

Structural changes in UK sectoral labour markets and their macroeconomic implications

Undoubtedly, the UK labour market has undergone a substantial change in recent decades (Dolton, 2018). This box uses a new dataset to analyse patterns of sector-level employment over time. It provides evidence that changes in the UK labour market have been associated with sector-level developments but also changes in industry composition, i.e. the relative size of sectors. We find that a rebalancing towards more productive sectors partly offsets a slowdown in productivity growth while average wage dynamics are associated predominantly with sector-specific trends. The increase in female labour force participation has been achieved by sectors with traditionally higher shares of female employees gaining in size. Vice versa, the UK economy would be more open to international trade, and the bargaining power of workers weaker had the industry composition remained the same since the 1990s. Finally, we measure the position of sectors in the whole-economy labour market using cross-sectoral employment flows. We find that sectors with higher cross-sectoral employee turnover are less exposed to international competition, less productive and characterised by lower levels of wage growth.

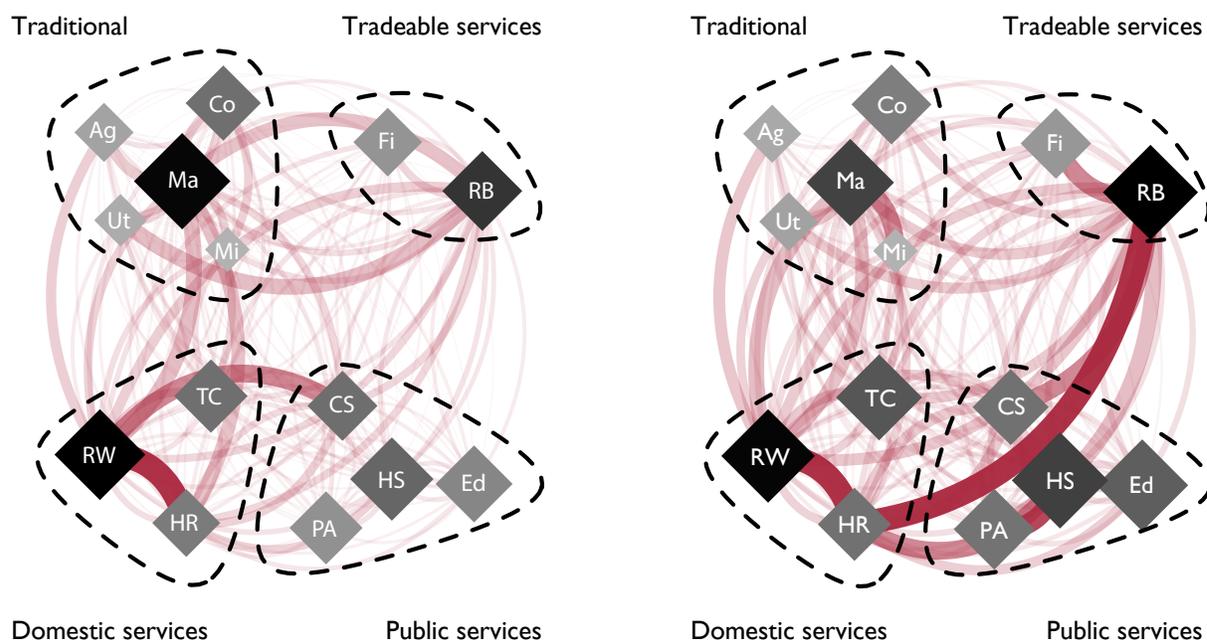
Labour market trends

Based on data from the Quarterly Labour Force Survey, we construct measures of employment by sector and measure the interconnectedness between sectors using cross-sectoral employment flows. This forms part of research at NIESR that studies the impact of long-run structural changes on sectoral dynamics of employment, productivity and pay.

Sector employment shares. In figures 1 and 2, each diamond depicts one of 14 broad sectors of the economy in 1994–6 and 2017–18, respectively. The area of each diamond reflects the sectors' workforce. Comparing figures 1 and 2, we find that some sectors gained in size and others substantially lost. Manufacturing sectors have lost more than a third of their workforce since the 1990s. Employment in outward-facing business services, education and health sectors, on the other hand, has grown by 40–60 per cent.

Figure 1. Labour market flows across sectors, UK, 1994–6

Figure 2. Labour market flows across sectors, UK, 2017–18



Source: NIESR.

Notes: Sectors – Ag: Agriculture, Mi: Mining & quarrying, Ma: Manufacturing, Ut: Utilities, Co: Construction, RW: Wholesale & retail, HR: Hotels & restaurants, TC: Transport & communication, Fi: Finance, RB: Business services, PA: Public administration, Ed: Education, HS: Health & social work, CS: Other services. Flows depict intensity of quarterly employment flows as a share of total employment in source sector. The darker the colour of the diamond the more central is the sector's position in the network. Diamond areas reflect sector employment: differences in area for a given sector across the two periods are proportional to changes in employment; differences in area across sectors in a given period are illustrative only.

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Connectedness. For each sector, we count the number of workers that move from this sector to another at a given point in time. The cross-sectoral employment flow is calculated as the percentage of leavers relative to total sector-level employment at quarterly frequency. We thus focus here on members of the labour force in employment and are interested in long-term structural changes in cross-sectoral flows, as opposed to labour market dynamics related to the business cycle. Comparing most recent worker flows (figure 2) with those observed in the 1990s (figure 1), we find a substantial increase in connectedness, illustrated by the denser set of lines linking sector diamonds. This suggests that workers now find it easier to work in other sectors than in the past, relative to churn of workers within sectors which our cross-sectoral analysis does not pick up. We find a particularly strong increase in flows between the hospitality (HR) and real estate and business services (RB) sectors, reflecting a deeper integration of both sectors' labour markets. Changes in cross-sectoral employment flows over time may partly also be due to the contracting out of activities. For example, some of current business services jobs used to be undertaken as part of public administration or various production activities were contracted out which makes firms previously part of the manufacturing sector now become part of the wholesale sector.

Centrality. Figure 1 shows that in the 1990s, workers were most likely to move between the traditional sectors of the economy (upper left corner), in particular in and out of manufacturing. Since then, most of the action has moved to the right of the chart, i.e. to private and public services sectors. In particular worker flows within this set of sectors have intensified. To quantify the importance of individual sectors in the network, we employ the concept of centrality. Centrality is a measure of the importance of a node in a network. In particular, we use the concept of eigenvector centrality (Jackson, 2010, pp. 66). It is calculated by first constructing an adjacency matrix that captures the strength of connections between each node and all other nodes. The greatest eigenvector of this matrix provides a measure of centrality such that the centrality (or importance in the network) of each node is a function of the centralities of its neighbours. In this case, the connections between the sectors are weighted by the share of labour passing from one sector to another each period. In figures 1 and 2, the colour of the sector diamonds illustrates their centrality, with darker diamonds corresponding to more central sectors. We find that business services and public services sectors, like health and education, have become more central, while manufacturing sectors have moved somewhat to the periphery. The sector that has remained an important node throughout is wholesale and retail trading, highlighting its role in attracting workers from both traditional and internationally open services sectors.

Macroeconomic implications

How do the structural changes in employment shares and cross-sectoral employment flows link to changes in aggregate labour market outcomes?

Table 1. The impact of sectoral trends on aggregate labour market outcomes

	Real wage growth (%)	Productivity growth (%)	Openness (index)	Union density (%)	Share of female workers
1996–2000	2.50	2.3	0.125	29.6	0.463
2011–2015	–0.97	0.2	0.128	25.4	0.489
Difference	–3.47	–2.1	0.003	–4.2	0.026
Contribution of sector trends	–3.45	–2.3	0.026	–5.9	–0.003
Contribution of industry composition	–0.02	0.2	–0.023	1.8	0.028
Correlation with centrality 1996–2015	–0.07	–0.01	–0.30	–0.21	0.23

Source: ONS, NIESR.

Notes: Average annual real wage and productivity growth in a given period. Productivity growth is the growth rate of output per hour worked. Aggregate differences reflect sector-specific changes and changes in the relative size of each sector. The contribution of sector trends is calculated considering sector-specific changes while holding the employment weight of each sector fixed. The contribution of the industry composition is calculated considering only changes in sector employment weights, holding sector-level characteristics fixed at their 1996–2000 values.

The top panel of table 1 decomposes for a number of important labour market variables the contribution of sector-specific developments and the contribution of changes in the sector composition to structural changes observed at the level of the whole economy. To do so, we construct two counterfactuals of the UK labour market: one in which the relative size of sectors remains unchanged (yielding the contribution of sector trends), and one in which sector averages of labour market outcomes remain fixed (yielding the contribution of changes in the industry composition). We find that changes in the sector composition of employment both aggravate and buffer different sector-specific trends. While the average decline in real wage growth since the

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1990s can mainly be explained by sector-specific changes in wage growth, a rebalancing towards more productive sectors partly offset the sector-specific slowdown in labour productivity growth over the past two decades.

In addition, had the sector composition remained unchanged over the past two decades, a counterfactual UK economy would be much more open to trade than it is now. While there has been a general decline in union density, at the macroeconomic level this was partly offset by a strengthening of sectors with higher union density, in particular the public sectors. Increases in the labour market participation of women are entirely reflected in changes in the sector composition of employment while on average, the share of female workers per sector has actually declined somewhat.

Is there a flipside to stronger connectedness between sectoral labour markets? The bottom line of table 1 correlates our measure of sector centrality with labour market variables over the period 1996–2015. This illustrates that sectors that play a more central role for the domestic labour market tend to be less exposed to international competition, are characterised by lower than average worker bargaining power and are somewhat less productive. This may explain lower levels of wage growth in these sectors.

Our analysis suggests that observing changes in the sectoral composition of the labour market and cross-sectoral employment flows helps to understand structural changes the whole-economy labour market undergoes.

This box was prepared by Nathaniel Butler-Blondel and Arno Hantzsche.

REFERENCE

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