

Politecnico di Torino

Politecnico di Torino

Ingegneria Gestionale

A.a. 2025/2026

Sessione di laurea Settembre 2026

Competition Governance in the Age of AI

A Comparative Analysis of the European Union and Japan

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Chapter 1

Introduction

Artificial intelligence and its applications are producing extraordinarily rapid changes in every aspect of life in our society. Moments of technological disruption like the current one are rare and offer new players the opportunity to enter the digital economy. Despite these opportunities, there is a deep concern that there is no "AI without Big Tech"[1] given that startups are often heavily dependent on gatekeepers for access to critical resources. Given the economic relevance of the AI sector and its impact on other industries, it is essential that competition policy and enforcement mechanisms are equipped to monitor and respond effectively to emerging risks in the AI supply chain. The AI industry raises important governance challenges since:

- Existing digital regulations were designed for traditional platform markets;
- AI systems evolve rapidly, making it difficult to use traditional legal and technological categories to classify them;
- Competition risks emerge across multiple interconnected layers of the AI value chain;

AI is establishing itself as a driver of productivity and competitiveness for years to come, and control of the critical technologies associated with this innovation is becoming a matter of national security and political independence[2]. It is therefore necessary to strike a balance between competing objectives: ensuring effective regulation and the protection of consumers and personal data, while preserving innovation, strategic competitiveness, and control over critical technologies. In this context, the EU and Japan appear to be adopting structurally different approaches and strategic positioning to competition governance.

1.1 Goal

The goal of this thesis is to analyse how the competition governance frameworks of the European Union and Japan are adapting to emerging competition concerns across AI technologies and the AI value chain. The analysis focuses on the regulatory trade-offs that emerge between legal certainty, operational adaptability, deterrent enforcement and innovation-friendly governance under conditions of technological uncertainty. The research combines: literature review, comparative institutional and regulatory analysis, and comparative case-study analysis, focusing on:

- EU frameworks (DMA, GDPR, AI Act);
- Japanese frameworks (MSCA, TFPDA, APPI, AI Utilization Promotion Act);
- Selected antitrust cases and recent AI-related investigations in both jurisdictions;

1.2 Structure of the thesis

The thesis is structured as follows. The next section introduces the main characteristics of the AI value chain, and summarizes the main competition risks for each layer, providing the conceptual foundation for the analysis. The following sections provide an overview of European and Japanese approaches to digital competition governance. Building on this comparative framework, the study analyzes selected digital market antitrust cases as well as emerging AI-related competition concerns. Finally, the paper discusses the main governance trade-offs and concludes with reflections on the implications for the regulation of AI ecosystems.

Chapter 2

The AI Value Chain

The training and deployment of an AI system relies on a highly complex and capital-intensive global supply chain[3] that involves three distinct phases: construction of the technology infrastructure, model development, and model distribution[4].

1. **Infrastructure**: this phase relies on computational resources, data and specialized skills. Artificial intelligence models require large training and validation datasets, and the training process itself requires computational power (chips, supercomputers, cloud infrastructure). Highly qualified resources are crucial throughout the phases of the value chain;

2. **Model development**: this phase consists on the deployment of the gathered data and computational resources to carry out the pre-training of the FM and its subsequent perfectioning through fine-tuning;

3. **Model distribution**: this phase consists in the distribution of the model and its actual market utilization, either through a formal release (closed source or open source) or through implementation in other applications;

There are a range of different markets in the AI infrastructure chain, each of which has its own unique dynamics. The aim of this chapter is not to provide an exhaustive description of each layer of the AI value chain, but rather to identify the main structural dynamics that shape competition across the ecosystem. Table 2.1 summarizes, for each layer of the value chain: the key success-factors or assets, the market structure, and possible anti-competitive practices.

Layer	Key asset/success factor	Market structure	Competition concerns
Hardware / chips	Supply capacity, advanced CPUs and accelerators, software ecosystem	Highly concentrated upstream market	Bottlenecks, dependency on supplier, closed architectures
Cloud / compute	Scalable infrastructures, data centers, cloud marketplace, massive CapEx capabilities	Concentrated around hyperscalers	Lock-in, self-preferencing in marketplace, preferential access to computing resources
Foundation Models	Access to compute and data, skilled resources, model performance	Dynamic but resource-intensive	Data advantage, economies of scale and scope, vertical integration
AI Applications / Agents	Ecosystem integration, access to distribution ecosystems	Emerging and competitive	Interface control, self-preferencing, ecosystem leveraging, lock-in, switching costs, agent-mediated foreclosure

Table 2.1: AI value chain layers and competition concerns. Author's elaboration based on [3, 4, 5, 6, 7]

2.1 Hardware and chips layer

The hardware and chips layer is highly concentrated, with some segments dominated by single players owning over 80% of the market[3]. Currently, the global leader in the production of GPU for AI application is NVIDIA, with a market share of over 90%[4].

While rising start-up are trying to emerge with more computationally and energy-efficient solutions[4], the major cloud hardware infrastructure providers for model development — Microsoft, Google, and Amazon — are developing proprietary chips in-house[8, 9, 10] to reduce dependencies on NVIDIA. Despite these efforts, NVIDIA's first-mover position in CPU manufacturing and its efforts to

deploy its CUDA software[1] have effectively slowed competition from other chip-makers, raising risks of closed architectures and lock-in. Furthermore, given its strategic partnership with semiconductor supplier TSMC[2], its dominant position is almost assured in the period ahead[4, 7].

Given the growing demand for AI, and the concentration of the chip supply market, potential bottlenecks could recur in the future, making it particularly strategic and relevant to have control over who obtains such supplies[3].

2.2 Cloud services layer

Cloud services are the primary means of accessing computing power for training AI models, and are therefore a key channel for the development and distribution of this technology. The market is concentrated around the hyperscalers Amazon AWS, Microsoft Azure, and Google Cloud Platform[11]. Such a level of concentration is understandable, given the high barriers to entry for the data center industry: very high capital requirements, economies of scale, and long lead times[3].

Given the role played by cloud providers in the diffusion of the technology, there is concern that they could exploit their marketplace platforms by applying self-preferencing strategies towards their own FMs or by promoting their own downstream services over third-party alternatives.

Access to large and diverse user data sets could also represent a real advantage for enhancing their models, improving performance, and introducing new services.

There are also risks of lock-in as changing service providers or migrating to an on-premise infrastructure can be costly and complex[4].

2.3 Foundation Models layer

In the Foundation Model layer, competition appears dynamic but increasingly dependent on access to strategic resources, with Google, OpenAI, Microsoft, and Meta being the most significant firms in this segment, having released nearly a third of all models released globally between 2014 and 2024[4].

This creates potential structural advantages for large digital incumbents[4, 5]: firms operating large digital ecosystems may benefit from data leverage, as user interactions and feedback can improve model development and personalization.

[1] A platform that enables the use of GPU parallel computing power to train and run artificial intelligence models. It has become the de facto standard in the market.

[2] Taiwan Semiconductor Manufacturing Company, the world's largest independent semiconductor manufacturer.

Nevertheless, data possession alone isn't enough to create a competitive advantage. Aggregating data and user feedback generated across multiple applications should directly impact model performance.

Moreover, economies of scale and scope may reinforce concentration, since the high fixed costs of training and deploying frontier models can be spread across multiple products, services and markets[4].

The market remains dynamic overall. Major digital firms continue to compete in the development of general-purpose foundation models, while other firms increasingly seek differentiation by developing models specialized for specific applications or domains[7]. At the same time, the availability of open-weight and open-source models may lower entry barriers for downstream developers and act as a partial counterweight to monopolistic tendencies[4].

2.4 AI Applications layer

The application layer is highly competitive, characterized by increasing integration of AI products into pre-existing services, diffusion of user-facing applications, rapid evolution of AI agents. The development of such products represents a disruptive innovation capable of enabling new services that end users can perceive as a substitute for (and better than) those of traditional digital platforms[4]. Furthermore, the advent of AI agents paves the way to a new generation of digital products and human-machine interaction, in which the AI agent completes a request by choosing which app or provider to use to complete the task, establishing a shift in the power to steer consumer demand from the user to an agent-centric system[4, 12].

Although the market is currently dynamic, various risks may arise, especially in the long term with the emergence of agents as the primary interface for interacting with users.

Firstly, major technological firms are already integrating their models directly into existing distribution channels[13, 14], creating opportunities for tying, ecosystem leveraging and self-preferencing[4, 5, 7].

As models become increasingly integrated with the operating system, the value chain could lose its linear shape and move closer to a platform structure, creating possible dependencies and lock-in risks[7]. In this context, partnerships between functional model providers, OS developers and device manufacturers are already taking place[15, 16, 17], potentially enabling strategies aimed precisely at limiting competition[12].

An additional factor of dependency arises from the need for third-party developers to reconfigure their apps or services to be compatible with the agent (for example, via specific APIs)[12]. This creates a barrier to entry as providers will

tend to integrate only with the most popular agents, strengthening their dominant position.

As AI agents gradually evolve towards complete autonomy, the risk of agent-mediated foreclosure emerges. While one might draw a parallel between the risk of self-preferencing in the case of AI agents and search engines, the fundamental difference lies in the fact that agents, potentially able to complete actions without human intervention, could completely bypass the user selection phase, thus concealing the self-preferencing strategy[12]. This can lead to increased benefits for the provider but not for the user, especially in cases where the user doesn't pay for the agent (the provider must find revenue elsewhere) or the agent is pre-installed or integrated into a service/device (users have more difficulty opting out of this dynamic).

Additionally, if agents become the main interface through which users search, compare and purchase services, third-party providers may lose direct access to customers and become increasingly dependent on the agent provider's selection and ranking criteria[12]. In this context, default settings, interface design and recommendation mechanisms may become crucial competitive variables, as they can influence which services are selected by the agent and how easily users can switch to alternative providers.

Finally, switching costs may further increase if agents become personalized over time and integrated with users' data, accounts, workflows and third-party services, as users and business customers may find it difficult to migrate to competing AI assistants without losing accumulated context, preferences or integrations[12].

2.5 Implications for Competition Governance

Competition concerns in AI markets cannot be understood by looking at a single layer in isolation. Rather, market power may emerge from the interaction between upstream bottlenecks, foundation model development, downstream applications and distribution ecosystems. Large technology firms have invested heavily across the AI value chain and, while the market remains dynamic and leadership positions are still evolving in several segments, attention should be paid to partnerships and vertical integration, which may enable firms to extend market power across layers and reduce contestability over time.

In more traditional digital markets, competition authorities have progressively developed legal tools and enforcement strategies to address practices such as tying, self-preferencing, exclusionary conduct and abuse of dominance. However, AI systems introduce new layers of complexity: they are general-purpose, rapidly evolving, technically opaque and deeply integrated into existing digital ecosystems. These features may expose the limits of traditional antitrust enforcement and raise

new questions about which enforcement approach is most appropriate to ensure the contestability of such markets.

The following chapters therefore examine the regulatory and governance frameworks of the European Union and Japan, their applicability to these new challenges, and what trade-offs emerge between their approaches.

Chapter 3

The European framework

The EU's approach to regulating digital products and services promotes a human-centric digital transition that protects user privacy, ensures cybersecurity, fosters fair competition, and standardizes compliance across its single market. The system is based on several legislative pillars, using a mixed approach of ex-ante regulation and ex-post enforcement. It also largely relies on specific, standardized definitions of technological concepts, digital services, and business models to determine how they are governed. The main EU regulatory instruments relevant to digital services and products are:

- **Digital Market Act (DMA)**, adopted in 2022 and applicable since 2023: aims to ensure contestability and fairness in digital markets through the identification of gatekeepers (large digital platforms providing so called core platform services CPS, such as for example online search engines, app stores, messenger services) that have to comply with obligations and prohibitions listed in the DMA;
- **Digital Services Act (DSA)**, adopted in 2022: enforces rules for online intermediaries (marketplaces, social media networks, app stores, and online travel and accommodation platforms) regarding content moderation, user safety, and platform transparency;
- **General Data Protection Regulation (GDPR)**, applicable since 2018: ensures personal data protection and data governance;
- **Data Act**, applicable since 2025: ensures access, sharing and portability of data;
- **AI Act**, adopted in 2024, progressively applicable until 2027: regulates AI systems on a risk-based classification, ensuring safety, transparency, and compliance;

- **P2B Regulation**, applicable since 2020: promotes transparency and fairness for business users on platforms;

While competition concerns related to chips, cloud services and data access can be traced back to established categories already addressed by competition law and digital regulation, the application layer of the AI value chain raises new regulatory challenges. AI agents, in particular, represent a problematic test case for the existing EU framework, as they do not easily fit within the legal categories on which current digital regulation is based.

This chapter therefore focuses on the applicability of existing EU rules to agentic AI systems, as they appear as one of the main emerging challenges for competition authorities.

3.1 The DMA as the Main Framework for Agentic-AI Competition Concerns

AI agents are difficult to classify under existing EU digital regulation because they do not completely fit into one predefined legal category. They may operate simultaneously as assistants, interfaces, search tools and intermediaries, creating uncertainty as to which obligations may apply. As shown in Table 3.1, among the instruments considered, the DMA appears to be the most relevant from a competition governance perspective, because its definition of "virtual assistant" best captures the nature of AI agents[1].

EU instrument	**Relevance for AI agents**	**Main limitation**
Competition law (Art. 102 TFEU)	Relevant for abuse of dominant position	Ex-post intervention may be too slow in fast-moving AI markets
DSA / P2B Regulation	Relevant for platform transparency and business-user relations	Limited capacity to address agent-mediated intermediation
Data Act	Relevant for access and portability of personal data	Limited relevance for purely digital AI agents and for competition concerns related to gatekeeping
AI Act	Relevant for safety, transparency and risk classification	Not primarily designed to address contestability or market power
DMA	Most relevant for contestability, default settings, self-preferencing, interoperability and data portability	Applicability depends on gatekeeper/CPS qualification, technical enforcement challenges

Table 3.1: Applicability of EU regulatory instruments to AI agents. Author's elaboration based on [1]

Assuming the designation of agents as 'virtual assistants', three important obligations would impact gatekeepers[12, 18]:

1. Allow users to easily change the default settings of the virtual assistant that directs them to other products or services. Moreover, if an OS gatekeeper also has its own virtual assistant designated as CPS, it must present the user, upon first use, with a choice screen between the main virtual assistants available (Article 6(3), para 2);

2. Prohibit self-preferencing in rankings (Article 6(5));

3. Ensure effective data portability and access to data generated by business users and end users (Article 6(9)-(10));

Furthermore, if the AI agent becomes so deeply integrated into the device that it controls basic functions and allows other apps to run, it could potentially be assessed under the rules applicable to operating systems[12]. The specific requirements for this category are broader and more structural[1, 12, 18]:

1. Must allow users to uninstall a pre-installed agent as long as it is not essential (Article 6(3), para 1);

2. Must provide third-party AI agents the same interoperability with hardware and software features as it is available to its own agent (Article 6(7));

These obligations appear particularly relevant, as they address several of the anti-competitive risks identified in Chapter 2.

More importantly, the immediate regulatory issue is not only the classification of AI agents, but also the level of integration of such technologies into core platform services already regulated by the DMA. Recent developments regarding the delayed release of Siri AI in the EU[19] illustrate this point. In Apple's case, the relevant DMA concern appears to arise from Article 6(7), which concerns the interoperability obligations imposed on designated operating systems, rather than from the formal qualification of Siri AI as a "virtual assistant". The case therefore suggests that the DMA may already affect the deployment of AI agents when they are integrated into designated core platform services.

3.2 Limits of the DMA in the Context of Agentic AI

Despite its versatility in addressing these new challenges, several obstacles, both in technical implementation and in effective enforcement, make the application and enforcement of the DMA challenging[1, 12].

Unlike search engines and traditional systems, agents do not just sort results but can make autonomous decisions, making self-preferencing less visible and potentially more impactful. While choice screens for search engines or browsers may remain relevant, their implementation is technically complex in the context of AI agents, as they deeply integrate the use of adjacent services into their tasks. The requirement to ensure transparency, fairness, and non-discrimination is also difficult to enforce, given the opacity of AI models and agentic decision-making processes.

Obligations regarding data portability and access also present problems of applicability: first, the scope of the data included in this obligation would need to be defined (conversational data, sensor data, location data, user preferences, etc.), and questions would then arise about the actual effectiveness of these provisions. While the portability of conversational data could facilitate market contestability, it could also undermine innovation, potentially enabling distillation risks. On the other hand, sharing more sensitive data such as model parameters or weights would be disproportionate and could undermine the incentives to invest in model development.

As AI agents become increasingly embedded in the core of operating systems and

hardware, ensuring compliance with constraints such as the ability to uninstall pre-installed services becomes complex, given the deep system-level integration. For the same reason, ensuring interoperability between different agents is not only complex due to the lack of standards, but also risky, as agents' access to sensitive data raises significant trade-offs between contestability, privacy, security, and system integrity.

In addition to implementation issues, the gatekeeper designation process itself may be unsuitable for rapidly evolving markets such as agentic AI. The DMA designation process of gatekeepers relies heavily on quantitative thresholds and on the identification of a durable market position. However, in fast-moving AI markets, competitive advantages may emerge before the relevant service clearly satisfies the conditions for designation. Moreover, the identification of business users may be more complex in this context, where developers, third-party service providers, advertisers and end users may interact through less visible and more automated forms of intermediation. This creates the risk of delayed or obsolete regulatory intervention, potentially reducing the effectiveness of the DMA.

3.3 The EU Model between Legal Certainty and Regulatory Adaptability

As shown, the EU regulatory framework provides several instruments that may apply to AI agents, and the DMA appears to be the most relevant from a competition governance perspective. Its obligations on self-preferencing, uninstallability, default settings, interoperability, and data portability are directly connected to the risks identified in the AI value chain in Chapter 2.

The DMA appears well positioned to address some of the competition concerns for two main reasons. First, many potential sources of foreclosure are likely to arise from CPS that are already covered by the DMA, such as operating systems, app stores, browsers, and other distribution channels controlled by designated gatekeepers, as suggested by the recent Siri AI/Apple Intelligence developments. Second, the inclusion of "virtual assistant" among DMA's list of CPS provides a possible entry point for assessing AI agents.

At the same time, agentic AI exposes important limits of the EU model. DMA's predefined legal categories of core platform services were not designed with such technologies in mind. As a result, its effectiveness depends on how AI agents are technically integrated and classified within DMA's categories. Moreover, several obligations raise complex implementation issues.

The EU model therefore offers a high degree of legal certainty and strong enforceable obligations, but agentic AI reveals potential tensions between this codified

approach and the need for adaptability. While the DMA already addresses several emerging risks, its future effectiveness will depend on the ability of regulators to interpret current categories, prevent delayed intervention in rapidly evolving markets and adapt enforcement tools to technically complex AI systems.

This tension between legal certainty and adaptability provides the basis for the following chapter, which focuses on the Japanese approach and its greater reliance on flexible, guidance-based and case-by-case governance mechanisms.

Chapter 4

The Japanese framework

Japan's strategy for regulating digital markets combines traditional antitrust enforcement with administrative guidance, sector-specific legislation, ex-ante regulation and soft law. The result is a pragmatic approach based on ongoing stakeholder dialogue, guidelines, and market studies. While the Antimonopoly Act (AMA) remains the general legal basis for competition enforcement across all markets, Japan has also introduced a number of more specific instruments addressing digital platforms, data governance and AI:

- **Mobile Software Competition Act (MSCA)**, effective from 2025: ex-ante competition policy model aimed at addressing structural risks in smartphone ecosystems, regulating bottlenecks such as operating systems, app stores, browsers and search. While functionally comparable to the EU Digital Markets Act, its scope is narrowed on smartphone ecosystems and it aims to foster competition and consumer choice by imposing strict rules on designated providers;
- **Act on Improving Transparency and Fairness of Digital Platforms (TFDPA)**, entered into force in 2021: promotes transparency and fairness protecting business users who operate on large digital ecosystems;
- **Act on the Protection of Personal Information (APPI)**, entered into force in 2005 and amended in 2015 and 2020: protects the rights of individuals while balancing the commercial use of data;
- **Act on Promotion of Research, Development and Utilization of Artificial Intelligence-Related Technologies (AI Utilization Promotion Act)**, adopted in 2025: provides a policy-oriented framework aimed at fostering innovation, coordinating stakeholders, and promoting responsible AI use;

Among these instruments, the MSCA is the most directly relevant from a digital competition perspective, while the AMA remains the main legal basis for ex-post enforcement. The other instruments contribute to the broader regulatory environment, but are not primarily designed to address contestability or market power.

4.1 The AMA and the MSCA as the Main Frameworks for Agentic-AI Competition Concerns

With regard to the AI market, Japan seeks a balance between promoting innovation and mitigating risks, avoiding hard regulation and relying more on pre-existing legal structures[20]. For this reason, there is no specific framework for AI market competition, but the authorities refer to the AMA, which remains applicable in this context but only ex post, against abusive and exclusionary conduct, according to traditional enforcement tools (market definition, proof of dominance, theory of harm, etc.). In this context, the MSCA represents an innovation in the Japanese model, introducing for the first time an ex-ante competition framework. Given the importance of smartphones as a distribution and use channel for AI applications and agentic systems, the MSCA, although written before the rise of these new technologies, provides the JFTC with several touchpoints to address AI-related anti-competitive practices. Specifically, applying the rules in force in the context of AI agents, depending on the relevant designated software/service, the MSCA may require designated providers to[20, 21]:

1. Ensure non-discriminatory and fair access to the platform for developers (Article 6). This article is relevant to ensuring a diverse distribution of AI-based applications;
2. Not hinder the distribution or offering of alternative app stores (Article 7, par 1), enabling alternative distribution channels for AI applications that might otherwise be hindered by high fees, access constraints, or poor visibility in traditional channels;
3. Provide third parties with access to certain hardware and software features of the mobile operating system (Article 7, para 2). This provision appears particularly relevant in the context of agentic AI, since AI agents may require access to system-level functionalities, sensors, voice interfaces, notifications, location data or other device capabilities;
4. Not resort to self-preferencing in search results (Article 9), which may become relevant where search engines integrate AI-generated results or answers and

give preferential visibility to their own AI-generated content, products or services;

While the MSCA also requires designated providers to show a choice screen to users for certain applications to reduce the dominance of pre-installed applications (Article 12, par. 1, subpar. b), the JFTC does not currently believe that AI assistants fall within this category of applications.

4.2 The Japanese Model: Targeted Ex-Ante Regulation and Adaptive Governance

Japan seeks to balance AI development and utilization, safety, competition and innovation through a combination of existing laws, soft-law instruments, market studies and, in specific sectors, ex-ante tools such as the MSCA. The Japanese framework does not currently include a general instrument equivalent to the DMA that could directly qualify AI agents as a regulated digital service. Their competitive relevance would therefore be assessed mainly through existing antitrust tools or, more indirectly, through the MSCA when they depend on smartphone software bottlenecks.

Although designed before the rapid diffusion of AI agents, the MSCA may have several points of contact with AI-related competition concerns. These include access to mobile operating system functions, fair and non-discriminatory treatment of application developers, openness to third-party app stores and self-preferencing in search services when AI-generated results or AI-related services are integrated into the search environment.

The Japanese model can therefore be understood as a layered and incremental approach to digital competition governance. It combines traditional antitrust enforcement, targeted ex-ante obligations, soft-law guidance, market studies and stakeholder dialogue. This structure may allow the JFTC to address AI-related concerns through existing legal categories while progressively adapting its enforcement practice to specific technological and market developments.

To analyse more concretely how competition authorities respond to similar forms of digital gatekeeping in practice, the next chapter examines selected antitrust and digital competition cases involving the European Commission and the JFTC.

Chapter 5

Comparative Analysis of Antitrust and Digital Market Cases

As highlighted in Chapters 3 and 4, the EU and Japan have developed different regulatory and enforcement frameworks to address competition concerns in digital markets. Recent developments show that these frameworks are already being tested in markets closely connected to AI development. Both the European Commission and the JFTC have opened investigations concerning cloud computing services, a key upstream layer of the AI value chain[22, 23]. At the same time, the Commission has also started to investigate concerns more directly related to AI-enabled intermediation, including the use of online content for AI purposes and the exclusion of third-party AI assistants from major digital services[24, 25]. Although these proceedings are still ongoing and cannot yet provide consolidated enforcement outcomes, they show that AI-related competition concerns are already being framed through familiar theories of harm.

Since there is not yet a consolidated body of enforcement practice specifically concerning AI agents that would allow a direct comparison between the EU and Japanese approaches in this area, this chapter focuses on selected recent digital market cases involving competition risks that may also arise in AI ecosystems, such as ecosystem control and leveraging, platform dependency, tying, lock-in and foreclosure. The aim is to analyze how the European Commission and the JFTC have addressed similar types of conduct in digital markets, using these cases as a proxy to understand how the two authorities may approach comparable risks in AI-related markets.

Case	Competition concern	Relevance for AI markets
Google Android/Search	Ecosystem leveraging, tying, default settings and foreclosure in mobile search distribution	AI applications and agents may depend on existing distribution channels. Control over these channels may shape the ability of AI startups and third-party providers to reach users.
Apple App Store	Anti-steering restrictions and platform control over information flows between developers and users	AI agents and AI-powered interfaces may filter, rank or present commercial options in ways that are not fully transparent, making it more difficult to detect self-preferencing, discriminatory treatment or restrictions on user choice.
Booking.com	Parity clauses, platform dependency and restrictive contractual terms imposed on business users	Similar concerns may arise where cloud platforms, AI marketplaces or other AI-related intermediaries act as key gateways and impose restrictive contractual terms, tying, bundling or conditions limiting business users' commercial freedom.

Table 5.1: Selected digital competition cases and their relevance for AI markets. Author's elaboration.

The following cases will be analyzed below: Google and its Search Services and pre-installed apps, Apple and its App Store guidelines, Booking and its clauses on room rates.

5.1 The Google Android/Search Case

The Google Android/Search cases provide a useful example of how competition authorities may address ecosystem leveraging and foreclosure in mobile environments.

In 2025, the JFTC issued a Cease and Desist Order against Google under the AMA, finding that Google had engaged in unfair trade practices through restrictive contractual terms. Google's violations involved agreements with Android smartphone manufacturers and mobile communications service providers that required

the pre-installation and prominent placement of Google Search and Chrome, and revenue-sharing agreements that discouraged the implementation, promotion, or suggestion of competing search services[26].

The European Commission had already adopted a decision against Google in 2018 for similar practices[27]. Specifically, the Commission found out that Google was imposing three types of restrictions: requiring manufacturers to pre-install Google Search apps and browser apps as a condition for licensing its app store; making payments to large manufacturers and mobile network operators on the condition that they pre-installed only Google Search apps on their devices; and preventing manufacturers that wished to pre-install Google apps from selling mobile devices running alternative versions of Android not approved by Google.

The remedies adopted by the two authorities illustrate different enforcement styles. The JFTC issued a Cease and Desist Order requiring Google to cease and refrain from similar contractual restrictions, notify affected business partners, implement a compliance program and submit to five-year third-party monitoring.

The European Commission, on the other hand, imposed a historic fine of €4.34 billion (then reduced by the General Court to €4.12 billion) and required Google to bring the illegal conduct to an end.

Authority	**Market / competitive field**	**Legal basis**	**Remedy**
JFTC	General Search Services, specifically the implementation of Search Functionality on Android smartphones	AMA Art. 19	Cease-and-desist order, commitments, compliance, monitoring
European Commission	General internet search services, licensable smart mobile operating systems and app stores for the Android mobile operating system	TFEU Art. 102, EEA Art. 54	€4.12 billion fine, obligation to cease conduct

Table 5.2: Google Android/Search case comparative table. Author's elaboration based on [26, 27]

This case is particularly relevant for AI markets because distribution channels are likely to become a key success factor for AI applications and agentic systems.

Major digital firms are already integrating AI tools and agents into existing operating systems, browsers, search engines, app stores and productivity suits. As a result, the way authorities respond to tying, bundling and ecosystem-leveraging strategies is likely to significantly shape the power dynamics between AI startups and incumbent digital gatekeepers.

5.2 The Apple App Store Case

The Apple App Store case allows for an analysis of how the two authorities have addressed anti-steering restrictions and platform control over access to consumers.

In 2021, the JFTC concluded an investigation into Apple, which was suspected of restricting business activities through strict clauses imposed on developers through the App Store Review Guidelines[28]. In particular, the clauses prevented developers from including in their apps external links or buttons directing users to alternative purchasing channels than those selected by Apple (which charged developers a fee for using them). These restrictions affected developers of reader apps, including music streaming, e-books and video streaming services. The JFTC also expressed concerns about the ambiguity of Apple's guidelines and the lack of clarity in app rejections decisions, which could reduce predictability for developers and negatively affect entry.

For similar reasons, the European Commission sanctioned Apple in 2024[29]. In that case, the Commission found that Apple applied restrictions on app developers preventing them from informing iOS users about alternative and cheaper music subscription services available outside of the app. The EU case was therefore narrower in sectoral scope than the JFTC investigation, as it focused specifically on music streaming apps, but it addressed a similar competitive concern: Apple's control over the App Store as an access point between developers and end users.

In this case, too, the remedies applied by the two authorities diverge significantly. The JFTC informed Apple that its practices might be in violation of the AMA; Apple subsequently issued a report stating it would revise its guidelines to improve clarity and allow developers to include in-app links to their own websites, as well as commit to an annual reporting process on the implementation of these measures for three years. Deeming Apple's measures sufficient to resolve concerns regarding potential AMA violation, the JFTC closed the investigation.

By contrast, the European Commission, following an investigation launched in 2020, fined Apple €1.8 billion in 2024. Furthermore, deeming Apple's measures insufficient and its revised business terms in violation of the DMA's anti-steering obligations, the Commission fined the company another €500 million in 2025 for non-compliance with the DMA [30].

Authority	**Market / competitive field**	**Legal basis**	**Remedy**
JFTC	App Store distribution for iPhone and reader apps for music streaming, e-books and video streaming services	AMA Art. 3 and Art. 19	Voluntary measures by Apple, annual reporting
European Commission	Distribution of music streaming apps to iOS users through the App Store	TFEU Art. 102, EEA Art. 54, DMA Article 5(4) anti-steering obligation	€1.8 billion fine, €500 million non-compliance fine, obligation to cease conduct

Table 5.3: Apple App Store case comparative table. Author's elaboration based on [28, 29, 30]

The relevance of this case for AI markets lies in the control of information flows between business users and final consumers. Apple's anti-steering restrictions limited developers' ability to inform users about alternative purchasing channels. Similar concerns may arise in AI markets if AI agents or AI-powered interfaces filter, rank or present commercial options in ways that are not transparent to users. The opacity of AI systems and the autonomy of AI agents may therefore make it more difficult to detect practices involving self-preferencing, steering restrictions or discriminatory treatment. The challenge for authorities will not only be to identify anti-competitive conduct, but also to design effective enforcement mechanisms capable of ensuring compliance and producing a credible deterrent effect.

5.3 The Booking.com Case

The Booking.com case allows for a less direct comparison than the previous ones, yet it highlights another distinctive feature of the European system: decentralised enforcement by national authorities, subsequently brought under an ex ante regime via the DMA. The case thus illustrates how parity clauses and platform dependency in online intermediation services were handled through different institutional mechanisms.

The JFTC investigated Booking.com regarding the clauses imposed on accommodation operators on its platform[31]. Specifically, Booking.com imposed two strict obligation, "narrow" parity clauses and "wide" parity clauses, which prevent accommodation operators from offering room rates that are equivalent or more favorable on their own sales channels or on all other sales channels, respectively.

The JFTC procedure did not cover narrow parity clauses, based on the specific situation observed.

In Europe, the issue of parity clauses in the hotel booking sector has historically been addressed primarily by national authorities. The Commission subsequently published a coordinated monitoring report by the European Competition Network on the online hotel booking sector specifically to assess the impact of changes to OTA parity clauses following national interventions[32].

In Japan, the investigation concluded with the approval of a commitment plan submitted by Booking itself, which provided for the removal of parity obligations, a prohibition of indirect enforcement through ranking algorithms, and the implementation of several compliance measures, including internal guidelines, training, audits and annual reporting to the JFTC for three years.

In Europe, the case was initially dealt with by national authorities that called for the removal or elimination of such clauses. The Commission subsequently designated Booking as a gatekeeper under the DMA in 2024 for its online intermediation service, Booking.com. As a result, Booking must comply with the applicable obligations under the DMA, such as Article 5(3), which prohibits gatekeepers from preventing business users from offering the same products or services through alternative online intermediation services or their own direct sales channels at different prices or conditions.

Authority	**Market / competitive field**	**Legal basis**	**Remedy**
JFTC	Online accommodation reservation services and OTA-hotel relationships	AMA Art. 19	Commitment plan by Booking, annual reporting
European Commission	Online intermediation service	DMA gatekeeper obligations	Ex-ante obligations after 2024 designation

Table 5.4: Booking.com case comparative table. Author's elaboration based on [31, 33]

The case is relevant for AI markets because it illustrates how a platform acting as a key intermediary can use contractual terms to restrict the commercial freedom of dependent business users. Similar concerns may arise in AI-related infrastructure markets, especially where cloud providers, AI marketplaces or agentic intermediaries become essential gateways for developers and firms. In this respect, the Commission's recent DMA market investigations into cloud computing are particularly relevant, as they explicitly focus on interoperability obstacles, limited

or conditioned access to business-user data, tying and bundling, and potentially imbalanced contractual terms[22].

5.4 Analysis of Enforcement Styles

The three cases highlight different approaches to digital competition governance and enforcement.

In the Google Android/Search case, Google's practices were found to have negatively affected competition by reducing incentives to use or promote alternative search engines and by limiting innovation in the sector. In this case, the JFTC resorted to one of its strongest corrective tools, a cease-and-desist order, accompanied by compliance obligations and third-party monitoring. This represents a strong corrective tool, but still reflects a behavioural and compliance-oriented approach. By contrast, the European Commission adopted a more sanction-based approach, imposing a significant fine and requiring Google to bring the infringement to an end. The EU approach therefore relied more explicitly on deterrence, taking into account the gravity and duration of the infringement.

Similar differences emerge from the Apple App Store case. Apple's unfair restrictions limited developers' ability to inform users about alternative purchasing channels and cheaper offers outside the app. This affected users' ability to make informed choices and reinforced Apple's control over the relationship between developers and final consumers. In Japan, the JFTC relied primarily on voluntary behavioural correction and periodic reporting. In Europe, by contrast, the Commission imposed a fine reflecting the gravity and duration of the infringement, and added a lump sum to ensure sufficient deterrence. The subsequent DMA non-compliance fine is particularly relevant because it shows that similar anti-steering concerns can lead to different institutional responses depending on the applicable legal framework and on the authority's assessment of the effectiveness of the proposed remedies.

The Booking case shows the European system's transition from decentralised enforcement by national competition authorities to an ex-ante obligation under the DMA. Booking's parity clauses limited the ability of accommodation operators to offer more favourable prices or conditions through alternative channels, thereby reducing price competition between sales channels and reinforcing platform dependency. In Japan, the JFTC concluded its investigation by approving a commitment plan proposed by Booking, highlighting its reliance on cooperation and ongoing dialogue with companies. In Europe, however, the situation has evolved from multiple investigations by national competition authorities to the designation of Booking as a gatekeeper. This case is therefore relevant because it shows

how a problem previously addressed through antitrust enforcement and national competition proceedings can be transformed into a harmonised ex-ante obligation applicable to designated gatekeepers.

The three cases highlight a recurring divergence between the two systems. The European approach appears more formalised, sanction-based and increasingly centred on ex-ante obligations under the DMA. The Japanese approach, while capable of using formal enforcement tools such as cease-and-desist orders, appears more corrective and compliance-oriented, relying on commitments, voluntary measures, monitoring and dialogue with firms. This comparison provides a useful basis for assessing how the two regimes may respond to similar risks in AI markets, where ecosystem integration, control over distribution channels, platform dependency and agent-mediated intermediation are likely to become increasingly important.

Chapter 6

Comparative Discussion and Regulatory Trade-offs

As shown in the previous chapters, AI markets challenge existing competition governance frameworks because they combine characteristics of traditional digital markets with new forms of technical complexity, opacity and ecosystem integration. The analysis of the AI value chain highlighted how market power may emerge not only from individual services, but from the interaction between upstream infrastructure, foundation models, downstream applications and distribution ecosystems. Chapters 3 and 4 then examined how the EU and Japan have developed different regulatory frameworks to address these risks, while Chapter 5 showed how these differences are reflected in concrete enforcement practice. This chapter brings these elements together by comparing the two models from a broader governance perspective. The aim is not to determine which system is superior in abstract terms, but to identify the trade-offs that each approach creates when applied to AI-related competition concerns, particularly in relation to legal certainty, regulatory adaptability, enforcement strength and the ability to address emerging forms of gatekeeping.

6.1 DMA and MSCA as Ex-Ante Competition Frameworks

Both the EU and Japan have introduced ex-ante regulatory frameworks aimed at enhancing contestability and limiting the ability of large digital intermediaries to entrench their position: the DMA and the MSCA[18, 21]. However, the two instruments differ significantly in scope, designation logic and regulatory technique.

While the DMA applies horizontally across multiple core platform services, the

MSCA adopts a more sector-specific approach, focusing on smartphone ecosystems and on bottlenecks such as operating systems, app stores, browsers and related services.

The two instruments also differ on the adopted regulatory techniques. The DMA relies on codified obligations and prohibitions that apply to designated gatekeepers and are directly enforceable within the EU framework. The MSCA also introduces binding ex-ante obligations, but it adopts a more guidance-oriented design, relying on detailed guidelines and practical examples to clarify how the rules apply in specific situations.

A further difference concerns the designation process. Under the DMA, gatekeeper designation is based on a combination of qualitative criteria and quantitative presumptions, including economic scale, geographic reach, user base, business-user dependency and temporal durability. By contrast, the MSCA adopts a narrower and more sector-specific logic: designation depends on the scale of use of specific smartphone software services in Japan, with the relevant threshold based primarily on the average number of domestic monthly users of the specified software.

Dimension	**DMA**	**MSCA**
Economic scale	Annual Union turnover of at least EUR 7.5 billion in each of the last three financial years, or average market capitalisation of at least EUR 75 billion in the last financial year.	No equivalent turnover or market capitalisation threshold.
Geographic scope	Provision of the same core platform service in at least three EU Member States.	Domestic Japanese market.
User threshold	At least 45 million monthly active end users and at least 10,000 yearly active business users in the Union.	Average number of domestic monthly users of the specified software of at least 40 million.
Temporal element	The user thresholds must generally be met in each of the last three financial years.	The user threshold is assessed on the basis of average monthly use during the relevant fiscal year.

Table 6.1: Comparison between the DMA and MSCA designation thresholds. Author's elaboration based on [18, 21]

Another difference concerns the role of regulatory dialogue. Both models provide for dialogue between authorities, gatekeepers, and stakeholders. However,

under the DMA, this dialogue primarily takes place within the scope of predefined, legally binding obligations, whereas the Japanese approach assigns it a more central role in the progressive shaping of enforcement activities, the drafting of guidelines, and the balancing of competition, security, privacy, and innovation. The MSCA therefore reflects a more gradual and practice-oriented approach to compliance.

Overall, while the MSCA can be seen as functionally aligned with the DMA in its objective of enhancing contestability in digital markets, it reflects a more targeted, operational, and context-specific approach, combining elements of hard regulation with detailed practical guidance and a stronger emphasis on practical implementation.

Dimension	**DMA**	**MSCA**	**Implication**
Scope	Broad horizontal framework covering multiple core platform services	Sector-specific framework focused on smartphone software ecosystems	DMA has broader reach; MSCA is narrower but more targeted
Regulatory technique	Codified obligations and prohibitions applicable to gatekeepers	Binding obligations supported by detailed guidelines and scenario-based examples	DMA provides stronger formal codification and direct enforceability; MSCA provides more operational guidance
Designation process and thresholds	Combines financial scale, user and business-user thresholds, and temporal durability requirements	Relies primarily on the average number of domestic monthly users of the relevant smartphone software during the fiscal year	DMA uses a broader and more demanding threshold logic; MSCA adopts a simpler usage-based threshold focused on domestic user scale
Regulatory dialogue	Dialogue occurs within predefined binding obligations	Dialogue plays a central role in guideline development and compliance practice	Japan relies more on progressive and practice-oriented implementation

Table 6.2: Comparison between the DMA and the MSCA as ex-ante competition frameworks. Author's elaboration based on [18, 21]

6.2 Application to AI Markets and Agentic AI

The relevance of the DMA and the MSCA for AI markets must therefore be assessed in different ways. Under the DMA, AI agents may become relevant either directly, if they fall within a core platform service category, or indirectly, if they are integrated into an already designated service. Under the MSCA, their relevance is mainly linked to their dependence on mobile software bottlenecks, such as operating systems, application stores, browsers or search services. The following table summarises the main regulatory touchpoints that may become relevant for AI agents under the two frameworks.

Regulatory function	**DMA**	**MSCA**
Default settings / choice screens	Directly relevant if AI agents are designated as virtual assistants; indirectly relevant through OS integration	Limited, current choice-screen obligations do not appear to cover AI assistants
Self-preferencing	Relevant under Article 6(5), especially in ranking and presentation of services	Relevant mainly for search services under Article 9
Data portability / data access	Strong relevance under Articles 6(9)–6(10)	No clear equivalent
Uninstallability of pre-installed services	Relevant if the AI agent is treated as a pre-installed app/service linked to an OS	No clear equivalent
Interoperability with hardware/software features	Relevant under Article 6(7), especially for OS or virtual assistant integration	Relevant under Article 7(2) for mobile OS features
Alternative distribution channels	Relevant through rules on third-party app stores and sideloading	Relevant under Article 7(1)
Fair and non-discriminatory access	Partly relevant, for example through FRAND-related obligations for certain CPSs	Relevant under Article 6

Table 6.3: Potential regulatory touchpoints for AI agents under the DMA and the MSCA. Author's elaboration based on [1, 12, 20]

This comparison shows that the DMA provides a broader set of potential entry points for AI-related competition concerns, especially through its rules on virtual assistants and operating systems. At the same time, its effectiveness depends on

the ability of regulators to classify AI agents within existing core platform service categories or to connect them to already designated services. The MSCA, by contrast, offers a narrower but more operational framework. Its relevance for AI agents is mainly indirect, but potentially important where AI applications depend on smartphone software bottlenecks for distribution, integration or access to device functionalities.

6.3 Implementation Challenges of Ex-Ante Competition Frameworks

Beyond the obligations mapped above, the DMA experience also highlights broader implementation challenges that may become relevant for the MSCA as its enforcement develops.

A first challenge concerns regulatory coherence. In the EU context, the DMA does not operate in isolation, but interacts with other instruments. This creates potential overlaps and tensions, especially where obligations on data access, interoperability or business-user rights must be reconciled with privacy, security and consumer protection requirements[34]. Although this issue is particularly relevant to the EU digital rulebook, similar coordination problems may also arise in Japan, where the MSCA requires the JFTC to balance competition objectives with cybersecurity, privacy, consumer protection and technological policy considerations.

A second and more general challenge concerns impact assessment. Since compliance with ex-ante obligations is an iterative process and user behaviour may take time to adapt, it is difficult to determine in the short term whether these obligations are effectively enhancing contestability and fairness. This problem is particularly visible in the DMA debate, where the limited availability of robust quantitative evidence and the absence of a fully developed assessment framework may hinder the ability of regulators to identify which obligations are most effective and which entail disproportionate implementation costs[35]. However, the same issue is likely to become relevant for the MSCA as well. As Japan's ex-ante framework moves from designation and compliance reporting to practical enforcement, the JFTC will also need to assess whether its obligations produce measurable improvements in contestability, developer access and user choice.

A third challenge concerns the practical governance of openness obligations. Ex-ante rules on portability, interoperability and access to platform functionalities are not self-executing: their effectiveness depends on whether they can be translated into technical and organisational mechanisms that are practicable, monitorable

and capable of generating concrete benefits for users and business users[36]. In this sense, the legal recognition of an access or interoperability right does not automatically guarantee that such access will be practically usable, stable or economically viable for third parties, nor that it will effectively increase contestability. This issue is particularly relevant for AI agents, whose ability to compete may depend on reliable and neutral access to several device features and user data. For both the DMA and the MSCA, the effectiveness of ex-ante regulation will therefore depend not only on the formal scope of the obligations, but also on the governance mechanisms through which those obligations are implemented, monitored and adapted over time.

6.4 Final Comparative Trade-off

Although competition authorities appear to be converging on similar substantive concerns, their responses differ in terms of institutional style, enforcement tools and regulatory culture[37]. The JFTC's approach places significant emphasis on flexibility, transparency and stakeholder communication. By contrast, the EU model relies more heavily on codified obligations, formal enforcement mechanisms and deterrent sanctions. These differences are reflected in the enforcement styles analysed in the previous chapter: while the Commission has tended to use sanctions and non-compliance proceedings to ensure deterrence, the JFTC has more often relied on behavioural remedies, commitments, reporting obligations and ongoing dialogue to foster gradual compliance. The EU and Japanese models should therefore not be understood as simple opposites, but as two different strategies for managing regulatory uncertainty. Recent developments in digital markets have highlighted the importance of future-proofing legal frameworks by balancing predictability and flexibility[38]. The rapid evolution of AI technologies requires regulation that is sufficiently clear to guide firms' behaviour, but also adaptable enough to respond to emerging business models and technical architectures without becoming obsolete.

A first trade-off concerns the breadth and timing of regulatory intervention. The EU model has strong preventive capacity once a service falls within the DMA framework, especially when AI functionalities are integrated into already designated services. However, it may be less effective when AI agents emerge outside established categories or before their gatekeeping role becomes sufficiently stable. The Japanese model, by contrast, can provide targeted intervention within smartphone software ecosystems through the MSCA. Outside that perimeter, however, AI-related competition concerns remain more dependent on antitrust enforcement, market studies, soft-law instruments and regulatory dialogue. This may allow a more adaptive response to technological change, but it may also limit the ability

to impose broad structural obligations across the AI value chain.

A second trade-off concerns implementation and technical feasibility. The key issue is not only whether ex-ante obligations are legally defined, but how they are operationalised in practice. The DMA provides clearer and more directly enforceable obligations, but their technical implementation often depends on compliance processes, regulatory dialogue and subsequent enforcement practice[39]. By contrast, the MSCA's reliance on detailed guidelines and scenario-based examples may provide useful operational guidance in specific areas. However, this model also depends heavily on the quality of regulatory dialogue, the technical capacity of the authority and the ability to update guidance as markets evolve. In AI markets, where business models and technical architectures change rapidly, this dependence on continuous institutional learning may become both a strength and a vulnerability.

A third trade-off concerns deterrence and collaborative compliance. Dialogue and flexibility can facilitate adaptation and reduce unnecessary compliance costs, but they cannot by themselves prevent anti-competitive conduct without credible enforcement mechanisms. The European Commission has stronger deterrent tools which may be particularly important in AI markets where tipping can occur rapidly. However, this approach may also generate rigidity, compliance costs and risks of over-deterring innovative forms of integration. The JFTC's approach may support more adaptive and context-specific solutions, but it also entails risks of weaker deterrence against large incumbents.

The main trade-offs identified above can be summarised as follows:

Trade-off	**EU model**	**Japanese model**
Breadth and timing of intervention	Strong preventive capacity once the DMA applies, but less immediate for emerging AI agents outside established categories or before gatekeeping becomes stable	Targeted intervention within smartphone software ecosystems; outside the MSCA perimeter, broader AI-related concerns rely on more adaptive but less structural tools
Implementation and technical feasibility	Strong formal obligations, but complex implementation and monitoring challenges	More operational guidance through guidelines and scenarios, but dependent on regulatory capacity and dialogue quality
Deterrence and collaborative compliance	Stronger deterrence through fines, non-compliance proceedings and enforceable obligations, but risk of rigidity and over-deterrence	More flexible and compliance-oriented, but potentially weaker deterrence against large incumbents

Table 6.4: Main regulatory trade-offs between the EU and Japanese approaches. Author's elaboration.

These differences also reflect broader strategic choices in the governance of AI markets. The EU model places greater emphasis on legal certainty, enforceable rights, data protection and the prevention of structural forms of gatekeeping. The Japanese model, while not ignoring competition and safety concerns, appears more oriented toward preserving flexibility, encouraging innovation and allowing regulatory practice to evolve progressively alongside technological development. The core trade-off is therefore not simply between predictability and flexibility, but between different ways of producing legal certainty, adaptability and effective enforcement under conditions of technological uncertainty. While the European Commission builds legal predictability (codified, directly applicable obligations, strong enforcement), the JFTC builds operational predictability (guidelines, scenarios, examples of permissible and impermissible conduct, and dialogue regarding enforcement).

For this reason, it is not possible to determine in abstract terms which model is preferable. The effectiveness of both approaches will depend on how they are implemented in practice, how authorities interpret and adapt their ex-ante tools, and how quickly AI markets evolve. This is particularly true for Japan, where the MSCA is still at an early stage of implementation.

Chapter 7

Conclusion

This thesis has examined how competition governance frameworks in the European Union and Japan are adapting to the emergence of AI markets and, in particular, to the rise of AI agents as potential new intermediaries in digital ecosystems.

The analysis started from the AI value chain, showing that competition concerns in this field cannot be understood by focusing only on foundation models or individual AI applications. Market power may instead emerge from the interaction between several layers, including compute infrastructure, data, foundation models, downstream applications and distribution ecosystems. A first conclusion is therefore that AI markets do not necessarily create entirely new competition risks, but they intensify and reconfigure concerns already observed in digital markets. Issues such as self-preferencing, control over default settings, restrictions on access to users, data advantages, interoperability barriers and ecosystem leveraging remain central. However, AI agents may make these concerns more complex because they can act as interfaces, recommenders, assistants, search tools and commercial intermediaries at the same time. This makes it more difficult for competition authorities to identify where gatekeeping power is located and how it should be addressed.

A second conclusion concerns the role of ex-ante regulation. The DMA and the MSCA show that both the EU and Japan recognise the limits of traditional ex-post antitrust enforcement in fast-moving digital markets. However, they translate this concern into different institutional models. The EU framework relies on a broader and more codified set of obligations applicable to designated gatekeepers across several core platform services. Japan, by contrast, has adopted a more targeted ex-ante framework for smartphone software ecosystems, complemented by guidelines, stakeholder dialogue, market studies and traditional antitrust enforcement. These approaches should not be understood as simple opposites, but as different ways of managing regulatory uncertainty.

The case analysis further confirmed that the differences between the EU and Japanese models are not only regulatory, but also institutional. Several risks that may become relevant in AI markets, including ecosystem leveraging, control over distribution channels, anti-steering restrictions, platform dependency and restrictions on business-user autonomy, have already emerged in digital markets in different forms. The comparison of the Google Android/Search, Apple App Store and Booking.com cases showed that the European approach tends to be more formalised, sanction-based and increasingly linked to ex-ante obligations under the DMA. The Japanese approach, by contrast, appears more corrective and compliance-oriented, relying more frequently on commitments, voluntary measures, monitoring and dialogue with firms.

The comparative analysis also shows that the effectiveness of ex-ante regulation will depend less on the formal existence of obligations than on their practical implementation. Rules on interoperability, data access, choice architecture or non-discrimination can enhance contestability only if they are translated into technical and organisational mechanisms that are usable, monitorable and capable of generating concrete benefits for users, developers and business users. This is particularly important for AI agents, whose ability to compete may depend on access to operating system functionalities, distribution channels, user data and interface-level visibility.

More broadly, the comparison suggests that the core trade-off is between different ways of producing predictability under technological uncertainty. The DMA offers stronger legal codification and deterrent enforcement, but its application to AI agents may depend on classification, designation and complex compliance processes. The MSCA may offer more operational guidance and regulatory adaptability, but its impact will depend on how the JFTC develops its enforcement practice and how effectively it applies the Act beyond the initial stage of implementation. Both systems therefore remain experimental in different ways.

For this reason, it is not possible to determine in abstract terms which model is preferable. The future effectiveness of both approaches will depend on how they are implemented in practice, how authorities interpret and adapt their ex-ante tools, and how quickly AI markets evolve. This is particularly true for Japan, where the MSCA is still at an early stage of implementation. Ultimately, AI competition governance will require a balance between legal certainty, adaptability, deterrence and innovation. The central challenge is to build regulatory systems capable of learning from market evolution while preserving contestability and user choice.

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