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Article

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General-Purpose AI Models as Essential Inputs in Downstream Markets: The Need for a Strict Standard Regarding Mandatory Access

General-purpose AI models have emerged as a disruptive technology with paramount spillover economic effects across industries. The owners of such models, namely big tech enterprises, can leverage their dominance in general-purpose AI models to expand into existing or new downstream markets. However, competition law is poised to constrain this expansion effectively. Nevertheless, there is uncertainty about the legal standard when assessing a refusal to deal in the case of access to general-purpose AI models. While EU competition law judicial practice reveals an adversary tendency against big tech enterprises leveraging in downstream markets, there is a case for adopting a narrower standard regarding access to general-purpose AI models.

I. Introduction

Artificial Intelligence (AI) is *en vogue*. Although European Union (EU) lawmakers have passed regulations on AI,[1] the impact of this technology on the law is unknown. The AI Act (hereinafter the AIA)[2] is mainly concerned with assuring a safe and reliable AI. However, despite the law not covering every aspect of AI, its provisions affect competition law and competition dynamics.[3]

From the standpoint of competition law, legal scholars have already addressed some of the risks AI poses. For instance, Bostoen[4] studies how AI algorithms can produce anticompetitive effects that infringe Arts. 101 and 102 of the Treaty on the Functioning of the European Union (TFEU).[5]

This article focuses on competition law issues arising from so-called General-Purpose AI (GPAI), also known as foundational AI. The AIA defines GPAI models as an 'AI model, including when trained with a large amount of data using self-supervision at scale, that displays significant generality and is capable of competently performing a wide range of distinct tasks regardless of the way the model is placed on the market and that can be integrated into a variety of downstream systems or applications'. Accordingly, the AIA defines a GPAI system as an 'AI system which is based on a GPAI model, that can serve a variety of purposes, both for direct use as well as for integration in other AI systems'.[6] Generality, adaptability and integration into downstream systems and applications identify these models in the AI landscape. This article deals with competition law issues relating to competitors' access to GPAI if these models become an essential facility input for competition in downstream markets.

The AIA already deals with GPAI model providers. They assume obligations regarding third AI system providers using their models in downstream markets, for instance by providing information and documentation about the model to third parties. However, transparency and information requirements are instrumental, so that third parties can implement them reliably and safely on downstream systems. Still, from a competition law standpoint, it is worth reviewing whether competition law issues may arise if GPAI model providers leverage their market power in downstream markets by denying access to the models.

This article is structured as follows. Section II explains the significance of the advent of GPAI models in the ongoing debate on digital markets and competition law. Section III establishes how the market development of the GPAI models impacts the question of access. Section IV assesses how the relevant legal framework affects access to GPAI models and whether authorities need new regulatory tools to address the question of access. Section

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1 Regulation (EU) 2024/1689 of the European Parliament and of the Council of 13 June 2024 laying down harmonised rules on artificial intelligence and amending Regulations (EC) No 300/2008, (EU) No 167/2013, (EU) No 168/2013, (EU) 2018/858, (EU) 2018/1139 and (EU) 2019/2144 and Directives 2014/90/EU, (EU) 2016/797 and (EU) 2020/1828 (Artificial Intelligence Act) [2024] OJ L2024/1689.

2 A brief overview can be found at <https://digital-strategy.ec.europa.eu/en/policies/regulatory-framework-ai> accessed 26 July 2024.

3 For a detailed explanation of how the AIA affects competition law and competition dynamics, see Thibault Schrepel, 'Decoding the AI Act: A Critical Guide for Competition Experts' (2023) <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4609947> accessed 26 June 2024.

4 AI algorithmics can produce restrictive agreements and abuse of dominance. See Friso Bostoen, 'Artificial Intelligence and Competition Law' (2023) <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4655894> accessed 12 February 2024.

5 See Consolidated Version of the Treaty on the Functioning of the European Union [2012] OJ C326/49.

6 art 3 AIA, definitions 63 and 66.

V delves into leveraging GPAI models in downstream markets and why a strict standard regarding granting mandatory access to GPAI models is necessary. Section VI reviews different avenues to accessing GPAI models and how the strict standard for mandatory access should be understood. Section VII provides a conclusion.

II. The question of access to GPAI models against the ongoing doctrinal discussion on digital markets

1. Different positions on digital markets and the 'Moligopoly thesis' as a meeting point

The landmark work by Bork, 'The antitrust paradox', represents a milestone in antitrust policy.[7] Since then, consumer welfare has emerged as the goal of antitrust law. The price-based theory determines whether conducts infringe the antitrust law provisions or not. Focusing on the effects on consumer welfare implies that other considerations like market structure and dynamics are disregarded.

However, this position has been widely contested with the advent of digital markets. Khan's notorious work claimed that 'Antitrust law and competition policy should promote not welfare but competitive markets',[8] meaning competition law aims to maintain a market structure without monopoly power.

Although the Chicago School's understanding of the consumer welfare standard has never been entirely adopted in EU competition law,[9] the concentration of digital markets has driven the popularity of the structuralist approach. While maintaining the consumer welfare standard, recent EU competition policy has attributed more importance to market structure and the competition process. Amendments to the Communication from the Commission 'Guidance on the Commission's enforcement priorities in applying Article 82 of the EC' reflect this tendency.[10]

On the other hand, other doctrinal sectors adhere to the Chicago School's understanding of consumer welfare and find no consumer harm in EU competition law enforcement case law but, instead, harm to competitors.[11]

Petit holds a third view on digital markets and big tech enterprises. An alternative explanation is required as the classic monopoly theory does not apply.[12] This leads to the 'Moligopoly thesis'. It poses that big tech enterprises keep monopoly power on their core markets while engaging in oligopolistic competition on other markets. Therefore, big tech enterprises efficiently attack other big tech markets by indirect entrance, i.e., by focusing on a new market related to the main one.[13] The policy recommendations for competition authorities are to limit the monopoly rents in the dominated and tipped markets while not intervening in untipped markets where big tech companies are competing, except where certain conditions are met.[14] The purpose is to stimulate the innovation and value that the entry of big tech companies into new markets certainly brings.

This article assumes the 'Moligopoly thesis' as a valid general explanation of competition in digital markets. Therefore, the 'Moligopoly thesis' is a useful reference to frame the question of access to GPAI models.

2. The Moligopoly thesis as a reference for access to GPAI models. The need for a nuanced approach concerning a new problem

Big tech enterprises fight for new, promising, untipped markets; they compete *for* the markets. They compete to standardise their respective GPAI models.[15] Big tech enterprises have decisively contributed to the discovery of this new market. Google's paper in 2017 ignited the latest breakthroughs in large language models.[16] Open AI launched ChatGPT. Furthermore, Microsoft's move to invest in Open AI allowed it to renew its attack on Google's core businesses, the research engine and the browser, by integrating ChatGPT in Bing and Edge respectively. Google was subsequently compelled to integrate its AI models to defend its position. At the same time, by implementing AI in its suite, Google is attacking Microsoft's productivity software dominance. A useful insight is that big tech enterprises discover new products and services to compete in relevant established markets. Therefore, Petit's thesis is validated in this regard. However, Microsoft's success in contesting the established markets is still unclear.[17]

The question of access to GPAI models requires a nuanced competition law approach that promotes big tech investments in this new market. This approach differs from the structuralist solutions that could be applied to entrenched positions in big tech companies' core markets.

7 Robert H Bork, *The antitrust paradox* (1st edn, Bork Publishing 2021).

8 Lina M Khan, 'Amazon's Antitrust Paradox' (2017) 126(3) The Yale Law Journal 710, 737.

9 ibid 40.

10 European Commission, 'Annex to the Communication from The Commission – Amendments to the Communication from the Commission Guidance on the Commission's enforcement priorities in applying Article 82 of the EC Treaty to abusive exclusionary conduct by dominant undertakings' [2023] OJ C116/01, 1-3.

11 Robert D Atkinson and Joe Kennedy, 'The Antitrust "Challenge" of Digital Platforms: How a fixation on size threatens Productivity and Innovation' in David S Evans, Allan Fels Ao and Catherine Tucker, *The evolution of antitrust in the digital era: Essays on Competition Policy* Vol 1 (1st edn, Competition Policy International 2020) 21-26.

12 Nicolas Petit, *Big tech & the digital economy* (1st edn, OUP 2020) 25-27.

13 ibid 161-63.

14 ibid 187.

15 The efforts to capture the potential rents of a new market often translate into the creation of standards, as the standard developer will enjoy its monopoly supply and the entry barriers linked to switching costs, network effects, etc. See Paul A Geroski, 'Competition in markets and competition for the markets' (2003) 3(3) Journal of Industry, Competition and Trade 151, 152-53.

16 Ashish Vaswani and others, 'Attention is all you need' (2017) <3f5ee243547dee91fbd053c1c4a845aa-Paper.pdf> accessed 19 February 2024.

17 See the evolution of market share of desktop search engines from 2023 in Statista, 'Market share of leading desktop search engines worldwide from January 2015 to January 2024' (*statista*, February 2024) <https://www.statista.com/statistics/216573/worldwide-market-share-of-search-engines/> accessed 19 February 2024.

III. GPAI models market. The question of access according to GPAI market development

1. GPAI models and downstream markets. An intricate relationship

Downstream markets are emerging with the development of GPAI models. However, current relationships between GPAI models and downstream markets are far from simple. Firms can access third-party GPAI models in several ways,[18] and AI in downstream markets is constantly evolving.

Furthermore, open-source models have a relevant foothold in the GPAI models' landscape,[19] as there is a case for small open-source models to compete with larger and proprietary ones by achieving better results with smaller sizes, i.e., being efficient.[20] Therefore, open-source solutions may play a relevant role in downstream markets, diminishing the need to access big tech GPAI models.

However, economic dependencies are foreseeable because increasing returns to scale, network effects, and economics of scope apply in GPAI markets. These characteristics are present when undertakings compete for the markets since they promote the adoption of their GPAI models as a standard in a winner-takes-all logic.[21] If the GPAI markets 'tip' in favour of a proprietary solution and AI becomes increasingly important in competing in downstream markets, conflicts related to access to the 'essential' GPAI model are to be expected. However, if there are viable alternatives, this reasoning does not apply.

2. The rationale for access problems: GPAI models as a new multi-sided digital platform

Although the relationship between GPAI models and downstream markets is intricate, this paper supports the hypothesis that GPAI models are becoming digital platforms on which AI developers and users will interact and that concentration is a natural result leading to access problems.[22]

Before the broad availability of GPAI models, AI developers needed to craft an AI system from scratch to deploy a specific AI application.[23] However, the advent of GPAI models allowed third parties to leverage their capabilities and adapt them to the intended uses.[24]

Moreover, due to the high capabilities of pre-trained GPAI models, the importance of fine-tuning might be relative, and prompt engineering may suffice in this regard,[25] meaning no adaptation investments.

Despite these benefits, the efficiencies will mean industry concentration, as only some companies own the necessary resources to develop GPAI models, except open-source ones. Is this feature automatically detrimental? The concentration facilitates an input on downstream markets that otherwise would have incurred enormous costs for the development of GPAI from scratch. However, the market power around GPAI must be reviewed through competition law.

Since developing GPAI models requires enormous resources, the upstream GPAI model market is a stage with access problems. However, as the following subsection sets out, there might be cases where this rationale does not apply.

3. Dynamics in GPAI model markets

a) Dynamics according to their target, accessibility and capabilities

Although all GPAI models share some characteristics, the market is not monolithic. In this regard, Scherepel and Pentland present a taxonomy of GPAI, or foundational AI models, based on their accessibility and target, to explore their nature and ultimately draw relevant policy recommendations.[26] The authors point out that general public foundation models serve any user in a broad set of tasks, while ecosystem foundation models are usually fine-tuned to serve the needs of specific user groups, and personal foundation models are only available and tailored to a particular user.[27]

According to the authors, competition dynamics vary depending on the type of foundation model used. For general public foundation models, they estimate greater increasing returns and positive feedback loops, and thus lower competition. In contrast, with ecosystem and personal foundation models, the increasing returns are less since the scope of users is narrower. Therefore, barriers to entry are lower in the latter, and more competition is foreseeable.[28] The first relevant insight is that market dynamics in GPAI models will depend on their user target. The broader the user target, the more probable are access problems.

On the other hand, Vipra and Korinek state that there is already concentration in the GPAI market, and it is indeed a natural monopoly thanks to supply-side economies of scale and scope, network effects, first movers'

18 Competition and Markets Authority (CMA), 'AI Foundation Models: Initial Report' (*CMA*, 18 September 2023) 55 <https://www.gov.uk/government/publications/ai-foundation-models-initial-report> accessed 20 February 2024.

19 Hugging Face is an AI community licensing access to open-source AI models. See Hugging Face <https://huggingface.co/> accessed 20 February 2024.

20 Meta AI, 'LLaMA: Open and Efficient Foundation Language Models' (*Meta AI*, 2023) <333078981_693988129081760_4712707815225756708_n.pdf> accessed 20 February 2024.

21 Geroski (n 15) 153.

22 The digital platform is an online infrastructure enabling transactions between different but interdependent groups of users that generate value for all concerned parties. Therefore, digital platforms imply multi-sided markets. Vera Demary, 'The platformization of digital markets: Comments on the public consultation of the European Commission on the regulatory environment for platforms, online intermediaries, data and cloud computing and the collaborative economy' (2015) Institut der deutschen Wirtschaft (IW) Policy Paper 39 <https://www.econstor.eu/bitstream/10419/126091/1/845730703.pdf> accessed 20 February 2024.

23 Adam Kolides, Alyna A Nawaz and Anshu Rathor, 'Artificial intelligence foundation and pre-trained models: Fundamentals, applications, opportunities, and social impacts' (2023) 126 Simulation Modelling Practice 4.

24 ibid 11.

25 Johannes Schneider, Christian Meske and Pauline Kuss, 'Foundation Models a New Paradigm for Artificial Intelligence' (2024) 66(2) Bus Inf Syst Eng 221.

26 Thibault Schrepel and Alex Pentland, 'Competition between AI foundation models: dynamics and policy recommendations' (2023) 3 Amsterdam Law & Technology Institute (ALTI) Working Paper 3-4.

27 ibid 4-6. It is also worth noting that Schrepel and Pentland propose that general public foundation models can be domain-specific since they classify BloombergGPT as such.

28 ibid 11-15.

advantage, privileged access to limited resources like data, computational problems, and talent.[29] However, these authors acknowledge that there will be more competition within the market for GPAI behind the frontier, i.e., behind cutting-edge GPAI.[30] In this regard, while the winner-takes-all logic and strict policy recommendations apply to frontier GPAIs, the situation differs for smaller GPAIs. Therefore, a second relevant insight is that market dynamics could vary depending on whether the GPAI model is frontier. The less capable the GPAI model is, the less likely it is to give rise to access problems.

Overall, there are barriers to entry that give big tech companies an upper hand. However, it is essential to note that these competition constraints will only apply to broad (not limited to a set of users) frontier GPAI.[31] In this regard, data requirements for pre-training due to its availability and the increasing reliance on proprietary data, computational resources to pre-train and run, the scarcity and concentration of technical expertise and access to funding stand out as motives for market concentration.[32]

These findings show that competition law issues relating to access will mainly apply to general public GPAI models. Moreover, there will be discussions about imposing *ex ante* regulation on these broad-scope and frontier GPAI models. In Section IV.2., the article will further discuss this latter point.

b) Dynamics according to the underlying strategy: closed and open-source systems

On the other hand, GPAI models could also be classified according to the strategy followed by the respective big tech to compete for the market. As W. Brian Arthur puts it, in the increasing returns industries, the competition and managing culture requires a discovery process about what strategy will lead to winning the market:

> 'In fact, the art of playing the tables in the Casino of Technology is primarily a psychological one. What counts to some degree – but only to some degree – is technical expertise, deep pockets, will, and courage. Above all, the rewards go to the first players to make sense of the new games looming out of the technological fog, to see their shape, to cognize them. Bill Gates is not so much a wizard of technology as a wizard of precognition, of discerning the shape of the next game (…)
>
> What strategic issues do you need to think about? In the processing world, strategy typically hinges upon capitalizing on core competencies, pricing competitively, getting costs down, bringing quality up. These are important also in the knowledge-based world, but so, too, are other strategies that make use of the special economics of positive feedbacks'.[33]

Big tech enterprises can launch a proprietary or closed-source and open-access GPAI or release an open-source GPAI coupled with proprietary ancillary services as their AI platform value proposition.

In the first group, we may, among others, find Open AI and Google building an AI platform through controlled access to their GPAI models, GPT and Gemini respectively. In the second group, we see Meta AI making their GPAI model, LLaMA 2, open source. These strategies are not entirely new. We can draw a parallel with Operating Systems (hereinafter OS). Therefore, Open AI and Google mirror Apple's strategy with iOS, and Meta AI copycats Google's strategy with Android.[34]

These strategies will significantly impact the nature of competition law issues. While closed-source GPAI models raise access issues for competitors in downstream markets, the absence of this concern does not make open-source GPAI providers free of competition law infringements, as the Google decision shows that the developer of open-source software can find solutions to protect its dominant position from competitors' and produce abuses of dominance as a result.[35]

IV. The legal framework to assess access to GPAI models. Are authorities ill-equipped?

1. The AIA

a) The relevance of the AIA concepts for access to GPAI models

The AIA addresses the GPAI and systemic GPAI providers' obligations regarding downstream markets. It enacts a narrow regulation focused on a risk-based approach to AI systems to promote AI governance and security. Therefore, the AIA does not explicitly pose relevant regulatory constraints to practices involving access to GPAI. In this sense, Hacker, Cordes, and Rochon[36] observed that the Digital Market Act (DMA)[37] poses more regulatory constraints on big tech companies regarding AI than the AIA.

The first AIA proposal[38] lacked any reference to GPAI. The high-risk classification system based on the AI

29 Jai Vipra and Anton Korinek, 'Market concentration implications of foundation models: The Invisible Hand of ChatGPT' (2023) 9 Center on Regulation and Markets Working Paper 7-19.

30 ibid 18-19.

31 Even in frontier GPAI, some big tech personnel think that new entrants could outpace incumbents in the race for AI as there are no significant barriers to entry. The new entrants leverage open-source GPAI models. Dylan Patel and Afzal Ahmad, 'Google, "We Have No Moat, And Neither Does OpenAI"' (*semianalysis*, 4 May 2023) <https://www.semianalysis.com/p/google-we-have-no-moat-and-neither> accessed on 23 February 2024.

32 CMA (n 18) 28-39.

33 W Brian Arthur, 'Increasing Returns and the New World of Business' [1996] Harvard Business Review 4-5 <https://hbr.org/1996/07/increasing-returns-and-the-new-world-of-business> accessed 11 March 2024.

34 I assume that Meta AI has made LLaMA 2 open source to generate a business model based on apps and services monetisation through LLaMA 2 adoption, similar to Google's business model with Android.

35 *Google Android* (Case AT.40099) Commission Decision, C(2018) 4761 final, paras 1077-1131. Additionally, Carlo Piana, 'Antitrust, Competition, and Open Source' in Amanda Brock (ed), *Open Source Law, Policy and Practice* (2nd edn, OUP 2022).

36 Philipp Hacker, Johann Cordes and Janina Rochon, 'Regulating Gatekeeper Artificial Intelligence and Data: Transparency, Access and Fairness under the Digital Markets Act, the General Data Protection Regulation and Beyond' (2023) 15 European Journal of Risk Regulation 49, 50-51.

37 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) [2022] OJ L265.

38 European Commission, 'Proposal for a Regulation of the European Parliament and of the Council laying down harmonised rules on artificial intelligence (artificial intelligence act) and amending certain union legislative acts' COM/2021/206 final.

application did not fit with the nature of GPAI because classifying an AI system as high-risk depends on the purpose of use that the provider envisages for the AI system. A new legal category was required. For this reason, authorities adopted a general-risk approach concerning GPAI as its behaviour depends on the actual use made by the final user.[39] This policy approach leads to ongoing systemic risk monitoring due to the impossibility of foreseeing all risks, regulating the terms of use, and compensating the producers of the extracted training data.[40]

Furthermore, the AIA imposes additional obligations on frontier or high-impact capability GPAI, classified as GPAI models with systemic risks. Every GPAI provider must deliver technical documentation of the model to both the authorities and downstream AI providers using the GPAI, and enact a policy to adhere to EU copyright law regarding training data. Providers of GPAI with systemic risks must additionally perform model evaluation, keep track of severe incidents and possible remedies, and establish cybersecurity and infrastructure protection. Although there are waivers for Open Source GPAI models, the exceptions do not apply to GPAI with systemic risks.

Emborg and Schaal suggest using the AIA category of 'AI models with systemic risks' as a proxy for market power in GPAI to impose special obligations targeting market concentration.[41] However, there is no legal basis to infer any effects of this AIA category on competition policy. Still, it would be a reasonable and imperfect proxy for market power since the development of frontier GPAI is highly concentrated due to the barriers to market entry. The question of mandated access to AI models with systemic risks could be framed as a duty for developers of highly capable GPAI models. However, as this article will examine, a strict legal standard to eventually grant compulsory access to GPAI models is needed.

b) How the safety and reliability goals of AIA might impact the competition law assessment

Emborg and Schaal point out the problem of agreements eluding competition authorities' merger control.[42] While it is true that these quasi-mergers might have anticompetitive effects and require further legal action, it is worth pointing out that cooperation in GPAI development is also necessary to ensure safe and reliable AI.[43] If mitigation measures against anti-competition effects are implanted, these agreements are desirable.

European start-ups like Mistral might benefit from these agreements, since big tech firms provide the necessary resources to develop models that better serve consumers' needs.[44] Otherwise, European start-ups might lag in the AI race.

As the next sections will propose, a strict standard regarding mandatory access to GPAI models is necessary to preserve big tech incentives in GPAI development. Promoting voluntary access is likewise important.

2. *Ex ante* regulation to grant access to GPAI models

a) The DMA interaction with GPAI models

Since enforcement due to procedural inefficiency is the main shortcoming of competition law in addressing digital markets, EU lawmakers have adopted both an *ex ante* regulatory approach and a market investigation tool by enacting the DMA.[45]

The DMA is a complementary regulatory instrument but different from EU competition law. While competition law aims to ensure undistorted competition, the DMA goes further by pursuing contestability and fairness in digital markets.[46] In essence, contestability promotes inter-platform competition while fairness enshrines much of the competition case law concerning intra-platform competition.[47] The DMA also covers extra-platform competition, i.e., competition between the gatekeeper (the undertaking designated to comply with the DMA obligations) and third parties outside of a Core Platform Service (the bottleneck owned by the gatekeeper).[48] In the latter, the DMA hampers the expansion of gatekeepers in adjacent markets by forbidding the leveraging of their Core Platform Service (CPS) power.[49]

The scope of the DMA is limited as it applies to designated gatekeepers providing CPS, i.e., an essential gateway for business users to reach end users (Art. 3.9 DMA *in fine*). Therefore, the DMA obligations only apply to gatekeepers, provided their participation in the CPS is relevant to the competition. If a gatekeeper provides a CPS with no market relevance, their designation decision should not include obligations concerning that CPS.[50] However, the problem is that the gatekeeper's formula is not always a perfect proxy for market power.[51] GPAI are not a CPS as defined in Art. 2 DMA. Nor do the obligations restricting leveraging on extra-platform competition directly affect the current GPAI market (Arts. 5.2, 5.6 and 5.7 DMA).

Another limitation of the DMA in addressing GPAI is its lack of flexibility in dealing with new cases. When

39 Natali Helberger and Nicholas Diakopoulos, 'ChatGPT and the AI act' (2023) 12(1) Internet Policy Review 3-5.

40 ibid 4-6.

41 Tekla Emborg and Jacob Schaal, 'Overcoming Big Tech AI Merger Evasions: Innovating EU Competition Law through the AI Act' (*Verfassungsblog*, 29 April 2024) <https://verfassungsblog.de/overcoming-big-tech-ai-merger-evasions-innovating-eu-competition-law-through-the-ai-act/> accessed 29 June 2024.

42 ibid. See Council Regulation (EC) No 139/2004 of 20 January 2004 on the control of concentrations between undertakings (the EC Merger Regulation) [2004] OJ L24/1.

43 Shin-Shin Hua and Haydn Belfield, 'AI & antitrust: reconciling tensions between competition law and cooperative AI development' (2021) 23 Yale Journal of Law & Technology 415, 418.

44 A positive interpretation of the agreement between Microsoft and Mistral against the view of Emborg and Schaal (n 41).

45 Natalia Moreno Belloso and Nicolas Petit, 'The EU Digital Markets Act (DMA) A Competition Hand in a Regulatory Glove' (12 September 2023) 3 <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4411743> accessed 2 March 2024.

46 Friso Bostoen, 'Understanding the Digital Markets Act' (2023) 68(2) The Antitrust Bulletin 263, 266.

47 ibid 266.

48 Moreno Belloso and Petit (n 45) 15.

49 ibid 19.

50 The European Commission designates gatekeepers concerning specific CPS. See <https://ec.europa.eu/commission/presscorner/detail/en/ip_23_4328> accessed 9 August 2024.

51 Bostoen (n 46) 278-79. There are even CPSs with an oligopolistic rather than monopolistic market structure.

the DMA does not cover a new conduct, authorities must resort to competition law.[52]

Nevertheless, while the DMA does not mention AI, Hacker, Cordes, and Rochon put forward its importance as a regulatory constraint for GPAI practices.[53] This is because the DMA affects big tech enterprises' core business elements powered by AI algorithms like rankings, as it imposes transparency, fairness and non-discrimination obligations.[54] Furthermore, the DMA would also hinder the development of GPAI by gatekeepers or big tech enterprises by hampering training data access while trying to spur the growth of competing GPAI models by mandating business users' access to data on free or FRAND terms.[55]

b) Need for new *ex ante* regulation to promote access to GPAI?

Since the DMA has limits of scope and flexibility to tackle GPAI, Hacker, Cordes, and Rochon propose amendments to the DMA to ensure transparency, access, and fairness on GPAI.[56] Their insight is to severely disrupt big tech companies' efforts to build GPAI, as they could be leveraged to ensure dominance in other markets. Therefore, while the AIA aims to ensure safe and reliable AI systems, the 'extended' DMA will prevent big tech firms from reaping the benefits of their edge in GPAI. In this sense, they write:

> 'The DMA is nonetheless right in explicitly blocking gatekeepers from leveraging their specific position to build better models. This would most likely have the effect of even further cementing their position on the market, thereby continuing to hinder the possibility of workable competition. This points to an inherent conflict of objectives in the area of AI and platform regulation: technological tools and AI systems are supposed to be high performing, but it is precisely this capability that may lead to further market concentration and the weakening of competitive processes. The AI Act and the DMA, therefore, rightly seek to accommodate this tension by allocating specific and, prima facie, strikingly divergent duties to gatekeepers on the one hand and developers of high-risk AI systems on the other'.[57]

Therefore, there is an ongoing discussion about the convenience of further *ex ante* regulation specifically targeted at disrupting market concentration in GPAI models. However, firstly, disrupting big tech's stakes in GPAI might be far-fetched. The concept of contestability for regulatory purposes in the DMA context aims to establish a credible threat of entry and expansion, disciplining the conduct of the gatekeeper. Forbidding big tech companies from improving the quality of their products exceeds this objective.[58]

Since structural changes in the GPAI model markets would require intense intervention, regulating access to GPAI in downstream markets would be a more feasible approach. However, even in that scenario, the case for mandated access is not straightforward. Excessive and intrusive *ex ante* regulation will not make markets more contestable but more regulated in the future. After more than twenty years of liberalisation in the telecommunications sector, *ex ante* pro-competitive regulation does not seem to be coming to an end but to be expanding.[59] This experience would advise against imposing mandated access to GPAI models through *ex ante* regulation.

3. Competition law

a) New *ex ante* regulation under the umbrella of a competition law legal basis

Competition law remains in force after the enactment of the DMA as a separate tool to address digital markets. Since the DMA does not expressly refer to GPAI models, Art. 102 TFEU remains the primary regulatory framework for assessing conduct concerning GPAI models.

Notwithstanding, Member States may also enforce their national competition law framework while applying Art. 102 TFEU if the infringement affects trade between Member States.[60] Stricter rules can be used in the case of unilateral conduct.[61] Therefore, there is room to enhance competition law concerning digital markets.

This is the case of German competition law, which introduced Sec. 19a, 'Abusive conduct of undertakings of paramount significance for competition across markets' in the Act Against Restraints of Competition (GWB).[62] Section 19a GWB shares many similarities with the DMA: addressing firms as large intermediaries or gatekeepers instead of determining dominance in the relevant market, the reversal of the burden of proof, and imposition of obligations following an administrative decision.[63]

Section 19a enshrines obligations aimed at preventing the expansion of market power, leveraging it on new markets and exploiting economically dependent trade partners.[64] In this regard, the seven categories of obligations are broad enough to capture a large set of abusive conduct. For instance, in decision B7-70/21, the Federal Cartel Office proceedings under Sec. 19a (2) sentence 4 induced Google to undertake to change its data processing terms regarding the cross-service processing of personal data.[65] However, as happens with the DMA, the lack of flexibility of a *numerus clausus* may impair its capacity to

52 Bostoen (n 46) 305.

53 Hacker, Cordes and Rochon (n 36) 50-51.

54 ibid 53-72.

55 ibid 75.

56 ibid 80-85.

57 ibid 75.

58 Jacques Crémer and others, 'Fairness and Contestability in the Digital Markets Act' (2023) 40 Yale Journal on Regulation 973, 994.

59 Fernando Herrera González and Luis Castejón-Martín, 'The endless need for regulation in telecommunication: An explanation' (2009) 33 Telecommunications Policy 664.

60 Council Regulation (EC) 1/2003 of 16 December 2002 on the implementation of the rules on competition laid down in Articles 81 and 82 of the Treaty [2004] OJ L1/1, art 3.1.

61 Council Regulation (EC) 1/2003 (n 60) art 3.2.

62 Gesetz gegen Wettbewerbsbeschränkungen – GWB; Act Against Restraints of Competition in the version published on 26 June 2013 (Bundesgesetzblatt (Federal Law Gazette) I, 2013, p 1750, 3245), as last amended by art 1 of the Act of 25 October 2023 (Federal Law Gazette) I, p 294).

63 Jens-Uwe Franck and Martin Peitz, 'Digital Platforms and the New 19a Tool in the German Competition Act' (2021) 12(7) Journal of European Competition Law & Practice 513, 514.

64 ibid 519.

65 7th Decision Division B7-70/21; decision pursuant to s 19a(2) sentence 4 in conjunction with s 32b(1) GWB.

address cases arising within GPAI – for instance, a refusal to deal with access to the GPAI model. Once again, Sec. 19a GWB may affect GPAI, but its rigidity may hamper the possibilities against some kinds of unilateral conduct concerning GPAI. On the other hand, the subjected undertakings do not need to hold a dominant position, as the overall economic position of the undertaking justifies an early antitrust intervention.[66]

Lastly, it is worth mentioning that enacting the DMA may pose problems for wielding these new competition law regulations. Article 1.5 DMA prevents Member States from imposing further obligations on gatekeepers to ensure fair and contestable markets. The issue lies in the wording, as fairness and contestability are not defined in the DMA.[67] Some authors propose a narrow understanding of the DMA, so its scope lies only in the regulation of CPS, while Member States can regulate other aspects of gatekeepers.[68] This is the approach followed by the Federal Cartel Office in B7-70/21[69] just seen above.

Indeed, Sec. 19a GWB can complement the DMA and Art. 102 TFEU as an additional *ex ante* regulation not in conflict with the DMA. Furthermore, unlike the DMA, under Sec. 19a GWB, efficiency considerations might be assessed as objective justification.[70] However, without *ex ante* regulations devoted to GPAI considerations, GPAI models must be evaluated under Art. 102 TFEU as the main framework. Additionally, whether *ex ante* competition law regulations apply to GPAI providers or not, they should not distort the application of a strict standard regarding the grant of mandated access on the basis of Art. 102 TFEU.

b) Article 102 TFEU

Regarding Art. 102 TFEU, the assessment is heavily conditioned on the fact that GPAI models will lead to AI platforms emerging as multi-sided markets, with the GPAI providers competing with business users for customers within their ecosystems. The argument relies on the fact that GPAI models are a 'building block' from which third parties will develop their products, which is the case of multi-sided platforms.[71]

As with every multi-sided platform, network effects play a significant role in determining their success.[72] In the case of innovative platforms,[73] new underlying markets that are to be considered by competition authorities might emerge. Cyriac has proposed that this is the case of data in multi-sided platforms run by big tech companies, with an underlying data market for each free service.[74] In the GPAI platform, whenever an application can be AI-powered, the underlying market is for access to the capabilities of the GPAI models.

As Cyriac puts it:[75]

> 'In the case of multi-sided platforms, if data collected is treated as the upstream relevant market, the particular market which uses the derived insights gained by applying data analytics to raw captured data forms the relevant downstream product market'.

The upstream market consists of different GPAI models. Downstream markets are several software solutions that take advantage of the GPAI capabilities.

Still, the elements of Art. 102 TFEU must be satisfied for an intervention in a GPAI platform. First, it is necessary to determine the relevant market. In multi-sided markets, there are two alternatives. Authorities might consider each side of the market as separate or, instead, delimit a single market for both sides. The choice will usually entail separate markets, provided that the interaction between different group users is not necessary, i.e., whether the platform can directly provide services to end users, with no need for business users.[76] This might be the case with GPAI.

Following the European Commission Notice on the definition of the relevant market for community competition, the relevant market must be considered in terms of competitive constraints.[77] However, there might be a lot of uncertainty in this regard – for instance, the influence of multi-homing and platform differentiation.[78]

Secondly, it is necessary to determine whether there is a dominant position in the relevant market. Digital multi-sided markets call for a broad understanding of market power. Authorities can resort to proxies like market, revenue, or user share,[79] but an inquiry into the case must be conducted in any event. In digital markets, other factors like data access and the capacity to downgrade service quality are particularly relevant.[80] To sum up, to the extent that a GPAI provider can act independently of competitors, there will be market power.[81]

Third, it is necessary to determine whether the dominant undertaking has committed an abuse of

66 Germany-OECD, 'The Evolving Concept of Market Power in the Digital Economy – Note by Germany' (*OECD*, 30 May 2022) <https://www.bundeskartellamt.de/SharedDocs/Publikation/EN/Diskussions_Hintergrundpapiere/OECD_2022_Competition_Committee_Concept_Market_Power_Digital_Economy.pdf?__blob=publicationFile&v=2> accessed 9 August 2024.

67 Josef Drexl and others, 'Position Statement of the Max Planck Institute for Innovation and Competition of 2 May 2023 on the Implementation of the Digital Markets Act (DMA)' [2023] GRUR International 864, 866.

68 ibid 866-67.

69 para 77.

70 Franck and Peitz (n 63) 520-22.

71 For the characteristics of the platform company, see Bhabani Shankar Nayak and Nigel Walton, *Political Economy of Artificial Intelligence* (1st edn, Palgrave Macmillan 2024) 20-21.

72 Nizar Abdelkafi and others, 'Multi-sided platforms, Electronic Markets' (2019) 29 Electronic Markets 553, 553.

73 Innovation platforms have 'common technological building blocks that the owner and ecosystem partners can share in order to create new complementary products and services', Michael A Cusumano, Annabelle Gawer and David B Yoffie, *The business of platforms. In Strategy in the age of digital competition, innovation, and power* (1st edn, HarperCollins 2019) 18.

74 Noby Thomas Cyriac, *Big data and the abuse of dominance by multi-sided platform. An analysis of Article 102 TFEU* (1st edn, Nomos 2022) 122.

75 ibid 260.

76 Sebastian Wismer and Arno Rasek, 'Market definition in multi-sided markets' (*OECD*, 15 September 2017) 4-5 <https://one.oecd.org/document/DAF/COMP/WD(2017)33/FINAL/en/pdf> accessed on 9 March 2024.

77 European Commission, 'Commission Notice on the definition of the relevant market for the purposes of Community competition law' (97/C 372/03) [1997] OJ C372/5, para 13 ff.

78 Remember Schrepel and Pentland's classification, distinguishing between the general public, ecosystem, and personal foundation AI models seen above. Schrepel and Pentland (n 26).

79 Jens-Uwe Franck and Martin Peitz, 'Market Power of Digital Platforms' (2023) 39(1) Oxford Review of Economic Policy 34, 36-37.

80 ibid 37-38.

81 See Case 85/76 *Hoffmann-La Roche & Co. AG v Commission of the European Communities* ECLI:EU:C:1979:36, para 38.

dominance. Market power entails a special responsibility for the dominant undertaking, so its strategies vis-à-vis competitors can only be based on competition on the merits.[82]

The issue with the first and second steps is the nascency of the GPAI models market, as any conclusion might be premature. Nor is it within this article's reach to conclude who the players with market power are in the relevant markets. It is assumed that the market power requirement is satisfied to continue on with the appraisal of the abuse of market position.

As GPAI models gain relevance for competition in downstream markets, competitors will rely more on them. Since GPAI providers have incentives to expand into downstream markets, big tech firms may opt to exclude third parties from access to their GPAI models to gain a competitive advantage. Under Art. 102 TFEU, the refusal to grant access to an essential input for competition amounts to an abuse of dominance. Therefore, authorities are not ill-equipped to confront access issues regarding GPAI models, as the refusal is a well-established abuse of dominance. *Ex ante* regulation is not necessary.

However, although identifying the type of abuse is not problematic, the circumstances under which access denial implies an abuse of dominance are far from clear.[83] There is an urge to identify a clear standard for access to GPAI model cases. Additionally, there is a case for defending a strict standard to grant mandatory access.

V. GPAI models and leverage on downstream markets. The need for a strict standard for the grant of access to GPAI models in downstream markets against current EU case law

1. Current state and threats of consolidation

The premise of the GPAI model market is industry concentration. It is coherent with the understanding of GPAI as platforms with multi-sided markets, strong network effects, positive feedback loops, and barriers to entry.

On 'open AI', the work by Widder, Whittaker and West is relevant. They point out that big tech companies will benefit the most from open AI as they provide the infrastructure to run the models and services built on top of them.[84] As this article has already set out, supporting open AI is one of the strategies big tech companies can resort to in order to compete against each other in the AI race, as the review of the situation involving mobile OSs shows.[85] In this regard, even the competition envisaged by Schrepel and Pentland in fine-tuning GPAI[86] might presuppose the involvement of big tech companies in the development of the training of GPAI models.

Consolidating GPAI model markets leads to the dominance of the prevailing undertakings. However, whether this market power is anti-competitive or entails anti-competitive results should not be taken for granted. As Devlin puts it:[87]

> 'Superior competition on the merits rewards the winner with market share, thus concentrating the market. Innovation may yield temporary market power with that share, evidencing that it is entirely consistent with a healthy competitive market process'.

Furthermore, there is no causal relationship between market concentration and consumer harm regarding higher prices because other variables are at stake.[88] In this regard, it makes sense that every GPAI provider participates in downstream markets by economies of scope. From a competition law standpoint, the interest in anti-competitive foreclosure in downstream markets emerges due to this market power regarding a relevant input, the GPAI capabilities.

2. The different legal tests under which leveraging GPAI models in downstream markets can be analysed. Relevant case law inferences

The discussion on the legal standard for assessing the leveraging of GPAI in downstream markets under Art. 102 TFEU will depend on the type of conduct assessed. In this regard, typical leveraging cases involve bundling and tying, margin squeezes, and refusing to deal.[89] The condition for a finding of an abusive leveraging, in the light of *Google Shopping*,[90] is that:

> 'The dominant company's conduct has an anti-competitive effect, which may potentially exclude competitors who are at least as efficient as the dominant undertaking on the secondary market'.[91]

Still, since the legal controversy essentially concerns access to the capabilities of GPAI models, potential leveraging in downstream markets must be assessed under the doctrine of refusal to deal.

However, when it comes to the refusal to deal, there is controversy with respect to the legal criteria. While Höppner proposes to differentiate between *de novo*

82 Competition on the merits is an abstract concept which does not reveal whether conduct is deemed abusive or not, as the anti-competitive foreclosure will be found after an effect-based approach. However, EU authorities deviated from this case law in the *Google Shopping* case since they presumed illegality for self-preferencing when there is competition with a rival in downstream markets. See Dilan Alma, '"Competition on the Merits": A Proxy for Legality in the Context of Article 102 TFEU and An Analysis of Its Interpretation in General Court's Google Shopping Judgement' (9 May 2023) <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4422380> accessed on 9 March 2024.

83 In particular, whether the indispensability of access is an element of the legal test. See Pablo Ibáñez Colomo, 'Indispensability and Abuse of Dominance: From Commercial Solvents to Slovak Telekom and Google Shopping' (2019) 10(9) Journal of European Competition Law & Practice 532.

84 David Gray Widder, Meredith Whittaker and Sarah Myers West, 'Open (for business): Big tech, concentrated power, and the political economy of Open AI' (18 August 2023) 11-12 <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4543807> accessed 4 July 2024.

85 ibid 13-14.

86 Schrepel and Pentland (n 26) 13-14.

87 Alan J Delvin, *Reforming Antitrust* (1st edn, CUP 2021) 94.

88 ibid 94.

89 Thomas Höppner, 'Duty to Treat Downstream Rivals Equally: (Merely) a Natural Remedy to Google's Monopoly Leveraging Abuse' (22 September 2017) 6 <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3040605> accessed 13 March 2024.

90 Case T-612/17 *Google LLC, formerly Google Inc. and Alphabet, Inc. v European Commission* ECLI:EU:T:2021:763.

91 Höppner (n 89) 11.

refusal to supply or the *essential facilities* doctrine, where the indispensability criteria apply, and termination of supply where it does not,[92] others argue that such differentiation is inconsistent with case law and treat the refusal to deal and the *essential facilities* doctrine as a single category.[93] This debate is relevant since GPAI providers are at the moment granting access, but may eventually deny it.

Furthermore, the standard for finding abuse regarding a refusal to deal established in *Magill*, *Bronner* and *IMS*[94] was lowered after the *Microsoft* case[95] as the conditions for meeting the standard were considerably relaxed.[96] After *Microsoft*, the European Commission no longer requires the strict criteria set in *Magill*, *Bronner* and *IMS* to apply essential facilities-alike remedies. As Graef puts it:[97]

> 'The section looks at the decisions of the European Commission in Google Shopping and Google Android and argues that essential facilities-alike remedies have been imposed under lower standards of tying and non-discrimination. This raises the question of whether the Commission is bypassing the stricter essential facilities requirements by expanding the scope of other abuses.'

Therefore, leveraging GPAI models in downstream markets could be assessed under the strict essential-facilities doctrine, i.e., the *Magill*, *Bronner* and *IMS* criteria, a broad refusal-to-deal standard like the one implemented in *Microsoft*[98] or other standards related to the abuse of dominance, like the margin squeeze abuse exposed in the *TeliaSonera* case.[99]

3. The rationale for a strict standard regarding access to GPAI models. Contesting the expansion of the anti-market leveraging doctrine

The choice of a stricter or a lower mandated-access standard, implying a decision for a certain level of intervention, should consider the trade-offs of competition policy. A competition policy focused on pursuing deconcentration in order to promote the efficiencies of perfect competition misses the dynamic effects of competition, like preserving firms' incentives to invest and innovate.[100] Therefore, the strict essential-facilities doctrine regarding access to GPAI models should be recovered.

Indeed, authorities must conduct a balancing exercise in refusal-to-deal cases, as there is a tradeoff between market competition in the short term and dynamic competition in the long term.[101]

In this sense, Graef claimed that since competition for the market is weak with an entrenched market position due to switching costs and network effects, there is an argument for favouring competition in the market over competition for the market, i.e., for lowering the standard for intervention in the downstream markets.[102] However, without justification, the proposal attacks any market leveraging, sacrificing pro-competitive leveraging.[103] One of the benefits of lawful market leveraging under a strict access standard in downstream markets is the preservation of the incentives to improve the underlying GPAI models.

Other arguments for a low legal standard regarding mandatory access refer to the fact that big tech companies have enjoyed monopoly rents through their entrenched position. This situation must ensure the recovery of their R&D investments,[104] and subsequent innovation resulting from competing firms having access to GPAI could lead to a net gain in social welfare.[105] However, it is worth questioning the pragmatism of the assumption that market power always compensates dominant undertakings for their investments. To check whether big tech investments pay off, we should account for their successes and failures. The cases of Windows Phone or Google Plus illustrate the point. The idea is not to dismiss the importance of big tech economic advantages. Therefore, a picture where big tech companies do not create value and assume risks would be misleading.

Another relevant insight from EU case law to the already covered subject of the need for *ex ante* regulation is the impact of economic regulation in the application of Art. 102 TFEU. After *Slovak Telecom*, a legal framework mandating access means that in refusal-to-deal cases, the *Magill*, *Bronner* and *IMS* criteria do not apply, as the regulated

92 ibid 11-14.

93 Inge Graef, 'Rethinking the Essential Facilities Doctrine for the EU' (2019) 53 Digital Revue juridique Thémis de l'Université de Montréal 33, 41.

94 Cases C-241/91 P and C-242/91 *Radio Telefis Eireann (RTE) and Independent Television Publications Ltd (ITP) v Commission of the European Communities* ECLI:EU:C:1995:98. Case C-7/97 *Oscar Bronner GmbH & Co. KG v Mediaprint Zeitungs- und Zeitschriftenverlag GmbH & Co. KG, Mediaprint Zeitungsvertriebsgesellschaft mbH & Co. KG and Mediaprint Anzeigengesellschaft mbH & Co. KG*. ECLI:EU:C:1998:569. Case C-418/01 *IMS Health GmbH & Co. OHG v NDC Health GmbH & Co. KGIn* ECLI:EU:C:2004:257. The consolidated standard arising from this case law is that the proprietary input must be indispensable for competition, its denial can eliminate competition, there is no objective justification, and in the case of intellectual property, the refusal has prevented the competition from offering a new product. Christian Ahlborn and Daniel S Evans, 'The Microsoft judgment and its implications for competition policy towards dominant firms in Europe' (2009) 75(3) Antitrust Law Journal 887, 899.

95 Case T-201/04 *Microsoft Corp. v Commission of the European Communities* ECLI:EU:T:2007:289.

96 Ahlborn and Evans (n 94) 901.

97 Graef (n 93) 56.

98 Furthermore, it is important to note that the *Magill*, *Bronner* and *IMS* criteria do not apply to every refusal to deal. This is the case of constructive refusal to deal, where the input supplier agrees to deal but on terms that have anti-competitive effects. In *Slovak Telekom*, the court confirmed that the Commission does not have to prove the indispensability of input regarding constructive refusal to deal but the anti-competitive effects of the defendant's conduct. See Case C-165/19 P *Slovak Telekom, a.s. v European Commission* ECLI:EU:C:2021:239, paras 133-34.

99 If the leveraging conduct on downstream markets were to be assessed under the margin-squeeze standard, it would suffice to meet the abuse requirement to prove that the practice has an anti-competitive effect on equally efficient competitors on the downstream market, and the wholesale input does not have to be indispensable to find the anti-competitive effect. Case C-52/09 *Konkurrensverket v TeliaSonera Sverige AB* ECLI:EU:C:2011:83.

100 Delvin (n 87) 10-11.

101 Graef (n 93) 51-53.

102 ibid 53-56.

103 Under a consumer welfare standard, pro-competitive leveraging generates efficiencies benefiting consumers. See Patrick F Todd, 'Digital Platforms and the Leverage Problem' (2019) 98(2) Nebraska Law Review 486, 519 ff.

104 Víctor Pavón-Villamayor, 'On refusals to deal in the European competition regime' (2009) 5(5) Rev. Derecho Competencia 133, 158.

105 The European Commission's decision in *Microsoft* held that the negative effects of the order to supply on Microsoft were compensated by follow-up innovation from the whole industry. Pavón-Villamayor (n 104) 152.

undertaking cannot effect an outright refusal to deal.[106] Regulated access means a low standard for finding abusive conduct. Therefore, the need for a suitable refusal-to-deal standard also calls for abstaining from *ex ante* regulation.

VI. Avenues for acquiring access to GPAI models

1. Exceptions to the intellectual property protection of GPAI models

Intellectual property rights cover AI models.[107] However, the current regulation is inadequate for the recent advances in AI and the limitations of a vague legal framework for software.[108] One of the most relevant issues is the conciliation with competition law, particularly regarding access rights. In this regard, Picht and Thouvenin wrote:[109]

> 'While it seems that software developers and the industries producing and using software have learned to cope with the current software protection framework, important issues remain unresolved. Moreover, the mere fact that developers and the industry have learned to make the best of the current software protection regime in no way precludes that a much better system could be created, i.e. a system that leads to faster and cheaper innovation and raises fewer competition issues'.

In this sense, the doctrine observes that excessive protection of AI models, whether intellectual or not, results in welfare losses.[110] From the intersection between intellectual property protection and competition law, it has been pointed out that restricting access to the protected object in not every setting gives the owners incentives to innovate, at least using the incentive-effect argument.[111] Even if intellectual property rights do not cover GPAI, the question arises of compulsory licences for GPAI in some fields.[112] One avenue for mandating access in this regard could be competition in downstream markets.

In securing public order and morals, there is a case for granting regulators access to the AI models to conduct *ex ante* checks using the exceptions to the Source Code Provisions acknowledged in international treaties protecting intellectual property rights.[113] The justification for securing the application of the 'public morals' or 'public order' exception in the AIA relies on the fact that only high-risk AI applications fall under disclosure obligations.[114] However, it is worth noting that this obligation has been extended to GPAI providers in the amended AIA.[115] In this case, intellectual property rights over AI models cede to access to secure regulatory scrutiny.

2. Voluntary access to AI models

Regarding third parties' access to GPAI models to compete in the downstream market, the first setting for access to GPAI is voluntary, i.e., by licensing and contracting access. In this line, efforts are directed toward removing barriers to licensing and contracting access to data and AI models while ensuring AI safety by standardising contractual terms.[116] However, contractual terms may not correctly address every challenge AI misuse poses, like ensuring safety in open-source AI models.[117]

In developing markets where market structure and power are still not consolidated, as with the GPAI models, public efforts should be directed at streamlining voluntary access to GPAI models. However, access to GPAI could also be made mandatory whenever an abuse of market power is found.

3. Navigating the competition law remedy for refusing to grant access to GPAI under a strict legal standard. Reinterpreting *Magill*, *Bronner* and *IMS* in digital markets

In EU competition case law, *Magill*, *Bronner* and *IMS* mainly comprise the strict essential-facilities doctrine, which restricts the imposition of mandated access to cases where the essential input is indispensable for competition, the refusal to deal is likely to eliminate competition in the downstream market, and that refusal cannot be objectively justified.

However, EU case law departs from the indispensability requirement in the refusal-to-deal practice.[118] Indeed, this condition might be too strict for digital markets, with no legal or physical limits on creating alternative inputs. While this might be true, reinterpreting *Magill*, *Bronner*

106 Katarzyna Czapracka, 'The Essential Facilities Doctrine and the Bronner Judgment Clarified: Case C-165/19 P Slovak Telekom v Commission' (2022) 13(4) Journal of European Competition Law & Practice 278, 280.

107 Nevertheless, it has been put forward that AI models and the underlying algorithmic, despite being software, may not enjoy intellectual protection due to the complexity of ascertaining the originality and authorship requirement according to the Software Directive. Josef Drexl and others, 'Artificial Intelligence and Intellectual Property Law Position Statement of the Max Planck Institute for Innovation' (2021) Max Planck Institute for Innovation and Competition Research Paper No 21-10, 18-19.

108 Peter Georg Picht and Florent Thouvenin, 'AI and IP: Theory to Policy and Back Again – Policy and Research Recommendations at the Intersection of Artificial Intelligence and Intellectual Property' (2023) 54 IIC 916, 929-30.

109 ibid 932.

110 Undertakings have other media to protect their exclusivity over AI models. Drexl and others (n 107) 17-18.

111 Vladimir Bastigas Venegas, 'Intellectual property rights, enforcement costs and EU competition law' (2023) 11 Journal of Antitrust Enforcement i-37, 40.

112 This might be the case if AI models were considered research tools. However, the existence of alternative models may render compulsory licensing unjustifiable. Drexl and others (n 107) 17-18.

113 Andrew D Mitchell, Dominic Let and Lingxi Tang, 'AI Regulation and the Protection of Source Code' (2023) 31 International Journal of Law and Information Technology 283, 289.

114 ibid 297-300.

115 art 74. 12: 'Without prejudice to the powers provided for under Regulation (EU) 2019/1020, and where relevant and limited to what is necessary to fulfil their tasks, the market surveillance authorities shall be granted full access by providers to the documentation as well as the training, validation and testing data sets used for the development of high-risk AI systems, including, where appropriate and subject to security safeguards, through application programming interfaces (API) or other relevant technical means and tools enabling remote access'.

116 In particular, standardised contract terms help address bargaining power, liability and compliance issues, allocation of rights, etc; The Global Partnership on Artificial Intelligence, 'Fostering Contractual Pathways for Responsible AI Data and Model Sharing for Generative AI and Other AI Applications' (*GPAI*, November 2023) 18-22 <https://gpai.ai/projects/responsible-ai/IC_Intellectual%20Property%20project.pdf> accessed 18 March 2024.

117 On the limits of restricted licensing to ensure AI safety in open-source AI models and the need to find alternative solutions, see Jonathan Cui and David A Araujo, 'Rethinking use-restricted open-source licenses for regulating abuse of generative models' (2024) 11(1) Big Data & Society 2-4.

118 For an overview of the exceptions to the indispensability requirement in the refusal to deal, with practice and a defence of it, see Niamh Dunne, 'Dispensing with indispensability' (2020) 16(1) Journal of Competition Law & Economics 74.

and *IMS* for digital markets does not have to entail a low standard concerning access to GPAI models.

A possible solution could stress the justification of the conduct instead of the indispensability requirement, i.e., the indispensability requirement is considerably relaxed while the justification element concentrates on the legal analysis interest. Therefore, emphasis could be placed on an intent test based on objective indicators, like forgoing short-term profits to harm competitors in the long term, as shown in the antitrust case of *Aspen Skiing Co. v. Aspen Highlands Skiing Corp*.[119] However, the problem lies in that anti-competitive intent should not be presumed, as only when there is no valid explanation for the conduct other than the anti-competitive should the defendant be found guilty of abuse.

VII. Conclusions

GPAI models are already on the regulatory radar. The AIA already contains specific provisions to address security and reliability concerns. However, the potential of GPAI models for leveraging in downstream markets makes them a matter of interest for competition law and economic regulation. Anti-leveraging intervention is a strong possibility due to the current prominence of the structural vision in competition policy. However, there is a case for interpreting recent events as evidence of big tech companies dealing with efficient competition, as suggested by Petit's 'Moligopoly thesis'.

The importance of GPAI models should not be dismissed. Access to GPAI represents an efficient alternative to developing proprietary AI systems from scratch. Undertakings have the flexibility to opt for model fine-tuning or instead to limit themselves to prompt engineering. However, these efficiencies lead to market concentration around AI platforms, as only a few undertakings own the necessary resources to develop GPAI.

With the development of smaller models, more sustainable competition is expected. However, assessing each player's strategy is essential when determining which frontier GPAI model will prevail. The relevance of strategy reveals the uncertainty of this market.

Leveraging GPAI models in downstream markets lacks a specific legal framework, but the AIA and DMA are relevant regulatory constraints. While the former imposes transparency and governance requirements on GPAI model providers, the latter indirectly hinders their leveraging by making their core markets fair and contestable. However, despite being found insufficient to address digital markets, competition law remains the most practical regulatory tool for addressing any potential dominance abuse in new settings.

National competition law has incorporated methods similar to the DMA. However, the methodology of Art. 102 TFEU is better suited to capture abusive unilateral conduct from GPAI model providers in downstream markets. Despite the difficulties, there is a case for delimiting the relevant market, market power, and abusive conduct under this framework.

Taking consolidation and market power for granted due to the efficiency of big tech strategies, there is still a need to choose a specific legal standard to grant mandated access to GPAI. Abusive market leveraging can be found under different standards, such as self-preferencing, margin squeeze, etc. The refusal-to-deal doctrine deserves special attention, as it implies denying access to an essential input to compete in downstream markets. The doctrine has explanatory power about the probable future development of GPAI models in downstream markets. The application of the *Magill*, *Bronner* and *IMS* criteria could be rejected on the basis that they fail to capture anti-competitive conducts in digital markets.

Legal scholars are trying to promote access to GPAI by standardising licences and contractual terms. Incentivising voluntary access to GPAI is correct since it leads to win-win, efficient transactions. However, access to GPAI can also be granted on a mandated basis using the refusal-to-deal doctrine. In this case, however, carefully evaluating the potential trade-off becomes necessary. While granting access to third parties can spur innovation and efficiencies across the downstream markets, it is also essential to preserve big tech firms' incentives to invest, as they are drivers of significant innovations and efficiencies. In this regard, this paper argues that competition authorities currently underestimate big tech incentives. Preserving big tech companies' incentives allows them to capture much of the value of their breakthrough projects.[120]

The *Magill*, *Bronner* and *IMS* criteria are appropriate to evaluate refusals to deal regarding access to GPAI models. However, as recent EU case law avoids resorting to the indispensability requirement, a strict standard would require focusing on the justification of the conduct. The *Aspen Skiing Co. v. Aspen Highlands Skiing Corp* case explains how such a legal test would work: only objective evidence can be sufficient to find conduct abusive. The standard should be narrow enough to find abusive conduct only where the sole explainable purpose is to exclude all competition from the market.

Much of the economic and competition law literature only considers competition for the market and disruptive innovation arising from new entrants. Recent empirical facts prove that big tech companies strive to create new markets to compete against each other and other competitors. These events validate Petit's suggestion that competition authorities should differentiate between big tech's conduct in entrenched markets and scenarios in which they compete for the markets. Going further, it would be necessary to add that this case calls for a review of the postulates of the ideology that recently predominated in competition policy. As Ruiz Ojeda would put it, the question of public intervention relies not only on economics and the law but also on politics.[121]

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119 For an overview of *Aspen*, see Marina Lao, 'Aspen skiing and trinko: antitrust intent and "sacrifice"' (2005) 73(1) Antitrust Law Journal 171, 180-83.
Aspen Skiing Co. v Aspen Highlands Skiing Corp. 472 U.S. 585 (1985).

120 Joseph A Schumpeter, *Capitalism, Socialism and Democracy* (1st edn, Routledge 2003) 87-106.

121 Alberto Ruiz Ojeda, 'Una reflexión final: Derecho, Economía…y ¿Política?' in Alberto Ruiz Ojeda (ed), *Fundamentos de Regulación y Competencia* (1st edn, Iustel 2013) 271-74.