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UK supply chain networks between public-suppliers and non-public-sector suppliers

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Abstract

Using linked data on government suppliers and commercial buyer–supplier relationships, this report shows that firms supplying the public sector draw on a more geographically diverse set of upstream suppliers than firms serving only commercial markets. However, it also finds that supply chains serving central government have become increasingly regionally concentrated since 2019. These dynamics matter for regional and SME policy, as well as for innovation, because they reveal where public spending supports broader cross-regional networks of firms, and where it reinforces dependence on a narrower group of large suppliers, potentially constraining innovation.

Introduction

Public procurement research has traditionally focused on direct supplier relationships, examining factors such as contract concentration and supplier characteristics (Flynn and Davis, 2014; Loader, 2018). While multi-tier supply chain analysis is well established in private sector research (Choi and Wu, 2009; Wilhelm et al., 2016), the role of sub-tier suppliers in public procurement networks is underexplored. The pandemic has heightened interest in understanding these deeper supply chain structures and mapping sub-tier dependencies in critical supply chains (Ivanov and Dolgui, 2020; Shen et al., 2021), yet comprehensive empirical analyses of Tier 2 suppliers in public procurement networks, especially their geographical distribution and evolution over time, are still scarce.

Previous work on sub-tier supplier relationships in public procurement have mostly focused on individual contracts or contracting authorities. Notable examples include Peck and Cabras's (2011) analysis of local authority procurement in Cumbria, and CLES's work using Local Multiplier 3 (LM3) methodology to map supply chain spending in cities such as Manchester. While these approaches provide rich insights into local multiplier effects and the spatial footprint of public procurement, they are time-consuming and typically confined to single authorities or specific contracts. This report offers a complementary, scalable approach by using comprehensive supply chain relationship data to analyse supplier networks across multiple authorities. While these mapped commercial relationships are broader than formal subcontracting, they offer new, scalable insights into sub-tier connectivity within public procurement.

This research comes at a critical moment for UK public procurement policy. The Procurement Act 2023, implemented in February 2025, together with the National Procurement Policy Statement (NPPS), reorients procurement toward supporting economic growth, delivering social value, and tackling regional inequalities. The new framework emphasises increasing spend with SMEs and local suppliers as a tool for regional development. Recent IPEC work argues that fully harnessing public procurement for regional development requires more strategic, innovation-friendly, and regionally sensitive practices (Uyarra and Shah, 2025). Yet policy attention has largely focused on Tier 1 suppliers, and there is still limited understanding of how procurement shapes sub-tier supply networks and their geography. This report therefore provides an initial exploration of how supply chain networks differ between public and non-public suppliers, shedding light on the broader effects of public procurement across multiple tiers of the supply chain.

We construct the sample by combining several databases. First, UK public procurement data for 2016–2022 are taken from Tussell, capturing public spend via contracts. Second, global supply chain information is drawn from the FactSet Revere database, identifying 219,879 buyer–supplier relationships involving 13,468 unique UK private firms between 2016 and June 2023. We match FactSet firms to FAME using company names and then link these records to Tussell via company registration numbers. Matches are verified using address, postcode, and industry information, resulting in 12,253 unique company registration numbers.

For the analysis, we focus on domestic supply chains, requiring both customer and supplier to be UK private firms. This yields 41,903 supplier–customer relationships, involving 2,052 unique suppliers and 4,815 customers. Among the 4,815 customer firms, 1,577 also hold public sector contracts in Tussell; these are our Tier 1 group, associated with 14,894 links to their own suppliers (Tier 2). While Tier 1 firms are UK government suppliers, their Tier 2 suppliers may or may not act as formal public subcontractors; accordingly, we do not claim that all Tier 2 firms are subcontractors. The subsequent analysis compares Tier 2 suppliers linked to public-sector Tier 1 suppliers with those linked to non-public-sector Tier 1 suppliers.

Supply chain networks of public- and non-public-sector suppliers (Tier 1)

We first investigate the overall supply chain networks. The two chord diagrams below map the regional flows between Tier-2 suppliers and Tier-1 private firms, distinguishing

whether public sector Tier-1 suppliers (Figure 1) from Tier-1 suppliers not supplying the public sector (Figure 2). Although the overall structure of the network appears broadly similar across the two groups, the diagrams reveal two notable differences. First, Tier-1 firms supplying the public sector show a lower overall concentration of Tier-2 inputs flowing from London: in proportional terms, London accounts for a smaller share of upstream connections when the Tier-1 firm supplies the public sector. This suggests that public-facing suppliers draw on a more geographically distributed set of Tier-2 firms. Second, despite London's smaller proportional footprint, London's connections are more strongly oriented across regions when the Tier-1 firm supplies the public sector, with flows linking London to other English regions more prominent in the public-facing network than in the non-public one. This pattern may indicate that Tier-1 firms serving the public sector rely more on cross-regional Tier-2 sourcing, with London acting as a key point of interregional linkage.

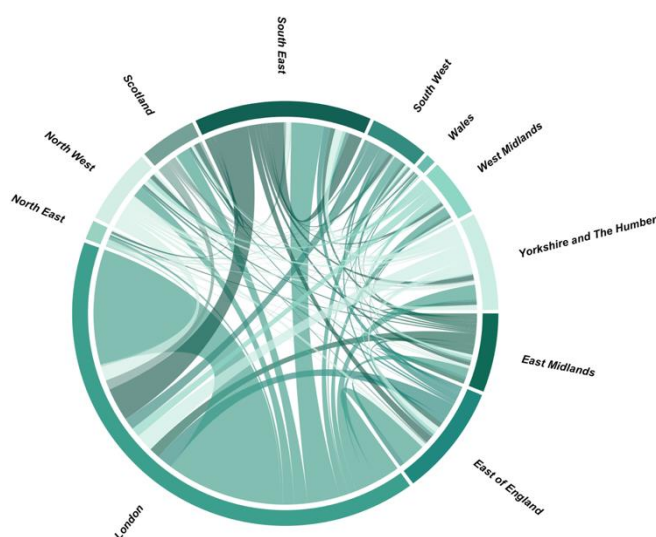


Figure 1 Supply chain of public-sector suppliers (2016-2022)

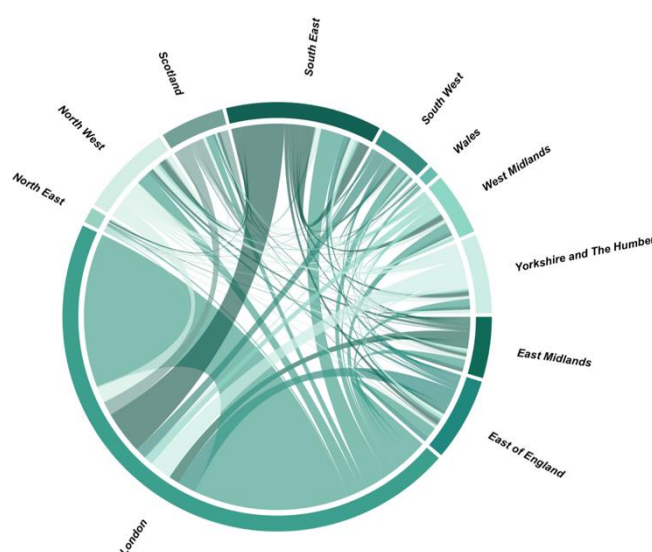


Figure 2 Supply chain of non-public-sector suppliers (2016-2022)

Regional concentration and local sourcing patterns

Figures 3 and 4 present two complementary indicators describing the geographical structure of UK procurement-related supply chains between 2016 and 2022. We intend to further examine whether the regional footprint of Tier-2 suppliers differs between whether Tier-1 firms supplying the public sector and those operating exclusively in commercial markets.

Figure 3 presents the average regional concentration of Tier-2 suppliers over the study period, measured using a Herfindahl–Hirschman Index (HHI) across regions. Higher

values indicate that Tier-2 suppliers serving Tier 1 firms are concentrated within a relatively narrow set of regions, whereas lower values reflect a more geographically diversified upstream supplier base. A clear and persistent difference is evident between the two groups throughout the sample period: Tier-2 suppliers linked to non-public-sector Tier-1 firms exhibit consistently higher regional concentration, while those connected to public-sector Tier-1 firms are more regionally dispersed. In other words, Tier-1 firms serving commercial markets tend to source inputs from a smaller range of regions, whereas firms supplying the public sector rely on a broader and more geographically diverse upstream network.

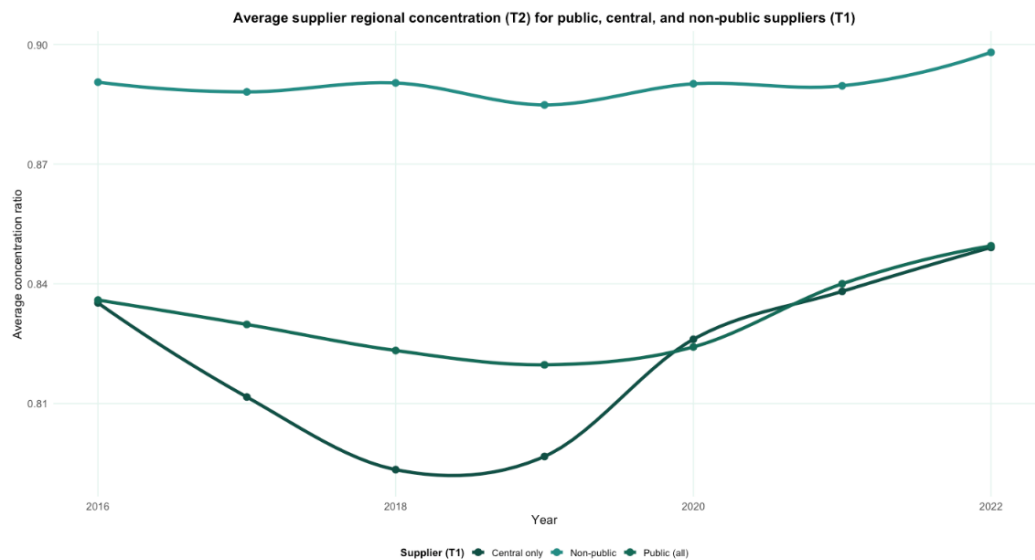


Figure 3 T2 supplier regional concentration (2016-2022)

The temporal evolution of these patterns also sheds light on broader supply-chain dynamics. Up to 2019, the upstream network of Tier-1 firms serving the public sector became progressively less regionally concentrated, while concentration among non-public-sector-serving firms remained relatively stable. From 2019 onwards, however, this pattern reversed: regional concentration increased among the Tier 2 suppliers connected to public-sector-serving firms. The reversal was particularly pronounced in the upstream networks of central government suppliers.

Several factors may have contributed to this shift, including increased centralisation of UK procurement and large cuts to local authority budgets reducing local procurement capacity (Uyarra and Shah, 2025); Brexit preparations, and the centralised COVID-19 response. These changes increased reliance of government contracting around a smaller group of large firms. Consequently, Tier-2 networks might be narrowed to trusted suppliers capable of meeting central government’s national delivery and crisis-response requirements.

Furthermore, we examine the intensity of local sourcing, particularly the extent to which this narrower set of Tier-2 suppliers is drawn from the same region as the Tier-1 firms (Figure 4). Interestingly, the results indicate that the post-pandemic increase in concentration is not driven by greater reliance on local suppliers. Instead, public-sector Tier-1

suppliers appear to have sourced less locally while simultaneously concentrating their purchases among a narrower subset of non-local regions. Overall, the pattern suggests a shift toward more selective regional sourcing rather than a simple re-localisation of supply chains.

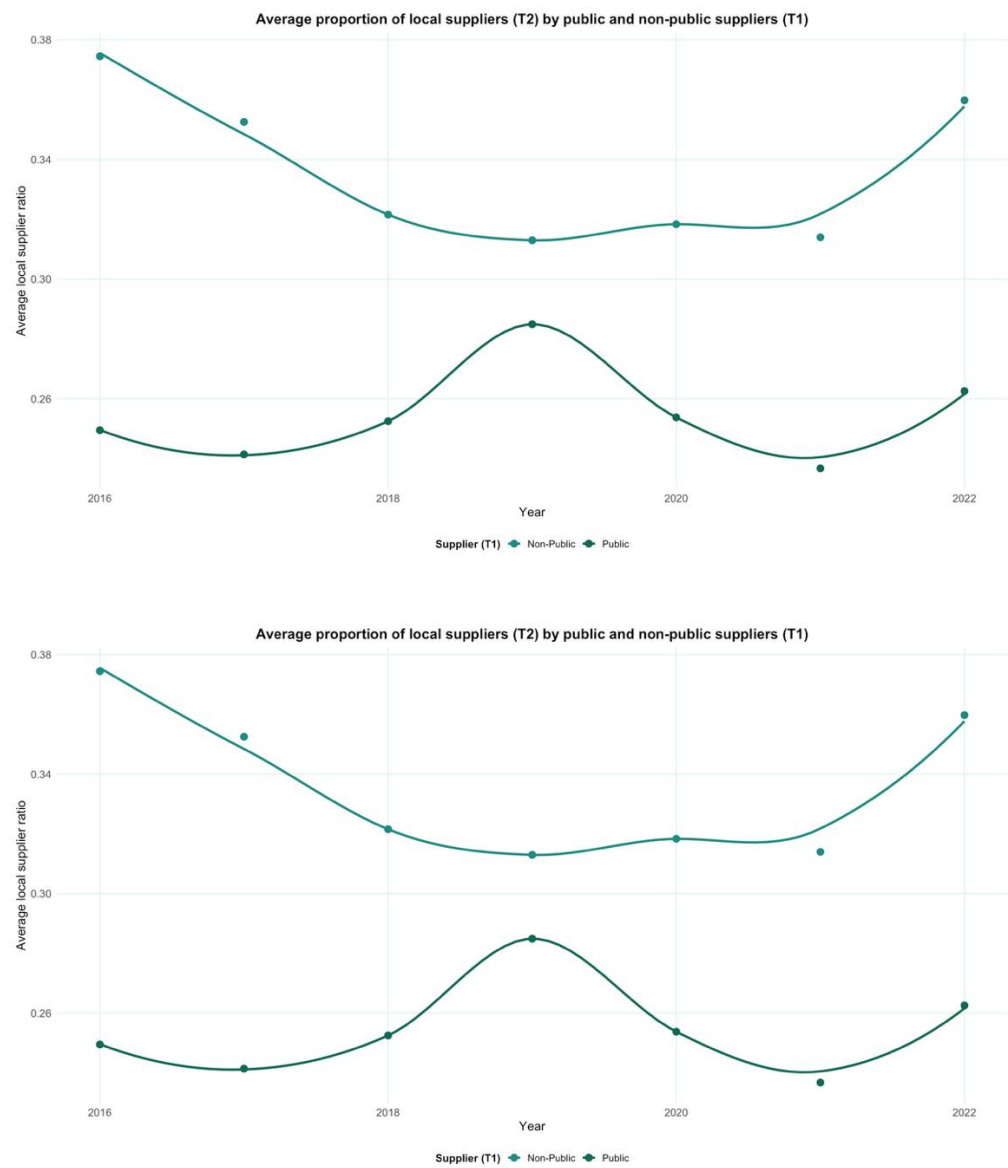


Figure 4 T1 supplier local sourcing intensity (2016-2022)

Taken together, these findings show that public-sector suppliers maintain a significantly more regionally diverse upstream network than their non-public-sector suppliers. This diversity declined during and after the pandemic; however, the reduction might be driven by a strategic narrowing of non-local sourcing rather than by an increase in local dependence. One interpretation is that public-sector-serving firms sought to rebalance and diversify risk exposure by reducing reliance on proximate suppliers, whose operations may also have been disrupted, while consolidating relationships with a smaller group of trusted suppliers across multiple regions. This adjustment also highlights the complex interplay between resilience, redundancy, and selectivity in public-sector supply chains during periods of systemic shock, which deserves more future research. While a geographically diverse Tier-2 base enhances input variety and recombability, supporting experimentation and learning in delivery models, the post-pandemic contraction of non-local sourcing may have raised the “innovation access cost” for newer or peripheral suppliers. In practice, this implies fewer novel solution pathways entering central government supply chains unless procurement teams intentionally reopen discovery channels (e.g., through innovation oriented lots, dynamic markets, innovation partnerships, and early market engagement).

Inclusion of small and medium enterprises (SMEs) in the Tier 2 network

Given the new procurement framework’s emphasis on maximising expenditure with SMEs, particularly as an instrument for regional economic development and “levelling up”, we also investigate the representation of SMEs within Tier-2 supply chains. To do so, we link our supplier database to FAME in order to retrieve firm-level turnover and employment information. Following the EU definition, we classify a firm as an SME if it has an annual turnover of €50 million or less and employs fewer than 250 workers.

Figure 5 presents the average proportion of SME suppliers in the Tier-2 networks of public-facing and non-public-sector supplier firms. Both groups exhibit an upward trend in the share of SME suppliers over the study period. This pattern may suggest that the policy emphasis on SME participation may have effects that extend beyond direct public procurement contracts. While public-serving Tier-1 firms are explicitly incentivised to incorporate SMEs into their supply chains, the parallel increase among commercial Tier-1 firms indicates a potential indirect spillover: firms operating in commercial markets may also be expanding their engagement with SMEs, possibly in anticipation of future procurement opportunities or broader shifts in the policy and regulatory environment that favour SME inclusion.

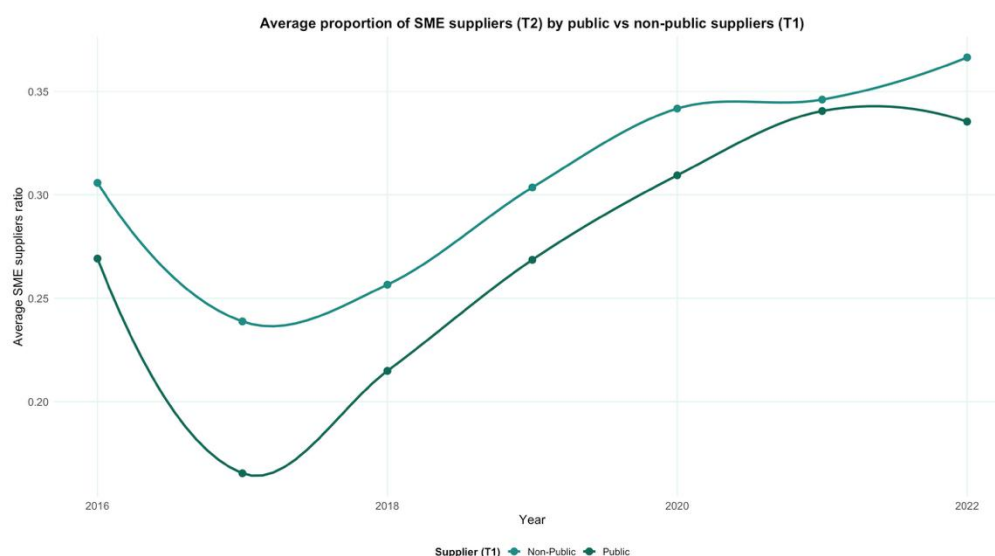


Figure 5 Average proportion of SME suppliers (Tier 2)

Conclusion

This report offers an initial large-scale assessment of the sub-tier (Tier 2) supply chains underpinning UK public procurement. By linking FactSet supply-chain data with Tussell procurement records and FAME firm information, we provide new evidence on how the upstream networks of public suppliers differ from those of firms serving only commercial markets. Three main insights emerge. First, public-sector Tier-1 suppliers draw on a more geographically diverse set of Tier-2 firms, suggesting that public procurement is associated with more regionally distributed supply networks. Second, this diversity declined during and after the pandemic, not because firms became more locally reliant, but because they consolidated their non-local sourcing into a narrower set of regions, an adjustment that reflects strategic selectivity rather than localisation. Third, SME participation in Tier-2 networks increased for both public and non-public suppliers, indicating that SME-oriented procurement policies may be generating spillover effects beyond direct public contracts.

Looking ahead, strengthening the evidence base on sub-tier suppliers will be essential for understanding the full reach of procurement policy. Policymakers may therefore wish to invest in improved data systems that allow for consistent observation of sub-tier relationships, develop carefully designed regional procurement initiatives with robust

evaluation mechanisms, and deepen analysis of the trade-offs between resilience and efficiency that arise from selective consolidation. It will also be important to explore how different tiers of the supply chain respond to procurement incentives, as these effects may not be uniform across industries or regions. Future research should examine sectoral variations in these patterns, weight relationships by contract value, and compare supplier networks before and after firms enter public markets to better establish causal mechanisms.

This analysis is not without limitations. First, the supply-chain data primarily captures relationships among incorporated firms and may under-represent smaller or informal suppliers. Second, our supplier identification reflects general commercial relationships rather than formal subcontracting tied to specific public contracts. Finally, our network approach estimates the regional pattern of supplier relationships rather than the economic impact of procurement spending, meaning that some aspects of local economic contribution remain unobserved.

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