



The Ronald O. Perelman Center for Political
Science and Economics (PCPSE)
133 South 36th Street
Philadelphia, PA 19104-6297

pier@econ.upenn.edu
<http://economics.sas.upenn.edu/pier>

PIER Working Paper
22-025

**Regional Employment Polarization
in a Time of Crisis
The case of Interwar Britain**

IVAN LUZARDO-LUNA
University of Pennsylvania

September 26, 2022

Regional Employment Polarization in a Time of Crisis

The case of Interwar Britain

Ivan Luzardo-Luna*

University of Pennsylvania

September 26, 2022

Abstract

This article aims to identify the impact of regional employment polarization on labor frictions in a time of crisis and structural change by examining the case of interwar Britain. Using an original dataset from the regional returns of unemployment insurance administration, this article estimates the aggregate and regional Beveridge curve shifts, which allows the breakdown of labor frictions into spatial mismatching (interregional frictions) and frictions within regions (intraregional frictions). The latter were the main source of labor frictions during the interwar period, but the former significantly contributed to the mass unemployment observed in the Great Depression.

Keywords: Unemployment, Spatial Mismatching, Beveridge Curve, Great Depression.

JEL codes: N12, J60, R11.

*Correspondence: luzardo@sas.upenn.edu. I thank Jesus Fernandez-Villaverde, Chris Minns, Joan Roses, Price Fishback, Andrew Seltzer, Patrick Wallis, Neil Cummins, and Brian Varian. Likewise, I also thank participants at LSE Economic History graduate seminars, CAGE Warwick 2018, EHS 2018, EHA 2019 and WEHC 2019.

Introduction

Substantial and persistent regional differences in unemployment rates have become a common characteristic of several advanced economies during major economic shocks such as the Great Recession (2007-09) or the European debt crisis (Fogli, Hill, and Perri, 2013; Beyer and Smets, 2015; Karahan and Rhee, 2019). In 2009, the monthly average unemployment rate in Michigan reached 13.4%, which contrasted with the 7.1% observed in Maryland. In 2013, during the aftermath of the Euro crisis, Spain displayed an annual average unemployment rate of 26.1%, five times greater than that of Germany (5.2%). Such regional polarization, which in the context of high unemployment could be defined as large and persistent differences in the unemployment rate, can result not only in an income divergence in the long run but also can be an important source of labor friction and a major reason behind persistent unemployment.

The coexistence within the same aggregate labor market of booming regions with an abundance of unfilled job vacancies and depressed regions suffering high unemployment, so-called spatial mismatching, has the potential to explain structural unemployment. This latter phenomenon is defined as a type of unemployment that is independent of regular business cycle fluctuations and is explained by labor frictions. These are transaction costs between the two sides of the labor market: the unemployed and employers with job vacancies (Pissarides, 2000; Daly et al., 2012; Şahin et al., 2014). If unemployed workers and job vacancies are located in different regions within the same country, there is an evident transaction cost, which increases labor frictions. These can be measured by the Beveridge curve, which considers the evolutions of both the unemployment and job vacancy rates¹.

Regional polarization has been associated by several observers with major structural changes (Moretti, 2012; Rosés and Wolf, 2019), such as the deindustrialization observed in most of advanced economies from the 1980s onward. Deindustrialization had a clear

¹The job vacancy rate is a ratio which measures the number of vacancies to the labor force.

uneven impact across European and American regions, with those regions dependent on heavy industries absorbing most of the employment losses during economic shocks, while job opportunities were concentrated in areas that successfully developed high-tech industries or high value-added services.

This article aims to establish the impact of regional polarization, via spatial mismatching, on structural unemployment in interwar Britain, which is one of the first Western “deindustrialization”². Throughout the interwar period, Britain suffered high and persistent unemployment characterized by enormous regional differences (Scott, 2007; Luzardo-Luna, 2020) due to the decline of Industrial Revolution industries (coal mining, textiles, metal works, and shipbuilding) located mainly in northern England, Scotland and Wales. In contrast, southern England saw a period of sustained prosperity, with low unemployment and an abundance of unfilled vacancies in a booming services sector and new mass-production industries.

The deindustrialization observed during the interwar period was both supply and demand-driven. Since the late nineteenth century, Britain had displayed a relatively poor productivity growth compared to other industrialized economies, such as the United States and Germany. This substantially affected Britain’s export sector’s competitiveness, composed predominantly of the industries from the first industrial revolution. These industries were also heavily affected by the resumption of the Gold Standard in 1925, which led to an overvalued currency and a further deterioration of Britain’s manufacturing exports³.

Due to its profound economic and social consequences, the mass interwar unemployment in Britain has attracted the interest of several generations of scholars. Important contemporary observers such as Keynes or Beveridge were not indifferent to studying the reasons behind the persistent and high levels of unemployment, although they did so from

²A more accurate description of what actually occurred in Britain during the interwar period is that the British economy went through a major structural change, rather than a proper deindustrialization. This interwar structural change was shaped by a decline in the “old” industries and a rising up of the “new” industries along with the service sector, rather than by the decline of the entire manufacturing sector as was observed in many advanced economies from the 1980s onwards.

³Such a divergence from the second half of the 1920s can be observed by contrasting Figures 3 and 4.

different approaches. The former saw unemployment as a result of the underutilization of resources in the context of a depressed aggregate demand alongside “sticky wages”, which meant that unemployment was essentially demand-driven. Keynes classed other factors affecting unemployment, such as labor frictions, as ‘bottlenecks’, without the magnitude to explain the mass unemployment that was present during the interwar period ([Matthews, 1968](#)). On the other hand, Beveridge identified structural elements in the high interwar unemployment, placing more importance on labor frictions by highlighting the imperfect labor mobility in terms of location and industry. More recent literature has favored Beveridge’s postulations, showing evidence of important labor frictions ([Hatton and Thomas, 2012](#); [Luzardo-Luna, 2020](#)).

The interwar deindustrialization was accelerated by two major crises, the 1926 Coal Lockout and the Great Depression, which had devastating consequences for the Industrial Revolution industries but had only a mild effect on the emerging sectors ([Luzardo-Luna, 2020](#)). In accelerating the ongoing deindustrialization, interwar crises led to a polarized regional labor market. Such a geographical divide suggests an increase in labor frictions caused by either spatial mismatching or large intraregional frictions in depressed regions. However, how relatively important these were and why market forces did not close the regional gaps have not yet been established. In other words, the literature has identified the presence of important labor frictions in interwar Britain ([Hatton and Thomas, 2012](#); [Luzardo-Luna, 2020](#)) and the main reason behind them, a major structural change, but not the specific mechanisms by which interwar deindustrialization resulted in persistent unemployment.

In addition to spatial mismatching, another potential explanation for regional polarization is the presence of large differences in intraregional frictions across different regions. If a given region displays systematically higher unemployment rates than the rest of the country, that could be the result not only of lack of mobility toward the regions with many vacancies but also of higher intraregional frictions between local unemployed workers and recruiting employers. If those regions account for a substantial share of the aggregate

labor force, they could have a profound impact on national labor frictions. In this case, the main reason behind the national labor frictions was mainly the high frictions within these depressed but highly populated regions. [Booth and Glynn \(1975\)](#) point out that within the interwar depressed regions, there were also relatively prosperous areas with low levels of unemployment. In that case, intraregional frictions played a relevant role in explaining the high interwar structural unemployment.

The economic literature has documented different explanations for structural unemployment and therefore for intraregional frictions. [Entorf \(1994\)](#) and [Jackman and Savouri \(1999\)](#) maintain that skill mismatching is a major reason behind structural unemployment. If the unemployed workers have skills that are different from those sought by employers, there is an important labor friction between the two sides of the labor market. Similarly, [Barnichon et al. \(2012\)](#) point out the fact that unemployed workers may have experience in shrinking industries while job opportunities are in booming industries. On the other hand, [Blanchard and Summers \(1986\)](#), [Crafts \(1989\)](#), and [Mathy \(2018\)](#) place emphasis on the discrimination against the long-term unemployed, the so-called hysteresis hypothesis. If a substantial share of the unemployed pool is composed of long-term unemployed individuals, who have a lower job-finding rate, after a crisis, unemployment will decline slowly even in the presence of many unfilled vacancies.

[Mathy \(2018\)](#) finds that hysteresis was a major reason behind the rise in structural unemployment after the Great Depression in the United States. In the case of interwar Britain, there has been a relevant discussion on the role of unemployment insurance, with [Benjamin and Kochin \(1979\)](#) maintaining that relatively generous unemployment benefits reduced the unemployed workers' search effort, while [Eichengreen \(1986\)](#) and [Hatton and Bailey \(2002\)](#) do not find any impact.

To identify the contribution of both spatial mismatching and intraregional frictions to structural unemployment in interwar Britain, this article breaks down the national Beveridge curve, a measure of the level of labor frictions, into regional Beveridge curves for the period 1922-31. Using a new dataset from the weekly returns of the regional unem-

ployment insurance administrations, this article estimates the national and regional Beveridge curve shifts. Following the methodology of [Abraham \(1987\)](#) and [Valletta \(2005\)](#), it is possible to separate the spatial mismatch effect (interregional frictions) from frictions within the regions (intraregional frictions) by estimating the difference between the national Beveridge curve's isoquant position and the weighted sum of the regional Beveridge curves' isoquant positions. The results show that spatial mismatching accounted for 6.7% of the aggregate Beveridge curve shifts, which measure the worsening in labor frictions, during the worst years of the Great Depression (1930-31), when unemployment saw a mass increase. Spatial mismatching, however, became relevant only during the Great Depression, having a negligible impact during the entire analyzed period (1922-31). Intraregional frictions were the main drivers behind the high and structural unemployment observed in interwar Britain, at least up to 1931. Such results indicate that the large regional polarization that shaped interwar Britain was not only due to spatial mismatching but mainly due to regional differences in the efficiency for matching local unemployed with vacancies. The relatively depressed regions, the North-East and Wales, faced not only higher unemployment rates but also a lower matching efficiency than the relatively prosperous regions, southern England and the Midlands. This gap was certainly related to differences in industrial composition, but it also points out that the lack of labor mobility was not exclusively a north/south migration problem; probably more important were constraints with regard to commuting within the depressed regions.

This article comprises three sections. The first examines the constraints of the datasets used to study the regional nature of interwar unemployment and presents the original dataset used in this article and discusses how this new source allows for identifying the impact of regional polarization on the high unemployment witnessed in interwar Britain. The second section estimates the aggregate and regional Beveridge curves, finding a large increase in labor frictions between November 1929 and 1931 because of the Great Depression. This section also quantifies the share of aggregate labor frictions due to either spatial mismatching or intraregional frictions. These results also show that the latter were the main factor behind national frictions for most of the interwar period,

although spatial mismatching had a significant impact on the increase in labor frictions observed during the Great Depression. Finally, the third section presents the article's conclusions.

A new dataset to study regional interwar unemployment

Figure 1 shows the annual unemployment rates for Britain between 1920 and 1939 drawing on [Boyer and Hatton \(2002\)](#). After the shock of the 1921 crisis, the unemployment rate gradually declined until reaching its lowest point in 1927, although the progress was interrupted by the General Strike and the 1926 Coal Lockout. As a result of the Great Depression, the unemployment rate jumped to 17% by 1932, a level that far outpaced the 1921 and 1926 crises. The persistent high unemployment rate, which never dropped below 7% despite the economic growth of the late 1920s, reveals the presence of underlying labor frictions ([Hatton and Thomas, 2012](#); [Luzardo-Luna, 2020](#)), which expressed their full scope with the onset of the Great Depression.

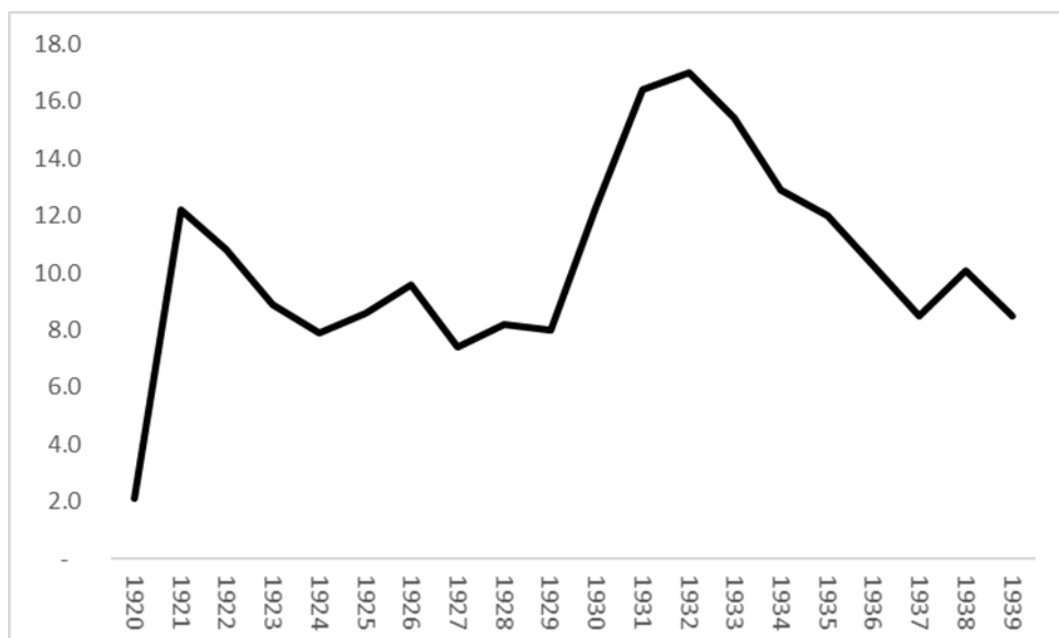


Figure 1: Annual unemployment rate for Britain, 1920-1939

Source: [Boyer and Hatton \(2002\)](#).

One of the main characteristics of the interwar labor market was the introduction of a new unemployment insurance scheme in 1920. Such a new framework replaced a more limited scheme in operation since 1911 by substantially expanding the eligible population and the benefits (Burns, 1941; Garside, 1990). The main function of the unemployment insurance scheme was to provide unemployment benefits to unemployed workers during their jobless periods. In the local-level unemployment insurance scheme operated by the labour exchanges, a network of local offices, which in addition to administering the unemployment benefits, offered job placement services for the private sector and organized local relief works (Burns, 1941). Although the unemployment insurance scheme established in 1920 did not include the entire working population, it had a great degree of representativeness, as it covered 70% of the labor force (M. Thomas, 1988) up to 1934. Before that year, unemployment insurance had excluded some sectors, such as agriculture and domestic services, because they were not considered sensitive to business cycle fluctuations.

The main source of information regarding the British interwar labor market is the records of the unemployment insurance administration, whose main statistics were regularly reported in the Ministry of Labour's publications, such as *the Ministry of the Labour Gazette* or *the Abstracts of Labour Statistics*. Both publications provide detailed statistics regarding the labor market situation at that time, including unemployment rates, the insured population, strikes, and wages, which is why they have been the main sources used in the economic history literature (Burns, 1941; Eichengreen and Hatton, 1988; M. Thomas, 1988; Hatton and Thomas, 2012; Luzardo-Luna, 2020).

The Ministry of the Labour Gazette, a monthly publication, provides information on unemployment and vacancies at the national level. Such data allows us to identify an important increase in labor frictions in the second half of the 1920s (Luzardo-Luna, 2020) but not the drivers of that increase. Figure 2 shows the national Beveridge curve for the period 1922-34 based on the series published by *The Ministry of the Labour Gazette*. With the onset of the Great Depression, the Beveridge curve saw two consecutive

years of enormous outward shifts, which meant a new long-term equilibrium of higher unemployment and job vacancy rates. In 1931, the worst of the Great Depression in Britain, the unemployment rate was more than double that of 1927 despite the labor market having a greater number of unfilled vacancies. [Mathy \(2018\)](#) presents a similar finding for the United States in the early 1930s, a significant outward shift in the Beveridge curve after 1933, after the worst year of the Great Depression in the American case. Likewise, [Lee and Yoon \(2020\)](#), using the matching function, found a deterioration in the matching efficiency in the early 1930s in the United States.

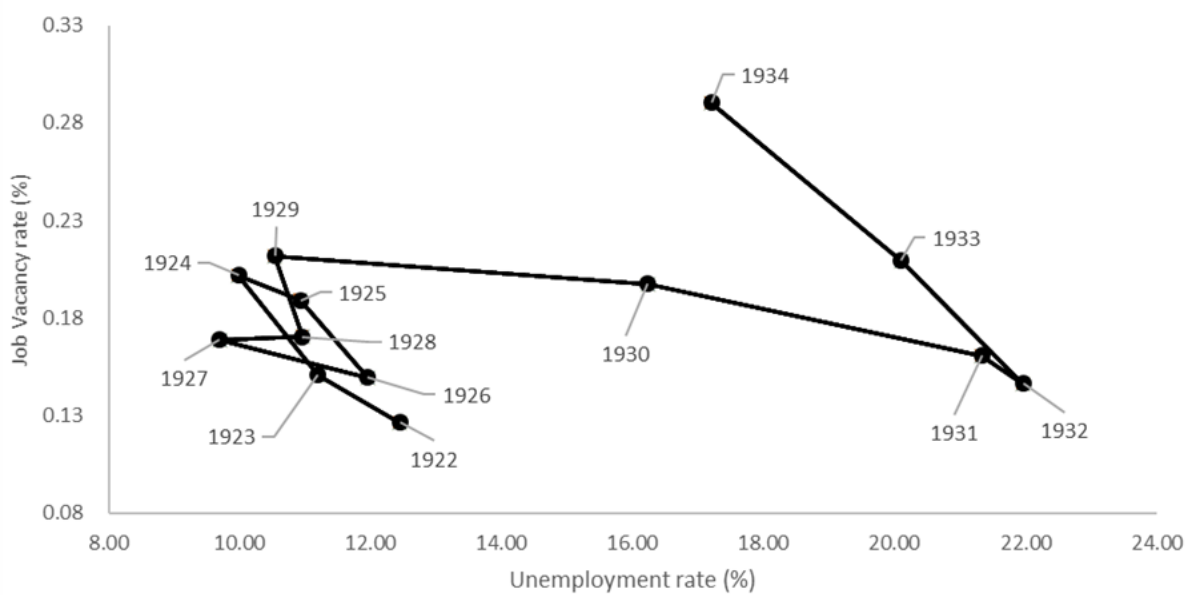


Figure 2: Annual Beveridge curve for Britain, 1922-1934 (annual averages)

Source: Estimated based on The Ministry of Labour Gazette.

Despite the relevance of the information published in *The Ministry of the Labour Gazette*, that source focused mainly on describing the state of the national labor market rather than regional or local dynamics, which represents a major constraint in establishing the impact of spatial mismatching on interwar unemployment in Britain. *The Ministry of the Labour Gazette* began to publish regional unemployment rates from 1927 onward but does not provide the number of vacancies at the regional level. Likewise, *the Abstracts of Labour Statistics*, an occasional publication issued with gaps of two or four years, presents a summary of the main statistics compiled by the Ministry of Labour. Although

the Abstracts of Labour Statistics show annual regional unemployment rates from 1923 onward, they also do not report the number of vacancies by region. Due to this constraint, these two sources, useful at the national level, do not allow for establishing how much of the labor frictions was due to either spatial mismatching or intraregional frictions.

To overcome the constraints of the publications of the Ministry of Labour, this article uses a new dataset: the statistical returns received by the Ministry of Labour from its regional branches. These unexplored records provide weekly information on regional unemployment figures and vacancies, which was also the raw data used by the Ministry of Labour's publications.

Despite the value of its information, there are several constraints to consider in this dataset, although it is still possible to measure the impact of spatial mismatching on labor frictions, and more generally examine the evolution of regional unemployment in interwar Britain. Firstly, the regional returns from the unemployment insurance administration are organized according to *administrative regions* rather than *economic regions* which would be a better geographical unit for analyzing a regional labor market. For instance, the North-East is the aggregation of four counties with very different employment compositions; Durham and Northumberland were both strongly oriented toward coal mining, Yorkshire, with a more diversified economy but with the textile industry being the predominant employer, and Lincolnshire- more oriented to agriculture and actually located in the Midlands. For this reason, the dataset built from these returns allowed for good identification of outer/inner Britain spatial mismatching, but there are significant constraints when it comes to elaborating on the determinants of the frictions within regions.

Another potential constraint in the dataset is the population outside the Unemployment Insurance scheme, which accounted for around 30% according to [M. Thomas \(1988\)](#). Many of them, for instance from the agricultural sector, could potentially be a source of labor friction. Economic history literature has highlighted the relevance of ex-agricultural laborers in the rise of new industries in the southern England and West Midlands, and

how those workers were even preferred over migrant from depressed areas (Scott, 2007). However, the actual fact is that the evolution of the job vacancy rate in southern England rose throughout the 1920s, indicating that even that assuming that the new industries absorbed a significant number of ex-agricultural laborers⁴, the demand for labor was growing so fast that there were job opportunities also for the potential migrants from the depressed areas. Even accepting that there was a substantial influx of workers outside the Unemployment Insurance scheme, the mismatch between unemployment in outer Britain and job vacancies in south of England still occurred, indicating the presence of other labor frictions that prevented a more dynamic internal migration.

The stock of vacancies used in this article for the weeks between April 1922 and October 1929 corresponds to the number of vacancies reported as “unfilled” in the weekly regional returns. Vacancies were “notified”⁵ by employers every week at the local unemployment exchanges managed by the Unemployment Insurance Administration, where they could remain posted until filled. Employers also had the option of canceling a notified vacancy if they either no longer required the position to be filled or if they managed to hire by other means. For that reason, a vacancy that was notified in a certain week could be filled during the same week, remain unfilled until a suitable candidate could be found or be cancelled by the employer. Unfilled vacancies were only reported until October 1929, after which time the returns only displayed the number of “notified” and “filled” vacancies.

To overcome that restriction, and to extend the time series on the stock of vacancies as much as possible, this article estimated the number of “expected unfilled” vacancies, for the weeks between November 1929 and November 1931. The “expected unfilled” vacancies number is the maximum number of unfilled vacancies multiplied by one, less the weekly average cancellation rate between April 1922 and October 1929. If for a given

⁴According to C. Lee (1979), who examined the employment composition of Britain’s labor market between 1841 and 1971, based on census data, the number of workers in the agricultural sector declined in the South-East from 253,535 to 224,736 between 1921 and 1931. At the same time, the employed population increased from 4,838,590 to 5,981,182.

⁵This was the term used by the Ministry of Labour.

region, the percentage of vacancies canceled every week, the cancellation rate, can be estimated, then the number of “expected unfilled” vacancies can be calculated by discounting that percentage from the maximum number of unfilled vacancies. This latter number is estimated for period t as the number of unfilled vacancies in $t-1$, plus the number of notified vacancies in t minus the number of filled vacancies in t . The cancellation rate is estimated for each region as a ratio of the estimated cancelled vacancies to the actual number of unfilled vacancies for the weeks between April 1922 and October 1929, for when that information is available. In general, terms, the cancellation rate was very stable over time and between regions, with an average of 16.8%, although the average cancellation rate was particularly high in Scotland, where it reached 25.8%. In sum, the regional records of The Ministry of Labour allow me to estimate the job vacancy rate between 17th April 1922 to 2nd November 1931, when the returns stopped registering “notified” and “filled” vacancies.

An additional point to consider regarding the number of vacancies is that their flow depended on the voluntary cooperation of the employer, who could use alternative mechanisms for recruiting, such as direct hiring or informal references. In that sense, the stock of vacancies reported in the regional returns was actually a share of the total vacancies. However, these data still allow for the construction of a job vacancy series under the assumption that the share of total vacancies reported was constant during the analyzed period, as they would mirror the evolution of the total vacancies, similar to the help-wanted indices commonly used in the literature. [G. Thomas \(1951\)](#) found that approximately 20% of the hiring registered in 1945 was done via the employment offices of the Ministry of Labour. If that percentage was similar during the interwar period, then the number of vacancies in the dataset, although only a proportion of the total number of vacancies available, was still significant in capturing the evolution of the demand for labor at the regional level. Similarly, [W. Lee \(2016\)](#) finds that the Public Employment Offices in the United States were used by 20% of the labor force in the 1930s, a percentage large enough to assess the evolution of the American labor market in the years following the Great Depression.

Unfortunately, the regional returns did not provide information regarding the number of insured workers, which would be analogous to the labor force. To overcome this restriction and to estimate both the unemployed and job vacancy rates, information from *the Twenty-Second Abstract of Labour Statistics of the United Kingdom* was used, which displayed information regarding the geographical distribution of insured workers for July of each year between 1922 and 1936. The value reported for each July was allocated to the week closest to July 15th for each year, and a linear interpolation was estimated to obtain the expected number of insured workers for each week in between, which acts as the denominator for both the unemployment and job vacancy rate. This estimation could throw doubt on the accuracy of the unemployment rate because the ratio could change due to either a change in the number of unemployed or in the number of insured workers. However, the regional number of insured workers displays moderate year-to-year variations and highly stable paths during the analyzed period. In general terms, the insured population evolution was characterized by an increase in southern England, a decline in Wales, and relative stability in the North-East, the North-West, the Midlands, and Scotland. In all cases, the changes in the insured population were less than 3% per year, which is why it is plausible to assume that the weekly variability in both the unemployment and job vacancy rates was mainly due to changes in the number of unemployed individuals and vacancies reported in the regional returns.

Figure 3 shows the weekly and seasonally adjusted unemployment rates for the six main regions of Britain: North-East, North-West, the Midlands, southern England, Scotland, and Wales. Figure 3 reveals a major regional divide between in terms of the unemployment rate. These regions with high unemployment levels, North-East, the North-West, Scotland, and Wales, so-called outer Britain, were where the core of deindustrialization occurred.

They relied heavily on the industries of the Industrial Revolution, such as mining, textiles, metal works, and shipbuilding, which fell into decline after the First World War. These industries, strongly export-oriented, were affected by the sharp reduction in international

trade throughout the interwar period, the arrival of new competitors and substitutes, and an interwar gold standard which was fixed at the pre-war parity (Scott, 2007; Luzardo-Luna, 2020). This sectorial composition can be observed in Figure 4, which displays the share of the “Industrial Revolution” industries (mining, textiles, shipbuilding, and metal works) in the employed population in 1921.

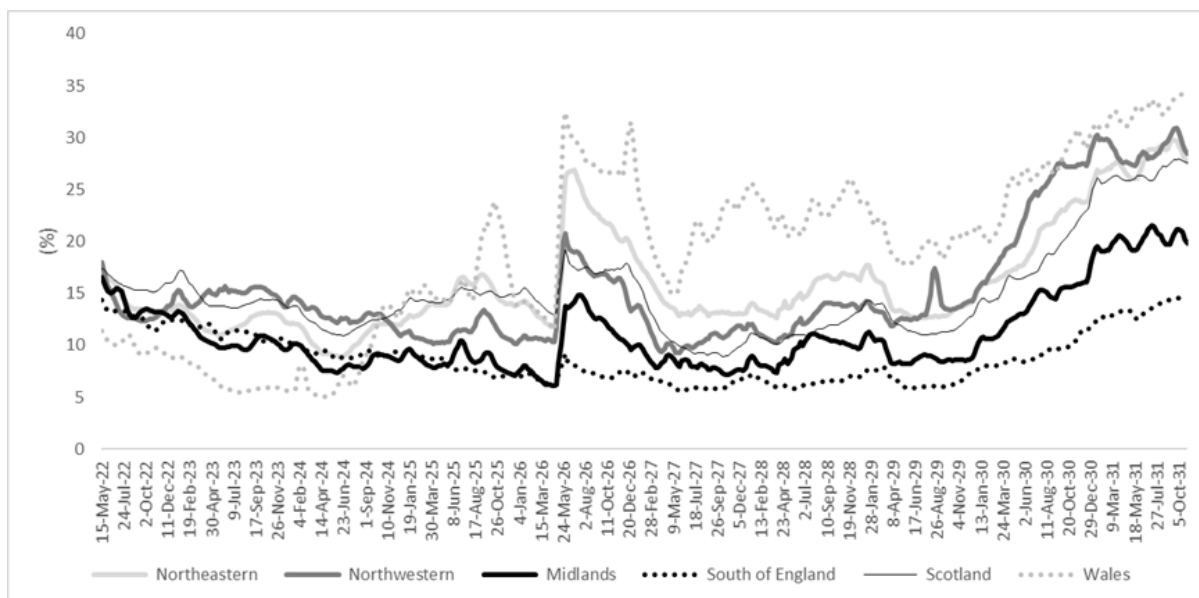


Figure 3: Weekly unemployment rates for British regions, 15th May 1922- 2nd November 1931 (4 weeks rolling average)

Source: Estimated based on the returns of the unemployment Insurance administration.

On the other hand, southern England, so-called *inner* Britain, experienced a structural change in the opposite direction. Unlike the north of the country, the south benefited from a switch toward an economy focused on services and the internal market. The development of mass consumption increased the demand for workers in retail, which had become the main employer in Britain by the late 1920s, overtaking textiles and clothing and demanding a vast number of low-skilled workers (Luzardo-Luna, 2020). Even in 1932, with the Great Depression at its height, southern England saw an unemployment rate substantially lower than the levels observed almost everywhere else in other industrialized countries. In other words, Britain’s “mild” Great Depression was essentially a southern phenomenon.



Figure 4: Share of the ‘Industrial Revolution’ (mining, textiles, shipbuilding and metal works) industries in the employed population in 1921

Source: Estimated based on the Lee (1979).

Finally, the Midlands, which was originally in a similar position to the outer regions of Britain but adjusted better to structural change and reduced its gap with inner Britain. Similar to the regions in northern England, the Midlands region was also significantly affected by the General Strike of 1926 and the Great Depression (Scott, 2007). However, with a more diversified economy and an increasing share of the new mass production industries, such as automobile manufacturing and processed food, the Midlands substantially reduced its gap with southern England.

Figure 3 shows that as early as 1923, there was a divide between outer and inner Britain, but throughout the 1920s this difference augmented. The general strike of 1926 seemed to be the tipping point in interwar regional polarization. This conflict, which occurred between 3 and 12 May 1926 and involved almost every industrial sector, was followed by

the 1926 coal lockout. This second strike paralyzed most of the coal mining industry for the remainder of 1926, affecting all of the industries that relied on power supply, such as textiles and metal works (The Ministry of Labour Gazette, January 1927).

The regions of northern England and the Midlands experienced a strong initial shock, which was followed by a slow and gradual recovery during 1926 and 1927. This fact is probably related to the way that the coal lockout ended. Due to the exclusion of miners who took part in the strike from unemployment benefits, trade unions and miners gradually desisted from mobilization and resumed their work. The last miners on strike, the minority by late 1926, came back to work in December 1926 (Ministry of the Labour Gazette, January 1927). The gradual demobilization of the strike allowed the economic reactivation of the power-supplied manufacturing industries in these areas, although unemployment only returned to pre-May 1926 levels by April 1927.

The shocks of 1926 had a devastating effect in most parts of Britain, except in the south, where the impact was marginal. While unemployment soared to over 20% in the North-East and Wales, it remained close to 6% in southern England. It is worth noting that unemployment rates for the regions of outer Britain should be read as a minimum threshold in this year due to the unemployment insurance administration excluding miners who took part in the strikes from its records (and benefits) (The Ministry of Labour Gazette, January 1927). This fact substantially reduced the official number of unemployed workers in areas such as Durham, Northumberland, and Wales, where coal mining was the main employer.

In contrast to the effect in the north, in southern England the 1926 crisis had only a minor impact on unemployment rates. Unemployment increased during the two weeks of the general strike, but after that it continued the declining trend that had begun from the early 1920s. Finally, there are the cases of Scotland and Wales, where the shock was intense, but unlike in northern England the recovery was not gradual. Because the coal lockout mobilization lasted longer in these regions unemployment remained high up to the very end of 1926, when it declined abruptly.

Important as the shocks of 1926 were, it was the Great Depression that led to a sharp and more permanent increase in unemployment, which amplified the outer-inner Britain divide. During its peak in 1932, the unemployment rate in southern England was 13.8%, substantially lower than the 38% observed in Wales or 29% in Scotland and North-West. In fact, the unemployment rate in southern England at the very worst point of the depression was not very different from that of the depressed regions throughout the late 1920s. Even by 1930, when the national labor market had already deteriorated, southern England displayed a relatively low unemployment rate of 7.5%.

While unemployment brought about by the Great Depression was mainly located in outer Britain, from the second half of the 1920s, job opportunities were becoming increasingly concentrated in southern England. The British labor market during the interwar period was polarized, not only in terms of employment but also in terms of job opportunities, which suggests that significant spatial mismatching occurred where the unemployed and vacancies were increasingly located in different areas. Figure 5 shows the regional job vacancy rates. All regions were strongly affected by the general strike, although there were notable differences in the timing and intensity of the recovery. At one extreme was southern England, which was the first region not only to resume its growth trend in the job vacancy rate after the 1926 crisis but also to accelerate its expansion. At the other extreme was the case of the Midlands, where the job vacancy rate only recovered by 1929.

Regional differences in the job vacancy rate trends existed, however, even prior to the general strike. In northern England, the Midlands and Scotland, job vacancy rates declined from mid-1924, indicating that the main industries in these regions were losing the capacity to generate new employment well before the general strike. More extreme was the case of Wales, which by mid-1923 had the highest job vacancy rate in Britain before seeing a massive decline from which it never recovered.

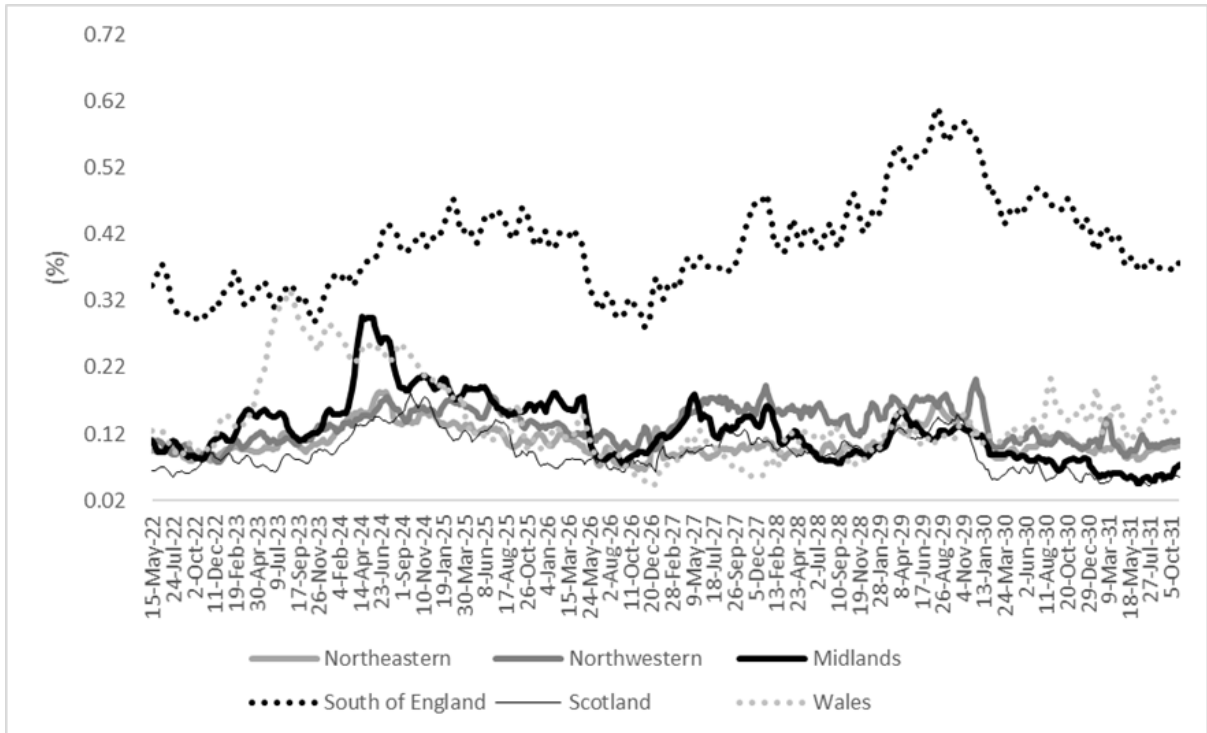


Figure 5: Weekly job vacancy rates for British regions, 15th May 1922- 2nd November 1931 (4 weeks rolling average)

Source: Estimated based on the returns of the unemployment Insurance administration.

With the two sides of the labor market, it is possible to estimate the labor market tightness, which is the ratio of the number of job vacancies to the number of unemployed. Such a ratio measures the relative abundance of vacancies given the number of unemployed. Figure 6 displays that measurement at a regional level. The labor market tightness in southern England increased across the board in the late 1920s and sharply declined in the early 1930s. This evolution is expected and explained by the business cycle, which reduced the number of vacancies per unemployed individual during the Great Depression. For other regions, except for the Midlands, the decline in labor market tightness did not persist after the initial shock in November 1929.

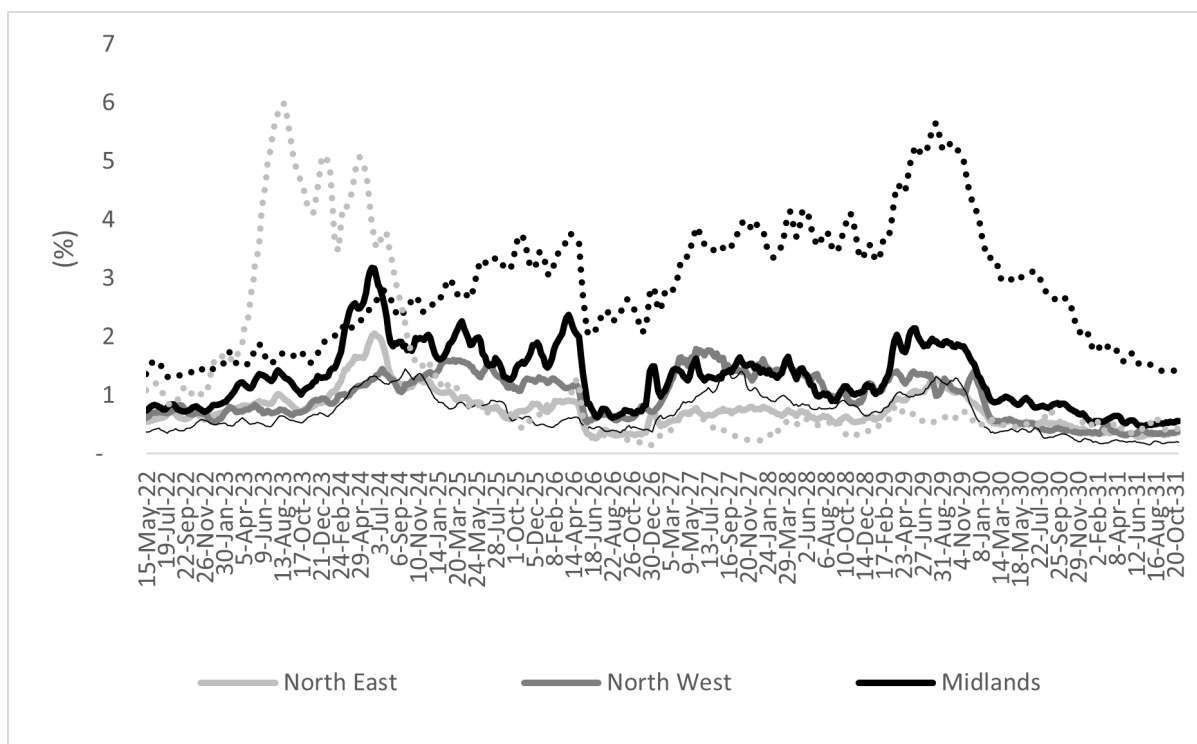


Figure 6: Weekly labor market tightness, 15th May 1922- 2nd November 1931 (4 weeks rolling average)

Source: Estimated based on the returns of the unemployment Insurance administration.

The Beveridge curve

To document the changing relationship between unemployment and vacancies between and within British regions over time, I estimate the national and regional Beveridge curves for Britain and its six main regions. Likewise, this regional and high-frequency dataset allows me to establish how much of the aggregate labor frictions in interwar Britain can be explained by either spatial mismatching, or frictions within regions, by the regional breakdown of the national Beveridge curve.

Originally proposed by [Dow and Dicks-Mireaux \(1958\)](#) for studying the post-war labor market, the Beveridge curve is a graphical representation of the downward sloping relationship between the unemployment rate and the job vacancy rate. The Beveridge curve allows a breakdown of the cyclical labor market dynamic from the structural changes in the level of labor frictions. A change in the relationship between unemployment and job

vacancy rates caused by a normal fluctuation of the business cycle can be observed in movements along the Beveridge curve's slope. On the other hand, a change in the relationship between these same two rates, caused by changes in the level of labor frictions, can be detected by inward and outward shifts of the Beveridge curve position from the origin (Abraham, 1987; Valletta, 2005; Mathy, 2018).

If the Beveridge curve shifts outwards from the origin, this means the labor market is facing a worsening in its level of frictions or a decline in the matching efficiency due to unemployment being higher for the same job vacancy rate. In contrast, if the Beveridge curve shifts inwards to the origin, the labor market is experiencing a decline in the level of labor frictions, which means that it is easier for unemployed workers and potential employers to match.

The new dataset used in this article allows me the regional estimation of the Beveridge curve, which displayed in Figure 7 for two macroareas, outer Britain and inner Britain plus the Midlands, between 1922 and 1931. As explained in Section 1, the number of unfilled vacancies by region could only be estimated until 1931 using the unemployment insurance records, which is why Figures 2 and 7 display different periods. However, the large outward shift of the Beveridge curve between 1929 and 1931 is still captured. Similar to that observed with regional unemployment rates, the two parts of the country were closer in terms of the Beveridge curve isoquant during the first half of the 1920s. However, in the second half of the 1920s, and particularly after the General Strike and Coal Lockout of 1926 there was a major increase in regional polarization, which increasingly concentrated job vacancies in inner Britain plus the Midlands and the unemployed in outer Britain. In the months prior to the Great Depression, Inner Britain had plenty of job opportunities, but these vacancies were not filled by the numerous unemployed individuals in the rest of the country.

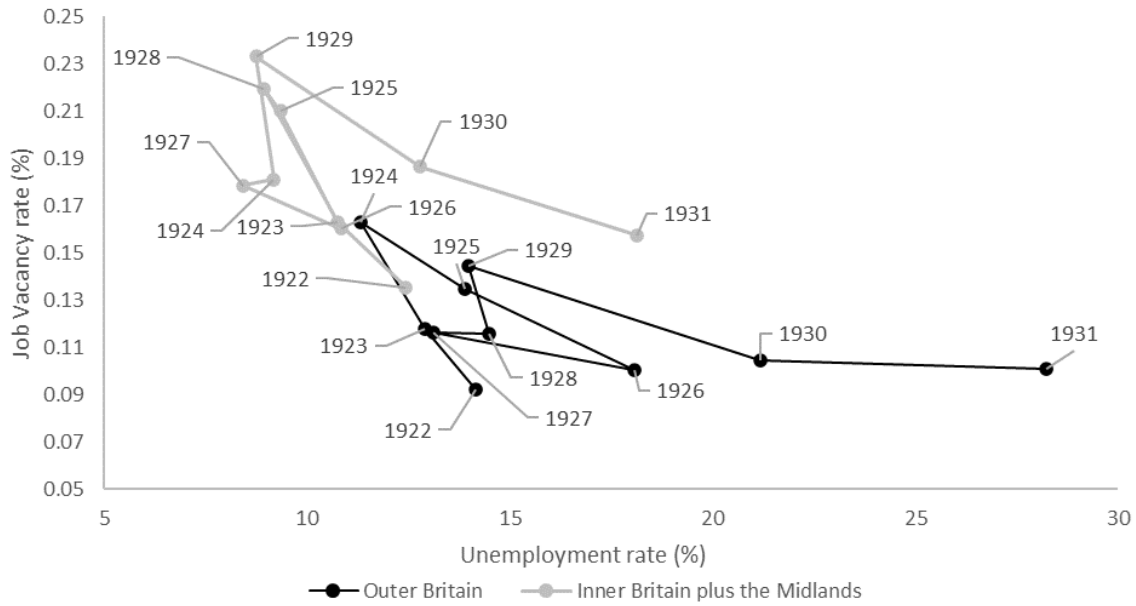


Figure 7: Annual Beveridge curve for British regions, 1922-1931 (annual averages)

Source: Estimated based on the returns of the unemployment Insurance administration.

Movements along and shifts of the Beveridge curve

The Beveridge curve could be derived from the matching function, a concept analogous to the production function, where unemployed individuals and vacancies are the inputs, and the number of matches is the output. The matching function aims to capture the technology or matching efficiency at which both unemployed individuals and vacancies transform into new hires or matches (W. Lee, 2016).

The matching function can be described as follows:

$$M_t = M_t(U_t, V_t) \quad (1)$$

where M is the number of new matches, U is the number of unemployed individuals, and V is the number of vacancies. The Cobb–Douglas is a common functional form used in literature for the matching function (Petrongolo and Pissarides, 2001) that assumes constant returns to scale. For this reason, the matching function can be represented as:

$$M_t(U_t, V_t) = AU_t^\alpha V_t^{1-\alpha} \quad (2)$$

where A is the matching efficiency, α is the elasticity of the number of unemployed on the number of matches, and $1-\alpha$ is the elasticity of the number of vacancies on the number of matches. Dividing by labor force (L), and assuming steady state, where the number of matches is constant and equal to the number of separations, Equation 2 can be rewritten as:

$$b_t = U_t^\alpha v_t^{1-\alpha} \quad (3)$$

where u is the unemployment rate (U/L), v is the job vacancy rate, and $b_t = 1/A$ is the reciprocal of the matching efficiency, which could also be interpreted as the position of the Beveridge curve isoquant. b_t has a negative relationship with the matching efficiency, which means that an increase, or an outward shift in the Beveridge curve, results in a reduction in matching efficiency. In contrast, a reduction in b_t , or an inward shift of the Beveridge curve, indicates an improvement in matching efficiency.

Following the approach of [Mathy \(2018\)](#), the Beveridge curve coefficients can be calibrated, assuming that b is constant and can be normalized to 1. Taking logarithms and changes, Equation 3 yields:

$$0 = \alpha \Delta \ln(u_t) + (1 - \alpha) \Delta \ln(v_t) \quad (4)$$

or

$$\frac{\Delta \ln(v_t)}{\Delta \ln(u_t)} = \frac{\alpha}{1 - \alpha} \quad (5)$$

Defining ϑ_t as the left-hand side ratio, α , which is necessary to estimate b_t in equation 3, can be calculated as:

$$\alpha = \frac{\vartheta_t}{\vartheta_t - 1} \quad (6)$$

Using a difference of 52 weeks, the α results are presented in Table 1 ⁶. In general, the coefficients moved within a range of 0.49 and 0.59, except for the North-East. These similar and close to 0.5 α coefficients across regions indicate that regional b_t values reacted to changes in both inputs; the unemployment and job vacancy rates, rather than to just one of them.

Table 1: Estimated α coefficients

Region	
Britain	0.49
North-East	0.26
North-West	0.44
Midlands	0.62
Southern England	0.51
Scotland	0.59
Wales	0.59

Once the α coefficients have been calibrated at the national and regional levels, it is possible to establish the weekly evolution of the position of the Beveridge curve isoquant, b_t , normalizing its value on April 24th, 1922 ⁷. Figures 8 and 9 display the evolution of

⁶Large outliers due to the ϑ_t being very close to one were excluded from the calibration. These values were:

August 3rd, 1925 and November 9th, 1925 for the North-West, and August 19th, 1929 for Wales.

⁷With the α coefficients and the unemployment and job vacancy rates from the dataset, it is possible to estimate b_t in equation 3. However, this value has not a relevant meaning, but what allows to capture

the position of the Beveridge curve isoquant for Britain and its regions, respectively.

The Beveridge curve for Britain saw a significant inward shift in 1922 as a result of the recovery from the 1921 crisis. These improvements reversed later that year until they reached a transitory peak in May 1926 due to the General Strike. However, this mid-1920s period of deterioration was transitory, and the Beveridge curve isoquant position decreased until reaching a nadir in late 1927. From this point onward, the national matching efficiency deteriorated before accelerating that worsening by the early 1930s.

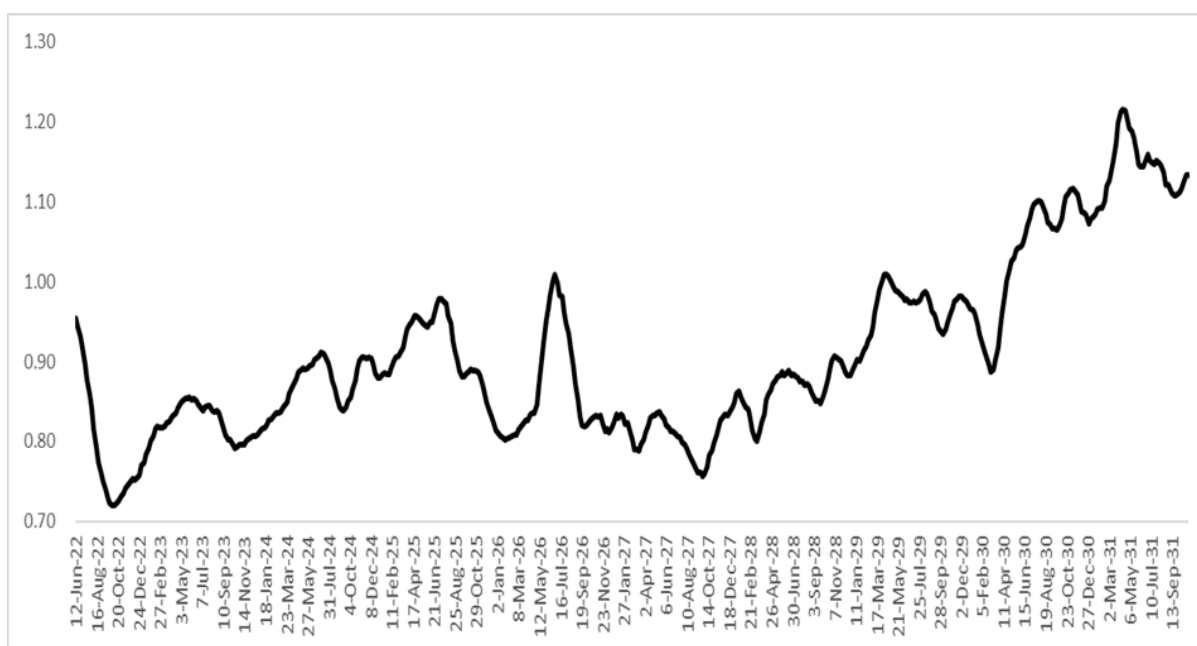


Figure 8: Beveridge Curve Isoquant Position in Britain, June 12nd 1922 -2nd November 1931 (eight weeks rolling average, April 24th 1922=100)

Figure 9 shows an important regional divergence in the matching efficiency between regions. In general, the regions in outer Britain (excluding Wales) suffered significant deterioration from the mid-1920s onward, and this divergence stopped by the onset of the Great Depression. On the other hand, southern England and the Midlands saw significant improvement in the first half of the 1920s, although their relative advantage began to decrease after mid-1930.

the evolution of the matching efficiency in the Beveridge curve is the shifts in b_t . For that reason, the value of b_t was normalized on April 24th 1922, which is why Figures ?? and ?? display the shifts from that date.

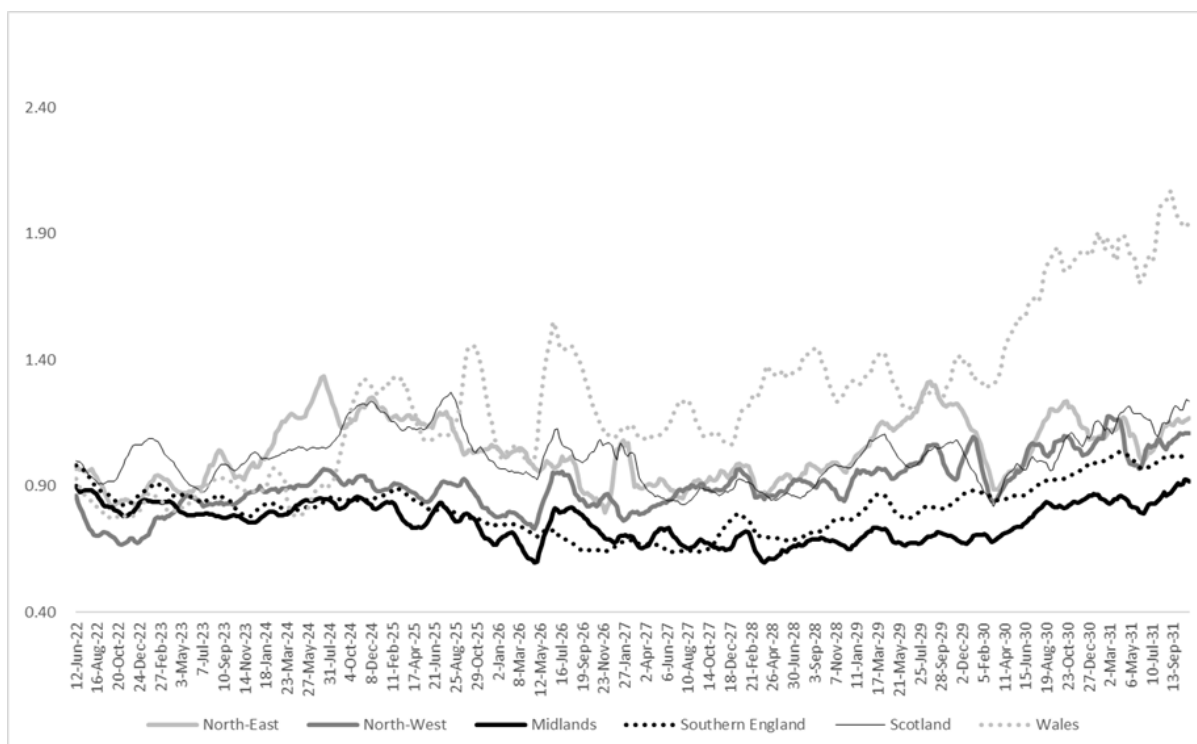


Figure 9: Regional Beveridge Curve Isoquant Position, June 12nd 1922 -2nd November 1931 (eight weeks rolling average, April 24th 1922=100)

Wales displayed the highest deterioration in matching efficiency, highlighting a relatively high level of unemployment given its local vacancies. This fact highlights that the high Welsh unemployment observed during the Great Depression, particularly from April 1930, was substantially driven by the frictions within Wales. In contrast to the evolution of the Beveridge curve in Wales during the 1926 Coal Lockout, during the Great Depression, intraregional frictions played a more important role during the latter shock. During the 1926 Coal Lockout, the mass unemployment in Wales can essentially be explained by the collapse in labor demand. However, during the Great Depression, there were large intraregional frictions that prevented more dynamic filling of regional vacancies.

In the case of the North-East, it is interesting that the peaks for the deterioration in matching efficiency were observed in mid-1924 and mid-1929 rather than during the Great Depression. In those years, there was a significant increase in the number of vacancies in the North-East, which did not lead to a decline in the unemployment rate. This fact could indicate that either spatial or skills mismatching existed within the region, which could

be related to the divergence of the areas present in that region, shaped by unemployment concentrating in Durham and Northumberland, and the relatively better performance of Yorkshire. For instance, in September 1929, within the North-East of England, the geographically close cities of Jarrow and York displayed unemployment rates of 33.1% and 7.5%, respectively (Local Unemployment Index, September 1929).

Similar to the North-East, intraregional frictions increased and peaked in the first half of the 1920s in Scotland, which was followed by substantial improvement that lasted until 1928. From that point onwards, the level of intraregional frictions increased until they reached a new peak at the end of the observed period. The reasons behind that improvement in intraregional frictions in Scotland between mid-1925 and 1928 are beyond the scope of this article, but a potential explanation is the larger internal mobility between its two main cities; Glasgow and Edinburgh ([Scott, 2007](#)). The former was largely dependent on export-oriented industries such as shipbuilding, while the latter developed a dynamic service sector. It is plausible to assume that Edinburgh was able to absorb a significant share of the unemployed who were originally located in Glasgow, although Scotland in the 1920s was also characterized by mass overseas migration. Regardless the reason behind the improvement in labor frictions in Scotland in the second half of the 1920s, that trend was reversed by the Great Depression.

In the North-West, where Lancashire accounted for most of the insured population, the level of intraregional frictions was not substantially different from those of the southern England in the first half of the 1920s. However, from 1926 a divergence commenced, which persisted during the Great Depression. The divergence between the two largest labor markets in that region, Liverpool and Manchester which by September 1929 showed unemployment rates of 18.1% and 8.6% respectively, indicate the presence of substantial frictions within the region. The evolution of the intraregional frictions in the North-West, and more generally, in the regions of outer Britain support the conclusion of [Booth and Glynn \(1975\)](#), who maintain that even in regions with high unemployment rates, depressed and prosperous areas coexisted.

The factors behind the low unemployment rates in southern England during most of the interwar period were not only the abundance of job opportunities but also the labor market's matching efficiency in filling those vacancies with local job-seekers. The rapid and sound growth of the retail industry, which employed many low-skilled workers (Luzardo-Luna, 2020) is likely key to this result. Likewise, the accelerated development of housing and new industries in the suburbs surrounding London, which witnessed enormous expansion during the interwar years Bowley (1945) and Scott (2007), demanded a vast amount of manpower. This opportunity was probably seized by many workers who were probably able to benefit from the largest urban transportation network in the world at that time, which made daily commuting between the working and residential areas more feasible.

Using data from the *New Survey of London Life and Labour* (1929-31), Seltzer and Wadsworth (2021) find evidence that commuting was linked with higher earnings during the early 1930s, which could be associated with more productive matches. Certainly, an unemployed person in Greater London, who for instance lived in the relatively more deprived areas in the east of the capital, had more employment options due to the availability of public transport, in areas such as in central London or the prosperous suburbs in the west of the city. Likewise, due to the shocks of 1926 having had a marginal impact in southern England, the strengthening of this regional labor market was not interrupted, which proved important for its resilience during the Great Depression. However, intraregional frictions within southern England saw a significant increase during the Great Depression, and eventually converged with those of northern England by 1931. Unlike the case for outer Britain, the job vacancy rate had a higher impact on the worsening of matching efficiency in southern England. Despite having a relatively higher matching efficiency rate, from the late 1920s, southern England suffered increasing difficulty in filling its stock of vacancies, and this situation did not change with the Great Depression.

The most surprising result is that for the Midlands, which displays the lowest growth of the Beveridge curve isoquant position. This high level of matching efficiency is probably

related to the rise of mass production industries in this region, which could have easily absorbed many unemployed workers from declining trades, such as metal works. In reducing its labor frictions, the Midlands managed to have an unemployment rate below the national average, even without a particularly high number of job opportunities.

An important constraint for the analysis of labor frictions by regional breakdown of the Beveridge curve, is the fact that the interwar labor market was largely segmented by gender or age, implying that some vacancies were exclusively oriented to determined groups, such as males or juvenile workers. For instance, if the unemployed were mainly composed of men, but the employers sought to recruit mainly female workers, this mismatch could be a source of friction. An examination of the employment composition for 1921 and 1931 ([C. Lee, 1979](#)) reveals that gender was an important source of segmentation. Some industries, such as coal mining or shipbuilding, were composed of predominantly men, while the main employer for female workers was the textiles sector. Ideally, the evolution of the Beveridge curve isoquant position should be estimated by segments (different groups within a given region, e.g. females in the North East) rather than by region.

The large segmentation observed in the vacancies is also associated with the substantial gender and age wage gaps that shaped the interwar labor market. [Scott \(2007\)](#) showed that in October 1935, the average wage for women in the industrial sector ranged between 46% and 54% that of men. Similarly, wages for juvenile workers were substantially lower than those for men, ranging between 23% and 47% of an adult male's wages. Such sharp wage differences could signal an important segmentation in terms of workers' occupation within industries. In this case, employers could have recruited mainly adult males for the relatively better paid occupations while discriminating against women and juveniles. In addition, such low wages were a barrier to daily commuting.

Unfortunately, in the case of vacancies, the dataset does not provide details about gender or age, and the information is limited to location only. However, the regional calibration of the Beveridge curve can mitigate that problem. The average vacancy in a given region is shaped by the industrial composition in that region, which partially captures some

segments' characteristics. For instance, the average vacancy in the North-West is more likely to be from the textile industry, the most prolific employer in that region, and therefore there was a higher probability that the position was aimed at female job seekers. In other words, the smaller the geographical breakdown, the higher the probability that both the unemployed and vacancies were in the same segment. Likewise, it is worth noting that even so the largest depressed trades; coal mining and textiles, were very segmented, the industry which had the most concentrated employment opportunities- the retail trade in southern England, seemed very open to all segments in terms of employment, although also segmented in regard to occupations.

In addition to establishing the magnitude of labor frictions within each region, the regional breakdown of the Beveridge curve allows me to establish the impact of spatial mismatching on the national level of labor frictions. Following the approach of [Abraham \(1987\)](#) and [Valletta \(2005\)](#) for the United States, the article defines the percentage of national labor frictions that is not explained by the aggregation of the regional b_t coefficients as spatial mismatching. The latter is calculated as the difference between the b_t for Britain and the weighted sum of the regional b_t , using the share of each region in the insured population as the weights. In other words, spatial mismatching appears when transaction costs in the aggregate labor market are greater than the sum of its parts.

Figure ?? show the contribution of each region⁸ into the national b_t for the entire inter-war period and the Great Depression. During the 1920s labor frictions were explained essentially by frictions within regions. However, between 1930 and 1931, when the most significant outward shifts in the Beveridge curve occurred, spatial mismatching accounted for 6.7% of the national labor frictions change.

⁸The contribution of region i into the national b_t is equal to

$$\frac{(b_{i,t} * l_i)}{b_t}$$

where l_i is the share of region i in the national labor force.

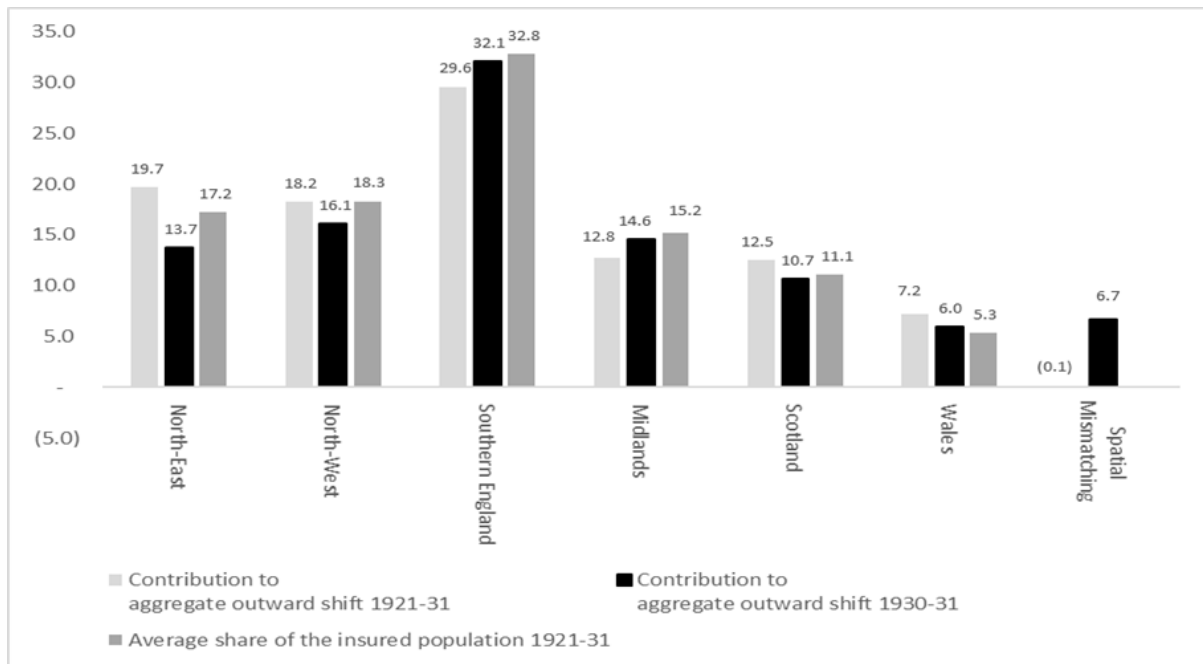


Figure 10: Contribution of drivers of the Beveridge curve shifts between 1921-31 and 1930-31 (%)

Large-scale interregional labor migration would have had significant, although limited, potential to reduce structural unemployment, and the prosperity in southern England during the “Roaring Twenties” could have provided relief for the depressed areas in other parts of the country. Contemporary policymakers were aware of that situation, and in fact, the government launched some labor mobility schemes managed by local labor exchanges (Burns, 1941). For instance, the Household Removal Scheme was launched in 1928 to provide financial assistance towards travel expenses when a head of household obtained a job in an area with good employment prospects for the other family members. However, the scope of this scheme was very limited, and this kind of policy was only implemented on a significant scale in 1934 with the reform of the entire unemployment insurance system (Burns, 1941).

According to G. Thomas (1951), who presented the results of a survey commissioned by the Ministry of Labour, the majority of labor mobility observed during the interwar period occurred within regions rather than between regions. These results, which are displayed in Table 2 (which only includes male workers), indicate that approximately

23% of the interviewed workers changed towns during the worst period of the Great Depression (1930-134), but only 7% moved to a completely different region. Surprisingly, such a value is lower than that observed for either the second half of the 1920s (8%) or the early postwar period between 1945 and 1949 (10%). Despite the difference in regional mobility between the late 1920s and the early 1930s being marginal, the unemployment rate in those periods was substantially different. Furthermore, Britain showed a higher degree of geographical mobility during the booming postwar period, where the labor market’s main problem, instead of high unemployment, was the shortage of candidates for recruitment. This disparity reveals the presence of substantial barriers for both intra- and interregional mobility that prevented more dynamic geographic labor mobility during the interwar period, possibly associated with high housing and commuting costs.

Table 2: Share of interviewed men that changed town or region, 1925-1949

Period	% of men changing town	% of men changing region
1925-29	24	8
1930-34	23	7
1935-39	28	9
1940-44	21	6
1945-49	35	10

Source: [G. Thomas \(1951\)](#), pp. 39-40

Housing has frequently been mentioned in the literature as a constraint for inter-regional labor mobility, especially for more recent periods ([Moretti, 2012](#)). Housing could be a constraint for more dynamic north-south migration, although its actual impact on spatial mismatching is an area that requires further research. However, considering that the areas that saw the highest population expansion were the suburbs of Greater London, rather

than the city center, it seems plausible to assume that the supply of housing grew faster for the middle-income segment than in the working-class segment of the population. [Scott \(2007\)](#) found that growth in the house-building sector was substantial during the interwar period, although this expansion- concentrated mainly in the 1930s. House-building was boosted by a significant reduction in mortgage costs. However, the lack of the same dynamism in the 1920s could have been a critical element behind the observed spatial mismatching observed during the Great Depression.

Even if small enough to have an impact on the aggregate labor market, the influx of migrants towards Greater London was substantial, and this attracted the attention of contemporary observers. [B. Thomas \(1934\)](#) estimates that between 1927 and 1931, around 4.6% of the insured population in the South-East were from a different region, with Welsh workers having a large share. Table 3 shows the region of origin of the insured workers with an unemployment book issued outside of the South-East region, which reveals that Wales was by far the administrative division from where the unemployed were the most keen to migrate from.

As important as spatial mismatching was during the Great Depression, the fact is that frictions within regions were the main driver behind the changes in the national b_t and therefore were the main cause of high structural unemployment in Britain. Such results reveal an important conclusion, which that the main source of labor frictions in interwar Britain was the unemployed individuals in depressed regions were not filling the job vacancies in their own regions. Such a result could be explained by skill mismatching, but also for poor commuting within depressed regions, which could had be a major constraint for intraregional mobility.

Table 3: "Foreign" Unemployment Books lodged in the South-East, 1927-1931

Division of Origin	"Foreign" Books	Average insured population 1927-31	"Foreign" Books per 1,000 of the average insured population
South-West	24,816	844,000	29.40
Midlands	20,748	1,803,000	11.51
North-East	31,562	2,002,000	15.77
North-West	20,437	2,142,000	9.54
Scotland	10,901	1,292,000	8.44
Wales	24,089	596,000	40.42
Northern Ireland	753	260,000	2.90

Source: [B. Thomas \(1934\)](#), pp. 224

A final point that is worth examining in order to understand both the lack of more dynamic inter-regional mobility and the frictions within the regions, is the role that Unemployment Insurance played. The influence of unemployment benefits on unemployed persons' search efforts, and therefore on labor frictions, has been greatly discussed in the economic history literature ([Benjamin and Kochin, 1979](#); [Eichengreen, 1986](#); [Hatton and Bailey, 2002](#)), but without any definitive answer. The precise impact of Unemployment Insurance on labor frictions goes beyond the scope of this article, but it is worth mentioning that Britain saw significant wage deflation during the early stages of the depression without any nominal change in the unemployment benefits up to 1931, which is why these later gained purchasing power during the Great Depression. [Eichengreen \(1986\)](#) and [Hatton and Bailey \(2002\)](#) did not find evidence of a substantial increase in the prevalence of unemployment using micro-data from the *New Survey of London Life and Labour*

(1929-31), which covered precisely the period of the outward shift in the Beveridge curve in Britain brought about by the Great Depression. Important as these results are, they examine only the case of London, which probably displayed higher nominal wages than those in the rest of the country, and which led to a particularly low replacement rate (the ratio of unemployment benefit to nominal wage). If other regions outside London, and more generally southern England, had higher replacement rates, the channel of the reduction in searching effort caused by unemployment benefits cannot be completely ruled out as an explanation for the frictions within regions or the lack of higher internal migration.

Conclusions

With the onset the Great Depression, Britain faced a sharp increase in labor frictions, as seen in the significant outward shift of the Beveridge curve. Spatial mismatching accounted for a significant share of those higher labor frictions, which is why the lack of more dynamic interregional mobility that shaped Britain resulted in a negative effect on employment between 1930 and 1931.

While the impact of spatial mismatching was significant during the Great Depression, intraregional frictions were the main source of labor frictions in the entire interwar period, and therefore were a driver of regional polarization. Why those intraregional frictions increased, and why they did so more in outer Britain than in southern of England or the Midlands, is a relevant question for further research. In this context, the lack of suitable commuting networks, such as those found in London and the southeast of England, and the role of skills mismatching are areas that would be particularly interesting to explore.

Behind the regional polarization that shaped interwar Britain lies a profound structural change that featured the decline of the Industrial Revolution industries and the rise of new industries that implemented mass production technology, together with the consolidation of the services sector. Due to significant regional differences in industrial composition, the result was a polarized labor market, where unemployed workers and job vacancies were

increasingly concentrated in different areas, which substantially increased unemployment during a time of a major crisis such as the Great Depression. In other words, the interwar regional polarization of the labor market was a major latent friction, which manifested in full force in the presence of a major crisis.

The intensity of structural change in interwar Britain, the first example of a Western “deindustrialization”, was substantial and played a critical role in high and persistent unemployment during this period. This radical adjustment is probably only comparable to the Industrial Revolution itself, when the changes worked in precisely the opposite direction, leading to the rise of the north and the relative decline of the south of Britain.

References

- Abraham, K. (1987). “Help-wanted advertising, job vacancies, and unemployment”. In: *Brookings papers on economic activity* 1987.1, pp. 207–248.
- Barnichon, Regis et al. (2012). “Which industries are shifting the Beveridge curve”. In: *Monthly Lab. Rev.* 135, pp. 25–37.
- Benjamin, D. K and L. Kochin (1979). “Searching for an explanation of unemployment in interwar Britain”. In: *Journal of Political Economy* 87.3, pp. 441–478.
- Beyer, R. and F. Smets (2015). “Labour market adjustments and migration in Europe and the United States: how different?” In: *Economic Policy* 30.84, pp. 643–682.
- Blanchard, O. J and L. Summers (1986). “Hysteresis and the European unemployment problem”. In: *NBER Chapters*.
- Booth, A. and S. Glynn (1975). “Unemployment in the interwar period: a multiple problem”. In: *Journal of Contemporary History* 10.4, pp. 611–636.
- Bowley, M. (1945). *Housing and the State, 1919-1944*. G. Allen & Unwin Limited.
- Boyer and Hatton (2002). “New estimates of British unemployment, 1870-1913”. In: *Journal of Economic History*, pp. 643–675.
- Burns, E. (1941). “British unemployment programs, 1920-1938. D.C”. In: *Committee on Social Security Social Science Research Council, Washington*.
- Crafts, N. (1989). “Long-term unemployment and the wage equation in Britain, 1925-1939”. In: *Economica*, pp. 247–254.
- Daly, M. et al. (2012). “A search and matching approach to labor markets: Did the natural rate of unemployment rise?” In: *Journal of Economic Perspectives* 26.3, pp. 3–26.
- Dow, J. and L. Dicks-Mireaux (1958). “The excess demand for labour. A study of conditions in Great Britain, 1946-56”. In: *Oxford Economic Papers* 10.1, pp. 1–33.
- Eichengreen (1986). “Unemployment in interwar Britain: new evidence from London”. In: *The Journal of Interdisciplinary History* 17.2, pp. 335–358.
- Eichengreen and Hatton (1988). “Interwar unemployment in international perspective: an overview”. In: *Interwar Unemployment in International Perspective*, pp. 1–59.

- Entorf, H. (1994). “Overtime Work, Lack of Labour, and Structural Mismatch: Some Extensions of the “European Unemployment Programme” Framework”. In: *Output and Employment Fluctuations*. Springer, pp. 131–156.
- Fogli, A., E. Hill, and F. Perri (2013). “The geography of the great recession”. In: *International Seminar on Macroeconomics*. Vol. 9. 1. JSTOR, pp. 305–331.
- Garside, W. (1990). “British Unemployment 1919-1939”. In: *Cambridge Books*.
- Hatton and Bailey (2002). “Unemployment incidence in interwar London”. In: *Economica* 69.276, pp. 631–654.
- Hatton and Thomas (2012). “Labour Markets in Recession and Recovery: The UK and the USA in the 1920s and 1930s.” In: *The Great Depression of the 1930s: Lessons for Today*, pp. 328–357.
- Jackman, R and S Savouri (1999). “Mismatch: A Framework for Thought (1990)”. In: *Tackling Unemployment*. Springer, pp. 141–200.
- Karahan, F. and S. Rhee (2019). “Geographic reallocation and unemployment during the Great Recession: The role of the housing bust”. In: *Journal of Economic Dynamics and Control* 100, pp. 47–69.
- Lee, C.H. (1979). *British regional employment statistics, 1841-1971*. Cambridge University Press.
- Lee, W and Y. Yoon (2020). “Structural change in the job matching process in the United States, 1923–1932”. In: *European Review of Economic History* 26.1, pp. 107–123.
- Lee, W. (2016). “Slack and Slacker: Job Seekers, Job Vacancies, and Matching Functions in the US Labor Market during the Roaring Twenties and the Great Contraction, 1924-1932”. In: *The Journal of Economic History* 76.3, pp. 840–873.
- Luzardo-Luna, I. (2020). “Labour frictions in interwar Britain: industrial reshuffling and the origin of mass unemployment”. In: *European Review of Economic History* 24.2, pp. 243–263.
- Mathy, G. (2018). “Hysteresis and persistent long-term unemployment: the American Beveridge Curve of the Great Depression and World War II”. In: *Cliometrica* 12.1, pp. 127–152.

- Matthews, R. (1968). “Why has Britain had full employment since the war?” In: *The Economic Journal* 78.311, pp. 555–569.
- Moretti, E. (2012). *The new geography of jobs*. Houghton Mifflin Harcourt.
- Petrongolo, B. and C. Pissarides (2001). “Looking into the black box: A survey of the matching function”. In: *Journal of Economic literature* 39.2, pp. 390–431.
- Pissarides, C. (2000). *Equilibrium unemployment theory*. 2nd ed. MIT press.
- Rosés, J. and N. Wolf (2019). *The economic development of Europe’s regions: A quantitative history since 1900*. Routledge.
- Şahin, A. et al. (2014). “Mismatch unemployment”. In: *American Economic Review* 104.11, pp. 3529–64.
- Scott, P. (2007). *Triumph of the South: A regional economic history of early twentieth century Britain*. Ashgate Publishing Company.
- Seltzer, A. and J. Wadsworth (2021). “The Impact of Public Transportation and Commuting on Urban Labour Markets: Evidence from the New Survey of London Life and Labour”. In: *Economic History Working Papers* 331.
- Thomas, B. (1934). “The Movement of Labour into South-East England 1920-32”. In: *Economica* 1.2, pp. 220–41.
- Thomas, G. (1951). *Labour mobility in Great Britain 1945-1949: an inquiry carried out for the Ministry of Labour and National Service*. Ministry of Labour and National Service.
- Thomas, M. (1988). “Labour market structure and the nature of unemployment in interwar Britain”. In: *Interwar Unemployment in International Perspective*. Springer, pp. 97–148.
- Valletta, R. (2005). “Why has the US Beveridge curve shifted back? New evidence using regional data”. In: *New evidence using regional data*.