

2. Digital platforms

Economic features and policy challenges

Digital platforms have already transformed a broad range of industries (content, transport, accommodation and retail shopping) and they will continue to do so with other sectors. This article provides an overview of the economic features of these platforms and identifies some general challenges for public policy.

Intermediaries in multi-sided markets

From an economic point of view, digital platforms act as intermediaries in two- or multi-sided markets. These are markets in which two or more different groups of agents (e.g. buyers and sellers) obtain value from becoming connected or coordinated in some fashion, but transaction costs (search, bargaining, enforcement, etc.) prevent these agents from solving that externality directly. Platforms are able to internalise the externalities by minimising transaction costs and facilitating direct interactions between the different sides of the market (Evans and Schmalensee, 2007)¹. As well as these matching benefits, some types of platforms bring other benefits, for instance “discovery benefits” in the case of content distribution platforms (e.g. Spotify) or a more intensive use of physical assets in the case of sharing economy platforms such as Airbnb (Coyle, 2016)².

Some traditional businesses can be characterised as platforms operating in two-sided markets. For instance, traditional bazaars, which connect retailers with customers; newspapers, with readers on one side and advertisers on the other; or auction houses, which bring together buyers and sellers of art and collectibles. In recent years, new types of digital platforms have emerged and multi-sided markets are experiencing a great surge. This has to do with the opportunities that information and communication technologies have created to significantly reduce transaction costs and facilitate direct interactions between individual agents. In this regard, Coyle (2016) argues that platforms achieve improved economic coordination through the use of technology, since participants do not need to be co-located or to transact at the same time.

Different classifications of platforms have been proposed. Some of them are based on the type of agents that form each side of the market, such as the distinction between business-to-business (B2B), business-to-consumers (B2C) and peer-to-peer (P2P) platforms. Other classifications focus on the role performed by the platform. For instance, Evans (2003) proposes three broad categories of platforms³:

- **Market makers:** they enable the different groups of agents to transact with each other (e.g. online marketplaces or shopping malls).

1: Evans, D., & Schmalensee, R. (2007). The Industrial Organization of Markets with Two-Sided Platforms. *CPI Journal*, 3.

2: Coyle, D. (2016). Making the most of platforms: a policy research agenda. Jean-Jacques Laffont Digital Chair.

3: Evans, D. S. (2003). Some empirical aspects of multi-sided platform industries. *Review of Network Economics*, 2(3).

- **Audience makers:** they match advertisers with audiences (e.g. traditional mass media, Internet portals or social networks).
- **Demand coordinators:** they develop goods and services through coordination (e.g. software platforms or payment systems).

Indirect network effects

As appears from the definition of multi-sided markets, one of the most significant characteristics of platforms is the presence of indirect network effects. A good exhibits an indirect network effect if its demand depends on the provision of a complementary good, which in turn depends on demand for the original good (Rysman, 2009)⁴. In the case of platforms, think of the complementary good as being the contribution of the other group of participating agents. This means that the utility of consumers on one side of the market increases with the number of consumers on the other side. This effect has significant implications for both business strategies and the structure of multi-sided markets.

For entrant platforms, indirect network effects raise the chicken-and-egg problem. Platforms need to get both sides of the market on board to trigger a positive feedback loop that makes the market grow. In order to do so, they may follow different strategies: offering low prices or even transfers to one side of the market, investing in lowering the participation costs of one group of customers, or initially directly supplying one side of the market (Evans, 2003).

Mature platforms still have to set pricing structures that take into account indirect network effects. Indeed, Rochet and Tirole made the pricing structure central to the definition of multi-sided markets. “A market is two-sided if the platform can affect the volume of transactions by charging more to one side of the market and reducing the price paid by the other side by an equal amount”, they wrote in their 2006 paper⁵. Therefore, optimal prices depend not only on marginal costs but also on the price elasticity of demand on each side and the nature and intensity of indirect network effects (Evans and Schmalensee, 2007). In practice, participants on one side of the market tend to subsidise these on the other, depending on the nature and intensity of indirect network effects and the extent of “multi-homing” on each side (Evans, 2003; Armstrong, 2006)⁶.

Moreover, to keep both sides of the market on board, consumers need to have confidence to interact or transact with those on the other side. Thus, platforms generally employ different techniques to mitigate information asymmetries, reduce risks and build trust between the participants. They provide rules on access and participation, sanctions against misbehaving agents, standard contracts, rating and review systems or escrow payments (Coyle, 2016). In this regard, since platforms have incentives to devise rules that promote positive externalities between customers and limit the negative ones, some authors argue that they serve as rule-making governance institutions (Boudreau and Hagiu, 2007)⁷.

4: Rysman, M. (2009). The economics of two-sided markets. *The Journal of Economic Perspectives*, 23(3), 125-143.

5: Rochet, J. C., & Tirole, J. (2006). Two-sided markets: a progress report. *The RAND journal of economics*, 37(3), 645-667.

6: Armstrong, M. (2006). Competition in two-sided markets. *The RAND Journal of Economics*, 37(3), 668-691.

7: Boudreau, K. J., & Hagiu, A. Platform Rules: Multi-Sided Platforms As Regulator. In *Platforms, Markets and Innovation*, edited by Annabelle Gawer. Cheltenham, UK: Edward Elgar Publishing, 2009.

Indirect network effects also impact the structure of multi-sided markets. In general, it is argued that they promote larger and fewer platforms, i.e. market concentration (Evans and Schmalensee, 2007; Gürkaynak et al., 2016)⁸. The chicken-and-egg problem generally makes barriers to entry higher and, for successful platforms, the self-reinforcing feedback loops between both sides of the market can trigger the threat of tipping (Bundeskartellamt, 2016)⁹. However, since incumbent platforms might also quickly lose their market share due to negative feedback loops, the role of indirect network effects can be to some extent ambivalent.

Besides indirect network effects, other factors affect the structure of multi-sided markets. On the one hand, economies of scale and direct network effects can reinforce the trend to concentration. Platforms usually benefit from economies of scale since their intermediation activities involve significant fixed costs. Direct network effects are present in some platforms (e.g. social networks) since consumers on one side of the market directly value the number of peers. This increases consumers' cost of switching between competing platforms and, therefore, raises barriers to entry. On the other hand, there may be counterbalancing factors against market concentration. These are differentiation between platforms (vertical or horizontal), "multi-homing" — which usually results from horizontal differentiation — and platform congestion — not relevant in the case of digital platforms — (Evans and Schmalensee, 2007). These are similar to the factors identified by Rysman (2009) as determining whether "tipping" towards a "winner-takes-all" situation occurs.

Challenges for public policy

Digital platforms create economic value and can therefore benefit all agents involved. However, since they reconfigure how economic activities take place — moving from one- to multi-sided markets —, they give rise to new risks and concerns that policymakers must address. These are some of the most significant ones:

- **Level playing field.** Some platforms might take advantage of regulatory loopholes to provide services subject to lighter requirements than those imposed on one-sided markets. To avoid these situations, the regulatory framework needs to evolve to ensure that similar activities receive similar legal treatment.
- **Consumer protection.** In multi-sided markets, consumers interact with both the platform itself and the other sides of the market. The degree of intermediation — and thus the extent of direct interaction between the agents — depend on specific business models. To ensure consumer protection is not weakened in such a framework, there is a need for clear and transparent assignment of responsibilities.
- **Negative externalities.** The activity of some platforms may have negative effects on agents that do not participate in those markets. For instance, the increase of short-term visitors in residential neighbourhoods or the potential implications for the financial system of lending marketplaces. Public policies need to mitigate these negative externalities.

8: Gürkaynak, G., Inanılır, Ö., Diniz, S., & Yaşar, A. G. (2016). Multisided markets and the challenge of incorporating multisided considerations into competition law analysis. *Journal of Antitrust Enforcement*, 0, 1-30.

9: Bundeskartellamt (2016). *The Market Power of Platforms and Networks*, Working Paper B6-113/15.

- **Promote competition.** Data plays a key role in many digital platforms and might restrict competition if it raises significant entry barriers and/or switching costs. In this regard, regulations that allow consumers to securely transfer their data between different firms can promote competition.
- **New tools for antitrust analysis.** Conventional methods to define the relevant product market or to measure market power are generally not applicable (at least straightforwardly) to multi-sided markets. For instance, the marginal-cost pricing is not a relevant benchmark, given the optimal pricing structure of platforms. Besides, network effects are usually relevant to assess potential anticompetitive practices.
- **Impact on other public policies.** Due to their intermediation role, platforms can help governments to collect certain taxes. Moreover, “gig work” platforms have significant implications for labour and social protection policies that governments need to analyse and take into account.

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