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The data-driven power of Google and co. A risk to competition?

Is data really the new oil? Some say that access to this basic commodity is decisive for the success and failure of entire business models in the digital markets. Would an obligation to share data with competitors be an adequate means of ensuring fair competition in these markets?

Increasing market power among a relative few companies appears to be a growing trend in the United States and in OECD countries. In the United States, the phenomenon of highly productive and innovative firms that combine large portions of the market under their own control – “superstar” firms – is particularly evident. The so-called FAANG companies (Facebook, Apple, Amazon, Netflix and Google) are key representatives of this trend.

Europe shows a rather less clear, and strongly heterogeneous, picture. No overall rise in market concentration can be identified either within the European Union as a whole (Valletti, 2017) or within Germany alone (Monopolkommission 2018). However, as in the United States, there are signs of increasing market power. For example, Weche and Wambach (2018) observe that

the average level of markups has risen in many of the EU-28 member states since 2012. In Germany and a few other member states such as Belgium and Finland, pre-crisis levels have already been exceeded. Particularly companies that held a significant degree of market power in the past have been able to expand their market power further.

A broadly similar trend is evident with regard to productivity growth. Empirical studies within OECD countries show a decline in the growth of average labor productivity since the beginning of the 2000s in nearly all developed countries (Andrews et al., 2016). Moreover, innovative production technologies have increasingly been concentrated within a small group of large companies. Over the same time period, the productivity

gap between these and other companies has expanded (Andrews et al., 2016; Adler et al., 2017). Only a few companies are becoming significantly more productive, while the rest are stagnating. In addition, productivity growth is no longer inclusive; a broad cross-section of companies has become delinked from productivity growth.

This poses a number of urgent questions for economic policy. The first is whether these two trends are connected. Is the increase in market power serving as a brake on productivity growth? The second – if such a relationship exists – is what economic-policy instruments are appropriate for countering this trend.

The first question is the subject of current empirical research and has not yet been conclusively answered (Blonigen and Pierce, 2016; De Loecker and Van Biesebroeck, 2016). However, there are indications elsewhere that increases in market power have far-reaching macroeconomic consequences. For example, recent studies on the United States show a negative relationship between market power and labor shares. The distribution of economic income has shifted in favor of companies since the 1980s, with the share of labor income accordingly reduced (Autor et al., 2017). The Bertelsmann Stiftung recently confirmed a similar relationship within German service industries (Ponattu et al., 2018).

The increasing market concentration thus not only impairs market competition, but also has far-reaching macroeconomic and sociopolitical consequences. Indeed, it shifts the balance of power from workers and consumers to capital and leads to an unequal distribution of wealth. These developments are easily identified in digital markets. For example, the Bertelsmann Stiftung study shows that these trends are particularly pronounced in industries where digital transformation is well underway.

As a result, policymakers have paid increasing attention to digital markets. Some observers regard the slow diffusion of digital technologies as one possible source of the sluggish productivity growth seen in a large number of companies. SMEs are finding it increasingly difficult to adopt innovative technologies, and entire regions are being left further behind (Andrews et al., 2015;

Andrews et al., 2016). The latter development in particular bears potentially explosive sociopolitical consequences.

Data as a basic commodity

Competition policy is one of the numerous instruments by which policymakers might seek to counteract slow and non-inclusive productivity growth. For example, in a guest column for the German-language business newspaper *Handelsblatt* on 13 August 2018, SPD leader Andrea Nahles called for a policy in which the large U.S. tech companies in particular would be required to make their data available to smaller competitors.

“As soon as a digital company exceeded a predetermined market share for a certain time, it would be obligated to share an anonymized and representative portion of its accumulated data.”

Even some leading competition economists have warmed to this demand, recommending in an advisory opinion on modernizing the German Federal Ministry for Economic Affairs’ market-abuse oversight function that a data-sharing obligation be considered (Schweitzer et al., 2018, p. 152).

The European Commission (2018) also recognizes the significant economic potential in data-sharing and has set a goal of erecting a European data economy. The Commission wants to create the legal and technical conditions to facilitate data-sharing between companies, so as to enable them to train their artificial-intelligence applications. However, the current consultation process has yet to consider a direct obligation to share. As it currently stands, the burden of developing a code of conduct for data-sharing rests on the shoulders of companies. Depending on the structure of the individual markets, however, “sector-specific measures” could be necessary in order to enable fair and open competition. The precise character of these measures has yet to be specified. Nonetheless, given that Competition Commissioner Margrethe Vestager has already intervened energetically in other digital-economy cases, particularly against Google (see below), a data-sharing obligation is quite conceivable.

We turn now to connecting the dots between the data-sharing obligation and the promotion of productivity growth. If data is the new oil, should it be shared among competitors? The demand to share oil would likely have astonished many in the analog era. We will thus seek to clarify this issue below.

The fact is, data – like oil – is in numerous ways a critical input within the value chain. For example, retailers use data on previous purchases to learn more about consumers' preferences and can offer them more individualized offers in the future. Sensors send data on the use of products and, in so doing, can report on an automobile's maintenance requirements directly to the auto shop, for instance. In an artificial-intelligence environment, programs learn continuously on the basis of experienced values, a capability that might someday enable the automobile to drive to the auto shop on its own.

Data is thus an input for the further development of diverse processes and products. However, data as an input factor is different from oil in two fundamental respects, which is why many economists are not entirely pleased with the analogy. First, data is non-rival in consumption. The use of data by one company does not prevent the use of the same data by other companies. In other words, in principle, data can be shared. Second, data is heterogeneous. Different kinds of data are used for different purposes. Machine-generated data relating to maintenance needs is of little value to online retailers. For this reason, there is no unified market for data as an input factor. Moreover, it is not the data alone that determines the associated economic value. Algorithms can identify patterns and develop independent solutions to problems only by analyzing and combining datasets. For an algorithm to learn and improve itself, it needs access to a massive amount of data – what is now called big data.

Share data – promote competition?

Observers point to a possible competitive problem in the fact that large corpuses of data are typically available only to large companies. Many

experts today debate whether a kind of “data power” exists in addition to economic market power (see Körber, 2017). This could lead to a significant barrier to effective competition if competitors lacked access to that data. Without access to the important basic commodity needed to improve their own products and processes, they would in turn fall farther behind with regard to internet-of-things (IoT) technologies, for example.

The proposed data-sharing obligation is in its essence derived from this idea. However, the specific channels through which data power is likely to reinforce market power remain unclear. Large companies can potentially profit from two effects: economies of scale and economies of scope.

Big data's competitive advantages

Big companies generate large amounts of data on their own. If their sheer size creates a competitive advantage for them, they benefit from so-called economies of scale. This is the case here if a larger amount of data implies a greater benefit. In such a situation, an algorithm improves as it is fed more data. This is particularly the case in the realm of deep learning, a sub-field of artificial intelligence in which the algorithm learns constantly as it continuously evaluates and creates new links within streams of data. For example, Amazon's Alexa virtual assistant becomes faster, and offers better answers, as more people use its services. The competitive advantage increases with the quantity of data.

In addition to the evaluation of larger amounts of data, large companies also benefit from so-called economies of scope. The leading technology companies are typically active in a number of markets. For example, Google operates the most successful search engine, but also produces Android, the most successful mobile-phone operating system; the Google Maps mapping service; and the YouTube video-streaming service. Alphabet, Google's parent company, is also active in many additional markets, such as those for artificial intelligence and the development of self-driving automobiles. This allows data obtained from a multiplicity of sources to be used for many services simultaneously. This also means that data can be linked and combined so as to drive

further developments in the artificial-intelligence sphere, for example.

However, the economic principle of marginal revenue equating with marginal costs should also apply here. The company will analyze additional data, and thus benefit from the economies of scale and scope, only so long as the income from the additional data analysis is greater than the additional costs of the data processing. Deciding when this condition holds can probably be done only on a case-to-case basis. However, the more critical question is this: Is access to the technology leader's data so crucial that competition is altogether impossible without access to this data?

Is data power market power?

In the ninth amendment to the Act Against Restraints of Competition (GWB), the German parliament expressly observed that market power can be derived from the control over data.

The newly introduced legislation under Sec. 18 para. 3a says that assessments of the market positions of particularly diversified platforms and networks must also take "access to competition-relevant data" into account.

In principle, the call to share what is potentially the most crucial element of market power – in this case, data – is not entirely new. As many network industries were liberalized in the 1990s, so-called monopolistic bottlenecks – the networks themselves – persisted. For example, new competitors in the energy, railway and telecommunications markets could not offer competitive products or services without access to the network facilities of the formerly state-owned companies. For this reason, infrastructure operators were obligated by law to provide competitors with reasonable, non-discriminatory and transparent access to their essential facilities, in this case the networks.

A similar call is now being made for data. However, applying the principle of access to an essential facility is associated with strict criteria, as it falls into the contentious area between access rights and property rights. The facility must meet two standards:

First, a facility is essential if its duplication by potential competitors is economically or technically unfeasible. Second, access to the facility must be essential to competition in a downstream or after-market – typically the consumer market. It remains unclear what kind of data would fulfill both these criteria simultaneously. However, it appears that the universe of such datasets is rather small, because a great deal of data is not exclusive, and can be obtained from the market. This applies especially to personal data, which can originate from a variety of sources as well as being generated by the technology companies. For example, location data can be obtained through various app providers, the mobile network service provider, or other third parties.

By contrast, IoT technologies typically require non-personal data, such as machine-generated and product-usage data. This is often obtainable exclusively from the producer, so the criteria of exclusivity are rather more easily satisfied. However, the extent to which this is so indispensable that no competition is possible without access to this data can probably be determined only on a case-by-case basis. As Schweitzer et al. (2018) also note, case law certainly recognizes such cases in the after-markets. For example, auto producers are obligated to provide independent automobile workshops with access to diagnostic and information systems, because competition would otherwise be impossible in the downstream market. In principle, it is thus conceivable that some data is so exclusive, and not otherwise available on the market, that it could be regarded as essential.

In the context of the after-market, market foreclosure may thus result at the downstream level. In the context of monitoring the undue restraint of market power, exclusionary abuse refers to companies with a paramount market position in relation to its competitors. Of course, this can also take place in digital markets. In April 2015, for example, the European Commission opened a proceeding against Google, alleging abuse of a dominant market position in the mobile-phone operating system market. One of the allegations was that Google had tied its Chrome browser to its dominant Android system, and thus unfairly obstructed competition in the market for mobile web browsers. Due to this behavior, among other

factors, a record-breaking fine of €4.34 billion was imposed on Google in August 2018.

Fundamentally, competition law thus has instruments with which to sanction the abuse of market power in digital markets. However, these instruments only intervene when the abuse has taken place, and competitors have already been damaged. At this point, it may already be too late. In the course of the procedure's approximately 3.5-year duration, the market share held by Google's Chrome increased from 52% to 68%. Google was able to solidify its dominant position further, and perhaps for good. For the time being, the penalty payment does nothing to change this situation.

This is a general problem in many digital markets. In many of these markets, so-called network effects play an important role. Users migrate to platforms that already have many other users. This can have the effect of tipping the market toward a particular provider (so-called winner-takes-all markets). In such a case, it is vital to attract many users at an early stage. In terms of competition policy, this seems unproblematic – at first glance.

However, competition within the market must be fair and open. Particularly in the case of network and platform markets, an intervention must be made significantly earlier and more swiftly if an abuse of market power is identified – and certainly before the market threatens to tilt irretrievably. In such a situation, compulsory data sharing is a valid instrument for the preservation of other competitors' market opportunities.

However, this prophylactic instrument can be only one among several instruments employed. The data-sharing obligation alone is not enough; the potential for discrimination against competitors continues to exist. In such a case, competition policy must be able to intervene more quickly and more effectively, before the game is already decided. In order to keep up with the dynamics of digital markets, the agency tasked with monitoring abusive practices requires more capacity, staff and regulatory clout.

Share data – undermine competition?

In principle, data sharing could have some negative effects on competition. For example, the risk of algorithmic collusion is currently being discussed in the context of digital markets. The heart of this discussion focuses on whether self-learning algorithms can align their price-setting practices in such a way as to achieve a so-called collusive equilibrium. In this case, one can also speak of a collective market power. All companies in the market can overall achieve higher prices and profit levels than would be possible under competitive conditions. The coordination on this equilibrium could be facilitated through the use of the same data. The consequences of collective market power are analogous to the effects described above: Resources are no longer deployed efficiently, and productivity suffers.

Driven by such concerns, the German Bundeskartellamt and the French Autorité de la concurrence (the countries' respective competition-protection agencies) have initiated a joint project intended to analyze challenges to competition policy that arise from the increased use of algorithms. Similar discussions are taking place at the OECD, among other venues.

More broadly, it has long been recognized that the exchange of data can have both efficiency-increasing and collusion-promoting effects. If the markets are already very concentrated, and if individual data on costs and demand are shared, the risk of collusion is assumed to be higher than would be the case in competitive markets in which only aggregated data is shared (see Kühn and Vives, 1995).

However, even if a debate regarding the risks of algorithmic collusion remains in full swing, risks of this kind associated with the current discussion on compulsory data sharing appear to be negligible. In such cases, the markets are generally very concentrated, and characterized by a few dominant providers. For this reason, the primary concern is to enable newcomers and startup companies to compete. Moreover, the proposals focus on the exchange of anonymized and machine-generated data for the purposes of

algorithm training, so issues of pricing are not directly involved.

In addition to raising controversial property-rights issues, the data-sharing obligation touches on contentious data-privacy concerns. With regard to personal data, the General Data Protection Regulation (GDPR) contains specific regulations mandating that the persons to which the data relates must provide consent to third parties' access to this data, as well as to the way it is used. This standard can be met if no more than anonymized data is shared, allowing no inferences to be drawn about specific people. For an algorithm, it is generally unimportant whether the data comes from a specific person or is simply representative of a group of people.

As noted above, primarily non-personal data such as machine-generated and product-usage data is what matters most with regard to productivity growth. Thus, fewer conflicts with data-privacy provisions can be expected, even if there may be sensitive cases here as well.

Summary

Overall, there are reasons to create a legally anchored obligation to share exclusive data deemed essential to the preservation of competition. An obligation of this nature provides competitors to the superstar firms opportunities to train their own algorithms and thus preserve their competitive prospects. The institution of property rights, as a cornerstone of market economies, should be interfered with only when driven by a strong public interest. In the case of data-sharing for fair competition, the public interest is clear.

In the absence of such measures, we face a risk that market entities competing to develop future technologies will fall further behind the currently dominant companies. This would have far-reaching macroeconomic and sociopolitical consequences. On the one hand, decreased competition reduces the pressure on established companies to continue bringing new and innovative products and services to market. On the other, the balance of power is already increasingly shifting from labor to capital, which involves an

increasingly unequal distribution of macrosocial well-being.

However, the obligation to share data can be only one among a number of instruments deployed. Moreover, it requires strong and effective oversight of potentially abusive market practices. Entities performing this function must be able to keep pace with the dynamics of digital markets, which perpetually present competition policy with new challenges. Some of the challenges are already familiar from traditional markets. However, many, such as the evaluation of data, are not. Competition authorities need additional capacities and instruments in order to meet these new challenges. Above all, they must have the regulatory clout to intervene at a significantly earlier point – that is, before the markets have been irreversibly tipped in favor of a few superstar firms.

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