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Internet Economics

Regulating monopolistic online media: the case of interoperability

Competition regulation roots itself in the recognition that fixed terms among actors of the economy or set by one player to keep on dominating markets hampers consumer welfare. The genesis of policy making was therefore the fight against pricing arrangements and the analysis of the market share held by private actors to determine monopolistic characteristics. For instance, the North America's Sherman Act (1890) aimed at preventing any price fixing and other price agreements perceived detrimental to small businesses, while the Clayton Act (1914) widened the scope of competition regulation by setting a framework to oversee mergers (Motta, 2004).

Both the prevention of unfair terms and the investigation of mergers via a market share lens remain valid tools today to regulate the economy, but the economical context has drastically evolved. Indeed, the information revolution is shifting paradigms by creating interdependence between the logic and the digital space (Floridi, 2014). This phenomenon echoes Silvertone's domestication theory illustrating the creation of a new ecosystem. Once technologies have permeated individuals' lives, the latter adapt themselves and their environment to the technology. Adaptations are then fed back into innovations processes (Silverstone et al., 1992). Yet this theoretical approach to the digital era is only valid in a perfect competition model. In practice, information revolution economics translate today into a small number of central nodes, becoming *de facto* gatekeepers whose business model shapes

the regulatory agenda. The last three decades have showed that digital markets create and cement winner-take-it-most effects, due to the incremental accumulation and *retention* of data generating assets. As a result, the Internet currently exacerbates network or scale effects, as well as it bolsters switching costs. This present dynamic is particularly interesting from an economics point of view as it could structurally reshape our online environment towards a mainstreamed freemium and ads revenue model.

During the last decade multiple civil society actors (TACD, 2018) and competition specialists (Lande, 2008) expressed concerns that competition regulation on the online industry has failed Western consumers. Yet the European Commission (EC) and national European authorities are increasing in number and thoroughness investigations on the implications of dynamics on online markets. In particular in the realm of search and social media platforms. In fact, disruptions are intrinsically tending towards polarisations, making policies critical and arduous to set. It is therefore urgent to ask, how can the shift to a global freemium digital economy currently prone to unhealthy monopolies pivot towards a European market maximising consumer surplus? In order to envisage most promising regulatory opportunities (II) we will start by assessing the present market failures caused by the dynamics at play and the different regulatory routes available (I).

I) Adapting to the Freemium Economy

The notion of monopoly is often associated with a negative connotation. Yet not all monopolies have nefarious consequences on society, far from it. For instance, consumers would not be better off if the energy market was divided between several parallel networks of infrastructure to channel energy. The costs, and waste, of having multiple similar networks would naturally ricochet on end users, making energy more expensive and supply less stable given the complexity of energy storage. Nevertheless on online markets any monopolistic actor, that is to say meeting almost all of the demand, is tempted to abuse its position to magnify its returns and prevent rightful competitors from entering its arena. This dynamic will always leave consumers worst off and weaken the demand and offer equilibrium. In order to seize what are the present stakes of policy and regulation in the context of search and social media companies operating in Europe, it is first necessary to apply theoretical economics to the dynamics at play (A). This building block will then enable to consider available policy opportunities (B).

A) The Confrontation of Theory to Practice

The study and regulation of oligopolies and monopolies stems from the study of marketshare and the manoeuvres of companies to maximise or manipulate their market power. As highlighted above, the gauging of whether a market actor is a natural or superficial monopoly was historically intimately associated to the existence of pricing arrangements. Later on the polarising effects of certain mergers and acquisitions brought them to become heavily scrutinised as well to prevent detrimental vertical or horizontal integrations. During the 20th century competition regulation considerably matured, to further understand how financial constraints could be passed on from and to different actors based on their willingness to pay, and how certain investments could form barriers of entry or expansion in a market. In a nutshell, the ‘follow the money’ rationale has historically been a valuable lens for competition regulators.

It therefore naturally permeates the core twofold components of the notion of market, combining a relevant product to a relevant geographic area of homogeneous competition conditions. The expression ‘relevant product’ is particularly interesting, as it will be understood as products and/or services deemed ‘interchangeable or substitutable’ (European Commission, 1997). A market can cover several types of goods as well as it can cover only one. For instance, the European Union has observed that if Alice is looking for tangerines, if there are none she will usually buy oranges instead. Both fruits are hereby in the same market. On the other hand, if she is looking for bananas and there are none, Alice will not substitute them with another fruit. Bananas are therefore the relevant product of an entire market. A healthy competitive market will be one where actors always endeavour to differentiate themselves, hereby naturally driving innovation at the lowest price possible to attract demand. This virtuous circle maximises consumer surplus, tying competition regulation to consumer welfare.

The information revolution has seen the traditional ways of unpicking characteristic patterns of unfair competition questioned. Most powerful actors operating online have become ecosystems, concentrating supply and demand players via two-sided platforms. These ecosystems are vital to the fabric of our societies. Yet the strategies, the barrier and the dynamics at play indicate fair competition is not possible today, leaving vital marketplaces inherently fragile. Ruled by dominant monopolistic players operating on a free demand-side model cross-subsidizated via profits made on supply-side prices. Although this business model corresponds to the one historically chosen by numerous newspapers, today the concentration of power and the reliance on automated decision- making translate into novel forces never experienced. What is more, the search and social media ecosystems are fast paced. A reduced number of central nodes most actors depend on, in a swiftly evolving space lacking transparency, inevitably renders ecosystems extremely fragile.

To be more specific, the Internet’s impact on search and social media is exacerbating network effects, be they direct - with every user better off when additional users join - or indirect with all users benefiting from the fact that they belong to a critical masse ensuring that most service providers will adapt to them. Moreover, network effects applied to the supply of technological goods and services bring switching costs. For instance, most web extensions are adapted to Google Chrome when they are frequently not adapted to Safari. Migrating from Chrome to Safari, then not only means that one needs to learn to navigate a new interface, but one also needs to find extensions less documented or already used by their relatives. Switching costs therefore range from technical incompatibilities to psychological and social hurdles (Klemperer, 2005). In addition, it is next to impossible for would-be competitors to enter and grow marketshare as network effect in media translate into scale effects. A phenomenon whereby the more an actor’s service is used, the more its product improves and becomes unmatchable. For instance, the social graph Facebook users enjoy could never be matched on a social media platform. These dynamics inevitably lead to sheltered monopolistic markets, characterised by actors maximising their profits by practicing prices substantially above their production costs, as Facebook and Google today (Competition and Markets Authority (CMA), 2019).

Both network effects and switching costs are reinforced by the incentives to ‘herd’ they operate on end users. In turn, the herding phenomenon creates positive feedback loops in the context of a dynamic game where new users arrive incrementally. Without regulatory involvement, in an all-or-nothing environment the dominant player is bound to neutralise

horizontal differentiation, leading unfailingly to the hampering of innovation and the polarisation of consumers. Indeed, at this point users are no longer choosing an offer matching their preferences but joining a 'expected winner' (Klemperer, 2005). A natural self preservation reflex to avoid being 'locked in' within an environment they would have invested time in. Unfortunately this is a no-win strategy with a service where adoption is sequential, as the multiple equilibria brought by concomitant adoption waves lead ineluctably towards lock in (Arthur, 1989). In other words, the *status quo* cannot afford to be an option.

To finish depicting the grim forces at play creating natural barriers to entry and expansion to new actors, strategies of the main dominant players in search and social media indicate novel behaviours. Both Google and Facebook have acquired businesses not yet profitable, for colossal amounts. The acquisition of WhatsApp by Facebook was the most expensive acquisition ever, despite the fact that WhatsApp did not have a business model. Another startling example is the acquisition of Youtube by Google. Youtube was not only not profitable, but most importantly, it was swamped in copyright infringements. The rationale for such business strategies is no longer rooted in readily profitable models. Reasons are hence elsewhere, such as the acquisition of a new technology, the absorption of a potential future competitor, the acquisition of data points - such as social graphs in social media contexts - or non-identifiable behavioural 'surplus'. Here 'surplus' is defined by Zuboff as the understanding of human behaviour patterns (Zuboff, 2019). All these reasons may also be driven by the desire to ensure no other company acquires the data, data surplus or the market penetration of the entity acquired.

As of today, Internet is polarising economical dynamics to an unprecedented degree and pace, while simultaneously being the arena for new systemic market inefficiencies and abuses. Unfortunately, Western economies are already deeply relying on search and social players, gatekeepers to societies' critical social and economical fabric. Increased robust tailor made regulatory involvement is therefore fundamental, and can be manifold.

B) Regulatory Options

Moving on to market regulation, it should first and foremost be acknowledged that interventions need to remain flexible. Indeed the concentration of market power takes on radical new turns in the context of fast-paced global networks of consumers. Therefore, new externalities and risks remain difficult to translate in numbers and integrate into mathematical models.

That said, European competition and consumer protection regulators are steadily translating factual dynamics into infringements they are mandated to rebalance. Which, together with the fast polarisation of winner-takes-it-most dynamics, make the recourse to regulatory intervention unavoidable. There are two types of regulations; *ex-ante* and *ex-post* measures. *Ex-ante* measures will be enshrined in the legislation, while *ex-post* measures relate to the enforcement of such legislation. The choice of *ex-ante* action over the other therefore implies that the legislative framework is not sufficient to respond to new competition paradigms. The British regulator in its 2019 interim report on online platforms recognises unacceptable behaviours and the dynamics presented above, and concludes that *ex ante* measures are the most appropriate. Its recognition of abuses by dominant players seems at odd with a call for amendments to the legislation. Especially when its intervention tools are infused with European

law, that has already enabled the EC to heavily sanction Google multiple times on competition charges. That being said, as observed above, Internet economics merge traditional dynamics to novel forces, so a mixture of *ex post* and *ex ante* measures may be necessary.

The advantage of *ex ante* measures is that they may ensure greater certainty than relying on lengthy legal proceedings to have or improve case law. This is especially true where resources are polarised by dominant actors. One of the most needed *ex ante* measure to take is the redefinition of what constitutes a market, at least in a digital environment. As seen above, the notion of market is ambivalent, tying geography and product. Assessing whether a company means to compete in a geography, whether it has made efforts to adapt its product to consumers of a certain geography still applies. It is hence the notion of product that needs to be adapted to a globalised cohort of consumers. In its interim report the British CMA highlights that even when consumers use multiple products or platforms, if their time online is manly spent on one it will be the dominant player because of the dynamics explained above. Especially because consumers' time online, also referred to as attention time, is a finite resource. Dominant players' market power should then be assessed based on their share of consumers' attention online (CMA, 2019). This reworking of the market definition would by the same token infuse mergers and acquisitions, as the online attention share change resulting from a merger or acquisition could easily be assessed by competition regulators.
This said, end-user attention is only a metric relevant for freemium models. To avoid analysing all from an freemium lens the attention criteria should be coupled with function metrics. Functions, like search, online shopping, social networking could therefore be analysed separately, even if a player's services are diverse.

Other *ex ante* measures suggested by the CMA include adapting the notions of market power, lack of transparency and conflicts of interest to platforms funded via online advertisement, as well as the creation of an enforceable code of conduct plausibly creating an obligation of interoperability (CMA, 2019). It is understandable that the CMA does not detail *ex ante* measures that would reduce the market power of entities that have among the strongest lobbying teams in the

world. Yet this begs two observations. Firstly, introducing new legal concepts may slow down legal proceedings that could follow, or lead dominant players to fund strategic litigation cases to undermine the practical interpretation of such measures. Secondly, based on the competition abuses documented by the CMA it is clear that efficient regulatory analysis tools are already available - an observation shared by the Furman report (Furman et al., 2019). This questions the need for a regulator to concentrate only *ex ante* measures instead of *ex post* ones, presented below.

A frequent concern regarding *ex post* regulation is that it is too slow. The ability to rebalance market dynamics in a timely manner is effectively a central one, especially on the Internet where Google and Facebook are vital gatekeeper for offer to meet demand. As a consequence, to counter current polarisations regulatory monetary and non-monetary sanctions should be prioritised over litigation.

Economical models are still applicable to the sanctionable wrongdoings of a player. The model developed by Klemperer (Klemperer, 1995) illustrates how the penetration price strategy can benefit from network effects and switching costs in a two-periods time range. Yet in the context of freemium models, this model can be reinterpreted. Following Klemperer's

demonstration, during period 1 the “attacking” player will practice predatory prices, lower than if the firm was trying to maximise its period 1 profits, in order to compete for marketshare. These prices are accompanied by switching costs, such as the obligation to reimburse a sum if one leaves before a certain amount of time. During period 2, prices considerably higher can be imposed as first users have switching costs and new ones have network effect incentives to pay anyway. The corresponding function is a Gaussian curve, indicating until when consumers would be willing to pay until some start leaving the service. Now, to apply this model to freemium strategies the predatory price becomes something that consumers value and that would harm the freemium model in the long run, such as respectful data protection practices that are at odds with data exploitation strategies. The period 1 switching cost is data associated benefits, such as benefits drawn from the content one has generated or the service improvements their data has created. With period 2, data protection is considerably lowered, but net users join anyway due to network effects. This model deserves to be confronted to the trajectory of Facebook. During its first years of existence Facebook had a data protection policy clear, succinct, rather empowering for users and promising restricted access to their data (Facebook, 2004). The growing network effect and the lack of interoperability later resulted in a lock in of users. Facebook seized the opportunity to benefit from consumer captivity, to gradually erode its privacy policy and commitments (Srinivasan, 2019) and benefit from a tailor made monopolistic position and enormous monopolistic rents. Indeed, polarisation in a monopolistic environment does no longer lead to a Gaussian function, but to a plateau where the monopolistic player can augment the price/privacy value at will, exacerbating the inefficiently of the market and the loss of consumer welfare. The reinterpretation of this model justifies the applicability of competition law, highlighted by Klemperer as unavoidable with such market distorting dynamics. *Ex post* measures may hence be best, by investigating and sanction, as well as by forcing to inform users of this strategy, its consequential sanction, the obligation to become interoperable, and the mapping of alternative players together with steps to migrate data.

Policies to rebalance competition should focus on the supply-side of platform’s activity. Two-sided platforms relying on advertisement revenues are characterised by a free end product. From a traditional consumer welfare perspective this is an apparent optimum model, despite unfair terms on both market sides. From a competition perspective current consumer rights efforts to make dominants' terms fairer is intrinsically questionable as they aim at forcing good practice on an

abusive monopolistic player. Meanwhile, enabling supply-side consumers to multi-home thanks to interoperability and empowering competitors to deploy a less aggressive model are leviers that would naturally benefit other harms sources.

Furthermore, a lingering concern for regulators and the wider public is how data exploitive businesses shape online business models. For Zuboff, today the paradigm has shifted so drastically towards human experience monetisation that new players cannot afford (Zuboff, 2019) to differentiate on data monetisation. Competition and consumer protection regulators could therefore, for a limited period of time, allocate parts of fines perceived in cases involving data exploitation to their data protection counterpart. The latter would redistribute money in grants. Indeed, the practice of grants to bolster the implementation of new rights or strengthen fair business models already exists in the UK and having a different independent regulator at each end of the process ensures impartiality.

This last inter-regulator *ex post* intervention has merits to move the digital market away from a space where locked-in users are distrustful and grow more cynical with every data exploitation scandal. Yet it may be less feasible than supply-side interventions described above. In particular, interoperability measures carry strong product neutral promises that will therefore be further analysed below.

II) Breaking Silos for Fairer Competition

Requiring online products to be interoperable would benefit the entire digital ecosystem, regardless of technologies. It could alleviate pernicious consequences exacerbated by the phenomena described above (A'), while Free Libre Open Source Software (FLOSS) models could further cement new opportunities while infusing the digital economy with the key to stakeholders' trust (B').

A') Interoperability

First and foremost, there are three different interoperability types; protocol interoperability, full protocol interoperability and data interoperability. All have in common the notion of protocol, defined as a set of agreed rules on information transfer. Protocol interoperability refers to the ability for two entities to interconnect and communicate on a part or all of their services. It differs from full protocol interoperability, which sets standard(s) for all actors to align on, such as the text messages protocol computable by all mobile phones. Full interoperability must be utilised parsimoniously as it sets rigid standards that may hamper incentives to innovate on protocols. Thirdly, data interoperability is the ability for players to seamlessly exchange real-time data. For protocol interoperability or full protocol interoperability to be effective in a healthy competitive environment where consumers can cross-post among different platforms, data interoperability is a necessity. It will therefore be assumed as a prerequisite associated with each other types of interoperability in this paper. It is reinforced by article 20 of the GDPR, which enshrines in European law the right for natural persons to request that data they have generated on a service be transferred to another service. EU law specifies that entities may refuse to give right to manifestly disproportionate requests. Yet data repeatedly shared with competitors for them to function normally cannot be seen as disproportionate, in particular when a core GDPR principle is data accuracy.

From a policy perspective, a single type of interoperability should not be imposed. A differentiation between degrees of interventions is necessary. Fairly implemented both protocol interoperability type robustly enable consumers to move freely according to their choices, countering technical lock-ins arising from natural switching costs aggravated by Internet. In addition they foster innovation as players can build on top of the standard. What should distinguish the recourse to one interoperability or the other is the state of the market. If market power is held predominantly by one player, full protocol interoperability must be imposted. This would level the playing field and accelerate adaptation of competitors by focusing their resources on improving the service or innovating horizontally. In non-monopolistic environments protocol interoperability is preferable, be it partial or on all products. Indeed, imposing that new product features align with a predefined standard may represent hindering resources and creativity constraints on small players striving to innovate to differentiate themselves.

Between partial and total interoperability, total interoperability is preferable. That way hybrid services can thrive, with products and features tailor selected by consumers. For instance, it is conceivable that in order to limit exposure to cybersecurity risks multiple consumers would restrict features they enjoy, or avoid certain vulnerable protocols. This way, thanks to total interoperability consumers control their threat level. From a policy perspective, total interoperability requirements should be set for monopolistic players in priority. Internet's current monopolies have been dominant players for so long, other players are currently too fragile to be imposed investments in interoperability. Once the market is more balanced, partial and then total protocol interoperability should gradually become requirements. The possibility that total interoperability fuels temporary market instability could prove enormously beneficial to competition and innovation in the long run. Besides, not all switching costs are due to technical lock-ins. Substantial portions of consumers may not change platform, being unwilling to experience the switching cost of re-adaptation to a whole different user experience. On top of that, consumer loyalty would remain, hereby lowering switching probabilities.

Plus, if moving to or from platforms and cross-posting is seamless, once innovation is unlocked end consumers may naturally decolonise monopolistic players, and create network effects on new platforms. As highlighted by the CMA, forces at play may eventually recreate a monopoly with time. Nevertheless in the meantime consumer welfare is improved (CMA, 2019) and more importantly, a mandatory full protocol interoperability on monopolistic players' products ensures cyclic improvements. Whenever market power is too concentrated the whole playing field is levelled by turning monopolistic players' standards into common goods. For this reason empowerment and support of new and would-be entrants as well as supply-side consumers is the best intervention angle.

That being said, beyond facilitating data exchanges, policies must be built on the acknowledgment that fair and future-proof interoperability relies on relevant common standards and conventions. Which need to be set and maintained. As consensus is not a realistic option (Klemperer, 2005), Free Libre Open Source Software (FLOSS) models could deliver the most beneficial solutions, provided impartial stakeholders monitor and (find) support when certain standards may not evolve in a way maximising consumer welfare.

B') FLOSS Models

To be effective on digital markets regulatory interventions must be detailed on implementation while ensuring flexibility. Future-proof interoperability policy needs to be somehow woven with factors leading players towards common standards and conventions. The EC's latest competition report recommends standards are "defined and managed (in a fair way) by the dominant company" (Crémer et al., 2019). This position is questionable as it assumes there is a stable dominant player. A surprising point from an authority whose mission is to maintain competition. Besides, the CMA report and the EC's fines prove that current dominant players abuse their position, so giving them control over interoperability gateways appears less than strategic.
Thankfully, other models exist.

FLOSS models stem from the observation that the more our societies rely on digital technologies, the more rules embedded in software code will impact all aspects of citizens'

lives. Recognising that Internet platforms have become gatekeepers to entire markets vital for societies reinforces the vision behind FLOSS models. These models differ between them on the degree of rights and freedoms given to users by applicable licences. These core rights and freedoms will always gravitate around how much code can be used, shared, improved and studied (FSFE website). Hampering these principles results in the opposite of FLOSS: proprietary software. Representative models are GNU licenses, requiring code to be available to users of the software and open for improvement, as well as future improvements. For such code to be deemed reliable, a diverse contributors base of a critical size is vital (Pappas Johnson, 2004). It must be stressed that this is a common condition to FLOSS as well as proprietary software, the difference being that it is not possible to assess the health of proprietary software maintenance if it is not public. Although the probability for cybersecurity flaws to exist are similar to both (Feller et al., 2005), this argument favours FLOSS solutions.

For information to be interoperable, it needs to transit easily according to commonly agreed rules. These sets of rules are standards, and their application to information transit is done via protocols. In market competition, dominant players have incentives to shape transit rules on their business needs. Limiting them protects their power. Underlying phenomena are stressed by academia - strong network effects create market entry barriers, however if dominant players use proprietary software those barriers become insurmountable (Klemperer, 2005). FLOSS models are thus uniquely ensuring healthy competition with transit rules freed from barriers to entry. The Free Software Foundation Europe (FSFE) set five criteria to maximise public benefit irrespective of market power, business model and legal exclusivity. Firstly, protocols are available for public auditing and use. Secondly, the code bears no dependency on non-open protocols. Thirdly, it bears no dependency on any other legal or technical clauses limiting use. Fourthly, rules are not managed by a single player. Fifth, implementation by competitors is public, or a complete implementation code is available to all. Last but not least, the FSFE rightly argues that a central principle for open standards is minimalism. Hereby ensuring the lightest implementation and data portability. This level of technical and governance openness is optimum for full protocol interoperability on the totality of monopolistic players' products. Indeed, power dynamics no longer infuse data transmission and trust is nurtured.

In terms of governance, a caveat to the FSFE's criteria is the absence of means ensuring code is maintained by a sufficient community of contributors. Regulators could finance teams of

contributors and community managers, or delegate this mission to civil society, with a budget available in case the critical mass found by Pappas Johnson is not reached. In addition, regulators require a certain percentage of hours to be spent on the maintenance of implementation code by competitors, adapted to their power. This governance could be applied in non-monopolistic contexts too, with the difference that decisions on standards to align with FLOSS models could emanate from non-dominant stakeholder consultations. This way lock-ins factors become common goods without the need for a player to become monopolistic, introducing constant positive levelling loops and optimising welfare.

All in all, as stressed by Klemperer in 2005, FLOSS models applied to standards offer ideal means to curb detrimental network effects and switching costs. Not only do they free entrants from belittling power dynamics where dominant players set rules shaping the future of the market, but they reinforce competition via anti-bundling solutions with no price barriers.

Plus, as code can be studied supply-side consumers gain negotiation power as they can migrate from platforms instead of being locked-in with one technology they cannot access.

Conclusion

The concomitant adoption of disruptive business strategies with the development of digital environments polarising network effects and switching costs have fostered the emergence of monopolistic players. Current overwhelmingly dominant actors must be sanctioned where regulators find abuses, as much as means to curb natural market dynamics must be constructively analysed. One intervention measure bears particularly time and technology neutral promises: interoperability. Yet the vision behind its implementation will be determinant. As highlighted, powerful players have stark incentives to shape implementation rules to their needs, and regulators like the EC seem inclined to relinquish this mission to them. Yet as found by academia, the present dynamics cannot be overridden in the predominance of proprietary software. What is more, FLOSS solutions are infused with structural shifts paramount to rebuild consumer trust: transparency and empowerment. This strength of FLOSS models is not sufficiently understood by regulators, who may not have grasped how much technology markets will be a common nexus to most markets in the future. Thus holistically impacting consumer welfare.

Going beyond naturally polarising markets, FLOSS models constitute a viable business strategy for players of a globalised network to generate wealth via ethical principles driven processes. More importantly, FLOSS models open a new dimension to economics and regulatory intervention as they require the ability to gather and maintain contributors communities. Factors bringing into existence and fostering healthy communities assembled towards technical milestones deserve to be better understood by regulators.

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