

BIG BUT NOT INSURMOUNTABLE?

HOW THE DEFINITION OF 'BIG DATA' CAN HELP IN THE ASSESSMENT OF ENTRY

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1 Introduction

- 1.1 Big data provides a new challenge for most competition authorities. A series of decisions related to big data, such as the Facebook/WhatsApp merger, have faced severe criticism by competition policy experts.² One of the reasons for this is that the barrier created by big data is not well-understood. If the concept is defined only to mean very large data sets, competition assessment can go wrong.
- 1.2 Commission officials defined big data as "large sets of data."³ We argue that the concept of "big data" is broader: *it is the ability to collect and analyse a large volume and variety of data in a timely fashion.*
- 1.3 Data may lose its value quickly. For example, Google needs a consumer's latest search history to ensure it displays the most relevant ads. Search history from years ago – or even weeks ago - may be irrelevant in predicting what products or services the consumer may be interested in today. Therefore, it is not usually the volume of data that determines whether a barrier exists but the ability to collect and process it rapidly.

2 There is more to being 'big' than volume

- 2.1 Big data is not only a concern for antitrust experts. The OECD has recognised that focusing on volume alone can be misleading, no matter if the volume is measured in gigabytes, petabytes (millions of gigabytes), or exabytes (billions of gigabytes).⁴ Instead, it outlined the importance of including concepts such as "velocity" and "variety" which cover more than the mere quantitative aspect of data. This leads to the 'three Vs':
 - a. **Volume** of data plays a crucial role for data orientated businesses.
 - b. **Velocity** refers to the speed of data generation but also of access to data and the way that data is processed and analysed. For example, the users of the Waze map application report information on traffic incidents, such as accidents or speed traps, which is processed in real-time to suggest the best route for a given

destination of travel. Velocity adds a dynamic component to the definition of big data. Data can quickly lose its value if it is not processed and analysed in a timely manner and data generated by consumers must constantly be collected and updated.

- c. **Variety** refers to the diversity of information in the data. For example, Facebook does not only gather personal information on users (for example, age or education), but also information on their network of friends and hobbies, interests. In addition, variety also reflects the variety of *sources* data may come from, so that companies may collect data using different platforms.
- 2.2 Velocity in particular can provide a crucial competitive edge. Data-driven businesses have to match the competitor's velocity of data collection and their capability to analyse the data. A company that either manages to process and analyse data more quickly than its competitors or to better use the variety of information data can provide, may provide itself a significant competitive advantage. However, competition authorities have sometimes ignored this aspect of competition, focusing instead only on volume, leading them either to over-estimate or under-estimate the effect of barriers to entry.



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1. The authors would like to thank Ferenc Peto for his help with this article.

2. See Stucke & Grunes, "Big Data and Competition," Oxford University Press, 2016.

3. Ocello, Sjödin, & Subocs, "What's Up with Merger Control in the Digital Sector? Lessons from the Facebook/WhatsApp EU Merger Case," 1 Competition Merger Brief, 2015, page 6.

4. See OECD, "Data-driven Innovation for Growth and Well-being," 2014.

3 Big data as a barrier to entry

- 3.1 In Google/Waze the UK's Office of Fair Trading (OFT) found that Waze's navigation service quality crucially depended on the amount of information it collected from its customers.⁵ The more active customers use Waze, the better Waze becomes because of the amount of information it collects from its users. Yet, customers would only start using Waze if the quality is good enough. This assessment yielded a chicken and egg dilemma of two-sided platforms that hinges on the fact that large data volumes are defined as an essential input for competition in data-driven markets.
- 3.2 The OFT found that one key attribute of a navigation service is real-time information on road incidents, such as accidents or diversions. Waze used a community based approach (crowd-sourcing) in gathering real-time information on traffic conditions. As Waze was still a much smaller player, the OFT's assessment focussed on whether Waze had a sufficient volume of users to build a reliable UK map.
- 3.3 Ultimately the OFT concluded that customers would not switch to Waze's service unless the quality of the service was high enough. However, this quality threshold could only be reached if enough customers provided their feedback to Waze, i.e. to generate data. Correspondingly, Waze was not seen as a competitive threat to Google by the OFT. In its assessment the OFT did not consider Waze's ability to analyse large volumes and variety of data in a timely fashion. Had it considered this wider definition of big data the OFT may have reached a different conclusion, i.e. that Waze would have had the potential to emerge as a competitor for Google's map services.

4 Big data capabilities can help overcome barriers to entry

- 4.1 Conversely, big data capabilities defined as the ability to analyse large volumes and variety of data in a timely fashion may facilitate entry under certain circumstances, allowing entry barriers to be overcome.
- 4.2 When it published its decision not to oppose the acquisition of Tele Atlas by TomTom on May 14, 2008, the Commission considered that entry by firms offering Internet-based map applications was "unlikely".⁶ The Commission excluded the possibility that Google could enter the market for navigable map databases quickly. It argued that the production of a navigable digital map database using end-user feedback was impossible. The Commission claimed that only a certain type of data could be used for navigable digital map databases and that this data needed to be collected through field surveys using customized vehicles. It found that the vast resources needed in building up a navigable digital map database would make entry very costly.
- 4.3 The Commission's entry assessment was based on a very "volume centred" definition of digital map data. It focused on the ability to duplicate exactly the same data that Tele Atlas and NAVTEQ

generated, using the same technology those firms used. The Commission did not consider the fact that Google was able to use the variety of data which its search engine provided, nor did the Commission take into consideration that the search engine produced data at a very high velocity.

- 4.4 In fact, using its competitive advantages relating to variety and velocity, Google soon started to offer navigation for free. Google Maps Navigation integrated a series of features such as "search along route," "search by voice," traffic view, satellite view and "search in plain English" using the data that was collected from Google's search engine.⁷ Moreover, it had the significant advantage of relying on the updates sent by its users. The combination of a high *volume* and *variety* of data updated at a high *velocity* caught incumbents such as TomTom off-guard. In contrast, the volume of data TomTom obtained through the acquisition of Tele Atlas lost its value quickly. €1bn on the Tele Atlas purchase had to be written off in 2009, only one year after the merger.⁸ TomTom's value slumped from €634m in the last quarter of 2007 to €213m in the first quarter of 2009.
- 4.5 It is therefore fair to say that the European Commission and the market in general, underestimated the way Google's ability to process and analyse the data it could obtain ultimately facilitated market entry.
- 4.6 We draw the following conclusions from this case:
 - a. First, Tele Atlas and NAVTEQ's market positions did not depend solely on the volume of data they already possessed. Until Google's market entry, no competitor had a technology that could update, analyse and enlarge a high volume of data like Tele Atlas and NAVTEQ could.
 - b. Second, Google managed to enter the market because the internet-based navigable maps it used included a variety of data that could be incorporated in the map product. Furthermore it allowed for quicker updates and improvements providing a product that was unmatched by TomTom.
 - c. Third, in spite of having a head start with respect to the data volume for navigable maps, TomTom could not prevent the successful market entry of Google in the market for navigable map datasets.

5 Big data is ubiquitous but the ability to analyse it is not

- 5.1 There are other examples showing that considering only the volume of 'big data' may miss the mark. Yahoo could not profit from having a higher volume of data than Google and ultimately lost its first spot in the market for search engines. Microsoft and Yahoo unsuccessfully tried to bundle their resources to match Google's search engine abilities but failed to catch up with its performance.⁹

5. Office of Fair Trading, Completed acquisition by Motorola Mobility Holding (Google, Inc.) of Waze Mobile Limited, ME/6167/13.

6. See Case Comp/M. 4854—TomTom/Tele Atlas, Commission Decision 14 May 2008.

7. See <http://googlemobile.blogspot.be/2009/10/announcing-google-maps-navigation-for.html>.

8. See <https://www.theguardian.com/business/2015/jul/21/navigating-decline-what-happened-to-tomtom-satnav>.

9. See Comp/M. 5727—Microsoft/Yahoo! Search Business, Decision of February 18, 2010.

- 5.2 Facebook managed to outperform Myspace, even though Myspace initially possessed significantly more customer data than Facebook. Myspace was cautious about collecting private data and therefore failed to quickly implement a successful big data strategy.¹⁰ In contrast to MySpace, Facebook swiftly implemented a big data strategy where a variety of personal data was regularly collected, analysed and enlarged. This helped Facebook to figure out what the consumers wanted and to swiftly implement new services. Myspace never managed to compete on an equal footing with Facebook after 2008, as it failed to develop a competitive technology to analyse and enlarge a high variety and volume of data in a timely manner, in spite of its initial head start with regards to the possession of large volumes of data.
- 5.3 Hal Varian, Google's chief economist, also emphasised the importance of analytics over the volume of data at an OECD hearing.¹¹ He noted that collecting large volumes of data can be cheap but the ability to analyse it provides the crucial competitive advantage.
- 5.4 The technology to collect and analyse a large volume and variety of data in a timely manner, is neither cheap nor widely available. The Commission found in its Microsoft/Yahoo decision that large R&D and investment costs are associated with internet search services.¹² Yahoo emphasised that heavy investments in software and in hardware are mandatory to stay competitive in the search engine market and that Yahoo's investments, although significant, have only been a fraction of Google's. Google is understood to have invested approximately \$585m to roll out its social network Google+.¹³
- 5.5 Moreover, another particularity of these technologies is their incredible versatility to enter and transform existing industries. No player in the urban transportation or food delivery industries realized they could be transformed by entrants with the ability to collect and analyse data. There is therefore no closed list of data driven markets, and even less a market for big data itself. Big data is not a demand related phenomenon, but a supply one. Being able to develop the most efficient technology might be more important for success than decades of experience in a traditional sector.
- ## 6 Conclusion
- 6.1 The evidence from data-related markets shows that the possession of large data volumes alone rarely provides a competitive advantage.
- 6.2 Occasionally, commentators refer to data as the "oil" of the 21st century. In our view, data is not comparable to oil; it is rather comparable to wind. Data flows and is largely accessible. Just like wind, it needs to be captured to be transformed into something valuable. It is the ability to do this and the accumulated experience of doing it that is valuable, and not the accumulated wind, nor the historical data.
- 6.3 We do not intend to suggest that competition authorities should not be concerned about big data. They should, as these analytical capabilities are not cheap and the accumulated expertise in some companies is becoming large. However, unless competition authorities understand how big data works to create competitive advantage or barriers to entry, they are in danger of investigating the wrong cases, in the wrong way.

10. See: <http://www.businessinsider.com/former-myspace-ceo-explains-why-facebook-was-able-to-dominate-social-media-despite-coming-second-2015-5?IR=T>.

11. H. Varian: Big data, personalization and competition at OECD hearing November 2016. Available at: <https://www.slide-share.net/OECD-DAF/big-data-bringing-competition-policy-to-the-digital-era-varian-november-2016-oecd-discussion>.

12. See Comp/M. 5727—Microsoft/Yahoo! Search Business, Decision of February 18, 2010, para 33.

13. See: <http://www.forbes.com/sites/bruceupbin/2011/06/30/google-cost-585-million-to-build-or-what-rupert-paid-for-myspace/#b9e3b16349f8>.

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