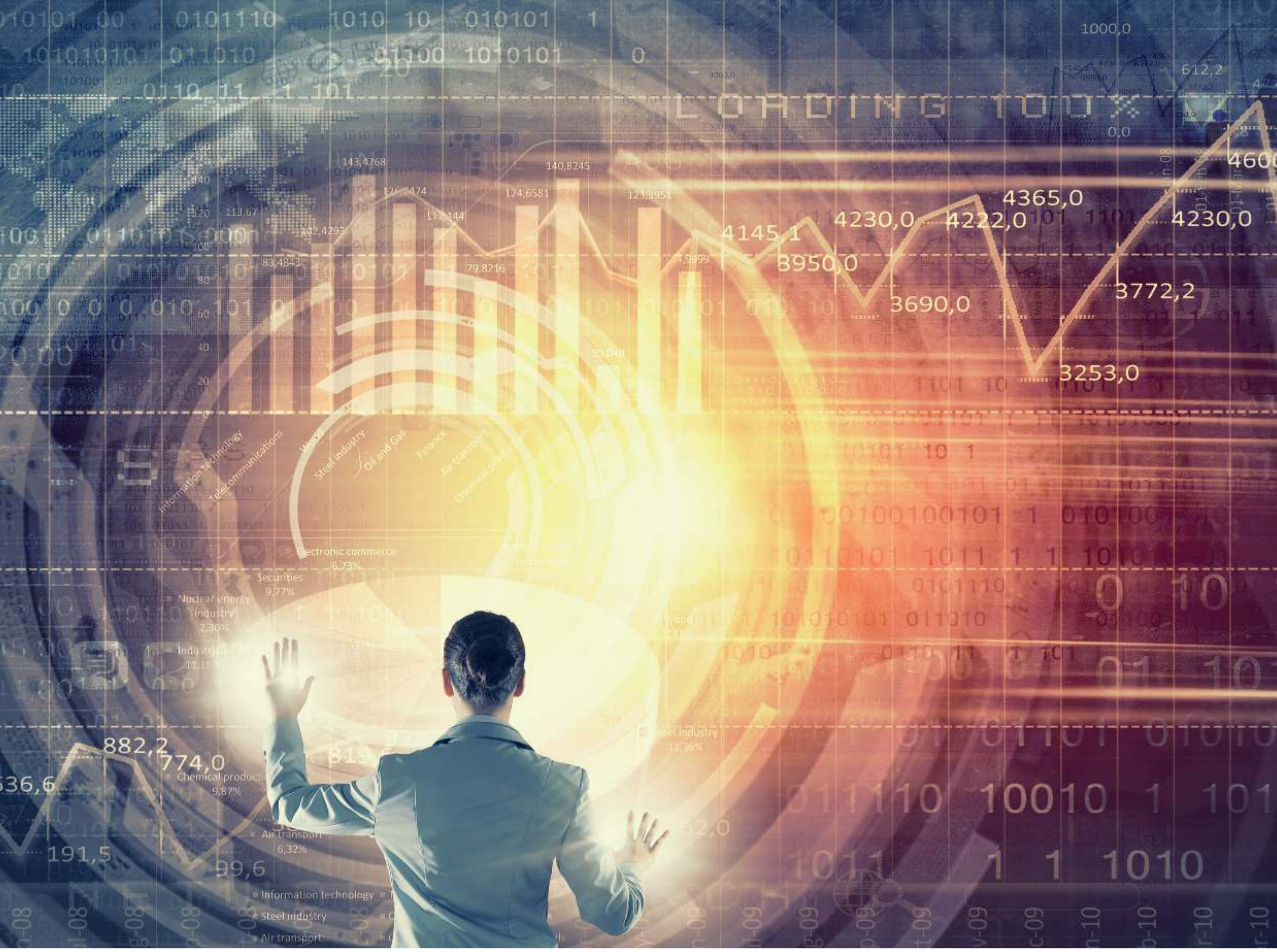

The role of platforms for value creation and organisational restructuring

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Introduction and definition of platforms

Digital platforms and their implications have been the study of many scholars within different disciplines like economics, law, media and, most notably, management and innovation (Atal, 2020; Cusumano & Gawer, 2002; Helmond, 2015; Kenney & Zysman, 2016). Some of the first definitions lean on the idea that platforms are market brokers (Rochet & Tirole 2003). Consequent definitions bring nuance to this narrative by typologising platforms by activity such as innovation, transaction, and hybrid platforms (Cusumano et al., 2019). Finally, scholars have defined the organisational types of platforms as internal, supply chain, and industry platforms (Gawer 2014). Although definitions have been evolving throughout the years and across disciplines, three features persistently emerge from the different typologies. These features are the relational structure of platforms, their hybrid nature, and their adaptability. This means that the full potential of platforms is realised through their connectivity with other actors who enhance the network effect of platforms. Hybridity, on the other hand, allows platforms to include different elements from "markets, hierarchies, networks and communities" (Schüßler et al. 2021, p.5). Additionally, the access to vast amounts of data generated by users also gives platforms an advantage over other actors (Butollo, 2019; Eisenmann et al., 2011; Grabher & van Tuijl, 2020; Kenney & Zysman, 2019; Parker et al., 2016; Tiwana 2010).

In recent years, the effects of platforms on employment in the context of the so-called gig work have been studied prominently; in contrast, this paper focuses on the impact platforms have on value chains and global production networks (Huws et al. 2017; Katz & Krueger, 2019; Wood et al., 2021). Against this backdrop, we are looking into the understudied issue of the impact of platforms on production systems. This policy brief is based on a larger scoping review (Sieker, Lessenska & Plaumann 2021) which asked the following question: *Which key trends in (1) organisational forms and (2) employment are associated with the application and penetration of platform technologies in value chains of production networks and industry-related services?*

The study lasted from September until December 2021, within the scoping review methodology of Arksey & O'Malley (2005). Finally, 270 studies published between 2010 and 2021 were collected through databases and backward searches, from which 59 were included.

Our research picked up three general trends within the literature. The first and most prominent one is that value is transformed from owning assets to granting access to platforms and their ecosystems. The second trend is that generating value from platforms has a geographical dimension as well – countries that host a more significant number of successful platforms are more competitive than others. Lastly, platforms have reconfigured the power dynamics of market interlocuters via their ability to dictate the rules of engagement and appropriate value from participating companies.

Platforms in GVCs and GPNs: the macro perspective

There are three distinctive effects on GVCs and GPNs exercised by platforms on the macro level:

- The transformation of value
  - From asset ownership to access granting
  - Value concentration from a geographical economics perspective
- The balance between value creation, appropriation, and participation
- Governance: From instructing to incentivising

The transformation of value refers to the transition from an emphasis on owning physical assets to the ability to grant access to actors that own such assets (Gawer & Cusumano, 2014; Grabher & van Tuijl, 2020; Kenney & Zysman, 2019). In this scenario, the costs of scaling up decrease and those that are a part of the platform's ecosystem reap benefits higher than those who remain outside of it (Kano et al., 2020). For companies, it is better to be a part of the platform ecosystem than compete against it. In the meantime, platforms benefit from the infrastructures of the companies that work with them. Platforms depend on the complementors for value generation through the assets they own.

Furthermore, value is also transferred on a geographical basis where platform-intensive countries such as the USA extract more value than others (Kenney et al., 2020). This phenomenon underlines the dependency of foreign companies on US-based platforms (Sturgeon 2019). Lastly, some European manufacturers, such as Germany, are trying to keep foreign-based platforms at arm's length, not allowing them to gain the upper hand (Butollo 2019).

As a part of this shift in value transformation, complementors that engage with platforms need to be aware of the value they create and how platforms might appropriate it and therefore carefully consider their participation in the platform (Kenney & Cutolo, 2019). Platforms become valuable only when they are connected to a large number of complementors (Humphrey, 2018). However, as the platform grows, power distribution is shifted to benefit the platform, making it possible for the platform to appropriate value from complementors (Kenney & Cutolo, 2019; Kenney & Zysman, 2019, Hänninen & Paavola, 2020). As value chains and production networks become increasingly platformised, the ability to boost the operational efficiency of worldwide supply chains also grows (Coe & Yeung, 2015).

Lastly, noticeable changes in governance have taken place – access granting is one such mechanism, along with different degrees of openness and closure (McIntyre et al., 2020). Other authors describe a transition from instructing to economic incentivisation, marking a shift towards persuasion instead of dictating processes (Grabher & van Tuijl 2020). Because platforms control the rules of the game, they use their power to control complementors through other mechanisms such as barriers to entry and selective promotion (Humphrey, 2018; Jacobides et al., 2013). The governance capabilities of platforms extend their outreach to the ecosystem, making it possible for them to manage the value creation there, too (ibid.).

Organisational forms and employment effects: the micro perspective

Looking at the employment effects and changes to organisational form from the micro perspective, we found that platforms have the following four implications:

- Control mechanisms
- Network Structure and Network Positioning
- Linkages
- Multi-employer performance pressures

Control mechanisms refer to different ways through which the power dynamic between and within the platforms and firms is navigated. One such mechanism is the suspension of control both by platforms and complementors for the two to be able to take advantage of the other one's features (Grabher and van Tuijl 2020; Vallas & Schor 2020). Another is the introduction of digital management tools to supervise workers and organise labour within the company (Szalavetz, 2019). When platforms are at the heart of a business model, they do three things – enable the implementation of interoperable services through which massive amounts of data can be attained. Second, they raise the efficiency of sourcing labour and thirdly, they assist in the performance monitoring at companies (Schüßler et al., 2021; Van Doorn & Badger, 2020; Sturgeon, 2017). These advantages are believed to have lock-in effects giving platforms greater control over complementors. Using data and interoperability lie at the core of platform technologies and enhance platformisation and datafication of workflows (Eloranta & Turunen, 2016; Plesner & Husted, 2020). Proper data utilisation can have a positive effect on profits and promote a higher return on capital by reducing labour costs (Grabher & van Tuijl, 2020; Kenney & Zysman, 2019; Tiwana, 2010; Eisenmann et al., 2011; Parker et al., 2016; Butollo 2019; Van Doorn & Badger, 2020; Schüßler et al., 2021; Gregory et al., 2021; Hartmann & Henkel, 2020). This ability to digitally monitor processes puts multi-employer performance pressure on workers and firms to restructure so they can fit to the digital tools being implemented (Dörflinger et al., 2021; Gutelius et al., 2019; Plesner & Husted, 2020; Schüßler et al., 2021).

In terms of network structure and positioning, platforms take the role of a hub in a network. This way, for platforms, traditional upgrading of firms via scope expansion centralises authority and at the same time widens the network, therefore increasing profits and promote a possible restructuring of the GVC and GPN. (Gereffi & Fernandez-Stark, 2010; Dallas et al., 2019; Sturgeon, 2019; Sturgeon, 2017). Another type of positioning suggested by Sturgeon (2019) is that of layering the platform throughout different levels of the value chain in contrast with the idea of an ecosystem. Finally, we find that in the context of network and positioning, a platform's power stems from its ability to increase or decrease labour costs and sourcing expert knowledge from its network.

Linkages are another source of power for platforms, stemming from their ability to maintain a multitude of touchpoints to node firms. (Dallas et al., 2019; Vallas & Schor, 2020). Platforms also exert a monopoly over knowledge-sharing in vertically and horizontally linked value chains alike. Additionally, they act as gatekeepers to lead firms, forcing the remaining participants to adjust to the platform and lead firm (Dallas et al., 2019, p. 673; Sturgeon, 2019; Gawer, 2021; Gawer, 2021a; Cusumano et al., 2019). Furthermore, platforms can enhance their capacity and flexibility through joint ventures or mergers. Due to their highly technological nature, platforms can use their ability to scale up or down until they establish themselves as a leader within a GVC and make complementors dependent on them (Butollo, 2021; Coe & Yeung, 2015). One particular distinction in the literature is that between 'high' and 'low' road firms. 'Low road' firms are characterised by increased flexibility of structures, a wide variety of skills among the employees and low costs of labour, while 'high road' firms are the opposite (ibid). In the context of platforms, 'high road' firms stand to benefit from upgrading, which does not have the same positive effects on labour income in 'low road' firms. This happens even though 'low road' firms have access to a greater variety of revenue sources through the platform's network. Moreover, platforms can 'unbundle' and 're-bundle' some components of GPNs, leading to hyper-globalisation or regionalisation/localisation of a given GVC within a GPN (Eisenmann et al., 2011; Gawer, 2018; Humphrey, 2018). Hyper-localisation can give back control over the GVC from platforms to communities, resulting in value-add in the case of developing countries Dallas et al., 2019; Turkina & Van Asche, 2018).

Multi-employer performance pressures are rooted in the fact that some tasks along a value chain are outsourced to platforms. This leads to risk-and-flexibility transfer chains and balancing work arrangements. The result is additional precarity and polarisation of employment (Cappelli & Keller, 2013; Cappelli & Keller, 2013a; Frade & Darmon, 2005; Spreitzer et al., 2017). Within platforms, firm restructuring is backed by wage pressure and employment conditions such as fragmented control of workers. This fragmentation is linked to employee dependence on the performance of three actors – the employee, the platform and the client firm, which means that platforms extend operations within GVCs and GPNs over a multitude of organisations (Schor, 2021; Spreitzer et al., 2017). Because of cost pressures, it is unlikely that wage and performance pressures will be eased by the shortened interaction chain between producers and consumers that digital platforms bring. The likelihood of offshoring and reshoring from and back to advanced economies is also deemed unlikely (Butollo, 2021; De Propris & Pegoraro, 2019; Sturgeon, 2017). For the different types of platforms, complementors must meet particular benchmarks. In the case of innovation platforms, complementors are expected to meet performance standards. In the case of transaction platforms, complementors need to keep labour prices at a level that satisfies the users (Gawer, 2021; Gawer, 2021a; Cusumano et al., 2019). All of these conditions go to show that the business model of platforms is pervasive towards node firms and complementors by increasing job polarisation and precarity.

Main takeaways and conclusion

One of the key takeaways identified via the scoping review is the accelerated trends in value transformation and organisational restructuring via the use of platforms. Namely, this is the shift from owning assets to granting access to them via platforms, impacting the value creation process along GVCs and GPNs. This is further enhanced by a shift from tangible to intangible assets in the context of digital platforms. Additionally, platforms have a fragmentation effect on production networks, while their dominance relies heavily on network effects.

Complementors are also seeing increased pressure from platforms for skill re-bundling and a high-quality performance of employees. This phenomenon is even more obvious in the context of the labour shortage in Germany. The second element is the geographical implication on value for countries as actors- the more platforms a country hosts, the more value it can generate. Lastly, future research could focus on sector-specific dynamics is needed, specifically such that looks at B2B platforms in manufacturing in greater detail.

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