

**DIRECTORATE FOR FINANCIAL AND ENTERPRISE AFFAIRS
COMPETITION COMMITTEE**

Artificial Intelligence, Data and Competition – Note by BIAC

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1. Introduction

1. *Business at OECD* (BIAC) welcomes the opportunity to provide its views to the OECD Competition Committee for the hearing on artificial intelligence (AI), data, and competition. The rapid growth of Generative AI (GenAI) tools and the development and successful deployment of AI foundation models (FMs) in the past few years raise legitimate and important questions about competition policy and enforcement in this field, the scope, need and timing for intervention by competition authorities, and any appropriate regulatory tools.

2. A meaningful discussion of these topics requires a thorough understanding of the structure and successive layers of the value chain of the GenAI industry, the business models that are being deployed, the nature of competition and the critical inputs that are required to compete in the various segments of the GenAI value chain and how the deployment of GenAI FMs and services interacts with competition on other (digital) markets. BIAC therefore appreciates the valuable work that many authorities have already undertaken to better understand the market for AI foundation models and very much welcomes this hearing.¹

3. Although different categories of AI tools have rapidly been developed, GenAI models in particular have become extremely popular and achieved widespread adoption by millions of users worldwide. GenAI are a subset of AI foundation models that can produce content in response to user prompts in the form of text, images, audio, video, or computer code based on existing data or models. As such, it has tremendous potential to create opportunities and benefits to improve existing solutions and create new products and services in a wide range of industries (e.g., healthcare, finance, education, music, legal,

¹ BIAC notes that in May 2023, the UK Competition & Markets Authority (CMA) launched an initial review of the market for AI foundation models, publishing an initial report in September 2023, and an updated report in April 2024 (see <https://www.gov.uk/cma-cases/ai-foundation-models-initial-review#initial-report> and <https://www.gov.uk/cma-cases/ai-foundation-models-initial-review#update-paper-and-technical-update-report>, respectively). In November 2023, the Portuguese Competition Authority published an issues paper mapping the key determinants of competition in GenAI (see <https://www.concorrencia.pt/en/articles/adc-warns-competition-risks-generative-artificial-intelligence-sector>). In January 2024, the Hungarian Competition Authority announced that it was conducting a market analysis on the impact of AI on competition and consumers' transactional decisions (see https://www.gvh.hu/en/press_room/press_releases/press-releases-2024/gvh-launches-market-analysis-on-the-impact-of-artificial-intelligence). That same month, the European Commission issued two calls for contributions on competition in virtual worlds (see https://ec.europa.eu/commission/presscorner/detail/en/IP_24_85). In February 2024, the French Competition Authority launched an ex officio inquiry and public consultation on the strategies implemented by large tech companies aimed at consolidating or leveraging their existing market power to expand in the value chain (see <https://www.autoritedelaconcurrence.fr/en/press-release/generative-artificial-intelligence-autorite-starts-inquiries-ex-officio-and-launches>). It had previously published a market study on competition in the cloud sector (see <https://www.autoritedelaconcurrence.fr/en/press-release/cloud-computing-autorite-de-la-concurrence-issues-its-market-study-competition-cloud>) and conducted dawn raids at the offices of Nvidia on account of potential anti-competitive practices (see <https://www.reuters.com/technology/nvidias-french-offices-raided-cloud-computing-competition-inquiry-wsj-2023-09-28/>).

advertising). Large Language Models are the most prominent FMs. They include GTP 3.5/4/4o (Open AI), LLaMA3 (Meta) Gemini (Alphabet) and Claude 2 (Anthropic).

4. Nonetheless, AI also has the potential to result in undesirable effects, including issues involving safety, security, privacy, intellectual property, and copyright.² It is important to acknowledge that there may therefore be a significant role for policymakers to address AI-related concerns, but that competition law is not the appropriate vehicle to address those wider societal or ethical concerns unrelated to market competition.³

5. Currently, GenAI is characterized as being a very dynamic sector with extraordinary growth and many new entrants coming to the market across the value chain.⁴ As discussed in more detail below, these structural factors themselves may militate against early competition law intervention, notwithstanding the advisability to monitor the evolution of the sector.⁵ At the same time, BIAC notes that there are important uncertainties regarding the future development of AI foundation models.⁶ In the midst of these uncertainties, a fundamental question is whether theoretical concerns can already be translated into rational, welfare-enhancing competition law enforcement. This is important, because premature, disproportionate, or out-of-scope intervention by competition agencies may well prove detrimental to the realization of efficiencies, competition, and innovation in the AI space.⁷ By the same token, legal uncertainty, including in the application of

² This submission does not purport to exhaustively identify undesirable effects outside of competition law and policy.

³ BIAC notes the recent adoption of the EU AI Act, which is a first comprehensive regulation on AI by a major regulator which assigns applications of AI to three risk categories. The EU AI Act will enter into force 20 days after its publication in the Official Journal of the European Union. While some of its provisions will become applicable sooner, the EU AI Act will become fully applicable two years thereafter. *See* Regulation (EU) 2024/ of the European Parliament and of the Council on laying down harmonised rules on artificial intelligence and amending Regulations (EC) No 300/2008, (EU) No 167/2013, (EU) 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), PE-CONS 24/24 (May 14, 2024), https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CONSIL:PE_24_2024_INIT. *See also* OECD, *The State of Implementation of the OECD AI Principles Four Years On* (OECD Artificial Intelligence Papers, No. 3, 2023), <https://doi.org/10.1787/835641c9-en> (generally on principles that should govern the use of AI).

⁴ However, some companies take the view that certain GenAI sectors are characterized by a level of concentration. *See., e.g.*, AUTORIDADE DA CORRÊNCIA (ADC), ISSUES PAPER: COMPETITION AND GENERATIVE ARTIFICIAL INTELLIGENCE (Nov. 2023), <https://www.concorrenca.pt/en/articles/adc-warns-competition-risks-generative-artificial-intelligence-sector>.

⁵ *See infra*, § 3.

⁶ *See* CMA, AI FOUNDATION MODELS: SHORT VERSION ¶ 1.43 (Sept. 18, 2023) [hereinafter CMA SHORT REPORT 2023]. *See also infra* ¶¶ 30-33.

⁷ *See* CMA SHORT REPORT 2023, *supra* note 6, ¶ 1.85 (“Overly burdensome regulation may make it unnecessarily difficult for competition and innovation to flourish, and at worst may lead to concentration and become a significant barrier . . . in its own right.”). BIAC submits that the same applies to competition law intervention. *See also* OECD, *The Role of Innovation in Enforcement Cases – Note by BIAC*, DAF/COMP/WD(2023)100 (Nov. 29, 2023), [https://one.oecd.org/document/DAF/COMP/WD\(2023\)100/en/pdf](https://one.oecd.org/document/DAF/COMP/WD(2023)100/en/pdf); OECD, *The Relationship Between Competition and Innovation – Note by BIAC*, DAF/COMP/WD(2023)56 (June 2, 2023), [https://one.oecd.org/document/DAF/COMP/WD\(2023\)56/en/pdf](https://one.oecd.org/document/DAF/COMP/WD(2023)56/en/pdf); and OECD, *Competition Enforcement and Regulatory Alternatives – Note by BIAC*, DAF/COMP/WP2/WD(2021)18 (May 31, 2021), [https://one.oecd.org/document/DAF/COMP/WP2/WD\(2021\)18/en/pdf](https://one.oecd.org/document/DAF/COMP/WP2/WD(2021)18/en/pdf).

merger control rules, can disincentivize potential investments and growth, especially in markets that are undergoing rapid change.

6. In any event, BIAC is of the view that if, upon proper inspection, genuine competition law risks materialize, the current competition rules, if used effectively, are sufficiently flexible and adaptable to address any potential anticompetitive conduct arising in the AI value chain. Recent enforcement initiatives confirm that authorities have already begun to explore whether conventional competition law concepts can meaningfully be applied to GenAI-related issues.⁸ As a corollary, BIAC believes that it is too early to assume that there is an enforcement gap or that the current competition enforcement tools are inadequate to deal with GenAI-related issues and should be expanded, modified or be replaced by new instruments.⁹ By the same token, BIAC does not disagree with the notion that competition law enforcement may, by default, intrinsically contribute to the protection of democratic societal values but is skeptical about any suggestion of explicitly expanding competition authorities' mandates to address policy goals unrelated to market competition.¹⁰

7. Section 2 below briefly discusses the main layers of the GenAI industry with an emphasis on the GenAI value chain, including the key inputs required for the creation of AI Foundation Models (FM), i.e., computing power, data, and expertise. Section 3 summarizes the key competition law implications, while Section 4 includes a number of general observations in relation to the enforcement of the competition law rules.

⁸ For example, the European Commission and the CMA have announced investigations into the reviewability of Microsoft's investment in OpenAI under merger control rules. *See* Press Release, Eur. Comm'n, Commission Launches Calls for Contributions on Competition in Virtual Worlds and Generative AI, (Jan. 9, 2024), https://ec.europa.eu/commission/presscorner/detail/en/IP_24_85; and *Microsoft / OpenAI Partnership Merger Inquiry*, COMPETITION & MKTS. AUTH, <https://www.gov.uk/cma-cases/microsoft-slash-openai-partnership-merger-inquiry#:~:text=8%20December%202023%3A%20The%20CMA,that%20situation%20may%20be%20expected>. In 2023, the German competition authority opened a similar investigation but ultimately determined that the partnership was not reviewable under German merger control rules. *See* Bundeskartellamt, Case summary: Bundeskartellamt examined whether partnership between Microsoft and OpenAI was subject to notification obligation under merger control, File number: B6-34/23 (Nov. 15, 2023), https://www.bundeskartellamt.de/SharedDocs/Entscheidung/EN/Fallberichte/Fusionskontrolle/2023/B6-34-23.pdf?__blob=publicationFile&v=6. Bundeskartellamt President Andreas Mundt also reportedly suggested at a GCR conference on Antitrust in the Digital Economy taking place on April 9, 2024 in Washington, D.C., that acquisitions of teams of AI engineers and developers should be scrutinised very closely (Nicholas Hirst, *Microsoft's AI hires resemble 2017 case evading merger veto, Germany's Mundt says*, MLEX (Apr. 9, 2024), <https://content.mlex.com/#/content/1555121>).

⁹ *See, e.g.*, Diane Coyle, *Preempting a Generative AI Monopoly*, PROJECT SYNDICATE (Feb. 2, 2023), <https://www.project-syndicate.org/commentary/preventing-tech-giants-from-monopolizing-artificial-intelligence-chatbots-by-diane-coyle-2023-02>; and Maurice E. Stucke & Ariel Ezrachi, *Antitrust & AI Supply Chains* (Mar. 11, 2024), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4754655.

¹⁰ This suggestion was reportedly made at a February 19, 2024, Renew Europe forum on "How to Avoid Big Tech's Monopoly on AI." *See* By [Théophane Hartmann](#), *Ensuring Competition in AI Will Also Preserve Democracy, Experts Say*, EURACTIV (Feb. 21, 2024), <https://www.euractiv.com/section/competition/news/ensuring-competition-in-ai-will-also-preserve-democracy-experts-say/>. Note however that within BIAC some companies are supportive of the expansion of merger control rules to capture nascent, sub-threshold concentrations.

2. The AI Landscape: The GenAI Value Chain and Key Competitive Considerations

8. As with prior general-purpose technologies – from the printing press to electricity, railroads, and the internet itself – the GenAI industry is not based on a single technology component or advance, but instead should be conceptualized as a modularized model comprised of several interconnected layers, with consumer-facing applications such as OpenAI’s ChatGPT, Google’s Gemini, Snapchat’s MyAI, and many other applications at the downstream level.¹¹ Such downstream applications rely on GenAI FMs, in particular Large Language Models. For example, ChatGPT is built on OpenAI’s GPT-4o.

9. Foundation Models need to be pre-trained, which requires three necessary inputs: data, computer power, and technical expertise.¹² Pre-trained models may then be fine-tuned to add specific capabilities or improvements using particular datasets. The United Kingdom’s Competition and Markets Authority (CMA) distinguishes between fine-tuning in the form of alignment and domain or task specific fine-tuning, which is the process of specializing a pre-trained model to a particular domain or task. This process requires smaller, more highly curated datasets than for pre-training.¹³

10. Accordingly, one can distinguish three main vertically related GenAI layers: computer power, typically comprised of cloud services or supercomputers with Graphic Processing Units (GPUs) and other specialized chips, FMs, and user-facing GenAI applications that rely on FMs.¹⁴ Each layer involves different actors, technologies, and competitive dynamics. These three layers are briefly discussed below.

2.1. Computer Power: GenAI Chips and Compute Infrastructure

11. Computer power is the upstream layer that provides the necessary infrastructure for developing and running FMs. It includes specialized chips, such as GPUs, and cloud computing services. Unlike the GenAI application layer and the market for the development and employment of FMs, the upstream GenAI computer hardware (or GenAI infrastructure market), is often perceived as relatively concentrated. This applies in particular to GPUs, where Nvidia is estimated to currently supply approximately 90% of these chips, but there are several actual or potential competitors that are developing or

¹¹ Different frameworks have been put forward to conceptualize the AI ecosystem, with varying levels of details. *See, e.g.*, Rua-Huan Tsaih, Hsin-Lu Chang, Chih-Chun Hsu & David C. Yen, *The AI Tech-Stack Model*, 66 COMMUNICATIONS OF THE ACM, 69, 70 (Mar. 2023) (“The seven layers, from bottom to top, are AI infrastructure, AI platform, AI framework, AI algorithm, AI data pipeline, AI services, and AI solution.”); Tobias Härlin, Gardar Björnsson Rova, Alex Singla, Oleg Sokolov & Alex Sukharevsky, *Exploring Opportunities in the Generative AI Value Chain*, MCKINSEY (Apr. 26, 2023), <https://www.mckinsey.com/capabilities/quantumblack/our-insights/exploring-opportunities-in-the-generative-ai-value-chain> (“computer hardware, cloud platforms, foundation models, model hubs and machine learning operations (MLOps), applications, and services”); *see also id.*, Exhibit 1; CMA SHORT REPORT 2023, *supra* note 6, at 5, Figure 1.

¹² While capital may be indispensable for building and maintaining a FM, BIAC does not consider capital as a key input on par with data and computer power. *See also* section 2.5.

¹³ CMA, AI FOUNDATION MODELS: INITIAL REPORT ¶ 2.12 (Sept. 18, 2023), https://assets.publishing.service.gov.uk/media/650449e86771b90014fdab4c/Full_Non-Confidential_Report_PDFA.pdf [hereinafter CMA INITIAL REPORT 2023]. *See also id.* ¶¶ 3.79 – 3.82 (noting that, theoretically, FMs could be generalized to the point that significant adaptation is not required for each use).

¹⁴ *See* Friso Bostoen & Anouk van der Veer, *Regulating Competition in Generative AI: A Matter of Trajectory, Timing and Tools*, (Mar. 1, 2024), <https://papers.ssrn.com/abstract=4756641>.

already offering alternative technologies. These include Intel, AMD, Google, Meta, IBM Telum, Croq, AWS Trainium, and Microsoft Maia and Cobalt.¹⁵ Sponsoring of entry into AI chip markets is also reported.¹⁶ In any event, the required compute capacity has not prevented multiple entrants from developing and deploying FMs.

12. Developers of FMs may access the required computer power through data centers, using publicly available supercomputers or using a cloud computing provider.¹⁷ There are a several cloud-based computing resources, including Amazon Web Services (AWS), Microsoft Azure, Google Cloud Platform (GCP), Microsoft Azure, Oracle Cloud Infrastructure, Baidu, Dell, Huawei, alongside a number of smaller cloud services providers and specialized AI cloud providers.¹⁸ Emerging alternatives include publicly owned supercomputers. Accordingly, it seems that there is significant competition between providers of computer infrastructure to attract FM developers and to meet the growing demand for cloud services and computer power.¹⁹

2.2. Foundation Models

13. Foundation models are the core layer that involves the creation and distribution of large-scale AI models that can perform multiple tasks across domains. They can vary in size and scope from large language models (LLMs) to small language models (SLMs). They may be open-source, proprietary, or anywhere in-between.²⁰

14. Open-source FMs compete effectively with proprietary versions. Many open-source FMs are available and accessible for use by developers via hosting and collaboration platforms. HuggingFace.com is one of the most prominent Open-Source platforms and

¹⁵ CMA INITIAL REPORT 2023, *supra* note 13, § 3.21.

¹⁶ For instance, OpenAI has reportedly been seeking investors to back its chip venture. *See Abu Dhabi in talks to invest in OpenAI chip venture*, FIN. TIMES (Mar. 15, 2024), <https://www.ft.com/content/d018067f-20e7-49eb-83dc-ebb8b1aad1a5>. Additionally, Microsoft, Meta, Databricks, Essential AI, and Lamini have confirmed that they will deploy new AMD GPUs for AI workloads.

¹⁷ Google (Gemini), Amazon (Titan), Meta (Llama-3) and Aleph Alpha (Luminous) self-supply computing infrastructure for training their generative AI models.

¹⁸ The three main CSPs with acceleration capabilities are Amazon Web Services (AWS), Microsoft Azure, and Google Cloud Platform (GCP). *See* CMA INITIAL REPORT 2023, *supra* note 13, ¶ 3.28. AWS, Microsoft Azure and GCP reportedly account for 73% of the market by revenues. *See Cloud Market Gets its Mojo Back; AI Helps Push Q4 Increase in Cloud Spending to New Highs*, SYNERGY (Feb. 1, 2024), <https://www.srgresearch.com/articles/cloud-market-gets-its-mojo-back-q4-increase-in-cloud-spending-reaches-new-highs>. There are at least ten global at-scale cloud computing providers. Specialized AI cloud providers include CoreWeave, NVIDIA, Scaleway, and Lambda Labs. There are therefore indications that the market is competitive, even though the largest cloud computing services providers may account for relatively large market shares.

¹⁹ Press Release, Autorité de la Concurrence, Cloud Computing: the Autorité de la concurrence Issues Its Market Study on Competition in the Cloud Sector (June 29, 2023), <https://www.autoritedelaconcurrence.fr/en/press-release/cloud-computing-autorite-de-la-concurrence-issues-its-market-study-competition-cloud>. The European Commission, as well as French and Japanese authorities, have also launched inquiries into the cloud services sector.

²⁰ A foundation model may either be deployed as such, or it can be accessed via APIs or through plug-ins. As a result, they may be incorporated by third-party foundation models into user-facing software and applications – a practice sometimes referred to as “AI-as-a-service.” *See* CMA SHORT REPORT 2023, *supra* note 6, ¶ 1.13.

hosts more than 350,000 open-source models and facilitates collaboration on the research and development of those models.²¹

15. Fueled by strong demand for new and different FMs and capital made available from a range of businesses, including venture capital, the market for the development and supply of FMs is still in its early stages, with significant competitive pressure from new entrants.²² Accordingly, as noted by the CMA, while OpenAI, Google, Meta, Microsoft and Nvidia entered this market early, the number of FMs continues to increase to an overall number of known FMs globally to over 300, with 120 FMs having been released between September 2023 and March 2024.²³ This suggests the absence of any meaningful barriers to entry.

16. The CMA observes that the models are increasingly capable and complex, while FM developers are also releasing models that are highly specialized for certain tasks or are much smaller in size yet potentially equally capable relative to larger models at performing a range of tasks. As a result, OpenAI's GPT-4o is still considered a leading FM, but new FMs claim to match or outperform GPT-4o on a number of benchmarks.

17. The CMA also notes that open-source FMs remain an important force of competition and innovation.²⁴ While some initially open-source models have subsequently become private, their widespread availability implies that firms may not need the resources to build and train an FM in order to develop AI-powered applications or be dependent on proprietary FMs.²⁵

18. In this respect, it is important to note that there is significant uncertainty about the relationship between scale (and, as a corollary, computing power) and model performance, as performance may plateau or even decline with scale.²⁶

²¹ *Hugging Face Hub Documentation*, HUGGING FACE, <https://huggingface.co/docs/hub/en/index>. Developers can download FMs from the platform and then deploy and use them on their own AI infrastructure or AI infrastructure offered by third parties. Another example is Microsoft's GitHub platform.

²² FM developers include numerous start-ups, such as Anthropic, Stability AI, Cohere, Mistral, Adept, Character.ai, and others, alongside traditional tech players. Importantly, all of these start-ups relied on different forms of investments and partnerships that enabled them to enter the market and expand.

²³ MA, AI FOUNDATION MODELS: UPDATE PAPER ¶ 11 (Apr. 11, 2024), https://assets.publishing.service.gov.uk/media/661941a6c1d297c6ad1dfeed/Update_Paper_1_.pdf [hereinafter CMA UPDATE PAPER 2024]. Some BIAC commentators take the view that ease of entry primarily concerns smaller models and/or is confined to niche markets.

²⁴ *Id.* ¶ 13.

²⁵ See also Bostoen & van der Veer, *supra*, note 14 (on "open early, closed late" strategies).

²⁶ CMA SHORT REPORT 2023, *supra* note 6, ¶ 1.30. See also Paulo Rocha Abecasis, Federico De Michiel, Bruno Basalisco, Tuomas Haanperä & Julie Iskandar, *Generative Artificial Intelligence: the Competitive Landscape* 23 (Copenhagen Econ. White Paper, Feb. 2024), <https://copenhageneconomics.com/wp-content/uploads/2024/03/Copenhagen-Economics-Generative-Artificial-Intelligence-The-Competitive-Landscape.pdf> ("In recent years, important technological advances that enhance the cost-effectiveness of models have emerged, particularly in the realm of fine-tuning. According to some commentators, this will allow smaller companies with no access to computing power to compete with Big Tech Giants. There are indications that models will not continue to grow indefinitely."). See also CMA, AI FOUNDATION MODELS: TECHNICAL UPDATE REPORT ¶¶ 2.7-2.14 (Apr. 16, 2024),

2.3. AI Applications

19. User-facing applications are the downstream layer that involves the development and provision of specific AI services or solutions. Broadly speaking, AI-powered applications can be split into categories, depending on their functionality.²⁷ As noted above, certain foundation models may be used to perform specific tasks with limited customizations. However, applications may also be built on fine-tuned foundation models. This process requires less data, capital, and time than foundation model development. As a result, the development and deployment of AI applications is regarded as being within reach of a much wider pool of contestants and as presenting the most competitive layer of the AI value chain.²⁸

2.4. Data

20. Depending on the type of model being developed, training LLMs may require large amounts of data. However, it would be incorrect to assume a linear correlation between larger data volumes (coupled with higher numbers of parameters) and model performance. In fact, it appears that alongside the trend towards size increases smaller FMs with extensive capabilities requiring fewer data and resources are successfully being developed that in some instances outperform larger FMs and that may in addition be deployed on consumer devices. In this respect, the CMA refers to Google's Gemma, Hugging Face's Zephyr-7B, Microsoft's Phi-2 and others.²⁹

21. Technological advances in model architecture may evolve to reduce the memory and compute requirements of FMs, or while FMs can increasingly process more and different types of data including synthetic data.³⁰

22. FM developers have access to publicly available data sources and may access proprietary data through partnerships, licensing arrangements and synthetic routes.³¹

23. In sum, while the development of FMs requires training data, it would be inaccurate to simply conclude that FMs necessarily require specific types or large volumes of data to be able to compete in the relevant markets. This should instead be subject to a

https://assets.publishing.service.gov.uk/media/661e5a4c7469198185bd3d62/AI_Foundation_Models_tech_nical_update_report.pdf [hereinafter CMA TECH REPORT 2024].

²⁷ Such as various applications in finance and insurance, healthcare, life sciences, transportation, agriculture and the like. *See generally*, The 2024 MAD (Machine Learning, Artificial Intelligence & Data) Landscape, (Mar. 2024), <https://mattturck.com/landscape/mad2024.pdf>. Users may interact with AI applications in a number of ways. Some applications are employed as standalone devices, such as chatbots and virtual assistants, while others are integrated in existing services or added to existing applications and services. *See also infra* § 2.7.

²⁸ Härlin, et al, *supra* note 11 (“The generative AI application market is the section of the value chain expected to expand most rapidly and offer significant value-creation opportunities to both incumbent tech companies and new market entrants.”).

²⁹ CMA UPDATE PAPER 2024, *supra* note 23, n.10. BIAC also notes the upcoming launch of Gemini Nano on certain Pixel models. *See also infra* § 2.7.

³⁰ *See, generally*, CMA TECH REPORT 2024, *supra* note 26, ¶¶ 2.6 – 2.27.

³¹ CMA INITIAL REPORT 2023, *supra* note 13, ¶¶ 3.4 – 3.20.

comprehensive, case-by-case analysis, taking into account potential requirements for the data meeting particular qualitative criteria.³²

2.5. Capital and Skills

24. The development of FMs requires capital and AI expertise. BIAC notes that in the past few years large amounts of funding have been made available to support the development of FMs, both for early and newer entrants and numerous start-ups. Access to capital is fundamental, as evidenced by partnerships between new entrants and established tech firms. The fact that the GenAI space attracts very significant investments confirms that investors have confidence in the further expansion of the industry.³³

25. Funding by venture capital and larger technology companies to start-up companies may be provided in the form of direct investment, convertible debt or through commercial or strategic partnerships and is often indispensable for smaller providers if FMs or AI services to develop, train and commercialize their services.³⁴ These investments and partnerships generally drive innovation and competition and lead to benefits and efficiencies.³⁵

26. The development of FMs also requires technical and practical expertise in data engineering, computing, and related fields. The CMA observes in this regard that there is no evidence of non-competes or publication restrictions that restrict skilled personnel to accept employment.³⁶ As skilled employees are currently a scarce resource in an increasingly competitive market and may therefore attract large rewards, BIAC believes that this *prima facie* indicates that labor markets are functioning well, rather than suggesting a competitive problem.³⁷ Moreover, the significant number of start-ups developing FMs suggests that they are attractive for technical experts.

³² This position is consistent with the position BIAC has taken in relation to the competitive significance of data more generally. *See* OECD, Data Portability, Interoperability and Competition – Note by BIAC, DAF/COMP/WD(2021)33, ¶¶ 20-33 (May 31, 2021), [https://one.oecd.org/document/DAF/COMP/WD\(2021\)33/en/pdf](https://one.oecd.org/document/DAF/COMP/WD(2021)33/en/pdf).

³³ BIAC takes the view that, while capital is crucial for the development of GenAI models, it does not, as such, constitute a barrier to entry within the meaning of competition law. *See* OECD, Barriers to Entry, DAF/COMP(2005)42, at 275-284 (Mar. 6, 2006), <https://www.oecd.org/daf/competition/36344429.pdf>.

³⁴ CMA UPDATE PAPER 2024, *supra* note 23, ¶ 44.

³⁵ There does not appear to be evidence that smaller companies are unable to secure funding from investors.

³⁶ CMA INITIAL REPORT 2023, *supra* note 13, ¶ 3.43.

³⁷ BIAC notes that competition authorities are nonetheless exploring whether the “acquisition” of teams of AI personnel may constitute the transfer of business that can be reviewed under merger control rules. *See, e.g.*, Sarah Cardell, Opening Remarks at the American Bar Association (ABA) Chair’s Showcase on AI Foundation Models, Remarks Before the 72nd Antitrust Law Spring Meeting (Apr. 11, 2024), <https://www.gov.uk/government/speeches/opening-remarks-at-the-american-bar-association-aba-chairs-showcase-on-ai-foundation-models> (“We also need to be vigilant where arrangements related to talent result in an outcome which may be similar to a full-scale acquisition of a company.”).

2.6. Partnerships, Investments, Strategic Agreements Across the FM Value Chain

27. Partnerships, investments, and strategic agreements including existing large tech firms are common across the FM value chain. One main rationale for these arrangements is for AI start-up companies to gain access to the computing power required to train FMs, as well as to external funding and distribution channels. The nature of these agreements varies and may range from simple agreements to share infrastructure to closer partnerships, including sharing of know-how, intellectual property licensing or distribution rights, or even some level of control.³⁸

28. The CMA notes that the FM value chain is becoming increasingly interconnected and mentions over 90 partnerships between, on the one hand, Google, Amazon, Meta, Microsoft, Apple and Nvidia and FM developers, FM deployers and FM developer tool suppliers on the other hand and expects that number to increase. It notes that partnerships may generate significant benefits and lead to increased innovation and efficiencies, but also mentions the possibility that incumbent firms may use partnerships and investments to eliminate competitive threats.³⁹ Accordingly, the CMA is subjecting strategic partnerships and investments, such as Microsoft's partnership with Open AI, to close scrutiny.⁴⁰

2.7. Uncertainties Regarding the Markets for the Development of FMs and the Potential Impact on Downstream Markets

29. As the GenAI universe is in its early stages, is extremely fast growing, innovative and dynamic, with many new FMs and applications developed by established firms, smaller companies and start-ups coming to the market, it is difficult to predict how competition in the various layers of the AI value chain will evolve.

30. BIAC compliments the competition authorities, in particular the CMA, that have not only mapped many relevant developments in relation to the development and distribution of FMs but have also identified a number of uncertainties with regard to the evolution of the markets for FMs and the potential impact of FMs on downstream and other markets. Below BIAC summarizes a number of these key uncertainties.⁴¹

31. First, in relation to the FM markets, it is uncertain:

- if and in which circumstances access to specific proprietary data will become indispensable to compete;⁴²
- whether FMs will become larger, and how the demand for and competition with smaller FMs will develop;
- the extent to which FMs may develop into highly generalized FMs that are able to conduct a wide range of tasks, thereby possibly reducing the demand for new and different FMs;

³⁸ CMA TECH REPORT 2024, *supra* note 26, ¶¶ 2.54 et seq.

³⁹ CMA UPDATE PAPER 2024, *supra* note 23, ¶ 45. *See also* CMA INITIAL REPORT 2023, *supra* note 13, ¶ 3.110; and *infra* ¶ 39 (on increased monitoring of partnership agreements).

⁴⁰ CMA UPDATE PAPER 2024, *supra* note 23, ¶¶ 42-50.

⁴¹ *See* CMA INITIAL REPORT 2023, *supra* note 13, ¶¶ 3.58 et seq and 4.1 et seq.

⁴² New intellectual property laws may have an impact on the availability of data. Also, specific proprietary data may become more important, for example to expand the capabilities of AI models beyond text, for example to images and video.

- whether incumbent tech companies and first movers may have an advantage over others; and
- how open-source models will evolve as a competitive force.

32. Similarly, there are significant uncertainties surrounding the impact that the development and deployment of FMs could have on downstream markets, in particular regarding the questions: (i) which deployment and distribution options application providers will have; (ii) whether vertically integrated firms will have the ability and incentive to foreclose downstream competitors; and (iii) how consumer demand for integrated and customized FM services will evolve.⁴³

33. The OECD's Background Note distinguishes a wide variety of deployment methods for AI solutions.⁴⁴ In particular, deployment could be integrated into existing (digital) offerings or standalone through a website, program, or application. The Background Note also observes that new routes to market may emerge, such as new platforms or stores for applications that focus on AI.⁴⁵ BIAC submits that any investigation of competitive concerns associated with the deployment of FMs requires a detailed, evidence-based, and forward-looking assessment of the routes to market and customer access points in the case at hand.⁴⁶

3. BIAC's Observations on Potential Competitive Concerns

34. Considering the current trends in the nascent and fast growing GenAI industry, and the uncertainties surrounding the development of GenAI markets, it is not surprising that competition authorities have already tried to identify potential competitive concerns.

35. While there is currently no evidence of competitive problems in any of the GenAI sectors, there is nonetheless concern among competition authorities that the competitive process in GenAI sectors is at risk. By and large these concerns center on "the growing presence across the FM value chain of a small number of incumbent technology firms, which already hold positions of market power in many of today's most important digital markets could profoundly shape the development of FM-related markets to the detriment of fair, open and effective competition and ultimately harm businesses and consumers, for example by reducing choice and quality, and by raising prices."⁴⁷

36. More specifically, the CMA has identified three key interlinked competitive concerns:

⁴³ CMA INITIAL REPORT 2023, *supra* note 13, ¶¶ 4.28 et seq.

⁴⁴ OECD, *Artificial Intelligence, Data and Competition*, 23-24 (OECD Artificial Intelligence Papers, No. 18, May 2024), <https://doi.org/10.1787/e7e88884-en>.

⁴⁵ In its Update Paper, the CMA suggests for example that large digital firms may be able to limit the extent to which consumers can use competing FMs by integrating their own FM with a downstream service where they have a strong market position and denying rivals access via integration, but also notes a significant breadth of potential use cases and routes to market for FMs. See CMA UPDATE PAPER 2024, *supra* note 23, at 11-15.

⁴⁶ See also Katie Curry & James Hill, GenAI – Some Reflections on the CMA's Update Paper (Apr. 2024), https://www.linkedin.com/posts/james-hill-0371231b9_genai-some-reflections-on-the-cmas-update-activity-7187050596942643200-ifK9/.

⁴⁷ CMA UPDATE PAPER 2024, *supra* note 23, ¶ 28. The concerns voiced by the CMA reflect concerns expressed by other competition authorities.

- Firms that control critical inputs for developing FMs may restrict access to them to shield themselves from competition.
- Powerful incumbents could exploit their position in consumer or business facing markets to distort choice in FM services and restrict competition in FM development.
- Partnerships involving key players could reinforce or extend existing positions of market power through the value chain.

37. BIAC notes that there seems to be some common understanding that the first order potential competitive concern relates to the access of critical inputs for the developments of FMs, namely access to computer resources, data, and expertise. It is suggested that firms that control those inputs could theoretically restrict access to them, thereby (i) preventing competitors from developing FMs that would compete with that company's own FM and (ii) protecting their position in related markets (by making it harder for potential competitors in those markets to develop and distribute FMs). Another potential concern arises if a FM provider with significant market power was refusing, or restricting access to its own FM in order to weaken its competitors in downstream FM services.

38. Other categories of "input" concerns relate to the availability and distribution of FMs to downstream users and developers of applications⁴⁸ and situations where firms that control the access points and routes to market for FM services (e.g., mobile and other devices) would restrict users' choice of those services.⁴⁹

39. Finally, partnership agreements that may be "an essential ingredient for the success of independent developers"⁵⁰ are looked upon with some suspicion as they could theoretically be used to eliminate or diminish competitive threats, "even where it is uncertain whether those threats will materialise."⁵¹

40. BIAC notes that, as companies active in the GenAI sector do not have strength and independence at every AI layer, there is a widespread need to rely on partnerships to innovate and compete. As these partnership agreements differ in their characteristics, particularly in the types of rights granted to the investing firm, they should be considered on a case-by-case basis.⁵²

⁴⁸ Downstream firms can access or source FMs in several ways, including developing a FM in-house, partner with a FM provider to enhance an existing FM, obtain API access to a third-party FM and FM deployment tools, or provide third-party plug-ins. The CMA observes that currently downstream firms can easily switch between deployment options. CMA INITIAL REPORT 2023, *supra* note 13, ¶ 4.10.

⁴⁹ For instance, through technical bundling, integration, or other means. See *infra* § 2.7. Smaller, faster and more cost efficient FMs may be deployed and used on a personal computer or mobile computing device. Examples include Gemini Nano and mobile-optimized Llama-2.

⁵⁰ CMA UPDATE PAPER 2024, *supra* note 23, ¶ 44.

⁵¹ *Id.* ¶ 45. See also Christophe Carugati, *The Generative AI Challenges for Competition Authorities*, DIGITAL COMPETITION (Feb. 1, 2024), https://www.digital-competition.com/files/ugd/2ce5d2_06c96edc26b642499b1bf374d4287142.pdf, at 3.

⁵² Commenting on the CMA UPDATE PAPER 2024, Curry and Hill note that "regulatory intervention to unwind or alter the terms of a partnership could deter potential new entrants from entering into such arrangements, potentially limiting their options for securing access to important inputs and increasing barriers to entry." Curry & Hill, *supra*, note 46.

41. BIAC is of the view that, notwithstanding the challenges presented by the exceptionally innovative and fast-growing nature of the Gen AI space, there remains a requirement to adhere to rigorous evidence-based fact-finding and establishment of counterfactuals necessary to establish specific harm in the specific context of Gen AI services. In this respect, BIAC notes that the current market uncertainties set out in Section 2.6 above may complicate the assessment of whether conduct is objectionable under the competition rules. BIAC acknowledges that competition authorities should remain vigilant in the enforcement of competition rules in the GenAI space. However, any inquiry regarding potential anti-competitive effects of certain conduct – particularly in adjacent markets – will always have to be case-specific and requires a deep understanding of market dynamics.

42. For example, legitimate competition law intervention is impossible to envisage without a solid understanding of the role of data in FM training dynamics, the challenges that open source and non-open source FM developers must overcome to scale their foundational models and, in the case of input foreclosure scenarios, the availability of substitutes. But even if there is sufficient certainty about the facts of the case, the (prospective) analysis remains often highly complex and must be carried out with great care as it may include various chains of cause and effect which may be “dimly discernible, uncertain and difficult to establish.”⁵³

43. Most of the potential competitive concerns identified by competition authorities are based on conglomerate effects, either in the form of “traditional” leveraging dominance into a new or existing markets, or from newer “entrenchment” theories of harm that center on the protection of a company’s core market or “ecosystem” by adding functionalities or increasing access to potential customers.⁵⁴ In addition to the general observations mentioned below in Section 6, these types of theories raise two specific points.

44. First, “leveraging” practices could be detrimental to competition if, for instance, an economic operator promoted its own products or services and demoted those of rivals or channeled its high number of users for a core product or service into its own GenAI offering.⁵⁵ However, “leveraging” reflects practices that are common in the economy because there may often be benefits in offering customers more than one service. Such benefits include lower costs or better convenience. Therefore, leveraging may in fact be pro-competitive and efficiency enhancing – for example, it may result in increased competition in adjacent markets or the development of innovative new products and services. It is therefore essential to distinguish between vigorous competition and exclusionary acts: “Whether any particular act of a monopolist is exclusionary, rather than merely a form of vigorous competition, can be difficult to discern: the means of illicit exclusion, like the means of legitimate competition, are myriad.”⁵⁶

45. Second, BIAC submits that both conventional and newer theories of leveraging should be firmly based on the well-accepted analysis of the “ability and incentive” to foreclose, as well as the effects of such a strategy. New labels for theories of harm should not be a pretext to bypass the necessary conditions for competitive harm to occur, or, more

⁵³ Case C-12/03 P, *Comm’n v. Tetra Laval BV*, ECLI:EU:C:2005:87, ¶ 44 (Feb. 15, 2005).

⁵⁴ See, e.g., Press Release, Eur. Comm’n, Mergers: Commission prohibits proposed acquisition of eTraveli by Booking (Sept. 25, 2023), https://ec.europa.eu/commission/presscorner/detail/en/IP_23_4573.

⁵⁵ See, e.g., AdC Issues Paper, *supra* note 4, at 35.

⁵⁶ *United States v. Microsoft Corp.*, 253 F3d 34, 58 (D.C. Cir. 2001).

generally, result in the lowering of the evidentiary burden required to establish antitrust violations.

46. Finally, BIAC notes that over the past two decades the digital services that have given rise to competition concerns have been two-sided B2C platforms, characterized by strong direct and indirect network effects. In contrast, many layers of the AI industry (including cloud services) are one-sided, with positively-priced inputs sold to other business customers. It is not yet clear whether there will be long-term winner-take-all dynamics in GenAI.⁵⁷

4. General and Final Observations

47. The competitive assessment of the GenAI value chain requires a rigorous and evidence-based approach, based on the established principles and concepts of competition law. The relevant markets, the sources and indicators of market power, the theories and effects of harm, and the counterfactuals and efficiencies must be defined and analyzed on a case-by-case basis, taking into account the specific features and dynamics of the GenAI sector. The burden of proof and the standard of intervention should not change based on the relative novelty of the GenAI-related markets or conduct.

48. BIAC believes that existing competition laws include the analytical tools appropriate and necessary for enforcement in the GenAI space. In particular, existing concepts of dominance and market power continue to provide an appropriate framework for considering when enforcement action may be warranted in respect of unilateral conduct and restrictive agreements in the AI industry, as well as mergers; while there may be specific indicia and considerations regarding market power in the context of GenAI-related markets, this does not fundamentally change the ability of established competition law principles to address any anti-competitive concerns regarding leverage, entrenchment or other theories of harm.

49. Considering the current uncertainties in the GenAI industry and the fast-moving developments in GenAI markets, it is tempting for competition authorities to apply broad principles – such as “Access,” “Openness,” “Diversity,” and “Fair Dealing” to inform their actions in the GenAI sector. However, these principles are in and of themselves incapable and insufficient to demonstrate antitrust violations. For instance, a particular transaction involving a FM developer and some kind of preferential treatment (in exchange for necessary investments or other benefits) does not necessarily imply competitive concerns.⁵⁸

50. It appears that competition authorities have not yet found any structural competitive problems in the GenAI sectors. However, if, upon proper inspection, genuine competition law issues arise, BIAC supports quick and effective intervention by competition authorities.

51. BIAC encourages competition authorities to monitor and further analyze the GenAI value chain and, where appropriate, engage specialized personnel, to be ready to intervene

⁵⁷ See also Curry and Hill, *supra*, note 46. Curry and Hill also question whether scale could become an important barrier to entry in the FM development market and suggest that, where customer feedback is not important, early entrants may not gain any lasting advantage, while late entrants to the market may benefit from lower development costs.

⁵⁸ On May 17, 2024, the UK CMA concluded that Microsoft’s 16 million Euro investment into the French startup Mistral does not qualify for investigation under the UK merger rules. See *Found Not to Qualify Decision*, COMPETITION & MKTS. AUTH. (May 17, 2024), <https://www.gov.uk/cma-cases/microsoft-slash-mistral-ai-partnership-merger-inquiry#found-not-to-qualify-decision>.

when necessary.⁵⁹ It is important that competition authorities remain engaged, while giving the evolving markets and technologies the necessary room to develop and emerge.

52. However, it also encourages competition authorities to be mindful of regulatory costs inflicted on the business community. Businesses should not bear disproportionate costs related to market inquiries, requests for information and the like in the context of agencies' general monitoring activities.⁶⁰

53. Cooperation with the industry to develop policies that will ensure competition remains vibrant and that all members of society benefit would be beneficial.

54. As with innovation theories of harm discussed by the Committee last December, a key issue in enforcement is the burden of proof and which party bears it. There is good reason to maintain the same burden of proof in GenAI cases as those involving other types of harm like price effects and output reduction. The standard or burden of proof applicable to a particular agency action (e.g., merger, dominance, interim measures) does not change based on a new theory of harm or following the emergence of a new technology.⁶¹

55. BIAC appreciates the valuable work that a number of competition authorities have already undertaken to better understand the market for AI foundation models and very much welcomes this hearing. It encourages the Competition Committee to continue and intensify its work in relation to this important, innovative, and fast-moving sector.

⁵⁹ BIAC also notes that in the EU national regulators entrusted with the application of the AI Act are required to report annually to the European competition authorities “any information identified in the course of market surveillance activities that may be of potential interest” for EU competition law enforcement. These reports may meaningfully contribute to competition authorities' understanding of AI-related activities. *See* EU AI Act, Art. 74(2).

⁶⁰ OECD, Alternatives to Leniency Programmes – Contribution from BIAC, DAF/COMP/GF/WD(2023)21, ¶¶ 21-27 (Nov. 30, 2023), [https://one.oecd.org/document/DAF/COMP/GF/WD\(2023\)21/en/pdf](https://one.oecd.org/document/DAF/COMP/GF/WD(2023)21/en/pdf).

⁶¹ Fed. Trade Comm'n v. Meta Platforms Inc., 654 F. Supp. 3d 892 (N.D. Cal. 2023); Meta Platforms, Inc. v. Competition & Markets Auth., [2022] CAT 26, para. 108 (CAT).