Pretty vacant: using job vacancies to understand the effects of labour market mismatch on UK output and productivity

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Question

The mismatch between unemployed jobseekers and job vacancies has been implicated as a driver of the UK's productivity 'puzzle'. Using job adverts posted online, we examine the extent to which eliminating occupational or regional mismatch would have boosted productivity and output in the UK in the post-crisis period.

Data

Our data are 15 million individual job ads posted daily by firms representing around 45% of all UK vacancies between January 2008 and December 2016. The data are 'naturally occurring', i.e. they were not collected for a survey and so do not have official labels (such as sector). The fields in the raw data which are typically available for each vacancy include a job posted date, an offered nominal wage, a job location, a job title, and a job description. Vacancies by region and occupation are not currently available in the official statistics.

Methods

We develop an algorithm which takes job descriptions and maps them into Standard Occupational Classification (SOC) codes using text analysis. We provide new estimates of Diamond-Mortensen-Pissarides style matching functions of the form $M = \phi u^{1-\alpha} v^{\alpha}$ by occupation and region. We run counter-factual simulations of employment, output, and productivity (per worker) with a social planner's optimal allocation of the unemployed to either occupation or regional sub-markets, following Sahin *et al.*, Mismatch unemployment. *American Economic Review*, 104(11), 3529-64, 2014. Counter-factual paths dependent on how many unemployed exist for social planner to reallocate, and on dispersion in productivity, tightness, and matching efficiency. Higher initial unemployment means the planner can have more impact.

Preliminary results

The differences in the rate of job-finding across parts of the labour market mean that the aggregate outflow from unemployment to employment is dependent on the distribution of jobs, or of the unemployed, across occupations and regions. So labour market heterogeneity by both occupation and region matters for output growth.

We find, contrary to existing literature, that unwinding occupational mismatch would have had a weak effect on the productivity level in the post-crisis period. However, unwinding regional mismatch would have substantially boosted output and productivity relative to their realised paths, bringing them in line with their pre-crisis trend rate of growth. Results are driven by large regional variation in labour markets, and higher unemployment in 2008/2009.

Although the influence of occupational mismatch on output has been weak, we do find an inverse relationship between worker productivity and matching efficiency. This implies that an unemployment shock to the higher skilled employment categories would be doubly damaging to short-term output because they combine high productivity with a low rate of job-finding. Unemployed jobseekers in managerial occupations would take around three times as long to find new work as those in elementary occupations. The strong effects of regional mismatch in the post-crisis period suggest that lowering the barriers to movement across regions, or equalising productivity, tightness, or the rate of job-finding, across regions, would reduce the potential for mismatch to weigh down on output in future.