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The anti-competition measures and policy remedies in the data economy

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Keyword: data network effect, essential data, algorithm audit, data cooperatives, data portability

I. Introduction

The Economist (2018) considers the five most valuable publicly listed firms, Amazon, Google, Facebook, Microsoft, and Apple, as BAADD, i.e., too big, anti-competitive, additive and destructive to democracy. Since the first time Google was investigated by European Commission (EC) six years ago, a series of anti-competition allegations and investigations were undertaken by national regulatory authorities (NRAs) in an attempt to prevent market dominance and to protect consumer rights. Google was fined 2.4 billion Euros by EC in June 27, 2017. The incident of Facebook data leaks causes many of us rethink the arm-length approach of the Internet policy. Scholars such as Ezrachi and Stucke call for antitrust regulations applied to the big data firms.

This paper is written to examine the anti-competitive conducts made by data monopolies and to measure their impacts on the whole industry and consumer rights. Then the author discussed the likely policy remedies and assessed the political feasibility in implementing these policies. In conclusion, we remind of importance of empirical studies in undertaking the locality-based policy approaches.

II. The Birth of Big Data Firms

Since the rise of Google and Amazon, we found that big data firms have been grasping market power in various industries, high-tech as well as traditional brick-&-mortar ones. Table 1 show the market dominance of Google, Amazon and Facebook in search engine, e-commerce and social media respectively. Airbnb and Uber then each dominate short-term housing rental and ride-hailing business under the concept of sharing economy.

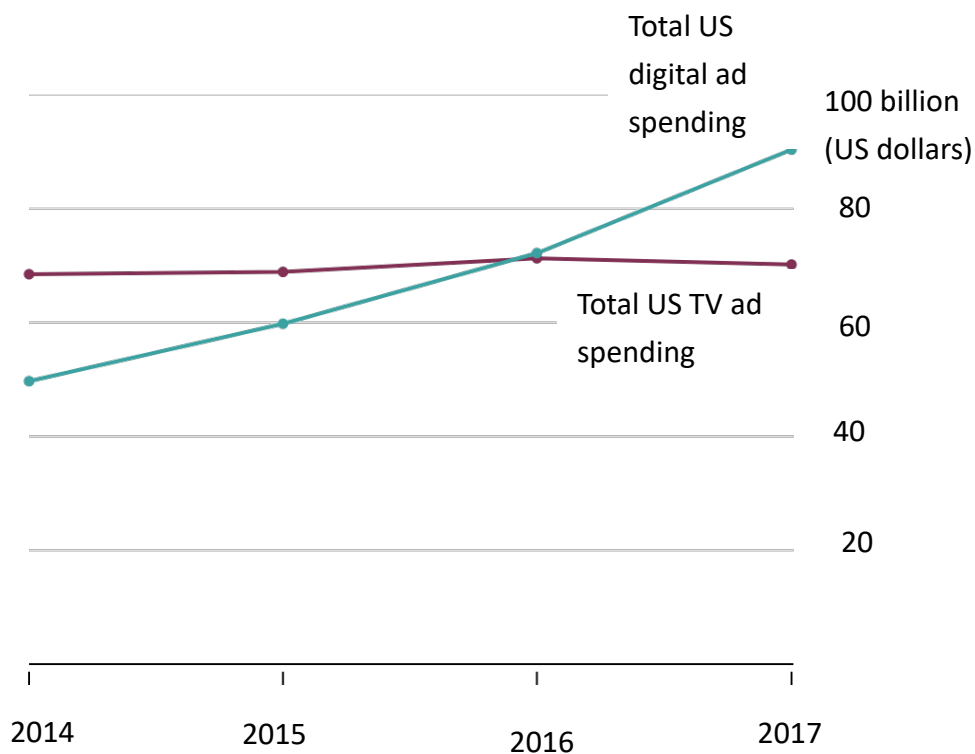
Table 1. The market power of selected tech firms

firm	market	status
Google	Search engine	67% of global market
	Home assistant	
	Map	
	Online ad	33% of US market

Amazon	e-commerce	40% of US market
	Home assistant	
	Cloud computing	
Facebook	Social media	35% of global market (2bn monthly users)
	Online ad	24% of US market

Source: the Economist

Graph 1 further depicts that the size of digital ad in the US exceeded that of TV in 2017. Based on the New York Times, Google and Facebook have been become default advertising platforms: “Google and Facebook accounted for about \$53 billion, or 60 percent, of last year’s digital ad spending in the United States” (Maheshwari & Koblin, 2018). Amazon then bundles its 100m “Prime” members for free shipping and online video. On top of that, Amazon sells just about everything else consumers desire, while its cloud-computing business guarantees stable, recurring revenue.



Graph 1. US Ad Spending

Source: The New York Times

(<https://www.nytimes.com/2018/05/13/business/media/television-advertising.html>)

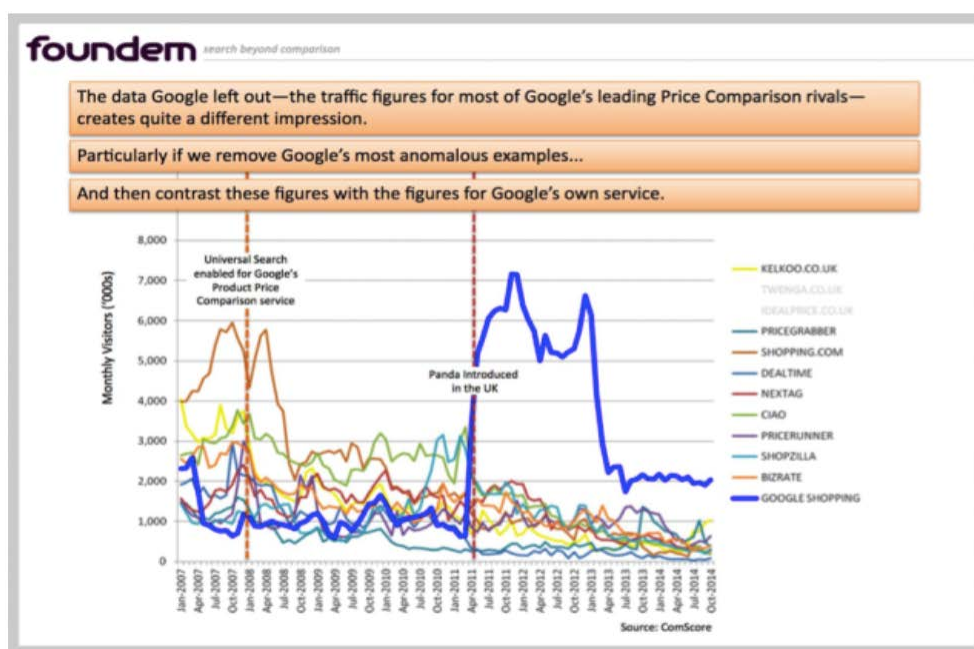
III. The market failures caused by data monopolies

All these big data firms benefit from network effects, turbocharged by clever algorithms. The more users they have, the better their products, the more new customers are lured. This has helped them confound doubters and grow briskly despite their massive size. These firms develop the services to public that continuously feed invaluable gigantic data back and the data obtained help expand them to other territories of services. For example, Facebook and Google initially used the data they collected from users to target advertising better. But in recent years they have discovered that data can be turned into any number of artificial-intelligence (AI) or “cognitive” services (The Economist, 2017). By the same token, that is how Amazon has evolved from an online bookstore to a total-solution ecommerce website and then cloud computing services.

Consequently, the data they possess and process are vital to creation of new economy. The new economy is about analyzing rapid real-time flows of often unstructured data: the streams of photos and videos generated by users of social networks, the reams of information produced by commuters on their way to work, the flood of data from hundreds of sensors in a jet engine (the Economist, 2017).

The typical concern of this new economy lies in competition. These giants may clash with one another. Having come to dominate a large part of their own markets, they are now striking out in search of new opportunities. But before they will encroach on each other’s territory, they bundle new business opportunities with their omnipresent services that erects entry barriers. Google indeed abuse its monopolistic power in search engine service in the European Economic Areas (EECs) and was severely fined. It is found that the visits to price comparison websites largely depend on the search results. Ninety percent of people only check the results shown on the first page; and one third of people will directly click the link of the top result. That is, the websites shown on the second or following pages are seldom accessed by the consumers. When Google

announced its own price comparison services in EECs in 2008, it deliberately manipulated the algorithms of search services so that the link to its service was shown on the top result whereas competing services are put behind. Graph 2 illustrates that the traffic to Google's price-comparing service originated from the search results increased while others' traffic significantly declined after Google adopted new algorithms called Google Panda in 2011 Q2. The visits to the competitors' websites in 2014 Q4 dropped to the 20 percent of the 2007 level. Because of this manipulation of algorithms, the price comparison rivals have to pay advertisements for the top placement of search results. The EC regulators thus ruled this behavior as unfair competition.



Graph 2 the traffic volumes of price comparison websites

Ezrachi and Stucke (2016) even argued that algorithmic pricing is a recipe for tacit collusion because more and more purchases are made online and sellers rely increasingly on sophisticated algorithms to set prices. Such an algorithm makes it easy for retailers to monitor and match each others' prices. Any one retailer would have little incentive to cut prices, since robo-sellers would respond at once to ensure that any advantage is fleeting. The rapid reaction afforded by algorithmic pricing means sellers can co-ordinate price rises more quickly. Price-bots can test the market, going over many rounds of price changes, without any one supplier being at risk of losing customers. Companies subsequently

might need only seconds, and not days, to settle on a higher price. Online sellers' growing use of self-teaching algorithms makes it even harder for trustbusters to point the artificial-intelligence-led collusion.

The second type of anti-competition refers to the fact that these data monopolies will have incentive withholding data from competitors citing the privacy issues. The data they possess, especially personal information – databases of names, residence area, age, sex and income – create “data-network effect” (Ezrachi & Stucke, 2017). They use data to attract more users, who then generate more data, which help to improve services, which attracts more users. That is, the more it learns about those users and the better targeted the ads on newsfeeds become. Similarly, the more people search on Google, the better its search results turn out. The data monopolies will thus withhold the essential data fostering competitive entry. Eventually, the essential data that entrants lack of access become the entry barrier.

Hal Varian, the chief economist in Google, defended against data-network effect, instead claiming that data exhibit “decreasing returns to scale.” He insisted that the real power of data monopoly is rooted in “the quality of algorithms that crunch the data and the talent that develop them” (Varian, 2014). In my opinion, the decreasing returns to scale is only manifested in mature services offered. When data monopoly explore the frontier of new business opportunities, it relies self-teaching algorithms that are trained on fresher data fed to them.

The third type of anti-competition is that data monopoly buys-up of promising competitors, and generates potential monopsony power over suppliers and vendors. Besides, it may entails the externalities imposed on its users, including a loss of privacy and tech addiction. Finally, it may cause probable pollution of the public sphere with fake news, mass manipulation and lobbying.

IV. Preventing anti-competition in the big data industry

In this section, the policy instruments deterring data monopolies from exercising anti-competitive behaviors are discussed and presented. Therefore, we with a holistic view will assess the following approaches

respectively and report our findings:

❑ 1. break-up:

As history is shown, AT&T was regulated as a public utility in 1913 because it over-dominated the telephone and telegraph market in the US. And it was further forced divestiture in 1983. Subsequently, IBM and Microsoft were ordered to open their interfaces and source codes in deterring their anticompetitive behaviors. However, the big data firms at the present time are hardly applicable to two major remedies tackling monopolies, either breaking them up or regulating them as a public utility. A simple break-up may also jeopardize the economies of scale. And traditional tools of utility regulations are indeed unenforceable since most products and service the tech firms offer are free.

❑ 2. merger & acquisition approval:

As data exhibit network effect, firms' data assets should be evaluated in terms of market capitalization when they apply for merger approval. It is noticeable that essential data deserve particular attention in contemplating the merger. Like the concept of essential facilities in telecommunication, essential data contain the crucial information that fosters competition. In this sense, one of the criteria in deciding kill-or-go is whether or not analytics of the integrated essential data enables the merged company to engage in anti-competitive behaviors and to generate diseconomies of scale. The antitrust regulators should make the big five firms hardly to acquire smaller ones.

❑ 3. enforced information disclosure about firms' control/influence:

Decades ago, the NRAs considered competition in telecommunication since eventually neither breaking-up nor regulated monopolies was feasible. Because of networking characteristics and bottleneck infrastructure, the NRAs adopted behavioral regulations such as interconnection, open access (i.e., local loop unbundling), equal access, and numbering portability in fostering telecommunication competition. By the same token, NRAs could promulgate algorithm audit, mandatory trading of essential data, developing pricing methodologies, and allowing for data brokers Ezrachi and Stucke (2016).

- a. algorithm audit

The analogy is cost separation in telecommunication that means downstream competitive services must be charged at the stand-alone without being cross-subsidized by upstream monopolistic service. The NRAs can have the principle algorithms of market significant players (SMPs) audited so as to enforce information disclosure. The competitive rivals could then have symmetric information about algorithm adjustments and compete against the monopoly in a level playing field.

➤ b. mandatory trading of essential data

Essential data to big data services are like essential facilities to telecommunication. The effective policy measure to open up fixed-line networks is unbundling local loops (ULL). Similarly, essential data contain the must-have information for competitors that cultivate their entries. The NRAs should mandate trading of essential data since, as previously mentioned, data monopolies have incentive withholding essential data and deterring competition.

➤ c. to develop pricing methodologies

It is said that, without reasonable cost distribution, the ULL policy will not be effective. Because the rental fee of local loops is the cost to competitors, the dominant carrier has incentive raising the fee far above the cost of providing line rental and the competitive rivals suffer from high cost of ULL. Therefore, the NRAs designed the pricing scheme the total element long run incremental costs (TELRIC) when implementing ULL. It is imperative to notice that the data monopoly has the same incentive in raising the price of essential data. The NRAs thus must develop and enforce cost-based pricing methods when the monopoly sells the essential data.

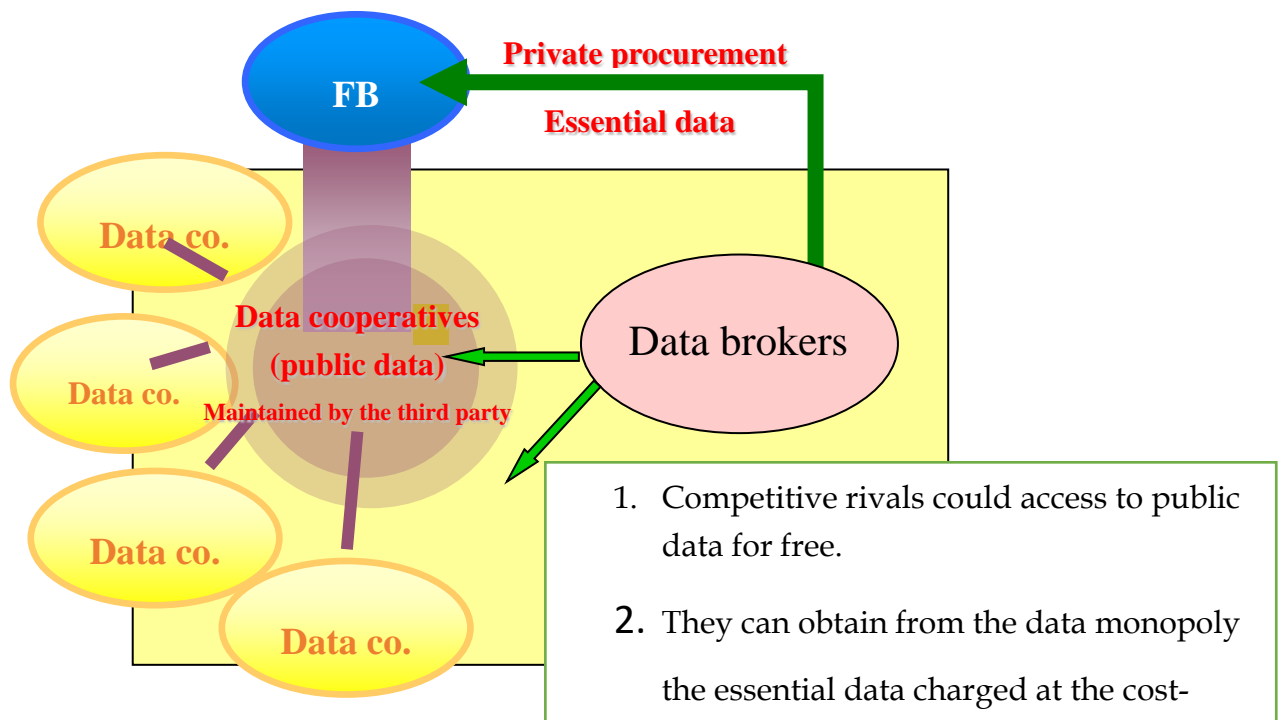
➤ d. allowing the data brokers

As competitors are weak in negotiating the terms and conditions with the monopoly in obtaining its essential data, the presence of data brokers saves the transaction costs for the competitors.

❑ 4. developing data cooperatives:

Government could release public data in order to decrease the costs for small and medium enterprises (SMEs) when they eagerly find business opportunities. Graph 3 illustrates how competitive rivals assess

to both public data and essential data via different approaches. The companies can obtain public data for free while they have to pay for essential data charged on cost-based.



Graph 3. The data cooperative managed by the trusted 3rd party

□ 5. redefining data ownership:

The Facebook scandal reveals a cruel truth that users' privacy is the last thing the big data firms care about. Because of their business models that better target audience and better ad revenues, the big data firms naturally maximize the usage of personal information gather without obtaining users' consent. EU in this May had General Data Protection Regulation (GDPR) effective. It borrowed the term number portability that views the phone number as personal property to construct the likely idea: data portability. EU assured that users own personal information they left for the big data firms in exchange for free services. Therefore, data portability saves the switching costs for customers in transferring their information to competitors and thus increases the likelihood of market competition. The NRAs could encourage companies to adopt blockchain technology in avoiding identity leak during the transfer.

- ❑ 6. Measures to protect privacy:
 - privacy could be protected by the companies that act as trusted, anonymised intermediaries between users and the big tech firms.
 - “Ethical” firms could emerge that create search engines, social-media platforms and digital assistants which are not reliant on ads and surveillance.

The Economist (2018b) describes Facebook and Google as the most vulnerable to regulation given their surveillance-based models and high market shares. Amazon, on the other hand, peaks its stratospheric valuation. It suggests that Amazon could be a price-gouging monopoly but at the moment it is lowering consumer prices.

V. Conclusion

America’s antitrust experts gradually came to a consensus after the Facebook scandal that government intervention in big tech firms is needed. Nevertheless, they have debated furiously regarding the degree to which Silicon Valley is regulated, such as the tradeoffs between innovation and regulation, between privacy and free flows of data, and between stopping manipulation and protecting free speech. This paper detailed the approaches of tackling these problems. In the end, it relies on regulators’ wisdom in determining which should have the first-aid.

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