Do Global Production Networks Contribute to Job Polarization in EU Regions? Exploring the Mediating Role of Regional and Sectoral Complexity

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Abstract
Over the last decade, a trend towards job polarization has challenged the notion of an ongoing process of occupational improvement in Europe. Employment structures in Europe are increasingly converging towards polarization (Cirillo, 2018). This process, characterized by the growth of both low-wage/low-skilled jobs and high-wage/high-skilled jobs (Goos and Manning, 2007), is driven by technological change (Autor, Levy, and Murnane, 2003; Autor and Dorn, 2010), consumption spillover effects (Manning, 2004; Mazzolari and Ragusa, 2013; Leonardi, 2010), and offshoring of tasks (Wood, 1995; Thoenig and Verdier, 2003; Feenstra and Hanson, 2003; Grossmann and Rossi-Hansberg, 2012).
From this latter perspective, technological change and trade liberalization have facilitated the possibility of trading tasks (Blinder and Krueger, 2013), especially in the manufacturing sector (Rodrik, 2013), intensifying task-based division of labor (Baldwin, 2014) and leading to a decline in routine jobs in the United States and the European Union (Autor and Dorn, 2013; Cortes et al., 2017; Goos et al., 2014; Jensen and Kletzer, 2010; Michaels et al., 2014; Reijnders and de Vries, 2018; Spitz-Oener, 2006).
Economic Complexity tools (Hidalgo and Hausmann, 2009; Tacchella et al., 2012) have been identified as a good measure for explaining structural transformation, exploiting the knowledge intensity embodied in exported products. When places produce and export more complex products, they require a large share of high-skilled workers and, as a consequence, services (Bosio et al., 2020). Moreover, recent literature shows how labor market outcomes are influenced by the economic structure in terms of sophistication and diversification of knowledge incorporated in exported goods. Specifically, places that produce more sophisticated products generally have lower unemployment rates and higher employment rates (Adam et al., 2022) and greater polarization of labour productivity (Basile & Cicerone, 2021).
In this study, we examine the dynamics of polarization in European NUTS-2 regions between 2007 and 2021 as well as the contribution of participation in Global Production Networks (GPNs) and economic complexity to this phenomenon. The underlying hypothesis is that the presence of a pool of diverse and sophisticated knowledge plays a heterogeneous mediating role both at the level of region and sector. For sectoral complexity, in addition to the traditional PCI indicator (Hidalgo & Hausmann), we develop an occupation-based complexity indicator that aggregates information related to the diversity and sophistication of occupations in each sector.
We use three main data sources: Amadeus/Orbis for the GPNs of European Multinational Enterprises; the Labour Force Survey Database for ISCO occupations, and SBS on EUROSTAT to calculate economic complexity.
In this way, we examine, through a mediation analysis, the role of economic and sectoral structure in mediating between GPN participation and job polarization.
This work contributes to the literature by developing specific economic complexity tools to measure complexity in relation to the occupations employed in each sector. Additionally, it is the first study to evaluate the effect of Global Production Networks (GPNs) driven by European multinational enterprises on regional polarization. Furthermore, this methodology allows us to untangle the effects on the local labor market of both active and passive participation in GPNs.

Keywords: Global Production Network, polarization, complexity

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