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A feature of many digital platforms is that they offer services to one side of the platform “for free.” In some instances, the business model requires the consumer to trade their data and attention in return for “free” services. We consider how providing consumers with a service that is ‘free’ can provide consumer benefits but also make it harder for potential rivals to contest that market, since it can be very difficult to undercut an incumbent selling goods for “free.” Price reductions below zero are sometimes possible, as shown by cashback and bundled offers, but can be more challenging when the payment is in data or attention. In addition, any move away from free, up or down, may require a significant additional transaction cost, which can be a significant barrier to consumer switching in certain situations.

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I. INTRODUCTION

Consumers have been offered a variety of services “for free” for a long time, however the rise of digital technologies which exhibit high fixed costs and low variable costs has increased the prevalence of “free” services, including free internet search; free email; free social networking; free microblogging; and free entertainment. Of course, in economic terms, a free lunch is very rare, and consumers are typically paying for these services through a form of barter with their attention and their data.² This is not a new phenomenon: historically consumers have received free radio and television entertainment; free newspapers; and free telephone directories. Just as the modern set of online services are not free; neither were the services received in the past. Consumers then, as now, paid with their attention.

Two-sided markets abound and their business models have always involved operating as a “platform”: giving one side of the market a low (or zero) price has always been a good way to increase demand from, and the amount that can be charged to, the other side of the market.³ While this phenomenon is not new, the way that it might raise barriers to entry and so embed market strength on one side of a market has raised competition concerns and attention from regulators, especially where the acquisition, aggregation and use of data is at the heart of the business model. In part, the additional regulatory attention might be explained by the greater level of data acquisition that digitization has allowed. The Yellow Pages could not keep track of everything that each household searched for. Google and other internet search engines have been able to keep tabs on what users search for, the search links they then click on, and even their other internet browsing habits. Building up this data allows improvement in the algorithms behind Google’s search engine, creating a better service for consumers and a competitive advantage over rivals. The data flows also enable Google to improve the relevance of adverts that are shown, and so increase the value advertisers can derive from their product.^{4, 5}

Our focus is on what price is actually being paid by consumers for so-called “free services,” and the potential competition concerns that this might raise. To that end, the next section examines the attraction of bartering for internet services with data and attention for consumers and firms alike. Section 3 considers the implications for competition of such services being provided to consumers for free. Section 4 concludes.

II. ONLINE TO THE FUTURE AND THE BARTER ECONOMY

Many firms have built businesses online by offering consumers various services at no monetary cost. The benefits of these “free” services for consumers are obvious, consumers can use email, search the internet, or social network for free. The benefits to the companies providing these services are perhaps less immediately obvious, and different in each case, but still relatively well-known in policy discussions. We set out some of the reasons in the next subsection.

A. Why Provide Services for Free?

There are numerous reasons why a firm might let consumers use the services they provide for free. Classic two-sided markets examples are credit cards and dating agencies. If a large number of consumers are using your credit card, then merchants are more likely to agree to accept and pay for your payment product in order to access sales to those consumers. This can mean that consumers get to use the credit card for free, or may even be paid to use it through cashback incentives and so on. Similarly, in heterosexual dating agencies it can mean that men are charged for listing their profile and viewing the profiles of women, while women can list their profile and gain access for free.⁶

A second, reason for bringing consumers onto a platform without charge is in order to monetize their attention. This is another typical two-sided market strategy, sometimes referred to as advertiser-funded platforms. When searching the internet or browsing a social media feed,

² Sometimes goods are genuinely provided for free either by the state or by charities. The state’s provision of primary and secondary education in most Western societies and the rise of food banks in the UK since the Financial Crisis would be two examples. However these are not the cases we are examining here.

³ See Rochet, J.C. & Tirole, J., 2003. Platform competition in two-sided markets. *Journal of the European economic association*, 1(4), pp.990-1029.

⁴ This data collection has also led to privacy concerns beyond the scope of this paper.

⁵ See Niels, G. & Ralston, H., 2021. Two-sided market definition: some common misunderstandings. *European Competition Journal*, 17(1), pp.118-133 and Hagiu, A. and Wright, J., 2020. Data-enabled learning, network effects and competitive advantage. *working paper*, available here: <https://ap5.fas.nus.edu.sg/fass/ecsikdw/data%20enabled%20learning%20june2020.pdf> (accessed September 22, 2021).

⁶ See Rochet, J.C. & Tirole, J., 2003. Platform competition in two-sided markets. *Journal of the European economic association*, 1(4), pp.990-1029.

a consumer is paying attention to what is on the screen, so this is an opportunity to show them other content of interest, for example an advert for something they might want.

This is not a new business model. For a long time, newspapers, radio, and television broadcasting have used the fact of having the attention of their listeners and viewers to present adverts. This advertising could be tailored to some extent since advertisers had a fairly good idea which consumers were paying attention to which newspapers, radio stations and television channels and at what times. Supermarkets even developed ways of keeping track of people's purchases so as to identify who might profitably be offered a discount on which products.⁷ What may be "new" is the extent to which the capture of attention can be combined with the granularity and detail of data on consumers to target them with advertisements to which they are likely to respond. In this way each user can be shown a different advert when visiting the site, tailored to what is known about them.

1. Allocative Efficiency

Many of the services provided over the internet involve high fixed costs, but low variable costs. This is what gives many of the platform industries large economies of scale; and why many internet start-ups are initially loss making. The very low variable costs suggest that the marginal cost of an additional consumer or subscriber may well be very near zero. So zero pricing might lead to allocative efficiency in these industries (i.e. price equal to marginal cost).

B. Why Consume Free Services – Surely People Know There's a Catch?

Paying with data and attention, rather than money, tends to reduce "price" transparency. The extensive policy discussions around data will not necessarily have filtered through to consumers. In a dramatic example of consumer inattention to the terms and conditions of "free" services, a few Londoners "traded" their firstborn children for "free" WiFi access.⁸

To the extent that consumers are aware of the "data price" they pay for "free services," it remains an open question as to how much they value their data and their privacy online. Some consumers might take the view that they don't see how being one datapoint among billions will be harmful to their interests and so are happy to trade their data. Other consumers might place a high value on their privacy and go to great lengths to ensure their online privacy.

Similarly, some consumers don't mind their attention being monetized and simply try to ignore intrusive advertising on the websites they visit. Other consumers might mind a great deal and go to the trouble of installing adblocking software to their browser.⁹

Unlike when consumers pay with money, the data component of the price paid by consumers is non-rivalrous. They can pay for their "free" internet search from Google with their data, and then pay for their "free" email account from Microsoft with the same data. This might make the "data price" attractive for some consumers.

The reasoning of some consumers might be rational in that they don't place a particularly high value on keeping their data private, but do value being able to send emails or network with their friends. So they pay what is, to them, the cheaper price for these services, which comes from handing over their data.

While the considerations above may satisfy economists' need for an explanation based on rational agents, there are also well evidenced behavioral explanations for consumer behavior with "free" services. A "free" offer might make consumers believe they are unlikely to regret a

⁷ There are stories about supermarkets' real-world data gathering allowing them to work out that people were pregnant before they even knew. See: <https://www.forbes.com/sites/kashmirhill/2012/02/16/how-target-figured-out-a-teen-girl-was-pregnant-before-her-father-did/?sh=b3e5d6f66686> (accessed September 21, 2021).

⁸ Security researchers set up a public WiFi access spot in London which offered free WiFi internet connection, but imposed a "Herod clause" which required users to "to assign their first-born child to us for the duration of eternity." Six people signed on to the WiFi and accepted the terms and conditions. See: <https://www.theguardian.com/technology/2014/sep/29/londoners-wi-fi-security-herod-clause> (accessed September 15, 2021). Of course, inattention is not the only possible explanation for the decision to accept the terms and conditions. People may have seen the clause but reasoned that such a clause would be unenforceable in any court and so continued anyway. Nevertheless, the anecdote provides a powerful illustration of the potential for consumer inattention or nonchalance over the terms and conditions.

⁹ For an example of such software, see here: <https://adblockplus.org/> (accessed September 15, 2021).

purchase as there is no monetary outlay, and so, effectively over-respond to free offers.¹⁰ In the case of the “free” email, internet search and social networking opportunities offered online, consumers may perceive signing up for these services as a no-regret action. They don’t have to pay for the services, so if they don’t like them, they can simply stop using them and nothing will have been lost, except for the time they took to experiment. However, therein lies the catch — the time it took to experiment was time in which they gave these products their attention, and in so doing, paid for them.

1. The Interaction Between Data and Attention Prices

One interesting aspect of this dual pricing system (data and attention) is the complementarity between the two prices. The more data that consumers give in return for their online services, the better will be the advertising targeting to which they are exposed, and so the attention price per advert shown will fall.

To illustrate, suppose a firm finds a way to extract more data, (i.e. the data price increases). Then that would mean that, assuming no change in the number of adverts shown, the attention price would fall as the adverts would be more targeted on things the consumer might want and so less annoying. The adverts might actually be helpful to the consumer as they might tell them about products they did not know were available, but which actually fulfil a need they have.

However, it is unlikely that the platform would hold the number of adverts constant when the attention price falls in this way. One possible response would be to increase the number of adverts until the attention price returned to its previous level.¹¹

The potential impact on the attention price consumers pay is an issue that is not discussed in any of the policy debates over data. It features in neither the calls to reduce the capacity of firms to gather data for privacy or price transparency reasons, nor in the calls for firms to be made to share the data they have gathered with their rivals for competition reasons. Nevertheless, it is something policymakers should be wary of as it may be a driver of unintended consequences.

There are also externalities between consumers when it comes to the interaction between the data and attention prices. The data we share about ourselves informs the advertising that is shown to similar, but more private individuals and so reduces the attention price they will pay. The converse is also true, those otherwise similar to us who go to great lengths to hide their data while using online services deny that data to advertisers and so raise attention prices paid by all similar consumers.

III. COMPETITION ISSUES WHEN CONSUMERS PAY THE DATA PRICE

Perhaps the most important pro-competitive feature of “free” services is that it makes it relatively easy for consumers to multi-home and test the offerings of different platforms. Compare the cost of trying Bing instead of Google as your default search engine with the cost to an Android phone user of “trying out” an iPhone. Anything that encourages multi-homing on the consumer side is likely to be pro-competitive as it makes it easier for consumers to switch to alternative offers and new entrants. This would tend to lower barriers to entry.

On the other hand, pricing services for free undermines a key entry strategy where a new entrant enters the market with a low, loss-making price that undercuts the incumbent. The hope is that this will attract a sufficient number of consumers to switch and try the competing product. If a sufficient number decide that they prefer the entrant’s product to the incumbent’s, the entrant will attract a large enough loyal customer base that they can then raise prices to profitable levels.

However, if the incumbent is not charging consumers anything it is very difficult to undercut them. When the market price is zero, moving away from that price can be difficult for entrants. A move, either up or down, faces significant transaction costs in the form of time, effort and sometimes data. Those additional transaction costs may exceed the actual price charged for a small price movement away from zero. While it is

¹⁰ See Shampanier, K., Mazar, N. & Ariely, D., 2007. Zero as a special price: The true value of free products. *Marketing science*, 26(6), pp.742-757.

¹¹ Note this isn’t actually the only possible response. On the other side of the market, more targeted adverts may increase the premium advertisers are willing to pay for their adverts to appear on a “cleaner” less “cluttered” page and avoid being drowned out by the visual cacophony of other adverts, especially if those other adverts are equally well targeted.

possible to undercut zero,¹² in practice moving away from a zero price can be challenging, however it may be possible to enter by undercutting the data or attention price.

A. Undercutting the Data Price

If there are consumers who are wary of handing over their data in return for online services, then one entry strategy might be to enter while collecting less data. Maybe supplementing that lower data price with a financial price, or accepting less personalized targeting of advertisements which attempt to monetize the consumer's attention. For example, this has been DuckDuckGo's entry strategy as an internet search engine. While they are funded by advertisements, those advertisements are targeted on the basis of what the consumer has put into the search bar, rather than being based on any personal information about the consumer. DuckDuckGo's Privacy Policy is described very briefly as "*Our privacy policy is simple: we don't collect or share any of your personal information.*"¹³

DuckDuckGo's entry strategy might be seen as a version of entering with a price which undercuts the incumbent. However, in this case, the goal is to enter with a *data price* that undercuts the data price charged by Google. However, such a strategy must be credible. How does one know either that the company is not collecting more data than they purport; or will not raise the data price once they have attracted enough customers? This credibility problem is little different from the standard reputational problem for a firm justifying premium prices through high quality, which has been covered elsewhere.¹⁴

However, note that a consequence of this entry strategy cutting the data price may be that the attention price paid by consumers rises (unless the number of advertisements were to fall to compensate). Which suggests an alternative entry strategy – cutting the attention price.

B. Undercutting the Attention Price

To an extent this was HBO's strategy when they launched as a cable company in the United States. Part of their unique selling point was that they offered premium content without interruption for advertising for a monetary price. HBO is now experimenting with a price discrimination strategy in their streaming services where viewers can choose a streaming service at a lower price, but where viewing will occasionally be interrupted by advertisements.¹⁵ This could be seen as undercutting on the attention price.

However, this ability to price discriminate on the attention price is also a reason why it might not be a frequent entry strategy. Some incumbent platforms already price discriminate by offering lower *attention* prices in return for charging a monetary fee. Free membership means that one's enjoyment of the platform might be limited in some way, and one sees advertisements on the screen while using the platform; but paid membership opens up additional functionality and eliminates adverts.¹⁶

It is notable that the premium element of freemium models tends to lower the attention price, but not (visibly) lower the data price. This may indicate that consumers care more about the attention prices they pay than they do about the data prices that they pay. However, that may well be because it is difficult to credibly take lots of data from some users and not take very much data from others. Consumers who are aware of the data price are likely to associate the amount of data taken by a firm with that firm's brand and reputation rather than the brand and reputation of a particular package offered by that firm.

It is tempting to draw conclusions from the fact that the large digital platforms which have brought large numbers of consumers onboard to their two-sided platforms by offering free services have not been undercut (on any price dimension) by entrants. One might infer from this that free services are detrimental to the competitive process. However, such a judgement would be premature without first gaining an understanding of *why* these firms have weathered the challenges from rivals. It might simply be that the alternative free internet search facilities (such as Bing or DuckDuckGo) or social networking sites (such as Google+) have been perceived as inferior substitutes by consumers rather than anything nefarious about free pricing.

¹² For example, credit card companies offering cash back on purchases might be seen as form of pricing below zero on the consumer side of the payment market.

¹³ See <https://duckduckgo.com/> (accessed September 21, 2021).

¹⁴ See, e.g. Klein, B. & Leffler, K.B., 1981. The role of market forces in assuring contractual performance. *Journal of political Economy*, 89(4), pp.615-641.

¹⁵ See <https://deadline.com/2021/06/hbo-max-ads-launches-lowest-commercial-load-streaming-1234767796/> (accessed September 21, 2021).

¹⁶ This is known as the Freemium business model.

IV. CONCLUSIONS

When it comes to “free” services, the data price has received a lot of attention both from those concerned with competition in these markets and those concerned with privacy. The former group see data as a significant barrier to entry and want to force companies that have found new ways of generating it to share it with their rivals.¹⁷ The latter want to ensure that the data price is appreciated by consumers and to force companies to hold data securely and give consumers opportunities to opt out of data collection.¹⁸

While regulators may be right to be skeptical about “free” services, there is a need to bear in mind a number of issues to avoid unintended consequences from any intervention. First, while much has been written about the data price consumers pay for “free” services; the attention price is at least as important, as are the complicated inter-relationships between the two prices. Restricting what data firms may gather may lead to an increase in the attention price being paid. By contrast, opening data to other market providers may actually lead to lower attention prices as other service providers can use the same data to target consumers more precisely.¹⁹

Second, while there may also be concerns over whether zero pricing creates a barrier to entry as it is a difficult price to undercut, this needs to be weighed against the way in which zero pricing also breaks down barriers to multihoming and the social welfare generated from free consumer services which might not exist if they charged even 1 cent due to transaction costs.

Third, it is possible that firms have attempted to undercut zero pricing. For example, Microsoft has attempted to introduce a negative price for internet searches, by offering rewards for people who use Bing for their internet searches in the form of “Microsoft Rewards.”²⁰ The rewards for searching increase if one uses Microsoft’s web browser, “Edge” instead of Google’s Chrome.²¹ This indicates that firms that have broad ecosystems providing different content that might tempt consumers may have an advantage in entering against “free” offers by incumbents.

A healthy skepticism about “free” services over the internet is certainly a good thing from regulators and customers, especially since consumers have shown themselves to be subject to behavioral biases when it comes to zero prices. However, any case for regulatory intervention is complicated by three important features. First, zero pricing typically appears in high fixed cost, low variable cost industries, so the marginal cost might be pretty close to zero, such that transaction costs might make the charging of a monetary price inefficient. Second, we should bear in mind that the business strategy of offering “free” services to consumers in order to bring them on board in a two-sided market is not new and can be welfare enhancing. What is new is the ability to combine capturing consumers’ attention which harvesting and analyzing large quantities of data about consumers – while this may raise privacy concerns, it may also lower the attention price that consumers have to pay. Finally, although “free” services might be difficult for rivals to undercut, the market is innovating around this point and finding ways to offer these services at negative prices. Furthermore, free services reduce the cost of multihoming for the consumer which is likely to be procompetitive. These considerations should direct policymakers to be wary of the potential unintended consequences of regulating around “free” offers.

17 See, e.g. Proposal for a Regulation of the European Parliament and of the Council on contestable and fair markets in the digital sector (Digital Markets Act), COM(2020) 842 final, December 15, 2020, Article 6(i-j).

18 Anecdotally, these opportunities to opt out come with their own “attention price.”

19 One should potentially allow a certain amount of time to pass so that a firm that develops a new way

20 See <https://www.microsoft.com/en-gb/rewards> (accessed September 17, 2021).

21 See <https://www.microsoft.com/en-us/rewards/search-and-earn> (accessed September 17, 2021).

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