Labour shortages, labour mobility and regional impact analysis

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Abstract
This abstract presents a multi-regional input-output (MRIO) model for the UK, integrating labour dynamics to analyse labour shortages, mobility and their regional impacts. By endogenizing labour and allowing for varied elasticities between labour and capital, the model captures the nuances of labour market tightness and its effects on wages. It incorporates a matching model to detail the mobility within and between occupations and regions, highlighting the interplay between labour supply constraints, wage-price feedbacks and demand-side adjustments.
Following the framework of Lankhuizen et al. (2022) and Diodato and Weterings (2015), our model introduces labour as a dynamic component. Labour is substituted against capital with a large heterogeneity of substitution elasticities, ranging from zero to values beyond unity. These factor demand functions are combined with Leontief technology for intermediate inputs and mark-up pricing.
Wages by occupation and region react to labour market tightness estimated using regional unemployment levels along with individual and regional fixed effects, similar to the classic Blanchflower and Oswald (1994) model. In turn, regional unemployment by industry is estimated in the model through a matching of the labour market with full mobility across industries within occupations, and limited mobility between occupations and regions. Lankhuizen et al (2022) have used this matching approach to show the discrepancy between employment effects from a type I (pure Leontief) model and employment effects with fully binding labour supply constraints. We extend this approach (i) by the income-consumption multiplier effects from employment generation and (ii) by feedbacks on wages and prices from matching between vacancies and unemployment (at the occupation-region level). Compared to an unconstrained macroeconomic IO model, the labour supply shortages reduce the employment/income effect, so that household demand also adjusts due to the constraints. Higher labour demand pressure also feeds back on wages and prices and therefore on consumption as well as on labour demand.
On the final demand side, aggregate private consumption depends on real disposable household income, which is also influenced by feedbacks from the price side as well as by fiscal policy (transfers and tax rates). The structure of household expenditure is specified in a simple household demand system. Gross fixed capital formation, public consumption and foreign exports are the exogenous parts of final demand.
This approach provides insights into the macroeconomic feedback mechanisms, particularly in regional impact analyses, underscoring the critical role of labour market dynamics in understanding economic resilience and policy implications. The macroeconomic feedback mechanisms in our IO model (income/consumption and prices/demand) explicitly describe the adjustment of the demand side to supply constraints, which is especially relevant in the case of regional impact analysis.