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Economic and Legal Features of Digital Markets

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Abstract

Digitization has changed economic activity in many ways. While digitization has contributed to a very dynamic development of markets and competition, concerns are also being expressed about powerful positions of some companies. The digital transformation poses new challenges for companies, consumers, politics and society. Competition policy is also required to address these developments and to adapt existing competition law, if necessary. The following analysis of digital markets showed that it is not possible, in general, to make concrete competition policy statements or even to give detailed recommendations for the antitrust analysis. The aspects are to be considered separately and in detail when examining search engines, social networks, trading platforms and other business models. On the other hand, data (and data analysis) should stand in the centre of competition law analysis due to their importance for the economic success of digital market companies.

Keywords

Digital Markets, Digital Economy, Data, Competition Policy

I. Introduction

Digitization has triggered profound structural change that affects almost all areas of our life. In this respect, sometimes it is spoken about a digital revolution. This change poses new challenges for companies (Crane, 2013), consumers, as well as for politics and society (Šmejkal, 2012). Competition is the central driver of digital change. At the same time, digitization is intensifying competition in many areas and economic activity is changing in many ways. In almost every transaction today is involved a computer (and thus a digital process). While digitization has often contributed to a very dynamic development of markets and competition, there are concerns about powerful positions of some companies. For some time, companies such as Google, Facebook or Amazon, which are perceived as the winners of digitization have been at the center of public discussion. Data protection and consumer protection authorities criticize the handling of personal data by these companies

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(Žárská and Daňko, 2018). On the other hand, competitors complain about unfair business practices and monopoly formation. Here is the irreplaceable role of the state regarding key competences as well as employers' digital competences required in natural science and mathematics (Plavčan, 2018). A question here is whether the goal of such expansion is the accumulation of additional data volumes that are important for successful business activity?

The aim of this article is to characterize the role of competition policy in digital markets (Section II). The general characteristics of platforms are presented in the following text on the basis of the competition policy analysis of specific platforms. These have important implications for the conduct of companies and competition and thus for the analysis of competition policy. The central question from the competition policy perspective is less whether companies have a particular competitive advantage in individual cases, but rather why this is the case. It is also crucial whether this position is temporary or permanent. Accordingly, it must be examined to what extent companies are protected from competition by market entry barriers or other market characteristics, or rather they are (continuously) competing through superior supply and successful innovations. The next section deals with competition in digital markets (Section III). For competition policy, the particular characteristics of multi-side platforms are a challenge. The fundamental relationships and complexity of multi-side platforms need to be considered by competition authorities and courts in the competitive assessment of specific cases. It is important to include all sides of a platform in the analysis and to record their economic significance, both direct and indirect. The assessment of the competitive situation on multi-side platforms requires an overall view in which factors other than market shares are to be considered, such as network effects, the availability of user data and the dynamism on the market. Then the article heads towards market definition and platforms market power (Section IV). The last section provides concluding remarks (Section V).

II. Dynamic development of digital markets

The internet economy is characterized first and foremost by its rapid developments and high dynamism. Looking at the market values of the largest listed companies in the world, one can observe that especially companies in the field of the digital economy have succeeded in creating high corporate values in a relatively short time. Apple alone is currently valued nearly one billion $ and has a higher market capitalization than Volkswagen, Siemens and Bayer combined. Google, Amazon, Facebook and Ebay have a market capitalization comparable to German DAX companies.

In addition to the young established companies, the momentum is particularly evident in the start-up area. The world's most valuable start-ups are almost all active in the digital economy (see Figure 1).

The dynamism of this industry is also evident in many other areas. Product life cycles, the period between the introduction of a new product and its withdrawal from the market, are increasingly shortening. The same applies to research and development cycles, which run faster and faster. In addition, the internet allows a very extensive adaptation of the offer to customer-specific requirements (customization). This has been established in numerous

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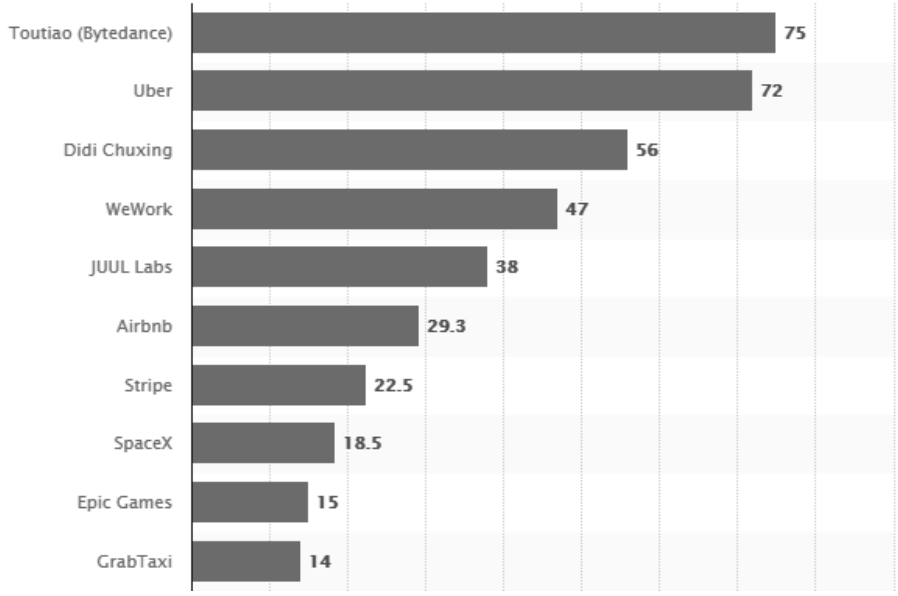
new business models in the field of advertising, search services or trading platforms, for example by offering users individual suggestions (Funta, 2014d). These changes have made a significant contribution to the very dynamic and innovative development of internet-based industries and companies. These industries show immense innovation processes that create new products and ideas and continually evolve existing ones. In the context of the development of digital business models and markets, it can also be observed that companies often expand into new markets or areas. In these cases, companies that are very successful in one area usually expand their activities quickly to neighboring areas. This expansion can serve to expand the company's offering to users, or to integrate services from other stages of the value chain into the business. The expansion of business activity may also encourage the development of new products or synergies in existing markets. Such an expansion can take place both in directly neighboring digital markets and in allegedly distant, non-internet-based markets.

Figure 1: The most valuable start-ups in the world in billion U.S. dollars by Statista (2019)



An impressive example of a broad expansion is provided by Google (Funta, 2018), which has extended its activities beyond its original role as a search engine, for example in areas like browser (Chrome), operating system (Android), hardware (Nexus) and home technology (Nest). Other activities such as the creation of telecommunications infrastructures (Fiber) and the development of autonomous mobility systems (Google Car) have been added. But other large companies in the digital economy have also greatly expanded their digital business through their own developments or acquisitions. Thus, the social network Facebook (Funta, 2017c) has expanded its activities by several acquisitions, including those of the messenger service WhatsApp and the photo service Instagram. The

hardware and software manufacturer Apple is not only active in areas of marketing of music (iTunes) and books (iBooks), but invests in cloud computing (iCloud), map services (BroadMap) and data analysis (Topsy). One of the goals of such expansions may be the accumulation of additional data volumes that are important for successful business activity. From a competition policy point of view, it can be problematic if, for example, a dominant company expands its position from one market to another through bundling, so-called leverage of market power (Funta and Nebeský and Juriš, 2014a). Such developments may create long-term overlapping systems that are controlled by a corporation and in which users are locked-in to some degree. From a user's point of view, a competition no longer takes place between individual internet services. A decisive consequence of digitization is the change in transactions. This change is reflected in a drastic reduction in transaction costs. For example, search costs for customers have been significantly reduced by innovative providers such as Amazon, search engines such as Google and agency portals such as idealo or eBay. Digitization has created new opportunities to bring customers and products together and provide them with more in-depth information (Mesarčík, 2018).

Online markets also allow more flexible and dynamic sales mechanisms such as auctions. Although auctions tend to incur higher transaction costs than fixed prices, as the seller has to bring competing buyers together, this increase on the internet is rather small. In addition, auctions offer significant advantage that they represent an efficient pricing mechanism and enable buyer competition. In addition to trading platforms, this also concerns the marketing of advertising space on the internet. However, given the dynamics of many internet-based business models, there are also particular challenges for competition policy. There should be fewer reasons for government intervention in these markets. However, in a dynamic environment, the institutions must act quickly. The dynamics in the markets mean that market boundaries are shifting. The relevant market must therefore be redefined again and again. In many cases, a comparison with a situation in the past will be less helpful, but to determine the relevant market, to estimate how the environment might evolve in the future needs to be made.

While digitization has facilitated market entry and intensified competition, the development of law has not always kept pace with the development of innovative products and business models. In all the markets of the internet economy, competition can be distorted by the fact that lack of adaptation of the existing legal situation to developments in the internet economy prevents innovative business models.

III. Competition in digital markets

While digitization has often contributed to a very dynamic development of markets and competition, concerns are also being expressed about powerful positions of some companies. For example, competition authorities such as the European Commission and the US Federal Trade Commission (FTC) have initiated procedures to investigate business practices of Google (Funta, 2014b) and other well-known internet companies. Some internet companies, such as Google, Facebook, Youtube, eBay, Skype or Amazon, have prominent position in their businesses, and sometimes there is little room for competition. The position of some companies and the simultaneously very dynamic development of

digital markets raise the question of how competition problems arise in these markets and whether existing competition law is capable of addressing increasing concerns. The central question from the competition policy perspective is less whether companies have a particular competitive advantage in individual cases, but rather why this happen. It is also crucial whether this position is temporary or permanent. Accordingly, it must be examined to what extent companies are protected from competition by market entry barriers or other market characteristics, or rather that they are (continuously) competing through superior supply and successful innovations. Economically, the latter situation corresponds to a competition in which a temporary monopoly follows another and innovation is the impulse of this process. From a competition policy perspective, it must be examined which markets tend to which situations.

To assess the competitive challenges faced by digital markets, we first need to analyze how these markets differ from conventional, "analog" markets. For this purpose, this section first discusses the most important characteristics of digital markets. A special focus is on the theory of multi-side platforms. Typically, a platform is an intermediary that brings together different groups of users so that they can interact economically or socially. This service can generate significant economic benefits. Such platforms play a crucial role in the digital market. Business models such as search services, social networks or operating systems have the character of a platform. But there are also platforms outside the online market, for example in payment transactions or mobile communications (Funta, 2017b).

Platforms as central component of digital markets

Platforms have some common features that have important implications for business behavior and competition, and thus competitive policy analysis. For competition policy, the existence of multilateral platforms has a decisive impact, which must be taken into account. However, it should be noted that, despite the general characteristics of digital markets, there are significant differences between the individual digital industries and business models, and thus it is hard to make generally valid statements.

Many important characteristics of conventional, one-sided business models, cannot be transferred to multi-side platforms. From a competition policy point of view, an important difference to conventional markets is that prices can be set at or below marginal costs even by imperfect competition. Against this background, many established methods of competition policy for platforms are not applicable. Unlike to conventional markets, competitive intensity in digital markets is often (but not always) determined by direct and indirect network effects. Direct and indirect network effects on platform markets foster concentration in these markets and are therefore a central aspect of competition policy analysis.

Direct network effects are related to the size of the network and occur when the benefit from providing a service directly increases with the number of customers of the service. Classic examples of areas with strong direct network effects are telecommunications networks, such as Skype. As a result, networks that already have a large user base are attracting more customers. In the area of digital markets, direct network effects are particularly important

for social networks or communities such as Facebook or Instagram or communication platforms such as Skype or WhatsApp.

In contrast to direct, indirect network effects occur when an increasing number of market users make the use of the platform more attractive to other side of the market. Accordingly, a platform or a market is usually referred to as two-sided or multi-sided, if indirect network effects play a decisive role. Indirect network effects lead to platform pricing that differs from one-sided business models. Platform operators often design prices for user groups asymmetrically. In this respect, a business model practiced on two-sided platforms is the subsidization of one market side by the other. The prices asymmetries can also ensure that the bundling of products by platform operators has a welfare-enhancing effect if networks can gain greater room for maneuver and balance prices.

Regarding the problems of market power and thus traditional market failure, indirect network effects tend to lead platform markets to concentration (Krausová, 2018). However, not every platform market is highly concentrated. This shows that indirect network effects alone are not sufficient for high market concentration or even monopolization and that other aspects play an important role. From an economic point of view, it is not clear whether competition between platforms actually enhances welfare, while this is almost always the case for one-sided business models, as long as there is no natural monopoly (Whish and Bailey, 2012). High market concentrations for platforms, especially if they are only available on one market side, cannot be interpreted in the same way as in case of conventional markets without network effects. High market concentrations resulting from network effects are not a new phenomenon. Strong network effects can lead to concentrated markets, but at the same time ensure that this high market concentration is efficient.

Determinants for platform competition

Overall, it should be noted that the link between market concentration and welfare effects for platform markets is unclear and that not all platform markets are moving in the direction of strong concentration. There are let say five effects that in particular determine the process and the level of market concentration on platforms and thus the competition between platforms:

* network effects,
* economies of scale,
* restriction of use,
* differentiation possibilities of the platforms (in particular due to heterogeneous user preferences),
* opportunities for multi-homing and/or switching costs.

Indirect network effects and economies of scale lead to increased market concentration. The relevance of these effects varies from platform to platform. Economies of scale are a common feature in the field of digital markets, as the cost structure is often characterized by relatively high fixed costs and low variable costs. For example, for many trading

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platforms, much of the cost comes from managing a database. Economies of scale and indirect network effects are thus common features of digital markets and limit the scope for competition between platforms. In addition, there are three central characteristics that counteract platform concentration. An important aspect here is the possible restriction of use for one market side. This can be caused by limited capacities in the traditional sense but also by a limitation of the number of users, for example due to negative external effects. A second feature, closely related to capacity constraints, that favors competition between platforms is the potential heterogeneity of platforms (the degree of potential product differentiation between platforms). This differentiation can be horizontal (different offers of comparable quality) or vertical (qualitatively different offers). The greater the heterogeneity of users and the easier option for platforms to differentiate their offer will lead to more diverse offer and lower degree of concentration. Against the background of differentiation as a pro-competitive aspect, exclusive contracts can also be helpful as they allow a relatively small platform to attract users for whom the relevant exclusive service is particularly important. Accordingly, heterogeneity of users can help counteract network effects and enable competition between platforms. On the other hand, strong heterogeneity leads to less intense platform competition.

The third key factor that strengthens platform competition is the side-by-side use of multiple platforms (multi-homing). The possibilities for multi-homing depend, among other things, on the switching costs and whether there are fixed costs for the use of a platform. The costs may be in the form of an actual monetary payment as part of a flat rate or as a non-monetary expense incurred by the user, for example, having to first consider how the platform works. High switching costs can ultimately lead to the fact that users remain on a platform they would not otherwise use (lock-in effect).

IV. Market definition and platforms market power

The basic service provided by a multi-sided platform is the ability to facilitate a beneficial interaction between economic actors of different groups. The connections of the user groups and the products and services offered to each group need to be examined if a market relevant to competition is to be examined or the market power of the platform is to be determined. For the analysis of possible restrictions of competition, three important consequences of indirect network effects must be considered:

First, if prices or qualities of the offer change on one side, this has direct effects on this side and thus indirectly on the use of the other ones. Overall, the user response on the affected page (with positive indirect network effects) is stronger than the immediate reaction to the change in supply.

Second, competition faced by a platform on one side of the market can limit the space for maneuver or market power on all sides of the platform. A platform that strikes a strategic competitive decision on one side, which directly affects only those customers on that side, must also take into account the reactions of the competitors on the other platform sides.

Third, indirect network effects may limit the substitutability of supply for users, thereby significantly increase market entry barriers for platforms. However, a successful platform

which already reached a critical mass of users on all market sides benefits from the positive feedback from the user groups. A new entrant to the market first has to reach these critical masses and possibly convince users to change platforms. Differentiation and multi-homing opportunities play a crucial role in the substitutability of supply.

The properties of platforms significantly influence the approach when determining market power. Market power is usually defined as the ability of a company to be independent of other market participants (Karas and Králik, 2012). This is the case if the company is able to raise prices significantly above a competitive level. However, the asymmetric price structures of platform markets mean that prices or margins on one side of the market do not allow immediate conclusions about the market power of the platform on this market side or market power as a whole (Funta, 2014c). The usual calculation of market shares as an indication of market power in antitrust practice (Babiaková, 2008) is not suitable for platforms. While it may be possible to calculate market shares of one platform, these shares may be very different for different market sides. Without detailed consideration of the indirect network effects, it is not possible to draw any conclusion about the actual market power of a platform from these shares (Svoboda and Munková and Kindl, 2012). The characteristics of platforms make it clear that the isolated consideration of a single side of the platform is not allowed for the assessment of competitive effects and the market power of a platform. Accordingly, within the scope of the market definition (Lopatka, 2011) a platform side may not be defined as a separate market from an economic perspective. Rather, when assessing the market power of a platform, it is always crucial how respondents to other sides respond to a change on a particular side. Competitive pressure on one side can limit the scope on the other side. However, since the competitive situation on the respective platform sides can be very different, the individual sides still have to be assessed separately in order to deduce the market power of the platform.

Various proposals to extend the concept of the SSNIP test (Funta, 2011)[2] provide opportunities to model changes in the overall profits of a platform, taking into account demand elasticities and indirect network effects. But even these extensions require much more information and are considerably more complicated. In addition, a hypothetical price increase cannot be considered if no pecuniary price is charged. For such cases it is suggested

[2] The SSNIP (Small but Significant and Non-Transitory Increase in Price) test examines the response of consumers to an assumed small but not insignificant, permanent increase in the prices of the products concerned. "In using the concept of the SSNIP test for product market definition, the Commission will consider whether a hypothetical monopolist of a certain product or set of products, which might constitute a market, could profitably impose a small but significant nontransitory increase in price (SSNIP). The principle behind the test is that a market is defined as a product, or collection of products, the supply of which can, hypothetically, be monopolised profitably. The application of the SSNIP test is an iterative process. It starts by considering each product (narrowly defined) in the market reference. The following question is then asked: if there were only one supplier of the product (a hypothetical monopolist), would it be able to sustain a SSNIP profitably? If the price rise is unprofitable, because consumers would switch their consumption to other products, then the closest substitutes are added to the product group and the procedure is repeated. Some analysis of the characteristics of the product including its intended use may, therefore, be necessary in order to establish possible substitutes that might be included in the group of products to be used in the SSNIP test. The relevant product market is normally defined as the smallest group of products for which a hypothetical monopolist could sustain a SSNIP profitably." Market Investigation References (2003): Competition Commission Guidelines.

to consider a quality reduction instead of a price increase. However, such a procedure presupposes the existence of a measurable quality measure, which cannot always be defined. In addition, the SSNIP test is not well suited to delineate dynamic markets in which less price and more quality and product innovation are important competitive determinants. Overall, there is still considerable need for research in the development of econometric techniques, which can and should be widely used in the practice of competition authorities. In this respect, it is essential for the practical application to include all platform sides in each analysis.

Especially in the context of merger control, consideration of the interdependencies of the market sides is essential. Here, the extension of the concept of the Upward Pricing Pressure (UPP) offers an opportunity to empirically estimate unilateral effects. The UPP test provides an alternative to the traditional concentration-based analysis of the effects of merger control. The UPP test will examine whether a merger will tend to be accompanied by a price increase or price reduction for a product considered. Here, two opposite effects are weighed against each other. On the one hand, the incentive to unilaterally increase prices, and on the other, the incentive to reduce prices, which may be due to merger-related efficiency gains. The use of the UPP can avoid problems in practice such as the definition of the relevant market in regards to markets with differentiated products. In addition, the intensity of competition between merging companies is to be considered.

However, very large amounts of data (Funta, 2017a) are needed to calculate this measure for multi-side platforms. In addition to estimate the reaction of the demand for the product under consideration to a change in price, demand characteristics of all platform sides must be mapped, not only in terms of prices, but also in terms of indirect network effects. It is therefore necessary to estimate the demand reactions to a change in the use of the other platform sides. In this respect, the application of the UPP extension by competition authorities is time-consuming. Nonetheless, consideration of platform versatility is also essential for merger control. For example, due to the network effects, it is even possible that a merger of platforms without efficiency gains will lower prices on all platform sides. Overall, assessing the market power of multilateral platforms poses a major challenge to competition authorities and decision-makers. Many of the conventional methods are not readily applicable and new methods are less developed and require complex analysis.

V. Conclusion

Digitization has changed economic activity in many ways. In almost every transaction today is a computer and thus a digital process involved. In this way costs can be reduced, data collected and evaluated and offers personalized. The reduction of costs has intensified competition in many areas, reduced prices and, in some cases, price differentials. While digitization has often contributed to a very dynamic development of markets and competition, concerns are also being expressed about powerful positions of some companies. Many of these companies offer services as intermediaries on multi-side platforms. These platforms have some general characteristics that have important implications for the behavior of companies and thus for competition policy. For competition

policy, the particular characteristics of multi-side platforms are a challenge. The fundamental relationships and complexity of multi-side platforms need to be considered by competition authorities and courts in the competitive assessment of specific cases.
In the evolution of digital business models and markets it can be seen that companies are often expanding into new markets or areas. An impressive example of a broad expansion is provided by Google, which has extended its activities beyond its original areas as a search engine. One of the goals of such expansions may be the accumulation of additional data volumes that are important for successful business activity. From a competition policy point of view, the growing practical relevance of multi-sided platforms is an important challenge. Appropriate economic analyzes of competition are much more complex than on one-sided markets. It is important to include all sides of a platform in the analysis and to comprehensively capture the indirect network effects. It is not possible, in the context of the competition analysis of digital markets, in general to make concrete competition policy statements or even to give detailed recommendations for the antitrust analysis (Gellhorn and Kovacic and Calkins, 2004).

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