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Summary of Discussion of the Roundtable on Competition in the Provision of Cloud Computing Services

Annex to the Summary Record of the 146th Meeting of the Competition Committee

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This document prepared by the OECD Secretariat is a detailed Summary of Discussion of the Roundtable on Competition in the Provision of Cloud Computing Services, held by the Competition Committee on 19 June 2025. It presents a factual summary of the views expressed by speakers and delegations that intervened during the discussion.

More documents related to this discussion can be found at:
https://www.oecd.org/en/events/2025/06/competition-in-the-provision-of-cloud-computing-services.html

Mr Ori SCHWARTZ
Email: ori.schwartz@oecd.org

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On 19 June 2025, the OECD Competition Committee held a roundtable to discuss competition in the provision of cloud computing services chaired by Mr Benoît Cœuré, President of the Autorité de la concurrence.

The session commenced with the **Chair** setting the stage for the discussion, underscoring the growing significance of cloud computing as a foundational layer of the digital economy. The Chair noted cloud computing services play a pivotal role in enabling innovation and supporting the rapid advancement of artificial intelligence (AI). The Chair observed that the cloud sector is characterised by a complex market structure, with distinct dynamics across the infrastructure, platform, and service layers. Despite the sector's innovative potential, there is a pronounced concentration of market power among a small number of firms dubbed the "hyperscalers" (Amazon Web Services (AWS), Microsoft Azure and Google Cloud). This concentration has prompted competition authorities in numerous OECD Member countries—including France, Japan, Korea, the Netherlands, Spain, the United Kingdom, and the United States—to scrutinise the functioning of cloud markets. The Chair stressed the importance of collaborative reflection on how best to approach emerging competition issues in cloud services.

The Chair then gave the floor to **Alexia Gonzalez Fanfalone**, Head of the Connectivity Services and Infrastructures Unit at the OECD's Directorate for Science, Technology and Innovation at the OECD. Dr Gonzalez Fanfalone provided an overview of broader policy trends relating to cloud computing services. The core features of scalability and flexibility were discussed. Cloud computing enables users, from individuals to governments, to tap into shared resources, improving efficiency and reducing costs. This shift from dedicated IT infrastructure to scalable, pay-as-you-go models has made cloud computing a pillar of digital transformation across economic sectors.

Dr Gonzalez Fanfalone noted that cloud computing is one of the fastest-growing ICT services globally, with annual revenue growth estimated at 20 to 40%. Major players include AWS, Microsoft Azure, and Google Cloud. Demand is driven by both private firms and governments, with cloud infrastructure critical for national strategies such as digital sovereignty. Initiatives like Gaia X in France and Germany aim to develop trusted European cloud infrastructure. The integration of cloud services into communication networks was highlighted, with cloud providers increasingly investing in connectivity infrastructure, including subsea cables. The share of global subsea cable bandwidth used by cloud and content providers has grown dramatically, underscoring their central role in the digital economy.

Security challenges were also addressed, with virtualised networks introducing new risks due to dependencies on multiple third-party suppliers. Recent outages in Spain, Portugal, and globally were cited as examples of the ripple effects of cloud service disruptions. Regulatory attention is increasing, with a growing number of communication regulators assuming responsibilities over cloud computing. The convergence of communication and digital services raises important policy questions about the role of cloud providers as infrastructure operators and the implications for regulation of access, interconnection, and resilience.

The Chair gave the floor to the **Secretariat**. The Secretariat provided a briefing on the background note, which overviews of key competition issues in cloud computing services.

The Secretariat outlined concerns identified in market studies, including switching barriers, limited interoperability, and pricing practices. The Secretariat elaborated on the different layers of cloud services: infrastructure as a service (IaaS), platform as a service (PaaS), and software as a service (SaaS). The focus of competition authorities has been on the infrastructure and platform layers due to their standardised business models and comparable market dynamics.

The Secretariat highlighted the strong position of the hyperscalers, with Microsoft and Amazon in particular holding up to 80% market share in some jurisdictions. The market is characterised by large capital investments, substantial economies of scale, and high sunk costs, which deter new entrants. Egress fees, charged for moving data out of cloud systems, were identified as a significant barrier, with margins reported as high as 8 000% above actual costs. Complementarities with adjacent digital services and network effects further entrench the position of hyperscalers. The growing role of cloud services in AI development was discussed, with cloud providers competing for limited supplies of powerful chipsets and forming partnerships with AI firms, raising concerns about self-preferencing, tying, and bundling practices.

The Secretariat continued by addressing core competition concerns: technical barriers to switching, lack of interoperability, and complex pricing structures. Long-term agreements with complex conditions make it difficult for users, especially smaller companies, to migrate services. Hyperscalers' pricing strategies, including generous cloud credits tied to exclusive use or future commitments, can have structural effects on competition. Additional concerns include restrictions on software use across clouds, bundling of services, and marketplace practices that favour providers' own offerings. Regulatory responses such as market studies, enforcement actions, and new legislative tools (e.g., the EU Data Act and Digital Markets Act) were discussed as means to address these issues. Standardisation was identified as a potential solution, though it may also reinforce the dominance of large providers.

Following the Secretariat's presentation, the Chair introduced two distinguished academics: **Cecilia Rikap** (Associate Professor in Economics at the University College London and Head of Research at the UCL Institute for Innovation and Public Purpose) and **Professor Antonio Manganelli** of the University of Siena. Dr Rikap was invited to provide a backward-looking analysis of how efficiencies have been addressed in merger control.

Dr Rikap argued for a paradigm shift in competition policy, emphasising the need to move beyond analysis of independent markets to recognise the embeddedness of cloud services in complex ecosystems and networks. She contended that the main problem is not market concentration per se, but the capacity of hyperscalers to exert control beyond ownership, affecting not only the cloud market but the global economy.

Dr Rikap described the cloud as a "digital technology supermarket," where users can purchase a wide range of services. Partners in the cloud ecosystem are both users and sellers, creating intricate interdependencies. She used the analogy of baking a cake to illustrate how production, exchange, and consumption of digital technologies all occur within the cloud. The cloud's structure generates dependencies for startups, the public sector, and corporations, with services often sold as black boxes, limiting access and fostering lock-in. Dr Rikap reported that in her interviews with industry professionals, the disclosed deliberate strategies to create "stickiness" and make it harder for users to leave.

Dr Rikap highlighted the role of hyperscalers in controlling key layers of the AI value chain, creating "choke points" that all actors must pass through. Even firms with the capacity to train their own models are ultimately obliged to use the marketplaces of the major cloud providers. The lack of interoperability and the panopticon-like oversight of the

global economy by hyperscalers were emphasised. Cecilia argued that these companies steer the agenda for AI development, influencing the types of AI that become prevalent and shaping global research networks.

The Chair then turned to **Prof Manganelli**. He discussed the differences between cloud markets and other digital markets, focusing on the unique interrelation between cloud and AI. He identified common concerns from market studies: high concentration, technical barriers (data portability, interoperability), commercial barriers (tying, bundling, vertical integration), and monetary barriers (unpredictable egress fees). The intensity and nature of competition problems vary depending on migration scenarios and the specific layers of the cloud stack.

Prof Manganelli explained that the infrastructure and platform layers of cloud services exhibit substantial economies of scale and network effects, while the service layer (SaaS) generates more revenue but presents different competitive dynamics. The cloud marketplace, created by hyperscalers, introduces platform-like dynamics and cross-side network effects, but vertical integration and regulation through cloud services make the ecosystem distinct from traditional digital markets. The role of data changes across layers, acting as a technical asset in infrastructure and as an informational asset in platforms and services, enabling data feedback loops and informational lock-in.

Prof Manganelli elaborated on the relationship between cloud and AI, referencing market studies by the French Autorité de la concurrence and the UK CMA. Cloud computing is crucial throughout the AI value chain, both upstream (development of foundation models) and downstream (deployment and inference). Vertical integration between cloud and AI segments is under scrutiny by competition authorities. Antonio suggested that tipping dynamics and consumer lock-in are most likely to occur downstream, where generative AI applications are integrated with specific foundation models, creating reliance on particular providers. The cloud marketplace for AI models further reinforces these dynamics.

The Chair then called on the **Netherlands** to present the findings of its 2022 market study, particularly their work focusing on non-consumer users (businesses and governments). The study highlighted the importance of the initial choice of provider, with strong competition for new customers through rebates and free credits. Integrated offerings and the ability to outsource IT management are major attractions, but dependence and lock-in are significant risks. Switching costs are high, and hyperscalers can steer users towards certain solutions. Multi-cloud use is common but typically not integrated for single workstreams.

Regulatory responses include the Data Act, which aims to lower dependence by decreasing switching costs and improving interoperability. The Netherlands advocated for explicit interoperability obligations. Enforcement of the Data Act requires cooperation between EU Member States due to the concentration of providers. The Digital Markets Act (DMA) may become more relevant, with cloud designated as a core platform service, though no providers have been designated yet. Competition law, particularly antitrust abuse of dominance, remains important, with bundling deserving attention. Ex ante regulation and ex post competition enforcement are seen as complementary. The government's role as a major buyer of cloud products was emphasised by the Netherlands, with potential to use buying power to stimulate interoperability and open source developments.

Japan then spoke about findings from its 2020 market study, focusing on fostering a competitive environment with diverse providers and ensuring interoperability. The study identified contractual, technical, and economic constraints that hinder switching. High data transfer (egress) fees were highlighted as a barrier, with the Anti-monopoly Act addressing unfairly high fees that have foreclosure effects. A specific case involving MC Data Plus was presented, where the company refused to provide employee information in a format

that would allow clients to switch providers. The Japan Fair Trade Commission (JFTC) issued a cease-and-desist order, requiring corrective measures.

Korea was invited to take the floor. Korea's market study involved 32 cloud service providers and over 3 000 clients and partners. Korea found that the market is highly concentrated, with global hyperscalers and the Korean company Naver accounting for over 80% market share. The study identified competition-restricting factors such as data transfer restrictions and non-transparent pricing. Self-preferencing and unfair trade practices were common, including biased licensing policies, marketplace terms, algorithm manipulation, and technical integration that favours providers' own services.

Unfair contract terms were also found to be prevalent, with large providers imposing one-sided terms that hinder migration and create operational risks for clients. Such practices are regulated under Korea's Monopoly Regulation and Fair Trade Act. The study called for greater attention to high switching costs and technical constraints, with ongoing legislative discussions aimed at fostering interoperability and data portability.

Following a short coffee break, **Professor Manganelli** was invited to discuss pro-competitive regulatory responses in the cloud computing services sector. He began by referencing the extensive market studies and investigations conducted globally, and the different institutional settings and legal frameworks across jurisdictions, granting national competition authorities (NCAs) varying remedial powers. Prof Manganelli noted that some recommendations from these studies have influenced policy, such as the Netherlands' ACM's input into the Data Act and the French Autorité de la concurrence's impact on French legislation. He observed that enforcement in digital markets, particularly cloud services, is inherently global, though relevant markets may be defined more narrowly in practice. Prof Manganelli advocated for more coherent regulation, especially at the European level, and discussed the absence of single dominance in the European cloud market, contrasting this with Japan and Korea, where individual local firm dominance may be more apparent.

Prof Manganelli explored the concept of joint dominance in digital markets, particularly when the geographical market is extensive, and referenced cases involving the leveraging of dominance from adjacent markets, such as Microsoft's activities in the US and UK. Prof Manganelli then turned to pro-competitive regulation, focusing on the European legislative efforts. He explained that while the Digital Markets Act (DMA) includes cloud computing services as core platform services, no provider has yet been designated as a gatekeeper due to the quantitative and qualitative criteria not being met.

Prof Manganelli critiqued the DMA's approach to cloud services, highlighting definitional ambiguities regarding business users and end-users, and the lack of recognition for cloud marketplaces as two-sided markets. He suggested that these issues may explain why no gatekeepers have been designated in cloud services under the DMA to date.

Dr Rikap then took the floor to discuss democratising access to knowledge, regulating cloud giants' relationships with subordinated companies, and contributing to building alternatives. She challenged the narrative that regulation stifles innovation, arguing that open access to knowledge, as exemplified by the open-source community, is fundamental to technological progress.

Cecilia presented research showing that major tech companies, including the cloud hyperscalers, sit at the centre of the global AI research network, influencing research agendas and, consequently, the direction of AI development. She argued that democratising access to knowledge would not hinder innovation but rather foster the kind of innovation society needs. She discussed the limitations of measures such as eliminating egress/data exit fees, noting that technical lock-in persists due to proprietary coding and certifications.

Dr Rikap advocated for greater transparency in strategic agreements between cloud providers and leading corporations, warning of the risk of "network cartelisation," where companies like NVIDIA design AI semiconductors tailored to the data centres of largest cloud providers.

On regulating cloud hyperscalers' relationships with customer companies, Dr Rikap highlighted the role of corporate venture capital in granting privileged access to startups' knowledge and technologies, steering their development, and reinforcing ecosystem dependencies. She called for regulation of such agreements to prevent dominant firms from accessing proprietary code or unduly influencing startups.

Dr Rikap also proposed considering strategic breakups between infrastructure-as-a-service and cloud marketplace functions for hyperscalers to reduce dependencies and foster competition. She emphasised that there is no single solution to the complexity of the cloud ecosystem but stressed the vital role of competition authorities in building alternatives.

The **United Kingdom** then spoke to describe their ongoing market investigation into cloud infrastructure, initiated by Ofcom and referred to the CMA for a deeper dive. The investigation identified high barriers to entry and expansion, with AWS and Microsoft holding significant unilateral market power. The CMA distinguished between the positions of the hyperscalers and others, noting that barriers hinder alternative clouds' entry and growth.

The investigation focused on barriers to customer switching and multi-homing, including egress fees, technical barriers, and particularly Microsoft's licensing practices, which may disadvantage customers using Microsoft software on rival clouds. The CMA's provisional findings recommended considering a designation investigation under the new digital markets competition regime, which would allow for ongoing intervention. The impact of AI on market dynamics was also under review, with the final decision expected later in the year.

Spain presented the CNMC's advocacy-focused market study on cloud services, aimed at identifying barriers to competition and issuing non-binding recommendations. The study, part of the CNMC's strategic plan, involved a public consultation in 2024. Stakeholders identified two main groups of barriers: entry barriers (high investment costs, shortage of qualified labour, regulatory hurdles) and barriers to switching/multi-cloud (interoperability issues, restrictive commercial policies, high migration costs, lack of transparency).

Spain's study was ongoing, with further stakeholder engagement planned. Preliminary analysis suggests significant barriers to competition, and the CNMC aims to provide recommendations to guide public policy and regulatory reforms

Türkiye then took the floor to describe the rapidly growing but still maturing cloud sector in the country, with concerns about dependence on global players and the need for effective policy and regulatory frameworks. Key issues include data transfer, portability, and interoperability, which are essential for fostering supplier diversity and enabling user switching. Local providers are concerned about technical and commercial asymmetries with global players.

The Turkish Competition Authority has not yet conducted specific enforcement actions but plans a sector inquiry into cloud computing services. Legislative work is underway to include cloud services among core platform services, with the aim of developing a more competitive and transparent ecosystem.

Denmark made a contribution based on survey responses from its ongoing market study. Three out of four Danish companies use at least one cloud service, prioritising security and compliance over price. While switching is relatively common, technical barriers (especially

interoperability and portability), fear of downtime, and retraining costs remain significant obstacles. A major issue Denmark has identified is the lack of transparency, both ex ante (difficulty comparing providers and understanding contract terms) and ex post (complex, unintelligible billing). The Danish competition authority is considering whether regulatory or legal interventions could improve transparency and facilitate switching, but further analysis is needed.

The **European Commission** provided an overview of the EU's approach, emphasising the strategic importance of the cloud sector for the economy and AI development. The EU has deployed a comprehensive toolbox, including the Data Act (effective September 2025), which aims to reduce switching costs, eliminate egress fees, and improve interoperability. The DMA lists cloud services as core platform services, but no provider currently meets the gatekeeper criteria.

The Commission referenced the Draghi report's recommendation to ensure access to hyperscalers' technologies while supporting domestic sovereign cloud solutions. Initiatives such as the Competitiveness Compass and Important Projects of Common European Interest (IPCEI) are mobilising investment in cloud and AI infrastructure. The Commission continues to use traditional competition tools, including merger control and antitrust enforcement, to address leveraging and interoperability concerns. Ongoing monitoring of AI and virtual worlds is also a priority.

Mexico described the evolving legal landscape, with COFECE gaining jurisdiction over digital markets, including cloud computing, following a landmark court decision. COFECE applies existing competition law to digital sectors, reviewing mergers and conducting research. The authority's experience includes reviewing mergers in data centre and IT outsourcing markets, finding no evidence of harm to competition. Legislative amendments are pending to clarify COFECE's powers over telecommunications and digital services.

Saudi Arabia explained their approach to cloud and digital markets which includes market surveillance, studies, and merger reviews. Four merger transactions in cloud computing have been approved, supporting the government's goal of increasing cloud adoption. The Saudi competition authority is attentive to the risks of AI and algorithms facilitating collusion and price discrimination, and emphasised the need for international co-operation among competition authorities to address challenges in cloud and digital services.

In the closing segment, the Chair invited final comments from the panel.

Dr Rikap reiterated the need to prioritise cloud policy, noting that cloud is foundational to the digital economy and other platforms. She advocated for ex ante regulation, particularly regarding the installation and operation of data centres, and highlighted the environmental impact of outdated technologies in some regions.

Professor Manganelli echoed the importance of prioritising competition policy in cloud, suggesting that cloud should be considered both as critical ICT infrastructure and as a platform requiring coordinated regulation across competition, telecom, and data protection authorities.

Dr Fanfalone Gonzalez, representing the OECD Connectivity Services and Infrastructures Unit, emphasised the need to understand digital technologies before regulating, given the market's complexity, economies of scale, network effects, and high fixed costs. She drew parallels with telecommunications markets and stressed the importance of balancing competition and investment. Dr Fanfalone Gonzalez called for regulatory co-operation across sectors and jurisdictions, noting that the convergence of ex ante regulation and ex post competition policy requires intimate collaboration for effective digital transformation.