

## [Modelling the service sector](#)

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In this paper, we have tried to understand better how service-sector companies operate and to incorporate some of these features into an otherwise standard macroeconomic model so as to examine their implications. We had two motivations for doing this. First, in the wake of the financial crisis output fell dramatically while inflation remained above its target and productivity collapsed relative to its previous trend. The fall in productivity relative to trend was particularly pronounced within the service sector, and then most particularly in certain subsectors such as ‘Professional, Scientific and Technical Activities’. At the same time, CPI services inflation has remained in the 3% to 5% corridor it has occupied since at least 2000. Given the weight of services in the economy – 75% in GDP and 50% in the CPI – it would seem that understanding how this sector works is crucial if we are to understand how the economy as a whole responds to shocks. Second, most standard macroeconomic models assume that ‘value-added’ is produced using capital and labour and raw materials and imports are combined with ‘value-added’ to produce final output. Whereas this model is a reasonable description of the manufacturing process, it seems less representative of what happens in the service sector. For example, how do we measure the output of, say, a firm of consultants, architects or estate agents? And what are the inputs of such firms? It is clear, for instance, that human capital and other forms of intangible capital such as goodwill, firm-specific knowledge and ways of doing things, and client bases, to name but a few, will be extremely important in enabling service companies to produce output. And these factors are also likely to affect price and wage setting in the service sector. For example, given the difficulty in measuring output and hence productivity, together with the importance of individual-specific human capital, how do you determine wages in a service company?

In order to get a better idea of how service-sector firms actually operate in practice, we first embarked on a series of structured visits to a set of firms that span the service sector. More specifically, we visited around 30 private-sector service providers, with a roughly even spread across Standard Industrial Classification sectors: four firms in Sector G (wholesale

and retail trade), two firms in Sector H (transport and storage), two firms in Sector I (accommodation and food services), two firms in Sector J (information and

communications), three firms in Sector K (finance and insurance), three firms in Sector L (real estate), five firms in Sector M (professional and scientific), three firms in Sector N (administrative and support services) and, finally, two self-employed workers in Sector R (arts, entertainment and recreation). In each case, we asked the firm what they considered to be their outputs and inputs and how they went about measuring them; we asked them what they considered to be full capacity and how they might respond to increases in demand; and we asked them about the form that their investment undertook and, more generally, about how they were able to achieve improvements in productivity. Our visits suggested two important features of service-sector firms: the need to spend time on 'marketing' given the search and matching frictions present in the market for, in particular, business services, and the high degree of 'scalability' of many services.

We then incorporated these features into an otherwise standard DSGE model and examined the response of output, inflation and sectoral and aggregate productivity to sector-specific productivity shocks and aggregate demand shocks. Our results suggested that, in sectors where these features were important, productivity would respond negatively to negative demand shocks.

We then used the model to examine the effect of the negative demand shock that followed the financial crisis. We found that the model could explain a small but significant part of the observed fall in business services productivity, and a small but less significant part of the fall in productivity in 'scalable' services. Given that business services productivity has performed particularly badly since 2007, and anecdotal evidence suggests that this has been associated with an increased proportion of the workforce in these companies used in tasks such as winning and maintaining contracts and trying to build up customer relationships more broadly, we think that our modelling approach has been successful. And we would argue that it is important to incorporate these features into our macroeconomic models if we are to understand the evolution of economies such as the United Kingdom in which the service sector is so important.