

ARTICLE

Crafting the Regulatory Ecosystem for AI: Competition 2.0

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The Network Law Review is pleased to present a special issue entitled “The Law & Technology & Economics of AI.” This issue brings together multiple disciplines around a central question: What kind of governance does AI demand? A workshop with all the contributors took place on May 22–23, 2025, in Hong Kong, hosted by Adrian Kuenzler (HKU Law School), Thibault Schrepel (Vrije Universiteit Amsterdam), and Volker Stocker (Weizenbaum Institute). They also serve as the editors.

Abstract. The challenges of the global landscape and new market realities, significantly led by the digital sector and AI development, are poised to shape competition policy and call for an unprecedented level of inter-policy coordination. This scenario gives rise to a new legal ecosystem of competition, what one can refer to as competition 2.0, an integrated and complementary approach between public policies, necessary to deliver the best outcomes for consumers. Competition 2.0 expands the potential of competition and better public policies, ensuring the level playing field.

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1. The transformative journey of EU Competition Law

In recent years, the global landscape has been marked by multi-layered and concurrent challenges, including climate change, supply chain disruptions, inflation, growing inequality, armed conflicts and rising geopolitical tensions. This complex mix is now aggravated with the emergence of an escalating trade war.

These are demanding challenges for public policies across the board, and competition policy is no exception. They call for the continuous adjustment of legal frameworks and analytical toolkits to rapidly changing market realities.

Coal and steel cartels were the main underlying culprits of the emergence of competition law at the level of the European Union. Since then, the plasticity of competition law has enabled it to evolve over time in response to economic transformations and new market realities, including the digital transition. Even more so, as we move at a fast pace towards an AI-based economy.

These challenges, however, cannot be addressed with a standalone approach to each policy, but rather through an optimal mix of policy instruments. Articulating the various policy instruments will allow exploring synergies and complementarities between them. The complementarities between competition policy and regulation in digital markets are a good example of how competition policy may inform and complement regulatory solutions that seek to protect and promote competition.¹ On the other hand, the synergies and complementarities between competition and industrial policy are well documented², establishing that competition-friendly sectoral policies may foster productivity and productivity growth.

While the interaction between competition policy and other public policies is not a new phenomenon, the urgency and frequency with which such inter-policy coordination is now required has reached unprecedented levels.³

This dynamic environment presents both significant opportunities and considerable challenges, which are poised to shape competition policy for years to come.

2. AI-driven challenges to competition policy

Competition policy is key to ensure that markets evolve and deliver innovation and consumer welfare. This means that, when industries experience disruption, competition oversight to ensure that contestability is not impaired is particularly important.

¹ See Robertson, Viktoria H S E, The complementary nature of the Digital Markets Act and the EU antitrust rules, *Journal of Antitrust Enforcement*, Volume 12, Issue 2, July 2024, pages 325-330, available at: <https://doi.org/10.1093/jaenfo/jnae013>.

² See, e.g., Aghion et al (2015), Industrial Policy and Competition. *American Economic Journal: Macroeconomics* vol. 7, no. 4, October 2015, pages 1-32.

³ See Rodrigues, Nuno Cunha, Why Competition Matters (in Generative AI)?, in *Why Competition?* (ed. Daniel Crane; Damien Gerard and Randy Tritell), *Concurrences*, 2024, pages 487-496.

The recent advancements in AI are significantly disrupting the digital sector. AI is a transformative technology that is reshaping the world economy. Its potential applications seem boundless and many businesses, incumbents and startups alike, are racing to develop and integrate AI into their products and services. The economy of tomorrow will be based on AI, just like today’s economy is based on energy, the computer or the Internet.

Many of these breakthroughs are associated with major players in the industry, and AI reflects many of the competitive challenges present in the digital economy. The AI industry and related sectors often exhibit traits that favour market concentration.

The traits associated with each of the key inputs to the development of foundation models, including data, computing power, skilled workforce, and experimentation, have the potential to create significant scaling advantages, network effects, and challenges in multi-homing.⁴

As a result, leading digital players and early adopters may gain competitive edges that solidify their dominance in the market and foster behaviours that could be detrimental to competition.

Exclusive access to data, for example, may either restrict others from obtaining such data or create significant difficulties in securing licenses from all relevant rights holders. This is particularly the case for datasets that are hard to substitute or replicate.⁵

Another concern arises from the incentives towards vertical integration, the establishment of agreements, and partnerships. While these may, in some cases, improve efficiency, the integration of AI into other dominant players’ products, such as cloud services, coupled with developers’ reliance on these resources and the nature of these partnerships, poses competitive challenges. This includes risks like favouring one’s own products and potential barriers to hinder entry or expansion, for

⁴ The key inputs and their implications for AI have been identified by several competition authorities. See, e.g., the AdC’s Issues Paper, as well as work by the European Commission, the French Competition Authority or the UK’s Competition and Markets Authority. In addition, the European Commission, the UK’s Competition and Markets Authority, the US Department of Justice and the US Federal Trade Commission have published a joint statement highlighting the risks to competition in the generative AI sector.

⁵ See Portuguese Competition Authority Short Papers Series, Competition and Generative AI: Zooming in on Data (September 2024), available at: https://extranet.concorrenca.pt/PesquisAdC/Page.aspx?isEnglish=True&Ref=EPR_2024_14.

example, actions of owners of foundational models with market power granting their own Generative AI models preferential or exclusive access down the value chain.

The challenges brought by AI to competition policy are not confined to antitrust. A key concern that was raised in the debate around effective competition law enforcement in the digital market, and that has gained even further relevance within AI, relates to the risk of harmful mergers going under the radar of merger control. As a result, there have been a number of attempts to tackle this concern. The European Commission (EC)'s recalibrated approach to article 22 EUMR⁶, under which a merger that fails to meet notification thresholds at Member State's level could, nonetheless, be referred to the EC, aimed precisely at closing this perceived merger enforcement gap.⁷ However, the European Court of Justice overturned this interpretation in the prominent *Illumina/Grail* judgment.⁸

The newly introduced call-in powers, for example in the Italian competition framework, also seek to address this concern.⁹ The interaction between these powers and the EUMR referral system is now being tested in court through the appeal brought by Nvidia regarding the acceptance by the EC of the referral of the *Nvidia/Run:ai* merger by the Autorita' Garante della Concorrenza e del Mercato.¹⁰

As these developments unfold, it is critical not to underestimate the importance of market share based notification thresholds, such as those provided in the Portuguese Competition Act.¹¹ These can play a relevant role in mitigating the concerns related to the elimination of potential competition.

These developments, together with the debate around AI partnerships and the so-called "acqui-hires",¹² are well illustrative of the relevance competition enforcers place on ensuring an effective and adequate merger control to prevent the risk of elimination of potential competition not only in digital and AI, but in any other sector.

⁶ Council Regulation (EC) No. 139/2004 of 20 January 2004 on the control of concentrations between undertakings.

⁷ See Commission Guidance on the application of the referral mechanism set out in Article 22 of the Merger Regulation to certain categories of cases, Brussels, 26.3.2021 C (2021) 1959 final.

⁸ Case C-611/22, Judgment of the Court (Grand Chamber) of 3 September 2024 (ECLI:EU:C:2024:677).

⁹ See Article 16, paragraph 1-bis of the Legge 10 October 1990, no. 287.

¹⁰ Case T-15/25, action brought to the General Court of the European Union on 10 January 2025, *Nvidia v. Commission*.

¹¹ See Article 37, no. 1(a) of the Portuguese Competition Act (Law no. 19/2012, 8 May).

¹² The concept of "acqui-hire" is most often used to refer to transactions whereby one company acquires the personnel of another company, either in their totality or in part, rather than acquiring the company as such. See Brueggemann, N. and Holles de Peyer, B.; *Acqui-hires in EU Merger Control*, EU Law Live, 26 March 2025, available at: <https://eulawlive.com/competition-corner/acqui-hires-in-eu-merger-control-by-ben-holles-de-peyer-and-niklas-brueggemann/>

3. Bridging knowledge gaps in AI development and policy

A pre-requisite for an effective competitive oversight of AI is building an accurate understanding of the landscape and dynamics of the sector.

Digital markets have been a priority for competition authorities over the past decade. Initially emerging as highly innovative and disruptive – much like AI today – these markets have since matured and crystalised, revealing many competition risks and anticompetitive practices. These developments were, in a way, inevitable, given that many digital markets have features typical of regulated sectors, and spawned multiple investigations and market studies in the sector. For that reason, it is not surprising that a regulation-like approach, such as the Digital Markets Act (DMA)¹³, was needed to effectively deal with competition risks in the sector.

In its efforts to promote competition and guarantee contestability in digital markets, competition authorities have also accumulated critical know-how in conceiving, anticipating and understanding risks to competition and anticompetitive strategies. The lessons learned by competition authorities about digital markets can be leveraged to AI which, in many ways, is a textbook example for all competition issues typical of digital markets.

Nonetheless, competition concerns in AI are not all old wine in a new bottle. Significant knowledge gaps persist and are worth exploring by competition authorities.

The hunger of AI for compute is particularly unique in the digital sector, where both the fixed costs of developing AI and the marginal costs of running AI are high, particularly in the case of reasoning models. This brings focus to the competitive conditions and contestability in the upstream markets for cloud computing and high-performance computer chips which are, themselves, subject to very high economies of scale.

In addition, while access to data has always been a highlight in competitive assessments of digital markets, AI introduces some key differences. Data is used on a much larger scale, so much that the possibility of “running out of data” is a topic of discussion.¹⁴ AI developers also experiment with data curation and mixing to

¹³ Regulation (EU) 2022/1925 of the European Parliament and of the Council of 14 September 2022.

¹⁴ See, e.g., pp. 59-63 from the AI Index Report 2025, available at: https://hai-production.s3.amazonaws.com/files/hai_ai_index_report_2025.pdf, or Epoch AI’s article (Pablo Villalobos et alii), Will We Run Out of Data? Limits of LLM Scaling Based on Human-Generated Data, available at: <https://epoch.ai/blog/will-we-run-out-of-data-limits-of-llm-scaling-based-on-human-generated-data>.

improve model performance, increasingly rely on synthetic data, and there are new markets for data due to data licensing agreements becoming more prevalent.¹⁵

Lastly, AI markets are entirely new, and entrepreneurs are still experimenting and maturing business models. AI development is done in several stages, it is interwoven with cloud computing, and AI is flexible enough to connect with other AI, APIs (Application Programming Interfaces) and outside services. As such, issues of integration, distribution and interoperability of AI models¹⁶ are areas where competition authorities need to keep vigilant.

In the absence of proactive engagement and vigilance by competition authorities, there is a risk of a scenario in which a small number of firms would create, control and exploit bottlenecks in AI markets and AI-related markets. This could hinder competition in adjacent markets, hampering other developers and, ultimately, harming consumers.

The Portuguese Competition Authority, along with other competition authorities, has been actively trying to build-up know-how on the AI sector. This has resulted so far in the publication of the seminal Issues Paper on Generative AI in 2023, offering a comprehensive view on the AI sector and mapping the determinants and risks to competition.¹⁷ This is being followed by the AdC's Short Paper Series¹⁸, launched in 2024 and aimed at keeping track of the fast developments of the AI sector, focusing, so far, on access and use of data and on the degree of openness of AI models. This knowledge building and sharing can act as a powerful nudging tool for firms, steering them towards more competition-friendly behaviour, while reducing uncertainty regarding the approach of competition agencies.

¹⁵ See Portuguese Competition Authority Short Papers Series, Competition and Generative AI: Zooming in on Data (September 2024), available at: https://extranet.concorrenca.pt/PesquisAdC/Page.aspx?IsEnglish=True&Ref=EPR_2024_14.

¹⁶ See OECD (2021), Data portability, interoperability and digital platform competition, OECD Competition Committee Discussion Paper, available at: <http://oe.cd/dpic> and CERRE's report Interoperability in Digital Markets, March 2022, available at: https://cerre.eu/wp-content/uploads/2022/03/220321_CERRE_Report_Interoperability-in-Digital-Markets_FINAL.pdf

¹⁷ See Portuguese Competition Authority, Competition and Generative Artificial Intelligence (November 2023), available at: https://extranet.concorrenca.pt/pesquisAdC/EPR.aspx?IsEnglish=True&Ref=EPR_2023_19.

¹⁸ See Portuguese Competition Authority Short Papers Series, Competition and Generative AI: Zooming in on Data (September 2024), available at: https://extranet.concorrenca.pt/PesquisAdC/Page.aspx?IsEnglish=True&Ref=EPR_2024_14; and Competition and Generative AI: Opening AI models (December 2024), available at https://extranet.concorrenca.pt/PesquisAdC/Page.aspx?IsEnglish=True&Ref=EPR_2024_23.

Moreover, knowledge pooling contributes to more proactive detection of illicit behaviour and better-informed policy design, in the realm of competition and beyond.

Indeed, fully realising the benefits of AI and ensuring contestability is ultimately a collective effort, both by competition authorities all over the world, and by different regulators with their specific priorities and expertise. As such, effective vigilance and intervention will require cooperation, coordinated action and collaborative regulatory approaches. On that regard, the road ahead may differ from the reality that prevailed until recently. Coordination and cooperation must unfold in a more complex and multisided game board, in particular after President Trump’s Directive to Prevent the Unfair Exploitation of American Innovation, issued in February 2025, which specifically refers to the digital regulatory framework in the EU.¹⁹

4. A new ecosystem to competition policy: shaping competition 2.0

As digital and AI unfold, new public policies and regulations emerge and take shape, highlighting the need for a pro-competitive approach.

Despite the heterogeneity of public action in terms of approach and level of intervention²⁰, common principles must be preserved, calling for new opportunities for inter-policy coordination.

In fact, the EU has a clear mandate to promote freedom, security and justice²¹, while ensuring that the conditions for competitiveness are met.²² The EU Treaties explicitly provide a set of principles based on a system of open and competitive markets, thereby establishing a limit on the potential for the creation of distortions to competition.²³

Both industrial policy and regulation are able to pursue comprehensive public interest objectives, targeting investment or legal obligations and aiming for efficient market outcomes.

¹⁹ Available at: <https://www.whitehouse.gov/fact-sheets/2025/02/fact-sheet-president-donald-j-trump-issues-directive-to-prevent-the-unfair-exploitation-of-american-innovation/>.

²⁰ See Piechucka, Joanna and Smulders, Ben and Sauri Romero, Lluís, Competition and Industrial Policies: a Complementary Action for Eu Competitiveness (August 12, 2024). Available at: <https://ssrn.com/abstract=4922877>.

²¹ See Article 3 (2) TFEU.

²² See Article 173 (1) TFEU.

²³ See Article 173 (3) TFEU.

The EU took a leading role regarding regulatory initiatives with the potential of influencing markets and legislators worldwide.²⁴

The features of digital markets and AI sector have triggered the development of new regulations, focusing on key concerns such as data protection, discrimination, safety and security.

For instance, the EU AI Act²⁵ lays down the requirements and obligations of AI systems operating in the EU. This aims to provide a balanced approach grounded on the level of risk each AI system represents to their users and society (from unacceptable AI practices to limited risk). This multilayered, pyramidal shaped scheme implies more or less obligations in terms of transparency, providing that if AI systems are deemed too harmful, they shall be prohibited. Specifically, there are both incentives²⁶ and requirements for AI systems to disclose which content has been generated by AI and to publish information on the data used for its training.

This act aims to create a human-centric approach to AI, safeguarding fundamental rights²⁷, and incentivizing the development of reliable content; the application of security controls, and the creation of a reporting obligation to share information on incidents and malfunctions. It also foresees measures to support SMEs and start-ups, namely by reducing the regulatory burden on them.

Like the DMA, this too shall complement the enforcement of competition law, reinforcing each other.²⁸ Actually, the interplay between ex ante regulation and ex post competition law interventions has been the subject of much discussion.²⁹

This illustrates the relevance of the interplay between competition policy and other public policies to unleash the potential of markets, while ensuring the level playing field. A virtuous circle between competition and other policies gives rise to pro-competitive policies. The present approach may be supported by a new legal ecosystem of competition, which one can refer to as competition 2.0. This is

²⁴ See Rodrigues, Nuno Cunha, A globalização do poder regulatório da União Europeia, Almedina, Coimbra, 2024 (in Portuguese).

²⁵ Regulation (EU) 2024/1689 of the European Parliament and of the Council of 13 June 2024.

²⁶ For instance, according to Article 53(2) or Article 54(6) of the EU AI Act, open-source foundation models are exempted from certain obligations, unless they are monetizing it or put into service as high-risk AI systems or an AI system that falls.

²⁷ See Article 6 (3) TFEU.

²⁸ On the discussion regarding the implications of the AI Act for competition enforcement see, e.g. Schrepel, Thibault, Decoding the AI Act: Implications for Competition Law and Market Dynamics, *Journal of Competition Law & Economics*, 2025, available at: <https://doi.org/10.1093/joclec/nhaf007>

²⁹ See, e.g., Kuenzler (2023), Third-generation competition law. *Journal of Antitrust Enforcement*, Volume 11, Issue 1, March 2023, Pages 133–141.

particularly evident when one thinks of how competition in quality may deliver more privacy friendly options, aligned with consumer preferences, or when the interplay between the GDPR³⁰ and competition law strengthens a theory of harm, as in the high-profile Bundeskartellamt’s Facebook case.³¹ That is not to say that trade-offs will not emerge, for example, from data protection rules which may, as a by-product, raise barriers to entry and expansion. However, optimising this interplay, striking the right balance in trade-off assessments and leveraging the synergies between different public policies to secure the best outcome for consumers, is precisely the core of a new, competition 2.0 approach.

On the one hand, within this framework, competition promotes better public policies, addressing market failures and reducing barriers to entry, expansion and innovation. On the other hand, this legal ecosystem leverages competition in and for the markets, by promoting balanced incentives and fostering open and competitive markets.

Hence, competition authorities have a relevant role, not only as enforcers, but also in identifying the bottlenecks and barriers to entry or to switching, striving to find the complementarities between competition and other public policies.

Competition – and competition agencies – can nudge the behaviour of firms, in ways that are aligned with other public policy goals. The Court of Luxembourg conveyed this message in the 2023 Meta case ruling³², when referring to a duty of sincere cooperation with data protection authorities. The Court calls for an integrated approach to safeguard the effectiveness of the regulation.

The same approach can be followed directly in the design of public policies to ensure the measures proposed do not lead to a distortion of competition, thereby implementing the objectives of the EU Treaties.³³ Having competition infused into public policy design, through an active cooperation with public policy makers, can, not only generate important positive externalities between competition and other public policy areas, but also allow minimizing the impact of other public policies on competition. Indeed, cooperation between competition authorities and other public policy authorities may allow to identify the relevant trade-offs, considering the impact of other policy initiatives on competition in the market and mitigate it, namely by observing the principle of proportionality.

³⁰ Regulation (EU) 2016/679, General Data Protection Regulation, OJ L 119, 04.05.2016.

³¹ Bundeskartellamt, Decision no. B6-22/16, 6 February 2019.

³² Case C-252/21, Judgment of the Court (Grand Chamber) of 4 July 2023 (ECLI:EU:C:2023:537), in particular paragraphs 53 and 54.

³³ See Article 173 (3) TFEU.

Furthermore, in case some gaps remain to be filled, one shall also recognize the potential for the creation of new or more targeted tools. This scenario led, for instance, to the implementation of the DMA, which aims to incentivize undertakings in the digital sector to act in accordance with the proper and efficient functioning of the market, ensuring contestability and fairness for the markets in the digital sector.³⁴

The AI Act is also illustrative of the importance of continuously adapting rules and regulations, i.e., the whole digital acquis, as the understanding of market realities deepens. In fact, the recent adoption of the AI Continent Action Plan (on April 9th)³⁵ brings with it an intent to simplify the implementation of the AI Act, so as to further the balance between the underlying policy objectives and the regulatory burden.³⁶ Developments aimed at stepping up efforts “to facilitate a smooth and predictable application of the AI Act” are certainly welcomed and aligned with the recommendations of the Draghi Report.³⁷

5. Conclusion

The future ubiquity of AI and its potential for economic growth, productivity and consumer welfare makes it a central topic for competition authorities.

A proactive stance towards the sector is warranted to make sure it develops in a way that fully realises the potential of AI and the ensuing benefits to consumers. The exact extent of the transformative impact of AI is a subject of debate. Nonetheless, it has been referred to as an inflection point and a “Generative AI Waterfall”.³⁸ Furthermore, the disruption brought about by AI can be an opportunity to bring additional contestability to the digital sector. Competition policy enforcers must excel in ensuring contestability without chilling incentives to invest, making a good use of their entire toolkit, namely by advocating for pro-competitive policies, providing guidance and defending the market from any distortion or restriction of competition. They also need to reach out beyond their *métier* and engage with other regulatory policies, so as to contribute to the challenging balance between pursuing

³⁴ See recital 7 of the DMA.

³⁵ See “AI Continent Action Plan”, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, COM(2025) 165 final, 9.4.2025.

³⁶ Available at: https://commission.europa.eu/topics/eu-competitiveness/ai-continent_en

³⁷ See Report by Mario Draghi (September 2024), The future of European competitiveness, available at: https://commission.europa.eu/topics/eu-competitiveness/draghi-report_en

³⁸ See Lehr, William and Stocker, Volker, Competition Policy over the Generative AI Waterfall, in Artificial Intelligence and Competition Policy (edited by Alden Abbott, Thibault Schrepel), pages 335 - 357.

the underlying public policy goals while avoiding placing systemic regulatory overburden, that can take a stronger toll on start-ups and disruptive entrants.

Despite the fact that competition law has proven its plasticity over the years across markets, a legal ecosystem based on cross policy dialogue expands the potential of competition and better public policies more widely. Additionally, the present landscape characterised by a complex net of geopolitical tensions, calls for an integrated and complementary approach between public policies, which in the EU context derives directly from the provisions of the Treaties.

All this means high stakes for competition policy in the complex policy, regulatory and geopolitical context in which AI will continue to unfold, which calls for a real competition 2.0.

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