Copenhagen Economics

ACCESS TO DIGITAL ASSETS

At what price?

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Access to "digital assets", such as data or digital platform services, has been a hotly debated topic for more than a decade.[2] While the discussion previously focused on the questions of *whether* and *when* such access could be considered beneficial, recent European Union legislative developments now mandate access to certain "digital assets" in several specific contexts. The result is that the focus has now shifted to *how* such access should be regulated.

The Digital Markets Act (DMA)[3] mandates access to search engine gatekeeper "click-and-query data"[4] and software application stores, online search engines and online social networking services.[5] The DMA stipulates that the terms or general conditions for this access should be fair, reasonable and non-discriminatory ("FRAND"). A key determinant of the access conditions will be the price.

In parallel, the Commission's proposal for the Data Act will create a new right to access non-personal raw data generated by users of connected devices from the data holder, usually the device manufacturer. The Data Act applies horizontally across the economy. According to the proposal, data can be requested either directly by users or by third parties on behalf of users. In the former case, access is free of charge, while in the latter case, the Data Act proposal specifies that access should be provided on FRAND terms.[6]

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[2] For example, a 2014 note by Andres Lerner noted that *"...the collection of user data by providers of online services recently has become a popular topic in debates about the application of competition policy"*. Lerner, Andres V., *The Role of 'Big Data' in Online Platform Competition* (26 August 2014). Available at SSRN: https://ssrn.com/abstract=2482780 or http://dx.doi.org/10.2139/ssrn.2482780https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2482780.

[3] *Regulation (EU) 2022/1925 of the European Parliament and of the Council of 14 September 2022 on contestable and fair markets in the digital sector and amending Directives (EU) 2019/1937 and (EU) 2020/1828* (Digital Markets Act) PE/17/2022/REV/1. ELI: http://data.europa.eu/eli/reg/2022/1925/oj. All direct quotations are taken from the official English version. OJ L 265, 12.10.2022, pp. 1–66.

[4] DMA, Article 6, 11 states that "*...the gatekeeper shall provide to any third-party undertaking providing online search engines, at its request, with access on fair, reasonable and non-discriminatory terms to ranking, query, click and view data in relation to free and paid search generated by end users on its online search engines.*"

[5] DMA, Article 6, 12, states that *"...the gatekeeper shall apply fair, reasonable, and non-discriminatory general conditions of access for business users to its software application stores, online search engines and online social networking services"*.

[6] See the Commission's press release at https://ec.europa.eu/commission/presscorner/detail/en/ip_22_1113.

Determining fair remuneration to optimise outcomes is arguably at the core of economics. The economics of prices and incentives has been applied extensively in sectors such as pharmaceuticals[7], postal[8], telecoms[9], energy[10], rail[11], and even sports[12] (determining fair compensation for teams who invest in developing future players). The term FRAND stems from extensive economic and legal literature on patent licensing.

This note discusses how the economic concepts used in these other contexts could be applied to access digital assets. Our note focuses on what constitutes a "fair and reasonable" price. Thus, we set aside the question of what constitutes "non-discriminatory" pricing, although interesting challenges also arise in that setting.

THE PRICE OF ACCESS MUST BALANCE A FUNDAMENTAL TRADE-OFF

The methodology that should be used to determine access pricing can depend on the specific sector and asset in question, and, perhaps most crucially, on the relevant policy objectives.

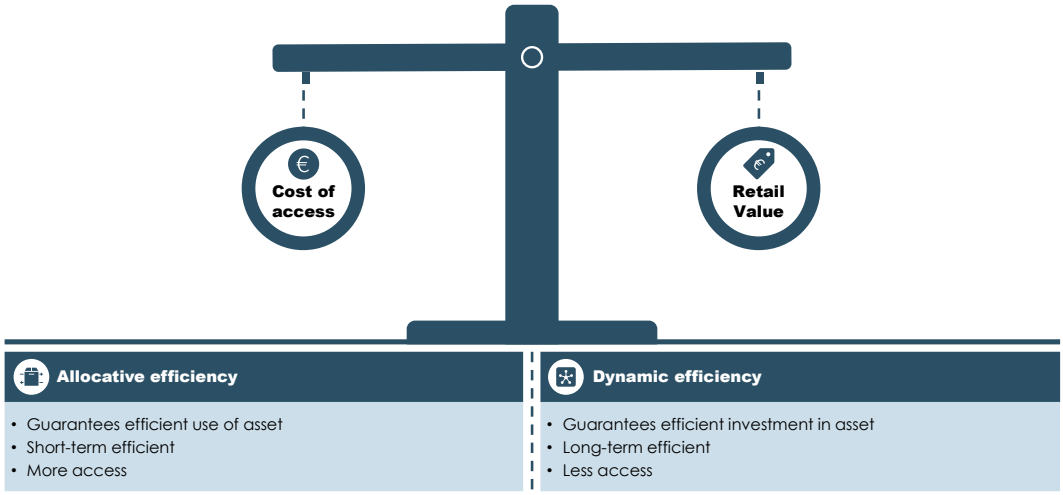
This is because an important trade-off often arises between two potentially conflicting objectives:

- In the short-run, it is desirable to ensure efficient usage of an asset. This refers to the concept of **allocative efficiency.** In principle, allocative efficiency should encourage more access use.
- In the long-run, it is desirable to ensure that the asset owner's investment incentives are maintained. This refers to **dynamic efficiency**. Dynamic efficiency may require higher payment for access to keep incentives untamed.
- The starting point to ensure allocative efficiency would be to ensure that the price of access is not "too high". In particular, a price that is considered "too high" could deter asset-seekers who were able to add value. In general, the starting point for such an assessment would be the cost of providing the asset. To ensure dynamic efficiency, the starting point is, by contrast, the value that the asset owner currently earns from the asset. If its earnings are not affected (or is increased) then its investment incentives will also be unaffected.

[7] For example, see Paris, V. and A. Belloni (2013) or Towse et. Al (2015).
[8] For example, see Donder (2006).
[9] For example, see Jin and Pang (2014) or Odlyzko (2013).
[10] For example, see Jenkins and Pérez-Arriaga (2017) or Wu et Al. (2015).
[11] For example, see Jarocka and Ryciuk (2016) or Productivity Commission (2006) (Australia).
[12] For example, see Terviö (2005).

Figure 1

The trade-off between allocative and dynamic efficiency



This trade-off underpins the two most-used methodologies to determine FRAND prices: **cost-based** and **value-based** approaches.[13]

Perhaps unsurprisingly, there is a direct parallel between the methodologies used to determine access pricing in the context of FRAND disputes and the methodologies used in the context of regulated access pricing. Cost-based approaches are exemplified to cost-plus methodologies when determining access prices, whereas value-based approaches are similar to retail-minus. A key distinction is that whereas *retail-minus* prices are primarily designed to avoid foreclosure, *cost-plus* prices are primarily designed to avoid exploitative conduct.

We compare these approaches using the hypothetical example of a gatekeeper search engine that will be mandated to provide access to its "click-and-query" data. We then discuss the implications of DMA objectives of fairness and contestability for efficiency and alignment.

COULD A COST-BASED APPROACH RESULT IN UNDER-REMUNERATION OF ASSETS?

Using the cost-based or cost-plus approach, the starting point of the assessment of FRAND is the cost of providing access. First, we need to determine the correct cost unit.

One could argue that "click-and-query" data are a by-product of providing a search engine. When a user searches on the gatekeeper's search engine, data on the query received, rankings of search results, clicks and so on are automatically produced.[14]

In this sense, the costs associated with providing access could be limited to the costs of managing and processing the data to make them available to third parties.

In the context of "click-and-query" data, this approach would likely result in a relatively low total estimated cost of access. Once the initial investment has been made by the gatekeeper in the processes

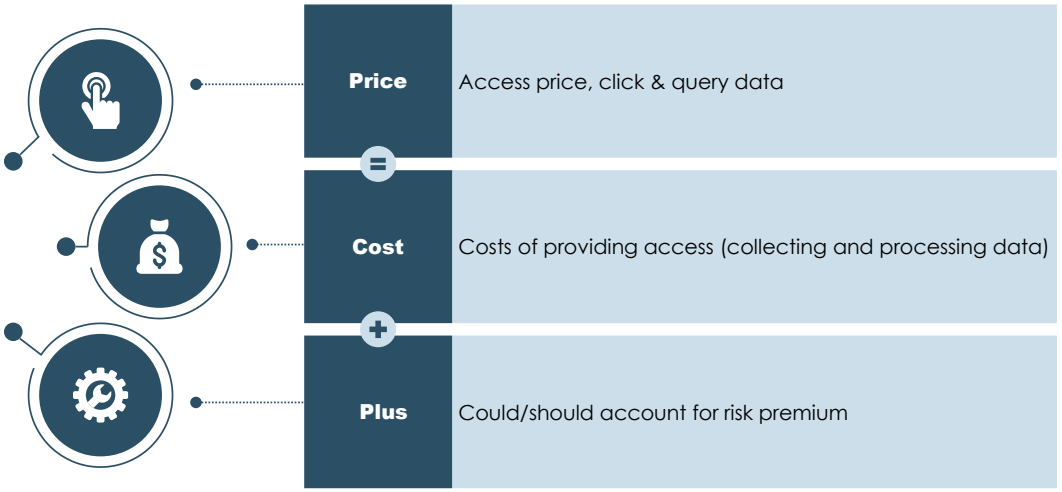
[13] As we discuss below, this is perhaps an oversimplification. Both the cost-based and the value-based approaches can be amended to consider, respectively, dynamic and allocative efficiencies by including an additional margin.

[14] Note that, in addition to being a by-product of search services, the underlying access right granted by the DMA stems from the notion that these are also important inputs into the provision of search services. The discussion here relates to the costs of acquiring those data. "Click-and-query" data are a by-product of search because they are automatically created when a user undertakes a search.

to collect and manage data, the incremental costs of providing access could be relatively negligible compared to the overall value of the search engine itself.

Figure 2

Illustration of cost Plus pricing



An alternative view point is that "click-and-query" data are only valuable because they derive from a successful search engine. In this sense, part of the costs of providing the search service could be included in the costs of obtaining "click-and-query" data.

These costs would include, for example, the underlying information technology infrastructure of the search engine and the costs of developing and maintaining the algorithm that produces the results.

Such costs could still be limited when compared to the potential *value* of a search engine.

Once the relevant cost measure is achieved, an allocation for a reasonable margin for the gatekeeper can be added to the measure to obtain the access price. That margin can reflect the level of risk involved in the gatekeeper's product and the need to maintain its investment incentives.

Typically, the margin used can be obtained by considering the margin earned by other firms in a similar situation. In the present case, it may be difficult to find a relevant benchmark for the appropriate margin for gatekeepers, given their special status which underpins the DMA. Any risk adjustments could be closely associated with the nature of the business model, which could limit or "pollute" the ability to identify unbiased benchmarks.

The cost-based approach could help secure allocative efficiency by ensuring that all access seekers able to cover the incremental costs of providing access (and make a profit) would make use of the good.[15] However, the cost-based approach could also reduce the incentives of a prospective gatekeeper search engine provider to continue investing in its services, including the search engine and, therefore, its "click-and-query" data.

[15] Note that the DMA only stipulates a right of access to rival search engine providers. Therefore, in this instance, full allocative efficiency could not be obtained if certain firms that could benefit from the "click-and-query" are not search engine providers.

COULD A VALUE-BASED APPROACH PREVENT ACCESS?

Using a value-based approach (e.g., retail-minus approach), the starting point of the assessment is the value generated by the asset in question. This value is generally determined by the additional profit the access seeker could earn via the asset.

These additional profits are determined by subtracting all incremental costs from any additional revenues that would be earned by the access seeker.

A classic example of value-based pricing is "retail-minus" access pricing frequently used in regulated industries. In these instances, access pricing is defined on a unit-price basis with the regulated (wholesale) price taking as starting point the price charged to end users (retail price), subtracted of any relevant costs (i.e. the "minus" element).

The use of search engine "click-and-query" data is as an input into search engine services.[16] While search engine services are generally offered for free, they are also used to generate revenue via search ads.[17],[18]

A value-based approach could take as a departing point the revenues earned by the gatekeeper's search ads subtracted from the costs of the information technology infrastructure and algorithms that take the "click-and-query" data as input.[19],[20]

One complication that arises is that a *single* dataset of "click-and-query" data is an input to *all* search queries for search engines (in other words, more search queries do not require more datasets to be purchased).

How would one determine the value of a single asset in this circumstance? If the access seeker pays the price of the gatekeeper's total ad revenue, this would imply that only access seekers with a similar scale to the gatekeeper could profitably buy access. This would defeat the purpose of the mandated access.

In an alternative setting, the access seeker pays a price based on the number of searches it receives. However, this would force the asset seeker to share potentially business-sensitive information with the gatekeeper to gain access.

Additionally, access seekers may be able to offer only specialised search services (e.g., product search), rather than general search services. In this instance, should they be able to purchase only a subset of the gatekeeper's data?

This could result in a setting where access seekers may pay more for access to a smaller dataset because it is more valuable (e.g., product queries may receive more ads than newspaper queries).

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[16] Arguably, it already allows rivals to create a carbon copy of the gatekeeper's search engine, given that it already includes queries and the ranking of responses according to them.

[17] For example, "Google Search and other" ads represented more than 50% of Google's parent company Alphabet's total revenue in 2022. See Alphabet's 2022 Annual Report, available online at https://abc.xyz/investor/static/pdf/2022_alphabet_annual_report.pdf?cache=4316f0c.

[18] In principle, competitive search engines could also choose an alternative approach to create value, such as charging a subscription to consumers. The value-based approach would still allow competitors to adopt such a model if they were able to generate more value than the value created by the gatekeeper's search engine.

[19] These costs would necessarily vary for different access seekers. To ensure fairness and that only efficient rivals are kept, typically the access owner's costs are used.

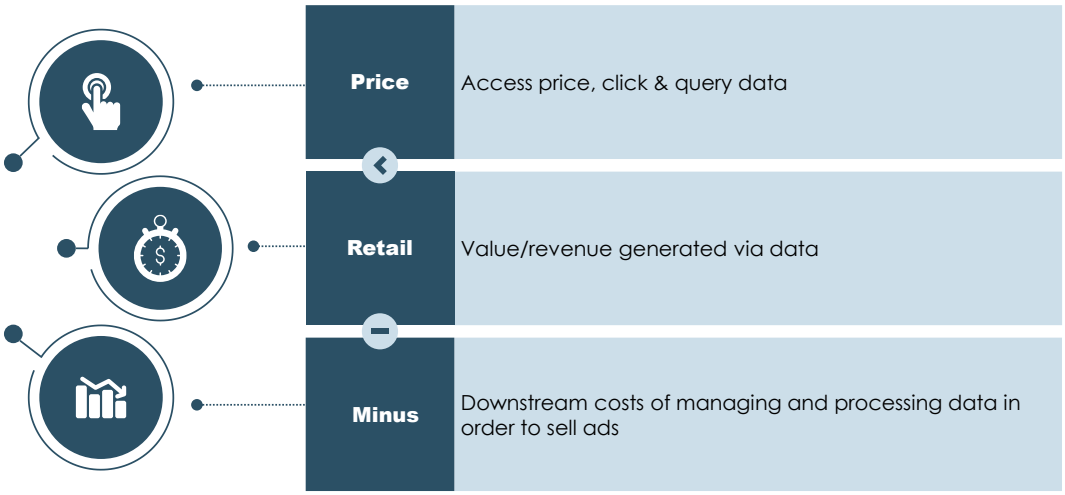
[20] Note that because *"click-and-query"* data are also an output of search services, the costs of the data may overlap significantly with the costs of providing a search service.

If this were not allowed, the gatekeeper could "cream skim" the gatekeeper's data by paying an average price per query, while serving only the most valuable queries.[21]

Ultimately, the price could be determined, e.g., according to the predicted value of a particular query. However, such an approach could require access seekers to share even more confidential information with the gatekeeper (e.g. on the queries it sees).

Figure 3

Illustration of retail minus



The value-based approach could help ensure that dynamic efficiency is preserved by ensuring that prospective asset owners would have an unchanged willingness to invest in creating new digital assets.

However, the value-based approach could prevent access from being provided in cases where it would otherwise be beneficial in the short run.

CONCLUDING REMARKS

WHICH APPROACH IS MOST ALIGNED WITH THE OBJECTIVES OF THE DMA?

The DMA has two overarching objectives: contestability and fairness.[22] The DMA does not explicitly define these concepts. However, the DMA's preamble notes that *"...access by gatekeepers to such ranking, query, click and view data constitutes an important barrier to entry and expansion, which undermines the contestability of online search engines."*[23]

A potential reading of this paragraph would be that the access price that achieves the maximum output (i.e., the one that achieves *allocative efficiency*) should be the FRAND price in this circumstance. For example, a report by the Centre on Regulation in Europe (CERRE) suggests that the access price

[21] "Cream skimming" occurs if an access seeker pays the average price of all queries while winning only queries that are more valuable. This means that the access seeker effectively pays less than the value it gains from the data it accesses.

[22] It is unclear whether the "fairness" that is an objective of the DMA is the same as the "fairness" that is used in relation to FRAND terms. Indeed, it may be that the word should be interpreted differently in the two contexts although both apply in the DMA.

[23] DMA, preamble, paragraph 61.

should rely on a "cost-plus" approach.[24] The report suggests that *"…one may ask whether…"* the FRAND price *"..should not be zero after all"*.[25]

The same report expresses concern that *"…forcing the gatekeeper to reveal the combination of full search term and the full search results page (ranking) seems problematic from an innovation perspective"*[26] because it would allow the access seeker to reverse engineer the gatekeeper's algorithm.[27] This concern could be resolved with a *value-based* approach if it allowed the gatekeeper to continue to earn the value of its *"click-and-query"* data.

The question remains as to whether and to what extent this approach would achieve contestability and fairness. Economic theory suggests that if a competitor to the gatekeeper could create additional value from its *"click-and-query"* data it would be able to pay the access price and compete.

However, this may be difficult in practice for several reasons:

- As noted above, it would be necessary to scale the value of *"click-and-query"* data to reflect the relative sizes of access seekers and gatekeepers.
- The provision of search services likely involves multiple trials and errors to optimise the algorithm. This could make it difficult for a new entrant to immediately achieve the scale of the gatekeeper and could require an allocation for inefficient suppliers.[28]
- It may be difficult to determine a value-based price that reflects the differences in values of different queries. This is intertwined with the "non-discrimination" obligation, the implementation of which has remained contentious in other sectors.[29]

Finally, it is not clear that the value-based approach would achieve "fairness". In particular, the DMA preamble states that unfair business market participants *"…should have the ability to adequately capture the benefits resulting from their innovative or other efforts"*.[30] Access seekers could argue that an access price that would reserve for the gatekeeper the value of providing search services using its "click-and-query" data would fail to achieve fairness aim, given that the access seekers are then not able to capture the benefits of their own innovative efforts.

Ultimately, as the CERRE report notes, *"…it seems unlikely that the access provider and access seekers can ever succeed in negotiating a FRAND access between themselves"*.[31]

This begets the question of how will regulators and courts step in to guide and direct the emergence of FRAND prices for the digital assets in scope of the regulations. Ultimately the final determined price may be somewhere in the middle of the two methodologies provided here for illustration. Should we expect that key economic considerations, trade-offs and evidence will re-enter the picture at the stage when specific pricing outcomes have to be determined?

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[24] CERRE (2022), Data Access provisions on the DMA, section 3.4.2. Available online at https://cerre.eu/wp-content/uploads/2022/11/DMA_DataAccessProvisions-2.pdf.

[25] CERRE (2022), Data Access provisions on the DMA, section 3.4.2. Available online at https://cerre.eu/wp-content/uploads/2022/11/DMA_DataAccessProvisions-2.pdf.

[26] *Ibidem*.

[27] This may not even be necessary because the access seeker may already have access to the results of the gatekeeper and therefore could provide a white-label version of its own search engine.

[28] For example, the website huckabuy.com estimates that Google makes thousands of algorithm updates every year. See https://huckabuy.com/google-algorithm-updates-history/.

[29] See for example the access business model complexity (brokerage, arbitrage) underpinning the long-running competition and ex-ante regulatory bpost cases (incl. CJEU C-340/13); see also CJEU case C-525/16 – Meo.

[30] DMA, preamble, paragraph 33.

[31] CERRE (2022), section 3.4.2.