Federal Ministry
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Labour and Economy

Competition in Virtual Worlds and Generative AI: Contribution by the Austrian Federal Ministry of Labour and Economy

Introduction

The Austrian Federal Ministry of Labour and Economy welcomes the opportunity to contribute to the European Commission's consultation on competition in virtual worlds and generative artificial intelligence (AI). With the launch of ChatGPT in November 2022, generative AI has after all entered the mainstream by enabling the broader public to utilize AI in order to generate new content and help examine, comprehend and solve problems.

Generative AI refers to a technology based on large, machine learning models that are trained on massive amounts of data, which allows them to autonomously create content similar to the data they are trained on. Examples include text generation models such as GPT-3.5/4 and its related chatbot ChatGPT, image generation models like Midjourney and code generating models like Codacy. As firms and the public alike are gaining a conception of what they can achieve with generative AI, this technology is set to revolutionize various sectors and industries, with profound implications not only on how they operate but also on competition.[1]

Next generation virtual worlds, on the other hand, refer to technologies that intertwine physical and virtual environments to produce highly immersive and intuitive experiences. While they may also have transformative implications on society and the economy, this contribution focuses on the call for contributions on generative AI, as it will have a much

[1] Several public authorities have hence initiated discussions on the competition-related effects of generative AI, including the *Competition and Markets Authority* in the United Kingdom and the *Autorité de la concurrence*in France. See https://www.gov.uk/cma-cases/ai-foundation-models-initial-review (last accessed on 29.02.2024); see https://www.autoritedelaconcurrence.fr/en/press-release/generative-artificial-intelligence-autorite-starts-inquiries-ex-officio-and-launches (last accessed on 29.02.2024).

greater impact and because it raises more substantial competition-related questions. Furthermore, this contribution, which is a result of ongoing discussions with Austrian stakeholders, centres on those questions of the call for contributions that seem most important for a regulatory discussion.

As being responsible for competition policy, we believe that it is crucial to ensure effective and fair competition in order to promote and safeguard innovation, efficiency and welfare. Effective and fair competition encourages firms to improve their existing products and services, to introduce new and innovative ones and to offer them at a competitive price, thereby fostering dynamism and growth in the economy. With transformative technologies such as generative AI and virtual worlds, it is critical to preserve a level playing field that allows the best products and services to win out and the whole economy to benefit. Furthermore, the "informed" consumer who is making the decisions as a basic principle of competition economics seems to be reinterpreted.

Generative AI: Potential competition issues

The following paragraphs relate to questions 1, 2, 4, 7, 8 and 9.

As set out above, the transformative nature of generative AI may also have implications on competition. Potential competition issues that could arise with the advent of the technology include barriers to entry and expansion, lock-in effects and barriers to switching in downstream markets and, related to the two former, the emergence and transfer of market power **(Question 4)**.

In the first place, the development of generative AI models requires important inputs, including access to large troves of high-quality data, corresponding computing capacities, sufficient financial resources and technical expertise. These requirements together with the current legal uncertainty surrounding AI may act as **barriers to market entry and expansion** in AI markets **(Question 2 and 4)**.

One of the most important inputs for generative AI is **data**. Generative AI models require vast amounts of training data to build the knowledge base of the model (i.e. pre-training) as well as to refine a model for a specific application (i.e. fine-tuning). Aside from the quantity of the data, its quality is also decisive, as AI models require data with specific characteristics (cf. the *Five V's* of big data: velocity, volume, value, variety and veracity). Obtaining access to sufficient amounts of high-quality data does not only represent a significant cost

factor for developers, but it may also become more challenging in itself. Most generative AI models rely on data that is freely available on the web. However, as data is increasing in commercial value, providers have limited incentives to make more of it freely available, which could lead to a situation where the freely available data is fully exploited or grows at a rate that is too slow to sustain generative AI model development. Data scarcity is already a recognized issue[2] and may make it more difficult for new and independent developers without access to their own proprietary data to enter the market **(Questions 1, 2 and 7)**.

In addition to data, **computing capacity** plays an important role in the training and operation of AI models. Access to large, specialized computing capacity for the development, hosting and deployment of generative AI, especially large language models, is crucial for market entry and expansion. Firms that cannot use their own (capital-intensive) computing capacity, often rely on agreements and partnerships with cloud service providers, which has lowered this barrier somewhat. Nonetheless, the difficulty of accessing computing capacity remains a key barrier not least due to cost and potential hardware shortages, such as specialized computer chips.[3] Besides that, it is noteworthy that computing capacity also requires extraordinary electric power resources **(Questions 1 and 2)**.

Apart from limited access to key generative AI inputs, developers of generative AI currently face notable **legal uncertainty** as regards to the data they use and - to a somewhat lesser extent - the outputs their models generate.[4] This raises questions in the areas of copyright, licensing and data protection law as well as liability and ethical issues. Against this backdrop, legal proceedings are already underway, particularly in the United States.[5] Major developers such as Microsoft and Adobe have begun to address this issue by assuring their customers that they will assume responsibility for legal disputes that arise due to the use of their technology.[6] **Legal uncertainty** may ultimately constitute a **barrier to entry for smaller and independent firms** in the generative AI market, as it renders it more difficult for them to enter the market and build a customer base, which they can subsequently benefit from. The

[2] See e.g. Alzubaidi and others, 'A survey on deep learning tools dealing with data scarcity: definitions, challenges, solutions, tips, and applications' (2021) 8 J Big Data 1.

[3] See https://www.reuters.com/technology/foxconn-sees-slightly-better-2024-warns-ai-chip-shortage-2024-02-04/ (last accessed on 01.03.2024).

[4] See e.g. Quintais, ‚Generative AI, Copyright and the AI Act', (2023) Kluwer Copyright Blog; Nordemann, 'EU law: Generative AI, copyright infringements and liability – My guess for a hot topic in 2024', (2024) Kluwer Copyright Blog.

[5] See e.g. https://www.nytimes.com/2023/12/27/business/media/new-york-times-open-ai-microsoft-lawsuit.html (last accessed on 01.03.2024).

[6] See https://www.reuters.com/technology/microsoft-defend-customers-ai-copyright-challenges-2023-09-07/; https://techcrunch.com/2023/06/26/adobe-indemnity-clause-designed-to-ease-enterprise-fears-about-ai-generated-art/ (last accessed on 01.03.2024).

benefits of an existing customer base for developers of generative AI are further set out below **(Question 2)**.

In the second place, lock-in of and **barriers to switching** for customers might inhibit competition in downstream markets once a provider of a generative AI technology has deployed their model or is offering their AI solution. **Incompatibility** between generative AI models constitutes one potential barrier to switching. Although the input and output parameters used in generative AI technology are similar, the application programming interfaces (APIs) of providers may differ. Particularly with regard to *embeddings*, which enable the use of internal company documents in language models, the solutions of providers are incompatible with each other and require a repetition of data processing. In addition, individual AI models differ in terms of content and may require firms to adapt their software in the course of switching to another provider. The opportunity cost of switching from one generative AI provider to another is thus notable and may result in lock-in effects **(Question 4)**.

Greater **interoperability** of generative AI models and their applications can lessen lock-in effects. In general, interoperability allows different services to communicate and work with one another and can contribute to effective competition by limiting lock-in effects and facilitating complementary services.[7] It may also constitute a preferable form of market intervention compared to other options such as subsidies. In this respect, horizontal interoperability can encourage competition as it allows for the retention of network effects when customers switch providers, especially when switching costs are substantial, as it is likely with generative AI.[8] Moreover, vertical interoperability can facilitate competition and contribute to a level playing field, for instance by reducing first-mover and bundling advantages.[9] Limited (vertical) interoperability particularly raises competition concerns in markets where digital gatekeepers play a significant role, as it is often the case in digital markets. Interoperability in the context of generative AI can take place both horizontally and vertically at the (narrower) data level, for instance through standardized data formats, in APIs or at the (wider) AI model level to allow for their functionality in various systems. The adoption of standards and corresponding documentation can likewise support interoperability while not hampering the innovation spirit **(Question 8)**.

In addition to incompatibility between generative AI models, **fees** can act as a potential barrier to switching. As explained above, large computing capacities are required to host

[7] See OECD, 'Data portability, interoperability and digital platform competition', (2021) OECD Competition Committee Discussion Paper, 14, 19ff.

[8] See ibid, 19f.

[9] See ibid, 20f.

and operate generative AI, especially large language models. Many firms therefore decide to operate an AI model with the help of a cloud service provider. However, when switching cloud providers, fees like those for transferring data out of the cloud (i.e. "egress fees") can make this switch more onerous. Where a third-party generative AI application utilizes a firm's own data, a switch to the application of another party can entail additional costs for adjustments to the data as well as with regard to data setup and learning **(Question 4)**.

In the third place, the aforementioned barriers to entry and expansion as well as to switching are linked to another potential competition issue that may arise with the advent of generative AI, namely the **possibility of emergence and transfer of market power** in AI markets. Providers of large digital ecosystems, such as Google, Microsoft and Meta, have significant advantages over smaller providers and new entrants due to their **financial strength as well as their existing customer base and data**. On the one hand, as noted above, their financial strength allows them to protect themselves and their customers against the current legal uncertainty surrounding the use of generative AI, either by utilizing their own proprietary data or by shielding themselves and their customers in some other way. On the other hand, it is easier for them to access the capital-intensive inputs required for generative AI models, such as data and computing capacity **(Questions 4 and 9)**.

Firms with a large existing customer base may further benefit from **network effects and feedback loops** with respect to data. As mentioned above, access to high-quality data is of great importance for the training and development of generative AI models. Firms with access to data from the use of their own applications and services, such as **large vertically integrated digital ecosystems** and first-movers, have the opportunity to continuously improve and personalize their services with the help of this data and thus gain an important competitive advantage over newcomers and smaller competitors **(Questions 4 and 9)**.

When **integrating existing applications with generative AI**, already dominant providers of large digital ecosystems can reap further benefits. The integration of generative AI into operating systems, software, communication services and social networks can already be observed. Microsoft, for instance, recently introduced several generative AI-powered *Copilot* tools in a variety of its business offerings, such as Microsoft 365 and Windows 11.[10] Indeed, generative AI models are often regarded as a way to further develop and integrate existing

[10] See e.g. https://finance.yahoo.com/news/microsoft-debuts-ai-powered-copilot-for-finance-as-it-continues-company-wide-ai-push-040029184.html (last accessed on 01.03.2024).

services, which may well constitute the only way to make a profit on generative AI development due to costly initial investments and training. However, it also raises potential competitive issues such as **anti-competitive tying and bundling (Questions 4 and 9).**

The aforementioned factors ultimately favour the development of market power, either through consolidation by firms in a given market or via transfer of market power by large players from other markets. The **current landscape in AI markets** demonstrates that these competitive risks could materialize. Although a variety of open and integrated/closed AI models exist, a substantial portion of firms are ultimately associated in some form with large technology companies (BigTech). These companies have both developed their own generative AI models and have added to their portfolio through investments or acquisitions of generative AI start-ups. Examples include Microsoft's proposed investments in Open AI and more recently Mistral and Google's takeover of DeepMind. This market dynamic could ultimately lead to the consolidation of market power by a few international digital giants, as we have witnessed in the current digital economy. In turn, this raises the risk of lock-in effects for customers and killer mergers/acquisitions as well as the tipping risk (i.e. the risk of monopoly formation) in AI markets **(Questions 4 and 9)**.

Addressing potential competition issues

The following paragraphs relate to questions 11 and 12.

Existing legislation and tools already respond to some of the potential competition problems identified in this contribution. **General competition law** provides important instruments for the examination of market power and its abuse as well as the imposition of measures to ensure effective and fair competition in markets. However, the advent of generative AI technologies undoubtedly creates challenges that the current legal framework may not sufficiently address or may not address fast enough. Many of these challenges are reminiscent of those we are facing in today's digital markets.

In a competitive landscape that could be trending towards market consolidation by a few technology giants and first-movers, we believe that there is a need for a decisive enforcement of competition law. Competition law enforcement needs to consider all the aims of competition, including innovation, product diversity, higher quality, and lower prices. In this respect, competition law enforcers should take the degree of market power of the parties to an agreement as well as dependency issues (i.e. **relative market power**) more into account. Powerful firms may be able to set terms that are disadvantageous to weaker business

partners. It is therefore critical, particularly from the point of view of SME-policy, to consider dependency relationships and vertical relations as well.

Firms might also misuse generative AI's capabilities to recognize patterns in order to improve their competitive position in a given market. For example, firms may use generative AI to facilitate anti-competitive market cooperation or to create fake content. To address such practices effectively and in a timely manner, competition law enforcers may need to **explore new methods** that are based on these technologies themselves. In this regard, generative AI applications could assist in monitoring the use of AI as well as in preventing abuse and detecting manipulations facilitated by it.

In addition, the **Digital Markets Act (DMA)**[11] may contribute to addressing some of the potential competition issues discussed. While generative AI models themselves are not included in the DMA's CPS list, they may nonetheless be subject to its rules whenever they are deployed within an existing CPS. Hence, the applications for which generative AI are used might fall under the regulatory regime of the DMA, which the definition of "virtual assistants" (i.e. a software that can process demands, tasks or questions and provides access to other services based on them) as a CPS demonstrates, for example. Indeed, virtual assistants will probably perform the processing of demands, tasks or questions with the help of generative AI in the future. If warranted, generative AI models as such can be included in the CPS list via the procedure provided for in Article 19 of the DMA as well.

The DMA, the General Data Protection Regulation (GDPR) and the AI Act, which is currently being finalized, also provide for important **transparency-related obligations** that can be useful for confronting potential competition issues related to generative AI.[12] These regulations may provide authorities with a better understanding of the collection, processing and use of data in connection with the use of generative AI. They may also inform authorities on the functioning of generative AI and on potential anti-competitive uses of the technology. Likewise, the Data Governance Act (DGA) sets out relevant rules for the availability of data, its exchange and further use, in particular within data spaces, and the Data Act regulates who can use data and under what conditions.[13] The measures laid down in the

[11] Regulation (EU) 2022/1925 (Digital Markets Act).

[12] See e.g. Art. 6 (9), 15 DMA; Art. 20, 22 Regulation (EU) 2016/679 (General Data Protection Regulation); See also the rules regarding technical documentation and record keeping in Art. 11, 12, 18, 19 of the forthcoming AI Act and its Art. 74 (12), (13), which allows market surveillance authorities to access certain information related to high-risk AI systems where relevant and limited to what is necessary to fulfil their tasks.

[13] See Regulation (EU) 2022/868 (Data Governance Act) and Regulation (EU) 2023/2854 (Data Act).

Data Act to reduce egress fees when switching cloud services are particularly noteworthy and will help firms that operate an AI model with a cloud provider.

While these laws and tools in part respond to the potential competition problems raised by generative AI, we believe that they are not sufficient to fully address the issues laid out above. Existing competition rules allow tough enforcement by competition authorities already. However, as the long discussion about the need for the DMA show us, competition policymakers need to **focus on certain key competition issues and offer solutions quickly**, which includes the **development of a legal framework for specific issues**. In doing so, a sector- or an application-specific approach may be appropriate. New **rules to prevent "killer acquisitions"** are also necessary in this regard, for instance the introduction of transaction value thresholds at the EU level.

Conclusion

Generative AI may well have profound implications on competition. Potential competition issues that could arise with the advent of the technology span from barriers to entry such as limited access to key inputs, to the lock-in of customers and the expansion and transfer of market power due to greater financial resources and network effects of incumbent digital gatekeepers. In conclusion, we would like to stress that the profound impact that generative AI will likely have on competition requires us to provide timely solutions, which in our view includes the development of a (sector- or application-specific) legal framework for certain issues. In the meantime, competition enforcers should apply existing competition law tools decisively and take relative market power more into consideration. Ultimately, we cannot afford inaction and a situation, where giant gatekeepers take over AI markets and eliminate competition, thereby stifling innovation, efficiency and welfare to the detriment of small and medium-sized firms and consumers.

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