporary Stopped
1926	1,068,513	668,747	1,737,260	61.5%	38.5%
1927	798,179	315,784	1,113,963	71.7%	28.3%
1928	958,567	418,464	1,377,031	69.6%	30.4%
1929	881,189	296,318	1,177,507	74.8%	25.2%

Source: Department of Employment (1926-1929) *The Ministry of Labour Gazette*

Table 5
Econometric results
Dependent Variable = Ln Job Finding rate

	OLS
Covariates	
LN Ω	0.508*** (0.165)
LN V/U	0.356*** (0.039)
Obs	173
R2	0.328

Table 6
Structural break tests

Unknown break date (Wald)

Test	Statistic	p-value
swald	290.011	0.000

Ho:	No structural break
Number of obs:	172
Full sample:	1920m3 - 1924m6
Trimmed sample:	1922m5 - 1932m5
Estimated break date:	1929m4

Wald test for a structural break: Known break date

chi2(2) = 60.0583
Prob > chi2 = 0.000

Ho:	No structural break
Sample:	1920m3 - 1934m6
Break date:	1925m4
Exogenous variables:	lnvu
Coefficients included in test:	lnvu _cons

Wald test for a structural break: Known break date

chi2(4) = 287.6686
Prob > chi2 = 0.0000

Ho:	No structural break
Sample:	1920m3 - 1934m6
Break date:	1925m4 1929m4
Exogenous variables:	lnvu
Coefficients included in test:	lnvu _cons

Table 7
Occupational classification by industry, 1951

	Occupations								
	Higher Professions	Lower Professions	Employers and Proprietors	Clerical Workers	Foremen supervisors	Skilled manual workers	Semi-Skilled manual workers	Unskilled manual workers	
Industry	**1A**	**1B**	**2**	**3**	**4**	**5**	**6**	**7**	**Total**
Agriculture etc.	0.0%	0.1%	28.6%	0.7%	1.8%	7.7%	60.8%	0.2%	100%
Mining	0.7%	0.4%	0.9%	3.1%	5.7%	39.5%	47.6%	2.1%	100%
Ceramics, etc.	0.5%	1.4%	4.1%	6.8%	3.0%	37.9%	19.4%	27.0%	100%
Chemicals	3.8%	5.0%	7.0%	16.0%	3.6%	15.3%	27.0%	22.2%	100%
Metal manufacture	1.2%	1.9%	2.7%	8.9%	5.4%	38.5%	18.6%	22.9%	100%
Engineering and shipbuilding	1.6%	4.0%	4.1%	11.4%	6.5%	41.2%	19.0%	12.2%	100%
Vehicles	0.9%	2.5%	4.8%	9.9%	6.2%	47.7%	16.9%	11.2%	100%
Metal Goods	0.4%	0.5%	4.9%	8.7%	5.3%	37.2%	28.7%	14.5%	100%
Precision Instruments	0.9%	2.3%	6.0%	11.0%	4.8%	52.5%	15.2%	7.3%	100%
Textiles	0.3%	0.8%	3.2%	5.1%	3.1%	50.5%	23.2%	13.8%	100%
Leather, etc.	0.4%	0.5%	6.9%	6.1%	2.9%	66.2%	4.5%	12.7%	100%
Clothing	0.0%	0.2%	4.3%	4.8%	2.0%	36.6%	48.1%	3.9%	100%
Food, drink and tobacco	0.6%	0.7%	6.9%	10.8%	3.3%	26.0%	30.8%	20.9%	100%
Manufactures of wood and cork	0.1%	0.7%	5.0%	5.6%	3.0%	63.5%	8.8%	13.3%	100%
Paper and printing	3.5%	1.3%	6.9%	12.4%	2.8%	44.9%	13.9%	14.3%	100%
Other manufactured goods	0.9%	2.7%	6.4%	11.1%	3.5%	42.1%	15.0%	18.4%	100%
Building and contracting	1.2%	0.4%	3.9%	3.9%	3.8%	57.6%	4.4%	24.8%	100%
Gas, electricity and water	3.7%	1.6%	4.9%	15.6%	2.3%	27.6%	18.2%	26.1%	100%
Transport and communication	0.3%	1.8%	4.5%	13.1%	3.5%	19.6%	41.8%	15.4%	100%
Distributive trades	0.2%	1.0%	30.1%	12.4%	0.5%	5.6%	43.4%	6.9%	100%
Finance	1.3%	0.2%	19.0%	66.8%	0.2%	2.3%	3.9%	6.3%	100%
Public administration	5.0%	3.0%	7.9%	18.3%	1.2%	10.3%	39.6%	14.8%	100%
Professional services	12.7%	45.0%	2.9%	13.9%	0.1%	2.7%	18.0%	4.8%	100%
Miscellaneous services	0.4%	3.0%	13.1%	4.7%	0.1%	8.5%	65.1%	5.3%	100%
Total	2.0%	4.7%	10.0%	10.9%	2.7%	25.4%	32.8%	11.7%	100%

Source: Routh, G. (1980). *Occupation and Pay in Great Britain 1906–79*. Springer

Table 8
Share of insured workers by industry, 1921-1929

Industry	1921	1922	1923	1924	1925	1926	1927	1928	1929
Building and Works Construction	8.4%	7.5%	7.3%	7.4%	7.6%	8.0%	8.4%	8.2%	8.2%
Shipbuilding	2.8%	3.0%	2.4%	2.2%	2.0%	1.9%	1.8%	1.7%	1.7%
Engineering, Ironfounding and metal trades	17.2%	16.2%	14.6%	14.2%	13.8%	13.7%	13.4%	13.3%	13.3%
Construction and Repair of Vehicles	2.6%	1.8%	2.4%	2.4%	2.5%	2.5%	2.5%	2.6%	2.6%
Sawmilling and machined woodwork	2.1%	1.9%	1.7%	1.7%	1.7%	1.7%	1.7%	1.8%	1.8%
Explosives, Chemicals, etc	2.5%	2.1%	1.9%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%
Rubber and leather trades	1.4%	1.1%	1.1%	1.1%	1.1%	1.1%	1.1%	1.1%	1.1%
Brick, tiles, etc	0.7%	0.7%	0.5%	0.6%	0.7%	0.7%	0.7%	0.7%	0.7%
Pottery, Earthenware, etc	0.5%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
Glass trade (excluding optical scientific)	0.3%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%
Hotel College, Club, etc, Service	2.4%	2.8%	2.2%	2.5%	2.5%	2.4%	2.6%	2.6%	2.8%
Laundry Service	0.8%	0.9%	0.9%	1.0%	1.0%	1.0%	1.0%	1.1%	1.1%
Comercial, Clerical insurance and Banking	2.5%	1.8%	1.2%	0.9%	1.8%	1.8%	1.8%	1.9%	1.9%
Transport Service	6.6%	7.6%	6.9%	6.8%	6.6%	6.6%	6.6%	6.6%	6.7%
Mining Industry	10.2%	10.6%	12.3%	12.2%	11.7%	11.5%	11.2%	10.7%	10.2%
Printing and paper trades	2.8%	2.9%	3.1%	3.1%	3.1%	3.1%	3.1%	3.2%	3.2%
Textile trades	10.4%	11.0%	11.6%	11.4%	11.2%	11.2%	10.9%	11.0%	10.9%
Dress	5.5%	5.7%	5.1%	5.0%	4.9%	4.8%	5.0%	4.9%	4.8%
Food, Drink and Tobacco	4.0%	4.1%	4.4%	4.4%	4.4%	4.4%	4.3%	4.3%	4.2%
Public utility services	1.8%	2.0%	1.5%	1.5%	1.5%	1.5%	1.4%	1.4%	1.3%
Distributive trades	7.9%	8.4%	11.0%	11.7%	12.2%	12.5%	13.0%	13.6%	13.9%
National and local governments	3.2%	3.3%	3.7%	3.5%	3.7%	3.4%	3.3%	3.2%	3.2%
Professional Services	1.4%	1.5%	0.9%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Other industries and services	1.7%	2.2%	2.3%	2.4%	2.4%	2.5%	2.5%	2.6%	2.6%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%
Top 4	46.3%				49.0%				48.2%

Source: Department of Employment (1921-1929) *The Ministry of Labour Gazette*

Table 9
Skill Classification according to over-representation criterion
based on Routh, G. (1980)

	Occupational over- representation and under- representation porcentages								
	Higher Professions	Lower Professions	Employers/ Proprietors	Clerical Workers	Foremen, supervisors	Skilled MW*	Semi-Skil MW*	Unskilled MW*	Skill class
Agriculture etc.	-98.5%	-98.1%	187.5%	-93.4%	-32.0%	-69.8%	85.2%	-97.9%	Low skill
Mining	-66.8%	-91.6%	-90.9%	-71.2%	110.0%	55.8%	45.1%	-81.9%	Medium Skill
Ceramics, etc	-74.0%	-71.1%	-59.3%	-37.7%	10.4%	49.5%	-41.0%	131.7%	Low skill
Chemicals	95.4%	6.2%	-29.3%	47.6%	33.1%	-39.6%	-17.8%	90.6%	High kill
Metal manufacture	-37.2%	-60.2%	-72.5%	-18.3%	99.6%	51.7%	-43.5%	96.1%	Medium Skill
Engineering/ shipbuilding	-16.8%	-14.1%	-58.5%	4.8%	141.3%	62.3%	-42.2%	4.5%	Medium Skill
Vehicles	-55.1%	-46.5%	-52.1%	-8.9%	129.7%	88.2%	-48.7%	-4.1%	Medium Skill
Metal Goods	-79.6%	-89.7%	-51.2%	-20.1%	95.5%	46.5%	-12.6%	23.8%	Medium Skill
Precision Instruments	-53.1%	-49.9%	-40.1%	1.0%	78.4%	107.0%	-53.8%	-37.3%	Medium Skill
Textiles	-83.2%	-83.5%	-67.6%	-52.6%	14.1%	99.0%	-29.4%	18.2%	Medium Skill
Leather, etc	-80.6%	-89.5%	-31.1%	-44.2%	6.3%	161.0%	-86.4%	8.6%	Medium Skill
Clothing	-98.0%	-96.4%	-56.4%	-55.9%	-24.5%	44.4%	46.5%	-66.6%	Low skill
Food, drink and tobacco	-71.4%	-84.6%	-30.3%	-0.7%	23.8%	2.4%	-6.2%	79.1%	Low skill
Manufactures of wood and cork	-93.4%	-85.2%	-49.9%	-48.1%	12.3%	150.2%	-73.3%	14.1%	Medium Skill
Paper and printing	79.6%	-72.2%	-31.0%	14.6%	3.3%	76.8%	-57.6%	22.8%	High kill
Other manuf. goods	-56.1%	-42.2%	-35.5%	2.3%	29.0%	65.9%	-54.3%	57.2%	Medium Skill
Building and contracting	-37.8%	-91.4%	-61.0%	-64.0%	40.5%	127.2%	-86.7%	112.5%	Medium Skill
Gas, electricity and water	86.7%	-65.1%	-51.0%	43.5%	-13.4%	8.8%	-44.5%	123.5%	Low skill
Transport and communication	-83.2%	-62.5%	-54.5%	20.3%	29.7%	-22.6%	27.3%	32.0%	Medium Skill
Distributive trades	-92.3%	-77.7%	202.8%	13.8%	-81.4%	-78.1%	32.2%	-41.3%	Low skill
Finance	-33.2%	-96.6%	90.7%	515.9%	-91.8%	-91.0%	-88.2%	-45.7%	High kill
Public administration	155.1%	-36.4%	-20.6%	68.2%	-56.1%	-59.6%	20.7%	27.1%	High kill
Professional services	549.5%	862.5%	-71.1%	28.3%	-94.8%	-89.5%	-45.3%	-59.1%	High Skill
Miscellaneous services	-81.6%	-35.8%	31.3%	-57.1%	-95.5%	-66.7%	98.1%	-54.7%	Low skill

Note: *MW means manual worker

Table 10
Insured worker by industry and location, December 1926

Industry	London and South Eastern	South Western and Midlands	North Eastern, North Western, Scotland and Wales
Coal mining	0.2%	20.0%	79.8%
Coke Ovens and By Products	2.4%	12.2%	85.4%
Pig-Iron	0.4%	17.9%	81.6%
Tinplates	0.6%	6.0%	93.4%
Iron-ore and Mining	0.1%	25.7%	73.6%
Steel Production	0.8%	14.5%	84.7%
Pottery	3.3%	88.2%	8.4%
Glass	14.4%	22.1%	63.3%
Glass Bottles	31.2%	2.7%	66.0%
Brick, Tile & C	15.2%	43.1%	40.3%
Miscellaneous metal industries	21.3%	45.8%	32.6%
Shipbuilding	9.0%	10.8%	73.7%
Vehicles (other than motors and cycles)	16.8%	38.7%	43.7%
Motors, Cycles and aircrafts	27.0%	52.5%	18.9%
Marine	6.9%	13.6%	70.1%
Constructional	13.0%	26.3%	60.7%
General	20.5%	20.5%	57.8%
Electrical	26.0%	34.8%	38.9%
Cotton	0.2%	1.8%	98.0%
Wool	0.5%	5.6%	93.4%
Silk	9.3%	50.7%	40.0%
Hosiery	6.3%	70.6%	22.4%
Other Textiles	6.5%	18.8%	68.6%
Boot and shoe	19.9%	61.5%	17.8%
Other Clothings	39.1%	16.8%	38.9%
Food	31.9%	19.1%	46.9%
Drink	30.9%	26.8%	40.2%
Distributive	35.8%	18.5%	43.8%
Public works and contracting	28.4%	21.3%	47.3%
Building	35.6%	23.7%	38.8%
Printing Publishing	50.7%	14.9%	32.8%
Gas, water and electricity supply	33.6%	22.6%	42.1%
Total Insured Workers	25.3%	22.2%	52.5%

Source: Department of Employment (1926) *The Ministry of Labour Gazette*

Table 11
Influence of Skill and Geographical dispersion on the matching efficiency

		Geographic concentration	
		High	Low
Skill	High	Increase	Increase
	Medium	Increase	Reduce
	Low	Increase	Reduce

Table 12
Potential drivers' classification according to
Influence of Skill and Geographical dispersion on the matching efficiency

	High	**Low**
High	Comercial, Clerical insurance and Banking	Printing and paper trades
	Professional Services	National and local governments
	Explosives, Chemicals, etc (MF)	
Medium	Construction and Repair of Vehicles (MF)	Rubber and leather trades
	Sawmilling and machined woodwork (MF)	Brick, tiles, etc (MF)
Low		Dress
		Food, Drink and Tobacco (MF)
		Public utility services
		Hotel College, Club, etc, Service (DT) (ad hoc)
		Laundry Service (ad hoc)
		Distributive trades

Table 13

Insured workers growth rates in industries Classified as *Potential Drivers*

	1921/22	1922/23	1923/24	1924/25	1925/26	1926/27	1927/28	1928/29
Rubber and leather trades	-19.47%	-5.23%	-0.36%	0.98%	-1.78%	-1.32%	3.09%	2.23%
Brick, tiles, etc	-8.16%	-20.97%	13.99%	11.38%	5.60%	-0.40%	-1.74%	1.05%
Printing and paper trades	-1.04%	3.21%	1.91%	1.50%	3.06%	-1.63%	1.19%	3.31%
Dress	2.26%	-14.73%	-1.34%	1.64%	-0.15%	-1.18%	0.26%	0.76%
Public utility services	12.62%	-27.18%	-2.36%	4.14%	3.77%	-11.98%	0.01%	-0.70%
Food, Drink and Tobacco	0.27%	3.76%	0.80%	2.41%	0.46%	-2.31%	-0.90%	0.99%
Hotel College, Club, etc, Service	10.88%	-22.71%	13.81%	1.42%	-0.22%	4.50%	2.68%	6.00%
Laundry Service	3.38%	1.20%	5.21%	3.92%	4.21%	1.65%	4.28%	4.21%
Distributive trades	2.95%	26.64%	7.18%	7.85%	3.61%	2.77%	3.93%	4.05%
Total insured workers	-2.46%	-3.26%	0.10%	3.28%	1.25%	-2.13%	0.83%	1.79%

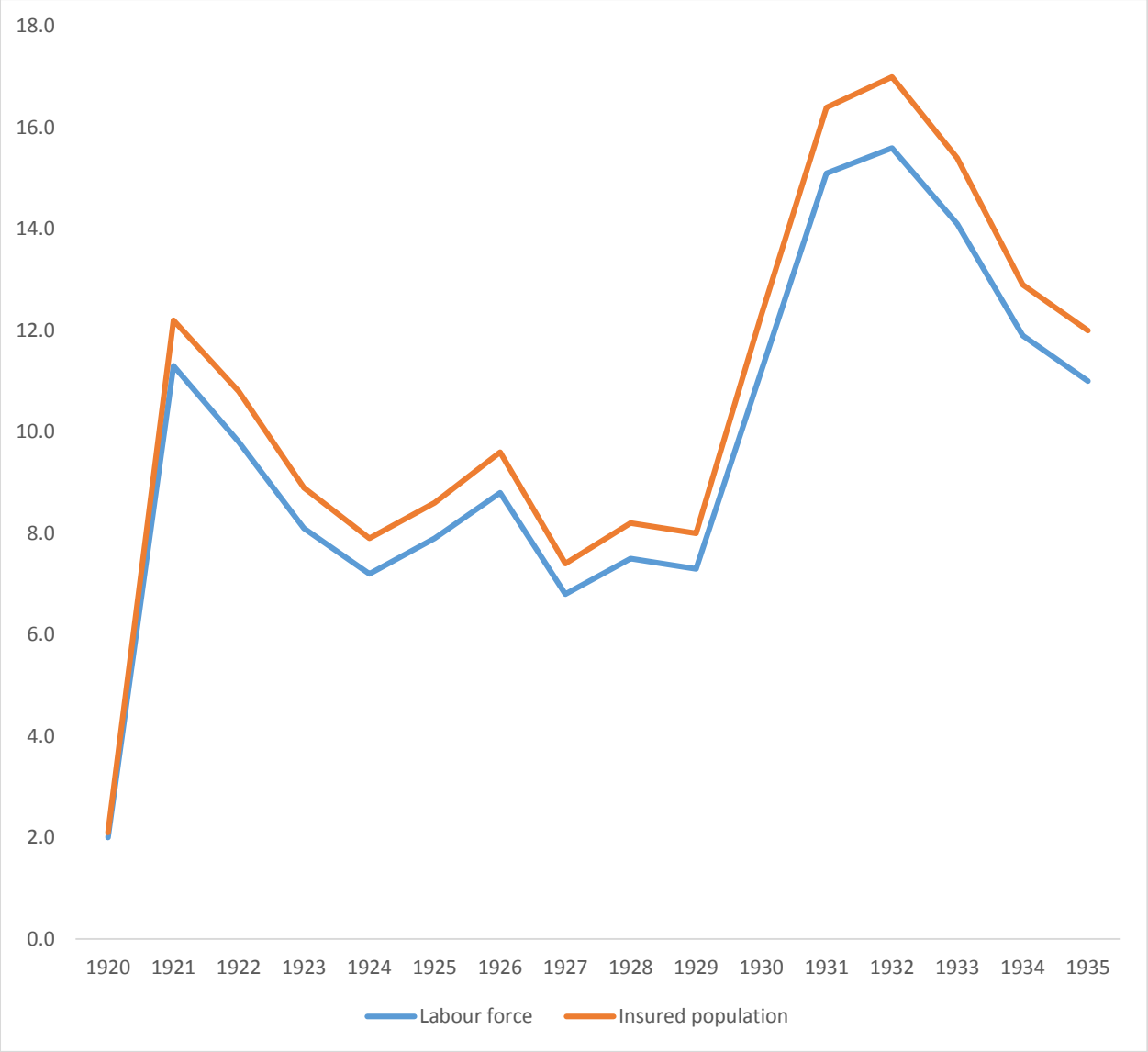
Source: Department of Employment (1921-1929) *the Ministry of Labour Gazette*

Table 14

Potential brakes' classification according to
Influence of Skill and Geographical dispersion on the matching efficiency

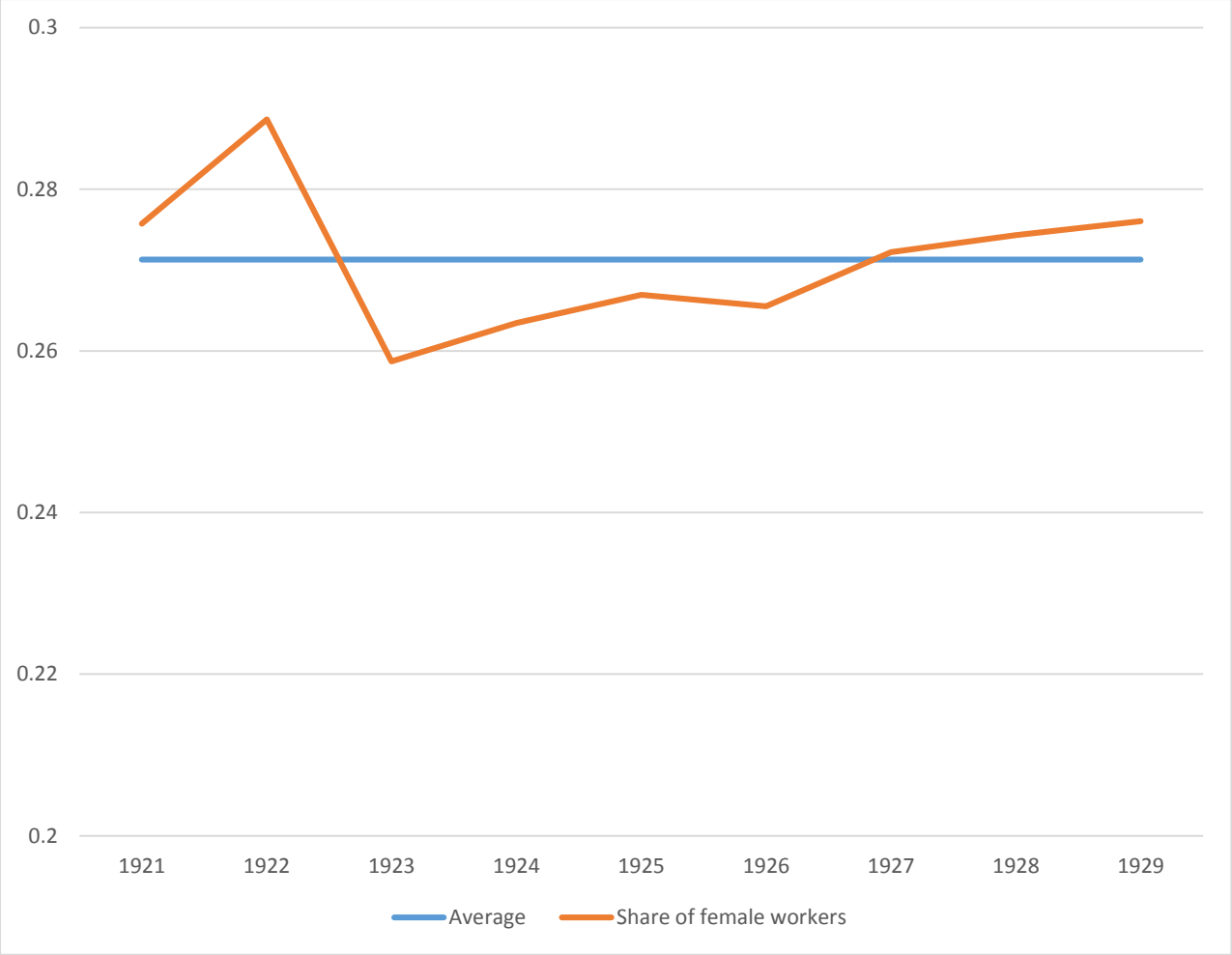
	High	Low
High		
Medium		Shipbuilding (MA)
	Mining Industry	Engineering and Ironfounding and metal trades
	Textile trades	Transport Service (ad hoc)
		Building and Works Construction
Low	Pottery, Earthenware, etc	Glass trade (excluding optical scientific)

Graph 1
Unemployment rate, total labour force and insured population
1920-1935



Source: Feinstein, C. H. (1972). *National income, expenditure and output of the United Kingdom, 1855-1965* (Vol. 6). Cambridge: Cambridge University Press

Graph 2
Female workers share in the insured population
1921-1929



Source: Department of Employment (1921-1929) t*he Ministry of Labour Gazette*

Graph 3
Matching Efficiency estimation, January 1920-June 1934