MOVE FAST AND INTEGRATE THINGS: THE MAKING OF A EUROPEAN INDUSTRIAL POLICY FOR ARTIFICIAL INTELLIGENCE

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Move fast and integrate things: the making of a European Industrial Policy for Artificial Intelligence

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Abstract

In this paper, I use the case of artificial intelligence (AI) to analyse the challenges and opportunities in designing a European industrial policy that (i) adopts a pro-competitive posture, (ii) does not fall victim of the risk of double weaponization by pro-nationalistic and pro-oligopolistic narratives, and (iii) re-orients its goals away from the AI 'arms race' and to the provision of public goods. At the moment, the AI industry is an infant industry, and the European digital stack enabling AI applications is controlled by non-European actors, which reduces European autonomy and justifies policy support. I suggest that while AI's economic impact are overestimated and hyped, AI should be a pillar of European industrial policy due to its strategic asset and dual-use nature. Through a series of proposals, I outline the contours of a European AI industrial policy; its features can be summarised by three keywords: *public*, as in the public assets that the EU should aim to build on the basis of open source technology and in the public interest; *federated*, through variety and the decentralisation of AI solutions conceived as a non-oligopolistic European alternative to large scale systems; and *federal,* realising decoupling across the technology stack, when possible and advisable, through supranational tools, institutions, and finances.

Keywords: artificial intelligence; strategic asset; industrial policy; European Union; geopolitical rivalries

JEL Codes: L40; L50; O33

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1. Introduction

Artificial Intelligence (AI) has entered its 'geopolitical epoch'.[2] The universally shared narrative is that the technology is a breakthrough comparable to past technological revolutions, although still in the making. AI is expected to be transformative and capable of boosting competitiveness across all sectors. What makes AI geopolitical is its nature as a strategic asset. The technology is dual-use: it is simultaneously seen as an enabler of productivity growth and a valuable resource to strengthen (or threaten) democracy and security. With security having overtaken the twin transitions (digital and green) as a key political priority worldwide due to the reshaping of globalisation into a more conflictual system, the importance of AI has grown in parallel and has surpassed that of other technologies. In this paper, I analyse the interplay of AI and industrial policy in the context of the European Union (EU). I address the question: what principles and designs should inform a European AI industrial policy? To answer this question, the paper offers a description of AI that avoids the hype and mischaracterisation, highlighting the tensions and risks underlying policy making for a technology on which different interests and powers clash.

If AI is indeed a strategic asset, the idea of making it the cornerstone of contemporary industrial policy is not at all far-fetched. This is even more true as public interventions in the economy are now widely accepted and considered necessary to remain competitive in the fragmenting international landscape. The EU is positioning AI as the perfect testing ground for its strategies aimed at achieving technological sovereignty and decoupling from global value chains: a technology so fundamental to the future of growth requires domestic support, favourable conditions for innovation, technology transfer, and talent formation, as well as actions aimed at reducing external dependencies in the face of the uncertainty that now characterises trade even among long-standing partners.

As AI-focused industrial policies are increasingly being developed around the globe, tensions are emerging. Growing state support for AI does not imply that the technology's uses will be in line with public interest. On the contrary, AI risks accelerating the nationalistic turn already underway in industrial policy, which could in turn lead to the demise of the post-war global governance architecture. Furthermore, industrial policy exerts pressure on the boundaries of competition policy and its core principles: supporting industrial consolidation in a new market such as AI to increase autonomy and catch up with the technological frontier could result in the crystallisation of market power positions, thus exacerbating dependencies in the long run.

In a Dickensian way, this paper argues that Europe is right to bet substantially on AI industrial policy. But it also claims that Europe is wrong to bet substantially on AI industrial policy. It is right because AI is a strategic asset, and the specific way in which the EU develops its AI industrial policy will send valuable signals to the whole world. These signals have to do with the EU's capability to develop truly supranational policies that can compete in terms of resources and outputs with initiatives deployed by major international players. Furthermore, adopting a cooperative and non-nationalistic stance on AI industrial policy will help the EU steer the course of global affairs towards a scenario in which industrial policies are pro-competitive and do not produce a generalised *race to the bottom*. Such a scenario has the best chance of countering the forces spiralling into rivalries with the creation of *global public goods*.

At the same time, contrary to what most headlines claim, betting on AI, and expecting so much from it, is wrong. Without a doubt, AI is a technological breakthrough, and it is 'here to stay'. AI will superimpose itself on existing digital infrastructures, evolving into a critical service-providing layer. However, from an economic perspective, expectations about the impact of AI are exaggerated and fuelled by hype. AI is pervasive in a very specific manner – namely as an end-user application – but it leaves large swathes of the economy virtually untouched. These are economics activities, such as traditional manufacturing, that need a boost in competitiveness, but that AI might not substantially affect. Hence, paradoxically, what AI can deliver is not what policy makers are investing in it for. The hype around the technology is a direct

[2] I use the terms 'epoch' rather than 'era' on purpose, as a literary device or pun: in the field of AI, epoch is a technical term indicating one complete iteration of an algorithm through the training dataset.

consequence of the market structure that produces AI, with a handful of companies benefiting from the persistence of the 'AI revolution' narrative. This hype generates a steady stream of investments – from venture capital firms and now increasingly from governments through industrial policy – necessary to cover the substantial costs of developing AI systems, as well as the rapid product innovation and price undercutting dynamics that characterise the market. If expectations about AI's ability to accelerate productivity and competitiveness deflate in the future – in a burst similar to that of the *dotcom* bubble at the turn of the millennium – much of what remains on the ground for policy makers to continue justifying their support of the technology is a 'fear of missing out'. But fear of missing out is far from a sound justification for industrial policy.

I argue that a European AI industrial policy developed around a partial understanding of the technology, its market structure and its limited economic impacts will be subject to the risk of *double weaponisation*: the first is that the current focus on the technology can be exploited to justify nationalistic perspectives and policies. The second is that the 'magical thinking' surrounding AI can be used to accumulate economic returns (and political power) by private actors, particularly large non-European technology companies (Big Tech/Tech Giants), in particular those that provide computing services and digital infrastructure on a global scale, known as *hyperscalers*.

Based on this premise, the paper makes four contributions: first, it shows that AI is a technological breakthrough, but the expectations about its impact are overblown. EU policy makers should be wary of the hype and the risks of investing substantial public resources in a technology that is unlikely to deliver the promised boost of competitiveness. Second, it argues that any AI industrial policy, and especially one built around a fear of missing out, will be subject to double weaponisation. Falling into this trap will fuel a race to the bottom towards AI nationalism and contribute to the increasing subordination of competition policy to industrial policy. By failing to opt for pro-competitive industrial policies, the EU is likely to crystallise positions of market power that will be difficult to dismantle and could undermine the efforts to achieve technological sovereignty. As the contours of the European AI policy are still being defined, the EU can explore alternative trajectories of development for the technology that do not yield to narratives of the 'arms race' and protectionism, nor to the empowerment of monopolies. For example, these alternatives include favouring open source solutions over proprietary ones, and federated, decentralised solutions over centralised and monolithic ones. A key idea put forward in this paper is that AI should be framed as a public asset, rather than a strategic asset. Furthermore, the double weaponisation risk calls for a reflection on the desirability of a public digital infrastructure and a certain type of 'European Champions'. The third contribution refers to the claim that multi-level coordination, democratic governance and a clear plan are needed to build European technological sovereignty in digital technology and AI. Above all, substantial new European own resources for investments are needed: in the EU, a serious debate on technological autonomy must translate into talks about fiscal autonomy. Fourth, the proposals in the paper also underpin a simple but controversial take on European innovation and technology policy: in the EU, the fixation on innovation at any cost and as the sole criterion for an economy's success obscures the importance of fostering technology diffusion and access. The latter are more tedious, but often more solid ways to build lasting and widespread prosperity.

The aim of this paper is also to draw conclusions that can survive obsolescence and remain relevant despite the rapid evolutions of the AI market and the shifting geopolitical landscape. For this reason, I will not focus on the details of policy proposals or on specific events, as both will be likely updated, overturned and made irrelevant in a short time. Instead, I will orient the analysis towards identifying forces, mechanisms and principles that may be transferable across domains (that is, not limited to AI) and persistent (namely, that will tend to recur if not addressed structurally). In this sense, the rationale for studying AI industrial policy extends beyond the central position of AI in current policy debates. The technology represents a useful case study of the forces shaping overall policy design, supranational integration and resource allocation in the EU. In particular, the case of AI allows for more general insights into the debate about the complementarity or conflict between industrial or competition policy objectives. The work contributes to the literature on AI economics, innovation and industrial policy, as well as on the political economy of the EU. Its proposals add to the chorus of voices supporting European technological sovereignty in digital technology, warning against AI nationalism, and calling for a reorientation of the priority of AI industrial policy from competitiveness to public interest (Kaltheuner et al. 2024).

The paper proceeds as follows: Section 2 provides an overview of AI and discusses whether expectations about the technology's economic impacts are justified. Section 3 situates the discussion on AI industrial policy within the broader theme of the global resurgence of interest in and use of industrial policy. The risk of a double weaponisation of AI industrial policy and the forces influencing it are explored in detail. Section 4 takes stock of the analysis to propose a series of principles and prescriptions that address the research question – what shape to give to a European industrial policy that conceives AI as an example of the provision of (global) public goods. Section 5 draws conclusions.

2. The place of AI in history: Much A(I)do About Nothing?

AI is expected to be a catalyst for competitiveness by virtue of its nature as a revolutionary technology, so much so that its development and adoption are considered an 'imperative'.[3] However, this nature is often presented in a partial or imprecise way. This can influence and mislead policy choices. To evaluate whether AI is truly positioned to transform modern economies at their core and whether the technology is really strategic asset that policy makers should place at the centre of their industrial policies in Europe and beyond, in this Section I offers a brief overview of the features of current AI, illustrate the formation of a fully-fledged industry around it, and present evidence of its real economic impact. This exercise can be seen as a contribution to answer the deeper question raised by technology scholar Carlota Perez: "what's AI place in history"?[4]

Thinking about AI as a system. AI is a *system technology* (Vannuccini and Prytkova 2023). This means that AI capabilities are delivered as a joint product of several components working in synergy. These components are AI algorithms, compute, data, talent, and domain structure. AI algorithms are the software engine of AI. They are complex pieces of code that underlie the so-called AI models, such as the widely used GPT, Gemini, Claude or Llama model families. AI models are also systems: they combine a set of modules and techniques that process data, another component of the AI system. In essence, AI algorithms share a fundamental architecture: they are neural networks – paths linking a series of instructions and operations, with some paths being preferred over others (that is, having heavier weight in the network) due to the 'learned' mapping of statistical associations (patterns) acquired from the training data. This makes AI software a collection of 'prediction machines' (Agrawal et al. 2022), performing out-of-sample predictions in different contexts according to the domain structure of the task, for instance, image recognition, text generation or natural language processing, and more recently robotic actuation. The training of AI algorithms is done through different techniques, including the well-known Deep Learning, which has achieved widespread fame for contributing, in combination with other factors, to significant performance improvements (and the resulting boom in interest) in AI since 2012. Its introduction marked the beginning of a novel era in AI compute requirements and paved the way for the current large-scale era (Sevilla et al. 2022). AI algorithms have become increasingly complex: they have different designs and are subject to different innovation trajectories (e.g., to make them more portable, efficient, or less data-hungry). However, most of the dominant AI models in use today rely on the Transformer architecture (Vaswani et al. 2017), which emerged as the standard in the field. The combination of a narrowing of the scope of technical advances and economic forces geared towards generating quick returns has set AI on a specific development trajectory, that of model scaling and alignment with 'the-bigger-the-better' paradigm (Varoquaux et al. 2024). Innovation in AI has led to a

[3] See, for instance, the explicit framing of the EU AI Champions Initiative's report: https://aichampions.eu/
[4] https://www.project-syndicate.org/magazine/ai-is-part-of-larger-technological-revolution-by-carlota-perez-1-2024-03

rapid increase of the models' 'capabilities', typically measured through performance benchmarks, to the point that the bar for benchmarks is rising to keep pace with new developments in the field. AI models have progressively become multi-modal, that is, capable of processing different types of data, real or synthetic, such as text, image, audio, or video. However, state-of-the-art AI is essentially a reproduction of language models (statistical distributions of words in natural languages) in software, which works best when dealing with textual data but remains brittle when dealing with other modalities.

Algorithms are of little use without data and computing power. Data is the fuel that powers AI engines; as prediction machines, the output of AI systems is a (complex) function of input data. The importance of data to train increasingly larger models explains the race to collect, scrape and distil information wherever possible. This is a financially expensive and privacy-invading activity, and AI providers have resorted to copyright infringement and exploitation of pirated sources to gain a competitive advantage.[5] Compute is the main tangible, hardware-related component of AI: essentially, compute means semiconductor devices (chips), and chip production is physical, requires substantial investment, is knowledge-intensive, and is eminently geopolitical given the current structure of the semiconductor supply chain (Byrne et al. 2022).[6] AI hardware is also the domain in which the largest share of economic value is accrued, as exemplified by the case of the company Nvidia which became one of the most valuable companies worldwide in a relatively short time.

The system nature of AI implies that production and innovation dynamics across all components are interdependent, as are the policies influencing them: subsidising the re-shoring of chip production may help achieve technological sovereignty in the hardware domain[7], but AI is also software and data. Similarly, in the absence of domestic hardware infrastructure, creating an enabling environment for new firms to emerge in the AI model market will not necessarily reduce dependencies, and may instead increase demand for services (e.g. data centres and cloud computing) hosted abroad. This means that a complete decoupling of AI, if this is a goal, is not a trivial task. Dibiaggio et al. (2024) found that integration of competences across the whole AI value chain (in their case limited to techniques, functions, and applications derived from patent data) explains part of the difference in AI innovation performance between the EU, the US and China. However, competence building is a slow process, certainly slower than the pace of progress at the AI frontier.

Given that the components of the AI system technology span the globe in terms of provenance, production and reach, and that AI displays features that are similar to existing infrastructural technologies such as telecom networks, railways, or the Internet, Vannuccini and Prytkova (2023) suggest that the nature of AI is best understood through the concept of Large Technical Systems (LTS). LTS are technological networks delivering specific functions in a way that mirrors how utility companies deliver their services. This perspective on AI is useful, as many scholars instead consider AI a 'general-purpose technology' (Eloundou et al. 2024). A general-purpose technology is a recognisable device adopted in scope and at scale across a variety of industries. The characteristics of AI do not fully match the description of a general-purpose technology: as we will see, the pervasiveness of AI is limited everywhere except in end-user applications (e.g., chatbots or coding co-pilots), precisely as one would expect from a utility company. It is important to highlight that policies targeted at general-purpose technologies are not the same as those recommended for large technical systems. General-purpose technologies, especially in the early stages of their development, tend to benefit from demand-creating public procurement. Large technical systems could benefit from competition policy interventions, influencing the distribution of market power across actors in the network. An AI industrial policy built solely on direct public interventions such as procurement contracts risks misallocating resources and unfairly favouring specific actors unless conditionalities (such as local content mandates) are included. An industrial policy that

[5] https://www.theatlantic.com/technology/archive/2025/03/libgen-meta-openai/682093/
[6] See also https://www.interface-eu.org/publications/chip-diplomacy.
[7] This is the rationale behind the adoption of the so-called CHIPS Acts across both sides of the Atlantic.

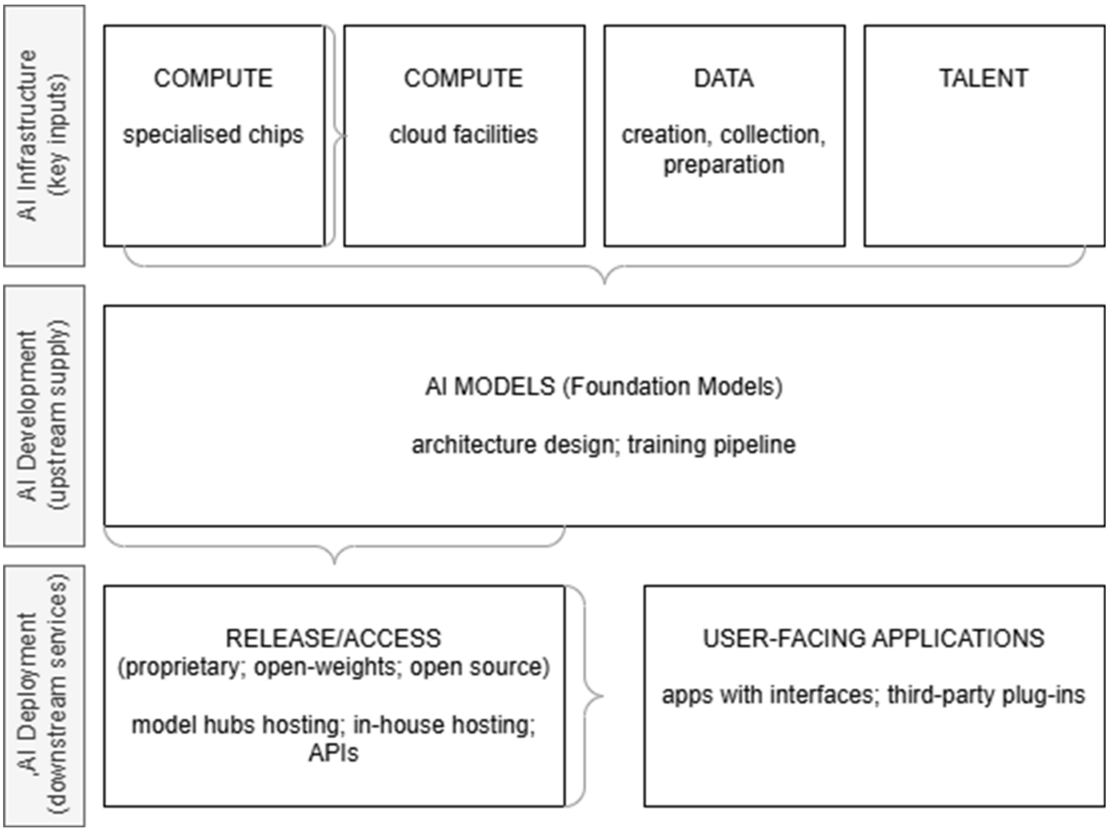
considers AI as a large technical system can instead prioritise pro-competitive tools, avoiding tension with competition policy goals.

AI industrialisation and commodification. In addition to its nature as a system – a set of interdependent software and hardware technologies –, the other key characteristic of AI today is that *it is an industry in the making*. In other words, AI is experiencing the formation of a fully-fledged value chain, or stack, that contributes to the production of AI systems. In parallel, the AI industry is undergoing a process of commodification: the technology is being packaged into discrete, marketable products or platforms, each combining user interface and the AI engine. As a result, a market for AI models and applications is developing. The commodification of AI and the formation of the AI models' market are enabled by the convergence of supply and demand on the development and use of large language models (LLMs, also known as 'Foundation Models') based on the Transformer architecture (Rogers and Luccioni 2023). LLMs are the engine powering the generative AI wave and the emerging proliferation of AI 'agents' that can interface and interact with other digital applications. As tends to happen in most new industries, the stabilisation of products around a 'dominant design' – in this case LLMs – has accelerated the industrialisation of AI.

Figure 1 illustrates a simplified AI stack for Foundation Models, based on the work of the United Kingdom's Competition and Markets Authority.[8] The representation distinguishes between the layers of *AI infrastructure* providing key inputs (e.g., compute), *AI development* (the focal market supplying models), and *AI deployment*, which includes downstream services such as the applications based on key models and the intermediaries or marketplaces (e.g., the platform HuggingFace), that store and provide access to models with varying degrees of openness, from fully open source to 'open weights', but virtually closed, models (Widder et al. 2024).

[8] See https://www.gov.uk/cma-cases/ai-foundation-models-initial-review. There exist several other representations of the AI value chain, more or less detailed, that however agree on the overall layers. For instance, see the work of the French Treasury: https://www.tresor.economie.gouv.fr/Articles/2024/12/05/la-chaine-de-valeur-de-l-intelligence-artificielle-enjeux-economiques-et-place-de-la-france.

Figure 1. The Foundation Models (FM) stack.

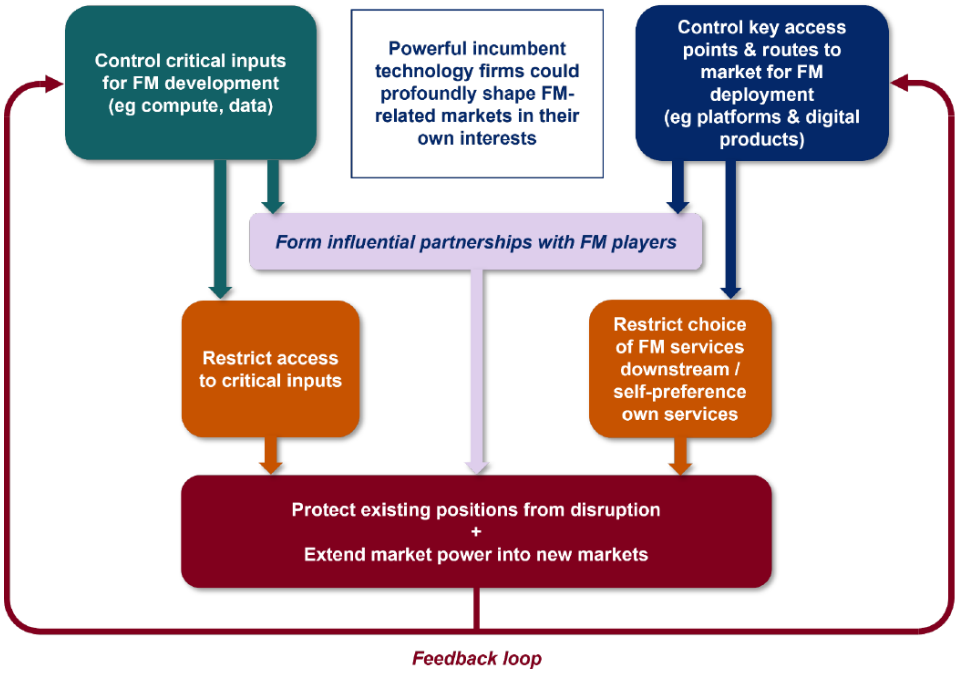


Source: Author's elaboration based on CMA's report on Foundation Models https://www.gov.uk/cma-cases/ai-foundation-models-initial-review, 2023.

As AI products are software solutions, the forces shaping the AI market mimic those well known for the software industry and digital markets, namely those characterising the production, pricing, and diffusion of information goods (Shapiro and Varian 1999; Bergemann et al. 2025). The economics of information goods suggests that consumption externalities (also known as network effects) and dynamic increasing returns tend to reward a few players, those who enter early and are able to bear the high fixed costs of producing the good in first place. Furthermore, actors can exploit price discrimination techniques such as bundling of offers or versioning (Belleflamme 2005) to extract surplus from consumers much more easily than industries producing tangible outputs. These players rake in market share and acquire a dominant position, causing the market to tip – that is, to fall into an oligopolistic or monopolistic market structure. The establishment of a dominant design reinforces this dynamic, as all potential market entrants who are unable to produce the dominant design face high barriers (financial and learning) to enter the market.

The industrialisation and commodification of AI is a concern for competition policy. Figure 2, taken from the CMA 'update paper' on Foundation Models, captures the feedback loops and the mechanisms used to strengthen market power, from partnerships to self-preferencing, from cross-markets externalities to controlling bottlenecks at the input and application layers.

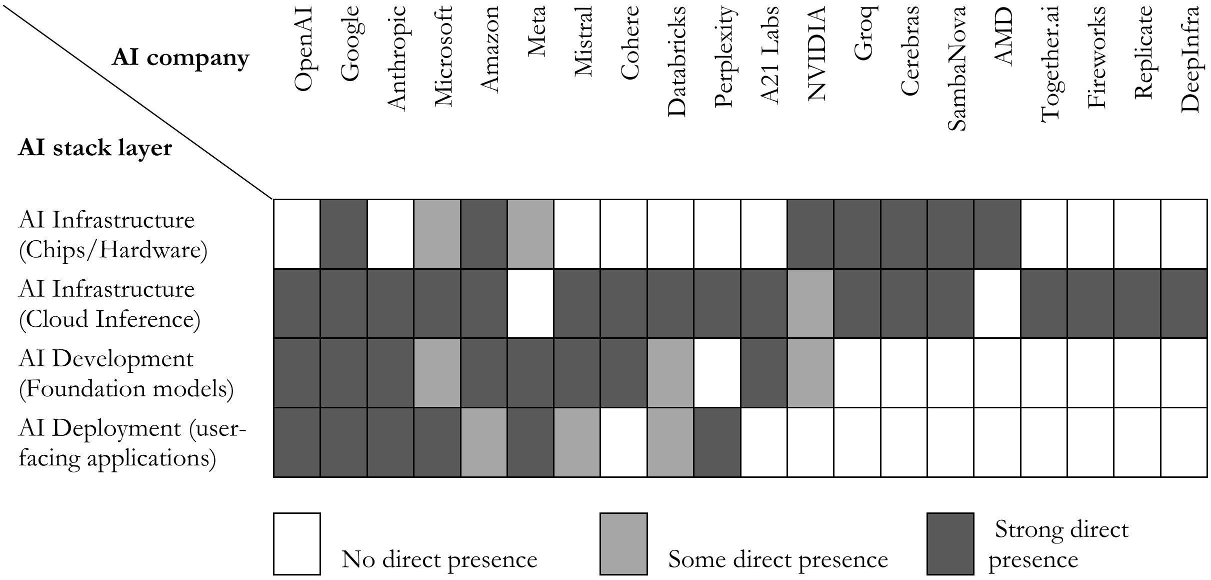
Figure 2. Market power feedback loops in Foundation Models market.



Source: CMA AI Foundation models update paper https://www.gov.uk/government/publications/ai-foundation-models-update-paper, 2024.

A strategy used by AI industry players to challenge competition is vertical integration across the stack. It is a well-known stylised fact that industries evolve from birth to maturity by initially having vertically integrated producers (as markets are not well developed upstream and downstream to support specialisation) to then transform into disintegrated structures. However, this happens when key players do not abuse their dominant position to gatekeep and retain control of sources of value across the stack. Figure 3 shows that the language model section of the AI industry currently shows a combination of vertically integrated and specialised actors across the stack, indicating a mix of strategies ranging from focusing on core activities to attempts at end-to-end AI production. Part of the reason for the co-existence of a variety of strategies has to do with the fact that, due to the infant state of the industry, AI companies are still fumbling in search of a value-generating business model. Currently, AI is still 'a solution in search of a problem', which is driving companies to experiment with different market positionings.

Figure 3. Integration and specialisation over the AI stack (notable companies – non-exhaustive list).



Source: Author's elaboration based on Artificial Analysis AI Review – 2024 highlights: https://artificialanalysis.ai/downloads/ai-review/2024/Artificial-Analysis-AI-Review-2024-Highlights.pdf.

The AI stack is only a part of the larger digital stack that ensures the provision of digital services. This makes things even more complex, as the digital stack is characterised at the same time by niches, insulated sub-stacks, and cross-domain interdependencies. The major actors producing AI often also control part of the digital stack, as they are native players and dominant platforms of the digital economy. Furthermore, Big Tech companies control important bottlenecks of the stack, such as the programming frameworks and tools used to develop AI systems.

In summary, AI technologies are a large technical system, superimposed on the digital economy and developing into a layered industry. AI industrialisation is accompanied by the commodification around LLM-based products and platforms; this provides AI producers with the opportunity to build business models that exploit the information goods characteristics of AI. This configuration incentivises market control strategies by corporate actors, both in terms of gaining power within layers and integrating across layers. The key AI actors are largely those who already dominate the digital economy, so the control of AI production and deployment is the result of economies of scope.

Stating that AI is an industry in the making is not enough to argue that the technology is the engine of the next industrial revolution, and therefore requires rushing in the arms race for its development and control. Studies on technological revolution and techno-economic paradigms (Perez 2010; Knell and Vannuccini 2022) agree that radical innovations are often the spark that starts new industries. At the same time, these technologies should be able to produce far-reaching impacts that induce cascades of transformations across related and unrelated activities, percolating to the very fabric of society. The next section discusses whether this is the case for AI.

AI economic impacts: a solution in search of a problem. The prevailing narrative is that AI will trigger profound transformations in any economic system, in a manner typical of radical innovation and general-purpose technologies. However, AI does not fit neatly into the general-purpose technology mould and, therefore, might not produce the impacts expected of a general-purpose technology. The typical response to the possibility that AI will not live up to its promises is that, usually, profound technological transformations manifest themselves in full force with lags. To paraphrase the famous 'productivity paradox' posited by Robert Solow during the early phase of the diffusion of information technologies in the 1980s: we observe the AI revolution everywhere but in the (aggregate) productivity statistics; however, it may only be a matter of time before productivity first absorbs adjustment costs and then rebounds, following the so-called J-curve pattern of early slowdown and late acceleration (Brynjolfsson et al. 2021).

The debate about the real impact of AI is intense and the results often depend on how the technology is defined or how its boundaries are drawn. For instance, some studies assess the impact of AI and robotics on labour, conflating two very different technology families (AI is software-based, while robots are hardware equipment) that are adopted in quite different contexts: the first predominantly white-collar, the second predominantly blue-collar. Other differences in findings can be explained by the type of data used: several studies focus on patent data due to the wealth of information readily available (Igna and Venturini 2023). These works identify interesting patterns, for example, that innovation in AI is subject to learning effects from previous innovations in information and communication technologies. However, much of the innovation in AI is not patented. While valuable for long-term analysis of trends in the field, these kinds of studies risk overlooking current developments in AI industrialisation, such as the commodification and diffusion of LLMs. Economic studies of AI exploring firm-level or unstructured data are better suited to analyse the impacts of the AI industry's current dynamics. However, they need to base their analyses on a solid identification of AI actors, for example by distinguishing between AI producers and users, which is a challenging task (Dernis et al. 2023).

Available evidence suggests that AI has enabling capabilities: it improves product innovation in user firms (Rammer et al. 2022; Babina et al. 2024). The evidence is quite different for robotic technology, whose adoption seems to shift firms' focus from product to process innovation to exploit economies of scale (Antonioli et al. 2024). Guarascio et al. (2025) suggest that the impact of AI on employment in the EU is region-specific: pre-existing strong local innovation systems can enable harnessing of complementarities that can lead to AI-driven job growth, and this increases the risk of exacerbating centre-periphery gaps within the EU. The aforementioned work by Dibiaggio et al. (2024) shows that integrating AI competences along the value chain has a positive impact on AI innovation.

At the same time, there are persistent findings on the over-estimation of AI's impact. Vu et al. (2024) focus on Canada and find no relationship between AI adoption and short-term productivity gains, apart from a selection effect where AI-adopting firms were already the most productive firms before adoption. Acemoglu (2025) estimates that AI's impact on aggregate total factor productivity growth is going to be very modest – less than 1% over ten years – and suggests that this estimate is also likely exaggerated. McElheran et al. (2022) exploit US business survey data to measure adoption and find this to be quite limited – around 18% of employment-weighted economic activities – with mostly large firms reporting AI use. At the same time, McElheran et al. (2025) find initial microeconomic evidence of the J-curve effect for industrial AI, leaving open the question whether substantial impacts of AI on economic performance will emerge in the long run. Overall, the evidence reviewed here refers mainly to the pre-generative AI wave. However, it supports this paper's claim about the 'utility-like' diffusion of AI, which is shaped like a funnel: a rather thin spread along the intermediate and productive sectors and a very broad spread for end-users.

As AI applications based on LLMs become more widespread, research has begun to assess their impact on work. Unlike mechanisms introduced by factory automation, the use of generative AI applications in the workplace is non-trivial and nuanced. This is because AI use occurs along a 'jagged technological frontier' (Dell'Acqua et al. 2023), with AI capabilities useful only for a sub-set of tasks: AI is adopted as an assistant or co-pilot (particularly for coding tasks), producing a compression of the distribution of workers' productivity. This means that less skilled workers enjoy marginally greater gains in performance. The dynamic corresponds to a 'democratisation of expertise'.[9] However, such a transformation does not

[9] See https://www.project-syndicate.org/magazine/ai-in-the-office-equalizer-or-new-source-of-inequality-by-azeem-azhar-and-chantal-smith-2025-03 for a survey of recent findings.

necessarily translate into overall effects detectable beyond the firm level. Early evidence suggests that economic impacts are minimal even when recent AI chatbots are considered (Humlum and Vestergaard 2025). Current AI mostly transforms the logic of and interaction within workflows and, in this sense, appears as the latest evolution in what has been known as 'robotic process automation'. At the same time, this type of effect can shift the balance of bargaining power between employees and employers, as the former lose part of their 'voice' based on their skills.

The fact that AI's impacts on economic performance are disappointing did not slow down investments in the technology, especially as hyperscalers and Tech Giants cannot back down on their decision to bet their future success on AI. AI seems still to be a solution in search of a problem, but it is also a business 'too big to fail'. For this reason, AI producers have accelerated, rather than reduced, AI-related capital expenditure, creating a large gap between investments and returns.[10] The increasing gulf between the hype and the lack of results is what might lead the AI bubble to burst, and the industry to experience a 'shakeout' (Vannuccini et al., 2025).

Overall, I argue that AI is transformative at the micro level, but with negligible impact at the macro level. Inflated expectations can co-exist with the reality of a radically new technology - a replay of the dotcom bubble, when the hype-driven industrialisation and commercialisation of the Internet led to a severe economic downturn, despite the novelty of the technology. The long-term effects of AI on productivity will also depend on the trajectory of AI innovation. Trends in AI agents' development and AI 'platformisation' (where work tasks are arbitrated and coordinated by multi-modal LLMs) suggest that the AI revolution is essentially a transformation of the way products are designed in the software industry, with AI models becoming the core engine and latest iteration of workplace automation, or rather a tool within increasingly capable but specialised software suites. This latter view, which helps deflate the exaggerated narrative of AI's impact, finds support in the data. Based on an analysis of innovation-level data (Wang and Vannuccini 2025), Figure A1 (in the Appendix) shows that most AI innovation falls into the category of software features, rather than new products or services. The way AI is being deployed seems to be by upgrading existing products with features powered by AI capabilities – an important transformation, but less revolutionary than expected.

Echoing Carlota Perez's, AI "is better understood as a key development within the still-evolving information-communications-technology (ICT) revolution". The technology itself does not represent a technological revolution, but rather the tail end of a larger one. However, even the tail end of the ICT revolution can produce important socio-technical transformations. Coincidentally, these are less about competitiveness, and more about the acceleration that AI induces in societal forces, from scientific discovery to populism and political polarisation. Therefore, to draw implications on whether and how AI should be one of the pillars of EU industrial policy, the key question to address becomes whether AI has the characteristics of a 'strategic asset' that justifies policy intervention to nurture and protect the technology, especially in an infant industry. Using the framework of Ding and Dafoe (2021) that was adopted by Fontana and Vannuccini (2024), three non-exclusive logics can be identified that define a strategic asset: the *infrastructure* one (a technology or a sector is strategic because it acts as a foundation for others – e.g., oil and gas), the *cumulative* one (a technology or a sector is strategic if it is characterised by learning effects and path dependencies justify large non-recoupable investments – e.g., aerospace), and the *dependency* one (a technology or a sector is strategic if its sourcing depends on non-domestic actors, limiting autonomy – e.g., rare earth materials). Recomposing the discussion so far, AI development is cumulative, and this applies to all domains of AI system technology, from algorithms to compute and data. AI deployment depends on few actors and concentrated markets, mostly located outside the EU. Finally, AI is infrastructural, and relies on the digital ICT infrastructure. Hence, AI can be considered a strategic asset. Furthermore, by applying the same scheme, all the components of the AI system – algorithms, data, and semiconductors underpinning compute – are strategic assets too.

[10] https://www.sequoiacap.com/article/ais-600b-question/.

Taking stock. In summary, is there really an inevitable AI imperative? AI's role in history is important but limited; some have started framing it a 'normal' technology.[11] Its economic impact is limited, but the progressive industrialisation and commodification of AI raises questions for competition policy. However, viewed more broadly, AI is a large technical system that fits the logic of cumulativeness, dependency and infrastructure that define strategic assets. As a strategic asset, AI is an industrial policy issue. Autonomy in producing strategic assets squares well with contemporary industrial policy objectives of reducing dependencies and promoting technological sovereignty. Therefore, the EU is wrong to place AI at the heart of industrial policy for the future of competitiveness, but right to increase its readiness for this technology due to its more subtle and complex strategic importance, including its potential dual-use nature. In the next section, I will discuss whether it is possible for the EU to strike a balance between competing forces by outlining a pro-competitive industrial policy for AI.

3. AI, between industrial and competition policies

In this Section, I outline the current context and the forces shaping the prevailing posture in Europe on AI policy.

The return of industrial policy. The general context in which I place the analysis is that of the 'return of industrial policy' and the 'new economics' of industrial policy (Juhász et al. 2023b). Almost all countries engage in some form of industrial policy today (Terzi et al. 2024; Evenett et al. 2024). In general, most countries *always* engage in some form of industrial policy, even in those historical phases in which the practice suffers setbacks or is considered critically. Industrial policy is any form of government choice over actions that influence the structure of an economy, and policy makers are always 'doomed to choose' (Rodrik and Hausmann 2006). Evidence points to an increasing use (and acceptability) of industrial policies, at least since 2010, particularly in developed economies (Juhász et al. 2023a). The EU has a long and troubled relationship with industrial policy that has evolved in sync with changes in global attitudes towards the practice. At present, the consensus is that Europe desperately needs industrial policies to address external and internal pressures – from competitiveness to security, from the green and digital transitions, from technology adoption to skills formation (Fontana and Vannuccini 2024; Cerniglia and Saraceno 2024).

There are many different views regarding the definition of industrial policy, its boundaries and its rationale. According to Juhasz et al (2024), three main rationales justify industrial policy interventions: *externalities, coordination or agglomeration activities*, and *public goods*. Industrial policies aim to internalise externalities when an economic activity creates external (negative or positive) spillovers that influence the incentives of individual actors. For example, this is the case when firms under-invest in R&D compared to what is socially desirable because they cannot appropriate a sufficiently large share of its returns. Alternatively, interventions will be guided by the rationale of coordination when the functioning of an industry is contingent on the availability of complementary upstream or downstream factors or activities that depend on the focal industry. Finally, policies motivated by the production of public goods aim to supply the infrastructural factors (tangible or intangible, such as regulation) needed to perform an activity. In practice, industrial policy instruments address combinations of these rationales.

The renewed acceptability of industrial policy, which is a discretionary activity, has an impact on competition policy, which is a non-discretionary practice aimed at ensuring a level playing field. Coyle (2025) categorises industrial policy instruments based on their relationship with competition policy: those that align, those with some implications, and those that potentially conflict. The first block includes instruments related to the 'public good' rationale, such as infrastructure regulation, skills formation, and the establishment of standards and interoperability rules. The second contains industrial policy instruments that are specific – namely sectoral (also known as vertical) interventions such as subsidies,

[11] https://www.aisnakeoil.com/p/ai-as-normal-technology.

loans, public support to R&D investments and small and medium-sized enterprises. Third, industrial policy interventions that conflict with competition policy are those that may raise entry barriers (e.g., by imposing additional costs that small companies might not be able to finance) as well as direct public investments. A similar distinction is that between 'pro-competitive' industrial policy and 'new-techno-nationalist' anti-competitive industrial policy (Boulieris et al. 2025). Industrial policy instruments are contextual – there are no one-size-fits-all tools. To offer some support to the idea that policies can be more or less pro-competitive, Table 1 presents a classification of policy instruments to promote innovation, compiled by the International Monetary Fund. The table summarises estimates of the effect of policies (per US dollar spent) on R&D expenditure. Although effects vary from positive to null, the list illustrates that policies have effects when they address specific domains or well-identified targets (e.g., mature firms, start-ups, science-based firms; sectors with low or high social returns). Some policies, such as Moonshot projects that underpin many contemporary industrial policy initiatives, have less conclusive impacts (on innovation); while potentially substantial, their effects may materialise over a longer period or crystallise existing inequalities in market power across firms.

Table 1. Policy instruments to promote innovation – impacts and guidelines.

	Impact on total R&D per US dollar spent		
Instrument	**IMF Estimates**	**Literature Estimates**	**Policy Guidelines**
R&D tax incentives	[0.7, 0.9]	[0.2, 1.5]	Better for mature firms and horizontal support; preferable if tax credit is refundable
Patent boxes (IP regimes)	Small	~0	Induce profit-shifting/excessive patenting
R&D grants	n.a.	[0.5, 1.5]	Better for younger firms and targeting sectors with high social returns
Public R&D	[1.2, 1.5]	>1	Better for fundamental research and targeting sectors with high social returns
Moonshot projects	n.a.	Inconclusive	Can have strong relocation effects

Source: Author's elaboration from International Monetary Fund (2024, p.8).

The tension between the priorities of competition and industrial policies creates a deeper issue. Competition authorities feel compelled to adjust their posture: as exemplified by the case of the CMA in the UK[12] or by the prescriptions of the Draghi report for the EU (Draghi 2024b), policy makers are exploring compromises that do not abandon the principle of enforcing competition, while being clear that exceptions are imposed by the geopolitical situation. This is particularly true for merger control, which is increasingly subordinated to the need of allowing market consolidation to produce 'champions' that can compete globally. As normative and political considerations that characterise industrial policy choices creep into traditionally positive analysis-based competition policy decisions, the long-standing boundary between the two activities is eroding (Coyle 2025). This 'new normal' of normative discretion influencing competition policy is detectable in policies already implemented. For instance, Krige and Daniels (2023)

[12] https://www.gov.uk/government/publications/industrial-policies-new-evidence-for-the-uk/industrial-policies-new-evidence-for-the-uk.

point out that "the Biden administration's […] high technology export controls deliberately blur the boundaries between concerns over military confrontation and economic competition".

Double weaponisation. The economic case for industrial policy is strong, and the availability of fine-grained data and more sophisticated evaluation techniques suggest that the interventions are generally effective (Lane 2020). At the same time, industrial policy discontents highlight that in many cases government failures may be costlier than market failures. As the International Monetary Fund puts it, "[t]he recent turn to industrial policies to support innovation in specific sectors and technologies is not a panacea for higher productivity growth. Such policies are only advisable when the social benefits can be clearly identified (for example, emissions reductions), knowledge spillovers from innovation in targeted sectors are strong, and sufficient administrative capacity is in place." (International Monetary Fund 2024, p.15). As Fontana and Vannuccini (2024) point out, grand challenges and the ongoing decoupling of the global economy nevertheless tip the balance in favour of taking risks with industrial policy, as the costs of inaction could be very high. However, in the current context, and particularly with reference to technology policies such as those targeting AI, the return of industrial policy and the tensions it introduces create a fertile ground for what I have called double weaponisation.

With the term double weaponization, I consider the possibility that industrial policy arguments and tools could be used instrumentally to pursue objectives other than those of improving overall societal welfare or ensuring support for the development of technologies and industries considered strategic. The first type of weaponisation of industrial policy is the nationalistic one: industrial policy is used as a rhetorical device to impose protectionist and inward-looking policies, the aim of which is to serve 'national power', both in a propagandistic and in a 'beggar thy neighbour' way. The second type of weaponisation of industrial policy occurs when dominant market actors exploit the industrial policy discourse to blunt the work of competition authorities and gain advantages over competitors – e.g., government contracts – by presenting themselves as 'essential facilities', that is, the sole providers of necessary technological or infrastructural solutions. This type of weaponisation also presents regulation as a straightjacket for innovation; while this idea has no clear-cut empirical support, it implicitly (and often explicitly) suggests that advancing AI requires espousing the development model championed by Tech Giants.

Regarding the first type of weaponisation, Hodge et al. (2024) show that industrial policy can induce race-to-the-bottom dynamics among countries: the negative spillovers produced by unilateral decisions are, at best, unintended consequences, at worst, purposeful actions. In the US, a defensive approach to innovation has become the norm, exemplified by an increasing resorting to tools such as trade bans. In the EU, the State aid regime has been progressively expanded (Di Carlo et al. 2024). However, in the absence of a truly federal fiscal and economic policy, the European State aid landscape has turned into an uneven subsidy race that risks fuelling a nationalistic vicious cycle. Unfortunately, at the global level, this dynamic echoes the use of trade policy (a sub-set of industrial policy measures) as a tool of national power politics during the inter-war period (Hirschman 1945), casting gloomy shadows over the potential end-game of a global industrial policy race. I have already discussed (and will return to) the implications of the second type of weaponisation, with Tech Giants exploiting the pro-industrial policy climate to appease governments and limit the scope of action of competition authorities. In general, the second type of weaponisation can be seen as a case of corporate capture or privatisation of public goods. Abeba Birhane sums up the point convincingly: "[c]urrent AI technologies have captured the public not because these systems are reliable, necessarily useful, or beneficial to the public, but because the tech industry holds a monopoly over the public narrative".[13]

In summary, industrial policy is resurging, but its return risks being 'fictitious' due to the potential misuse and capture (Dosi et al. 2024). To be truly welfare-improving and avoid the double weaponisation, industrial policy needs to discriminate in favour of pro-competitive interventions that also transcend national borders. Dosi and co-authors suggest that only industrial policies aimed at 'global commons' should be pursued. A similar idea is suggested in Fontana and Vannuccini (2024) and it underpins this

[13] https://aial.ie/pages/aiparis/.

paper: a truly supranational, that is, federal, industrial policy for the EU is the first step to escape (at least) the nationalistic pull of double weaponisation: continent-wide concerns are naturally closer to the global dimension and, thus, more likely to be addressed through the production of global public goods rather than competing national solutions.

The evolving rationales of AI policy. Soon after its entry into public discourse, the novelty and uncertainty surrounding AI led to a 'Cambrian explosion' of AI policies and strategies being developed across the globe. Originally, these aimed to outline ethical principles and guidelines to make AI 'trustworthy', with the EU being a pioneer in the area. In this context, the debate has been predominantly shaped by the opposing viewpoints of experts emphasising the ethical issues of AI versus those focused on 'existential risks' and 'safety'. The conflict between these two approaches has political elements, with the AI ethics position being strongly grounded in scholarship and the AI safety position conveying a specific 'sci-fi-style' worldview held by many AI practitioners.[14] The primary focus of AI ethics is to highlight the limitations of AI systems and to reveal the scope for misuse, biases, harms, and obfuscation. These arise from the lack of transparency and competition that characterises AI production, the 'garbage-in, garbage-out' nature of the algorithms, and (perhaps most importantly) the underlying ideology inspiring the very design of the systems – a mix of values steeped in techno-libertarian and conservative worldviews, endemic to the Silicon Valley ecosystem.[15] The existential risk perspective has instead pushed for a 'longtermist' take on AI, voiding AI development of the focus on biases to concentrate on the threats related to the emergence of the so-called Artificial General Intelligence (AGI). This is a hypothetical scenario, not based on any current working of AI systems, which argues that AI will surpass human capabilities and that, therefore, creating AI aligned with humanity's goals should be prioritised to prevent a future takeover of our species by machines. Given its predominance among leading AI personalities and company founders, this latter perspective has largely influenced initial AI policy making, with policy makers embracing the fears of existential risk and submitting to the AGI narrative.

With the introduction of large language models and their emergence as the industry standard, it has become clearer to policy makers that AI policy is less about existential risk, and more about regulating infrastructure, product liability, and provision of the necessary input to develop the technology further, and in any case ahead of international competitors. The AGI narrative still influences policy framing, but to a lesser extent. This policy evolution is evident both in regulations such as the European AI Act, which was drafted in the midst of the commodification of AI, and in the themes of major international AI policy events. The first major international summit, held in Bletchley Park in the UK in 2023, was dedicated to AI safety; the subsequent Seoul summit dropped the safety label from the title to emphasise 'challenges and opportunities of AI'. The latest edition, organised in Paris in 2025, has been labelled an 'action' summit, highlighting the shift from concerns about safety to more traditional State activism directed at seizing opportunities in a market that has become more stable and better defined. In this sense, the term action can be seen as a proxy, or synonym, for industrial policy: its adoption closes the evolutionary arc of AI from an unidentified policy object to a strategic industry. All major players have followed suit to re-orient the AI policy narrative towards the action goal: the UK has published an 'AI opportunities action plan'[16] focused on AI adoption, and the European Commission has launched its AI Continent Action Plan.[17] As mentioned, part of this engagement with action is driven by a fear of missing out. At the same time, there are rationales for making AI a matter of competition and industrial policies.

AI policy is industrial policy; AI policy is competition policy. The poly- and perma-crises characterising the global landscape have forced the EU to take stock of its vulnerabilities, particularly those related to trade and materials dependencies as well as its overall headwinds to economic

[14] See Emily Bender's take on the matter: https://medium.com/@emilymenonbender/talking-about-a-schism-is-ahistorical-3c454a77220f.
[15] https://firstmonday.org/ojs/index.php/fm/article/view/13636.
[16] https://www.gov.uk/government/publications/ai-opportunities-action-plan/ai-opportunities-action-plan.
[17] https://commission.europa.eu/topics/eu-competitiveness/ai-continent_en.

performance.[18] A series of reports (Dibiaggio et al, 2024; Fuest et al. 2024) have highlighted the so-called 'middle-technology trap' in which the EU finds itself and the innovation, productivity and investment gap that the Union has with other global actors, namely the US and China. Thus, there is a consensus that the EU holds a follower position in the global economy. As I will discuss in Section 4, this consensus has its caveats. However, prescriptions have converged on the need for the EU to increase its 'competitiveness' and autonomy. The influential Letta (2024) and Draghi (2024a) reports untangled the competitiveness issue in detail, setting up a new policy discourse based on completion of the common market – including the 'fifth freedom' of movement of research and innovation (Letta) – and on supporting investment and consolidation in strategic sectors such as defence and telecommunications (Draghi). In short, the lack of scale, investment and market integration undermines Europe's ability to act as a leader on the global stage.

In this context, for the right and wrong reasons I outlined in Section 2, AI is considered a key enabler of competitiveness and a strategic asset. For instance, the Draghi report dedicates a chapter to computing and AI, highlighting the EU's weak position in the development of the technology across the stack, which will limit the possibility of the competitive advantages. Mügge (2024) points out that the EU's position on AI sovereignty is characterised by a certain degree of interpretative freedom: for the EU, investing in AI is both a strategy to gain competitiveness and to protect European actors from foreign competition. In other words, it is not trivial to discern whether the more fundamental race shaping AI industrial policy in Europe is the 'between' one – between the EU and its competitors – or the 'within' one, involving European actors and Tech Giants. It is in this between-within distinction that industrial and competition policies risk being in conflict in the context of AI policy.

AI lends itself well to the three industrial policy rationales outlined earlier. First, as AI is an industry in the making, it is also an infant industry that needs help to internalise externalities and align investment incentives. Second, AI develops across a layered stack of digital and physical technologies, which require coordination to leverage complementarities. Third, given its potential dual use, support for its development can be justified by the public good argument. Furthermore, actions to develop AI domestically respond to the priority of achieving technological sovereignty (Dibiaggio et al. 2024). Indeed, non-domestic actors active or dominating at different layers of the stack can be a source of dependence. The combination of dependence on foreign actors for AI production and the fact that, in practice, this dependence is concentrated in few large players constitute a compounding risk. In other words, external dependence is probably detrimental; external dependence on technological monopolies is certainly detrimental.

The lack of large European actors in the infrastructural layer of the technology stack calls for market consolidation and a relaxed posture on continental mergers, in line with the general recommendations of the Draghi report. At the same time, as has been said for the city of Rome, frontier technological capabilities cannot be built in a day. For instance, when British Prime Minister Starmer pledges to "mainline AI into the veins" of the UK, it is not clear who will be the nurse administering the transfusion. The devil of capture lies in the details of policy implementation plans: without resources and time to catch up with global actors and drive AI advances, the EU has to rely on established solution providers, which for the digital economy means relying on Tech Giants. This feeds the weaponisation of industrial policy through capture by oligopolistic actors and the surrender of autonomy – what Cristina Caffarra calls the 'sovereign democratic infrastructure hyperscalers trick'.[19] The weaponisation of industrial policy through industry capture is exemplified by recent initiatives such as the Stargate project, an OpenAI-led

[18] In practice, the EU has begun realising that the favourable conditions it has enjoyed over decades began faltering: (i) China as an export market, supporting the export-led German growth model; (ii) low energy prices, made impossible by limited diversification of suppliers that became evident after cutting ties with Russia in response to its latest invasion of Ukraine in 2022, and (iii) security at very low cost guaranteed by the US and NATO's military umbrella, now threatened by the recent American retreat from multilateral and international organisations.
[19] https://cristinacaffarra.blog/2024/12/01/the-sovereign-democratic-infrastructure-hyperscalers-trick/

joint venture that promises massive investments to scale up AI infrastructure. [20] Regardless of whether the initiative proceeds as planned, the Trump administration immediately backed the project, sending a clear signal that public support for private initiatives that present themselves as quasi-public goods is a preferred direction of policy. Large initiatives like Stargate are usually compared to big push interventions such as the Manhattan Project because of their considerable funding. However, the comparison overlooks the fact that current AI infrastructure initiatives either lack a clear mission, or the mission is not explicitly (if at all) in the public interest. This is precisely one of the ways in which the second type of weaponisation occurs: by exploiting widely accepted narratives about security and global rivalries, corporate actors can justify their role and market power as if they were acting patriotically, rather than – as is normal and expected – as profit-seeking entities. A similar capture dynamic is at work in the EU, where announcements of investments in AI made during the Paris Action Summit (€109 billion from France; **€**200 billion from the European Commission) hide the fact that a significant share of these sums will come from non-European private actors such as American and Saudi investment funds, thus increasing rather than reducing dependencies.[21]

At the moment, even if it chooses to take part in the AI arms race, the EU is not fully capable of competing. As Frederike Kaltheuner and Leevi Saari argue[22], the lead time and accumulated advantage by Tech Giants are path dependent and hard to dismantle: "[a]s European AI companies attempt to scale to a global customer-facing market, they are pulled into the orbit of the hyperscalers. To reach a sufficient customer base for a functioning business model and gain access to the computation needed to run large-scale AI inference at scale, the path to profitability goes through Big Tech. This explains why European AI companies like Mistral form partnerships with Microsoft". Google's now famous statement "we have no moat, and neither does OpenAI"[23] referring to the defensibility of closed-source AI models from the threat of open-source models, does not apply to the geopolitical space. In this case, cross-market network effects represent a substantial moat for Big Tech, which is also leveraging strategic partnerships between hyperscaler-model providers to retain market power.[24] Even if the market for downstream AI models becomes competitive and a 'sovereign' European solution emerges or scales up in the near future, dependencies will be still weigh heavily across the entire digital stack: the EU does not have a champion in the compute and cloud layers, and that is where investments to catch up could fail, be misplaced, and take a long time to produce effects. Finally, the difference in the size of investments across the two sides of the Atlantic is substantial: while in the US investments are so large that "CapEx is the new M&A for Big Tech"[25], the EU has an investment gap of hundreds of billion euros per year, as estimated in the Draghi report.

If AI policy is also geared towards avoiding the privatisation of infrastructure and the development of domestic solutions that could be valid alternatives to dominant actors, priority should also be given to competition policy. As Von Thun and Hanley (2024) report, competition policy already has the tools, on both sides of the Atlantic and beyond, to prevent Big Tech becoming 'Big AI'. As mentioned in Section 2, Big AI engages in a series of anti-competitive behaviours, which are the typical practices of actors abusing a dominant position, especially in markets for information goods. These include the exploitation of gatekeeping power, engaging in killer and reverse killer acquisitions[26], and designing products and platforms in a way that favour themselves, for example through self-preferencing, limiting access to technology or interoperability, or through the use of tying or bundling of offers to retain users or acquire

[20] https://en.wikipedia.org/wiki/Stargate_LLC
[21] https://www.nouvelobs.com/economie/20250210.OBS100136/ia-d-ou-viennent-les-109-milliards-d-euros-d-investissements-annonces-par-macron.html
[22] https://open.substack.com/pub/euaipolicymonitor/p/deepseek-and-trump-20-can-europe
[23] https://semianalysis.com/2023/05/04/google-we-have-no-moat-and-neither/
[24] The most relevant being Microsoft-OpenAI, Amazon-Anthropic, and Google-Anthropic. See the US Federal Trade Commission study on the matter:
https://www.ftc.gov/system/files/ftc_gov/pdf/p246201_aipartnerships6breport_redacted_0.pdf
[25] https://www.theinformation.com/articles/is-capex-the-new-m-a-for-big-tech
[26] https://cepr.org/voxeu/blogs-and-reviews/how-tech-rolls-potential-competition-and-reverse-killer-acquisitions

increasing market shares. The EU does not have to be creative here: it already has extensive antitrust powers given by the Treaties (Article 102 of the Treaty on the Functioning of the European Union) and the Digital Markets Act (that contains *ex ante* provisions to make digital markets more contestable); if there is a clear political will, these powers can be used. At the same time, as dominant market positions are built across the AI stack, the unit of analysis of competition evolves towards technological ecosystems. To effectively address this issue, competition policy may also need to evolve into a stack-level or ecosystem-level competition policy.

Given the challenges outlined above, and in parallel with the European use of antitrust tools to extend the reach of competition policy to hyperscalers, industrial policy can focus on supporting initiatives to recover some of the time lost in decoupling AI and the whole digital stack from external dependencies – in other words, to *move fast, without breaking things*, but rather 'integrating' things. This is what inspires the Draghi report's recommendations for developing European AI 'verticals', use cases leveraging European technology across the technology system, from the cloud infrastructure to LLMs. In this direction, an organic proposal that stands out and is gaining momentum is the 'EuroStack'.[27] The EuroStack is an initiative to support the development of a sovereign European digital infrastructure championed by public institutions. This can be achieved through the federation of existing alliances and networks at the EU level. EuroStack is proposed as a collection of policies that can help overcome the forces favouring weaponisation of industrial policy by Big Tech, and can coordinate European actors to provide made-in-EU solutions characterised by interoperability, openness, inclusivity and sustainability. In addition to technical aspects, the debate started by the EuroStack proposal is also advancing the discussion on policies targeting demand, such as those related to local content mandate for public procurement, or 'buy European' requirements. A key feature of the EuroStack idea is that it does not focus exclusively on AI, but rather highlights its position as a sub-system within the broader digital stack. As I argue in the paper, downplaying the AI hype in the formulation of policies is a necessary preliminary step in designing a successful framework that is aimed at the provision of public goods. A second necessary step is to make sure that the implementation of EuroStack learns from the mistakes and difficulties that have slowed down European initiatives such as the European federated data ecosystem standards Gaia-X.[28] A third requirement is effective institution building. The EuroStack proposal makes the case for the establishment of a European Sovereign Tech Fund as a vehicle to spearhead industrial policy initiatives. This idea is in line with similar suggestions in the literature (Fontana and Vannuccini 2024). The proposal for a fund regularly emerges in debates on European Industrial policy, indicating that there is a persistent demand for such a solution. Finally, a fourth requirement is adequate financing. As I stress in the next Section, and as Fontana and Vannuccini (2024) elaborate extensively, this is the crux of the matter for European industrial policy, even beyond AI: in addition to technological capabilities, true decoupling requires true fiscal capacity. In turn, this is not a question of specific policy design, but rather of the will to proceed with political unification at the continental level.

A decoupled European digital stack producing sovereign AI is not forced to deliver large-scale AI solutions. An alternative option is for the EU to reject the trajectory of large-scale AI, and instead pursue the development of a plural range of solutions that can form a federated European AI hardware and software *suite*. In a sense, this option amounts to a change of direction and a shift in the dominant design: instead of allocating efforts to build LLM single platforms with multiple capabilities, investments can be directed to connecting multiple platforms with single (specialised) capabilities. A core assumption is that the current trajectory of AI development is only one among many, and it is not an inevitable one. Derailing a technological trajectory and a dominant design, especially when supported by market dominating companies, is difficult but not impossible. A similar derailment is taking place in the

[27] See https://euro-stack.eu/. A wide coalition of advocacy actors and think tanks is forming around the proposal, see for instance the report by the Foundation for European Progressive Studies (FEPS) on 'Time to build a European digital ecosystem': https://feps-europe.eu/publication/time-to-build-a-european-digital-ecosystem-2/ or the Centre for European Policy Studies (CEPS) work on digital public infrastructure: https://www.ceps.eu/ceps-publications/building-the-european-digital-public-infrastructure-rationale-options-and-roadmap/

[28] See https://gaia-x.eu/.

semiconductor industry, for technical reasons, namely the mismatch between AI computational needs and the prevailing architecture underlying integrated circuits until recently (Prytkova and Vannuccini 2023). Path-breaking and implementing a more decentralised way of developing AI requires a shift in focus to creating coordination, standards and interoperability protocols, and privileging open-source solutions over proprietary ones. Coincidentally, this is one of the justifications for (pro-competitive) industrial policy interventions. Furthermore, this shift in direction could be instrumental for the EU to show that there are many paths to developing useful AI, thus helping to mitigate the AI race discourse and the nationalistic tendencies in industrial policy. Initiatives such as the OpenEuroLLM project are moving in this direction[29], but the focus on federating rather than scaling has not yet reached the European mainstream.

The European Commission's current AI policy strategy is based on the 'action' framing. The recent AI Continent Action Plan, drafted by Commissioner Virkkuunen implicitly adopts the large technical system view that I claimed should be used to frame AI. This is because the plan is developed along five interdependent pillars: large-scale computing infrastructure, data access, adoption (through the 'apply AI strategy'), talent and skills, and regulatory simplification and implementation. In particular, the AI computing infrastructure pillar is meant to address the risk of weaponisation of AI by hyperscalers through the establishment of AI 'factories' and 'gigafactories' across the continent - ecosystems that can leverage existing European supercomputer networks.[30] Part of the plan is to procure advanced AI chips, in the hope of kickstarting a positive feedback loop between European chip manufacturing and European AI models. While ambitious, this part of the plan is also where failure and misallocation of resources looms: EU AI policies should not be solely geared towards the goal of bigger-the-better and the achievement of AGI, which is explicitly mentioned in the AI continent plan. As I discussed, this is baseless trajectory fuelled only by hype, and policy makers should avoid it.

As is often the case with EU policies that need to consider the limited room for manoeuvre of fiscal policies and the lack of powers at the supranational level, current AI industrial policy is less about new investments and more about announcements, streamlining and re-purposing of existing resources. This is the case of the AI factories, which build on the already existing public-private partnerships of the European High-Performance Computing Joint Undertaking (EuroHPC JU). While this approach is in line with the 'move fast without breaking things' principle of exploiting strengths and existing capabilities advocated by this paper, such a strategy risks diminishing returns. European efforts are still limited compared to initiatives undertaken by the US and China. The latter, also in response to export bans on semiconductor devices and production technology to which it has been subjected, is moving rapidly towards the goal of AI decoupling, with advanced Chinese AI models trained on Chinese hardware (specifically Huawei) (Yin 2025).

The focus of EU AI policy on public compute should be welcomed, and it fits into a broader trend, with public compute initiatives emerging everywhere.[31] Such policies differ in the details: who the target users are (e.g., academic researchers vs start-ups), the conditions of access, and the type of services provided. However, their momentum signals a growing awareness of the public good nature of digital and AI infrastructure and the need to avoid capture by private actors. This does not mean that capture does not happen, given the capability of Big Tech to weaponise industrial policy. For instance, advocacy organisations such as the AINow Institute have warned policy makers of the risk of capture in the implementation of the US National AI Research Resource (NAIRR).[32] The same risk exists in the EU: Warso (2024) shows that European research and innovation funding is industry-centric and subject to a

[29] See https://openeurollm.eu/.
[30] A similar 'regional' and local ecosystem focus of AI policy is developed in the UK, with the idea of identifying 'AI Growth Zones' according to detailed feasibility criteria (including power and water availability): https://www.gov.uk/government/publications/ai-growth-zones.
[31] See Ada Lovelace Institute's report: https://www.adalovelaceinstitute.org/policy-briefing/global-public-compute/
[32] https://ainowinstitute.org/wp-content/uploads/2023/06/AINow-DS-NAIRR-comment.pdf

false representation of AI; this is not a negligible issue, as 21% of recent Horizon Europe funding (around €6 billion) went to projects linked to mentioning AI.[33]

Taking stock. AI decoupling in the EU requires both industrial and competition policies. These should work in synergy, injecting competition into an industry shaped by few actors, and building competences and autonomous infrastructural capacity, as these few actors are also non-European. Current EU initiatives have adopted a system view of AI and stress the importance of public compute, but they may not help achieve technological sovereignty if they fail to (i) promote collective action across the entire digital infrastructure stack, as suggested by the EuroStack proposal; (ii) adopt a realistic view of the technology to limit the double weaponization; (iii) increase the scale of fresh investments to allow the continent to move fast, without breaking things; and (iv) consider abandoning the pursuit of the large-scale paradigm in AI, favouring the experimentation of an alternative, federated approach to a plurality of AI systems that would distinguish the EU from the rest of the world engaged in the AI arms race. In the next and final Section, I will use the insights from the analysis to outline a series of *desiderata* for a comprehensive European AI industrial policy.

4. Public, Federated, and Federal: the shape of AI industrial policy in the EU

In this Section, I present the *pars construens* of the analysis, suggesting a specific vision and posture for the EU's AI industrial policy. A key question is whether the window of opportunity to build a European AI, or at least one less subject to the double weaponisation, is still open or not. The immediate answer, based on the discussion so far, is that reducing the accumulated gap and dependencies is difficult, as global economic, technological and political forces work against it. Furthermore, developing the necessary competences is a time-consuming process that does not respond immediately to the 'big push' of capital investment. Therefore, even moving fast now might not be enough. However, the EU already has a strong foundation of knowledge, capabilities and technological components, but these are dispersed across the continent and require the necessary financial support to favour scale-up, integration, and coordination.

The main problem for the EU is not that time is running out; it's the lack of understanding of the best *direction* to follow. Indeed, while it may not be realistic to develop the infrastructure to push the AI frontier without wasteful allocations and capture by oligopolistic actors, there is much value to be generated behind the frontier, and in alternative directions to the main vector of AI development – the large scale and compute-intensive one. For instance, specialised AI upgrades to legacy systems, embodied AI on devices, robotics and industrial machinery can account for a large share of demand for AI that does not necessarily require the AI-as-a-service, chatbot-based business model that dominates LLM applications.

Below, I outline the key propositions and proposals that EU policy makers could consider. Some require only a fine-tuning of existing approaches and tools; others require radical changes in the direction of policy making or radical changes *tout court*.

Changing narrative. EU industrial and technology policy is always at risk of weaponisation due to its fixation on disruption and industry priorities (Warso 2024). This is even more true for AI because of the allure of the hype, the global consensus on AI's revolutionary impacts, and the fear of missing out in an inevitable race induced by the AI imperative. It is important to remember that while doomed to choose, policy makers are also free to choose and to update their priors. The EU can decide not to participate in the AI 'arms race' and can instead explore what European citizens, organisations and firms really expect and demand from AI, in order to identify which AI could serve as a public good. A possible starting point in this sense is to prioritise democratic participation and governance, and the adoption of open-source

[33] See https://openfuture.eu/publication/the-digital-transformation-we-need/ for an overview of the different existing and proposed programmes related to digital infrastructure.

over proprietary solutions, at least to provide viable alternatives to the dominant model. This narrative shift around AI goes in the direction of reframing the development of the technology for the public interest (Kaltheuner et al. 2024) and of reclaiming (digital) sovereignty as an individual, rather than a national, issue (Rikap et al. 2024).

Discussing the future of welfare, Iozzo (2019) introduced a proposal that can be ported to the field of industrial policy to outline a different narrative for AI. The idea builds on James Meade's work 'Agathotopia'. Policy makers can decide to transform common resources into public assets that can pay a 'social dividend' to citizens, after having been used to guarantee market investments and yield returns. The social dividend is a generalised transfer based on the participation in a collective investment.[34] The EU could pioneer the *reframing of strategic assets into public assets*. In this way, investing in the development of AI would not be subject to the logic of the race, but to that of providing a social dividend of compute, automation and prediction to all Europeans. Framing strategic assets as public assets requires a substantial re-evaluation of the very premises of developing technology and innovation – a real change in values. This cannot be imposed, but is a matter of democratic participation and discussion. However, the idea is expressed in the hope that it can inform and guide the debate on the EU's policy posture.

Systemic and federating intervention. The scope of EU AI industrial policy should cover the entire large technical system, with the aim of identifying cross-domain bottlenecks and possible synergies. Moreover, following the EuroStack proposal, AI policies should be conceived as an integral part of policies for the digital stack containing the AI stack. Industrial policies for system technologies are more likely to be pro-competitive, as they need to pay particular attention to complementarities, interoperability, and agreement on standards. The instruments should aim to ensure the overall coherence and orientation of the system. In this sense, the evidence provided by Dibiaggio et al. (2024) is indicative: a focus on competences' formation, alignment and integration along the AI value chain is associated with innovation.

Focusing on systemic interventions can also help the EU explore paradigms of AI production that are alternative to the dominant the-bigger-the-better paradigm, especially as decentralised training of AI models becomes technically feasible.[35] Policy efforts can be devoted to federating specialised AI tools and localised communities, helping to shape decentralised AI commons, as proposed by Varon, Costanza-Chock, and Gebru.[36] Federating resources, which is an exercise in orchestration and coordination, does not imply that scale is no longer important. Open source or decentralised technological alternatives to dominant proprietary products and services often exist – such as the Linux operating system, or the Fediverse social network. However, their ability to be a competitive threat is not assured by default. To ensure a future suite of sovereign European AI systems becomes a global public good rather than just an excellent market niche – a 'Linux of prediction machines' –, substantial public backing is needed. This brings us back to the issues of (i) the institutional tools to deliver such solutions, and (ii) their financing, which will be discussed in the next two paragraphs.

Vehicles: Funds and Champions. Even with a shift in the overall policy posture towards a pro-competitive industrial policy that abandons the race narrative and moves towards the production of public technological assets, the question remains as to which specific institutional vehicles can be entrusted with task of pursuing the goals and priorities of the European AI industrial policy. One possibility is to establish funds or agencies along the lines of the ARPA/DARPA model in the US. The idea is also advanced by the EuroStack coalition, which proposes the establishment of an EU Sovereign Tech Fund. In this context, the question is an architectural one: whether to create an AI (or strategic technology) dedicated fund, or an umbrella institution with specific investment lines and projects, as proposed in Fontana and Vannuccini (2024). The idea of an umbrella fund coincides with the

[34] A real-world implementation of the social dividend idea is the transfer paid by Scandinavian sovereign wealth funds to their citizens, financed by the returns obtained by managing natural resources such as oil.
[35] https://www.primeintellect.ai/blog/intellect-2
[36] https://codingrights.org/docs/Federated_AI_Commons_ecosystem_T20Policybriefing.pdf

'Competitiveness fund' proposed by the European Commission. Given the tendency of EU policy making to accumulate narrowly tasked and under-funded programmes, an umbrella fund has a number of attractive features. First, it represents a radical institutional novelty. This would send a strong geopolitical signal about the weight and scope of EU actions, as well as its willingness to introduce institutional innovations. Furthermore, a larger institutional shock will introduce an imbalance in the structure of EU competences that could, in turn, induce further reforms. Second, the fund will be a multi-purpose tool, able to adapt to rapid economic changes and technological advances, and to exploit economies of scope and scale in an increasingly complex industrial landscape. A broader fund would also oversee the expansion and 'Europeanisation' of the Important Projects of Common European Interest (IPCEI). At the same time, if the EU decides to opt for a more decentralised mode of AI production, institutions should be able to govern variety. For this reason, under the aegis of an industrial policy fund, the EU should start developing 'agency thinking' and establish "a landscape of diverse innovation agencies with varying strengths and dynamic capabilities" (Kattel 2024, p. 17).

In addition to institution building, a second direction of action for the EU is to foster the formation of continental champions – large enterprises, private, public, or public-private - that can compete with major global players. While the EU can reposition itself in the AI narrative space, it cannot fully insulate itself from geopolitical and technological realities. If the way to exploit economies of scale and larger markets in a global, albeit fragmented, economy is through champions, these must be European, rather than national champions. At present, large-scale European AI is conceived for infrastructural and scientific purposes – AI factories/gigafactories are inspired by the idea of a 'CERN for AI'. Mosconi (2007) makes a strong economic case for European champions as market actors. He distinguished between Type-I and Type-II European champions; a distinction that is relevant for the interplay between industrial and competition policies. Type-I champions are "large European firms stemming from multilateral governmental cooperation and public funding in strategic industries. These industries require strong European presence due to high R&D expenditure and/or their ability to advance the technological frontier."[37] Examples of Type-I European champions are ST Microelectronics in the semiconductor industry and Airbus in the aerospace sector. I would also include in this category high-tech firms based on the continent, such as the chip designer ARM, which did not emerge from governmental cooperation but rather from global expansion stemming from scientific origins (in ARM's case, from the Cambridge ecosystem). In contrast, Type-II champions are market-driven; they emerge from cross-border horizontal and vertical consolidations and mergers enabled by market expansion. Examples of such champions can be found in the apparel and consumer goods sectors – e.g., Luxottica-Essilor – or in banking and financial services. Industrial policy needs to differentiate its interventions towards Type-I and II champions. More precisely, Type-II champions require careful scrutiny by competition authorities, while Type-I may merit a more lenient view on consolidation.

A consensus is emerging in the EU on the need for Airbus-style champions, including for AI (Archibugi and Mariella 2021).[38] However, the question is whether the conditions, as well as the decisions, that made Airbus a success story also apply to the AI industry. As has been pointed out, the airspace sector is a perfect recipient of industrial policy, since, in addition to the technological complexity of its products, users (airlines) have high fixed costs while competing on a relatively undifferentiated service with few truly captive users and extensive safety regulations, and therefore the relative benefit of state intervention is greater than in other sectors.[39]

The Airbus example suggests that one of the recommendations of this paper – namely for policy makers to be wary of the nature of AI technology and to avoid fixating on the hype – has a broader implication.

[37] Taken from Franco Mosconi's comment published in the LUHNIP Monthly Brief on EU Industrial Policy: https://leap.luiss.it/wp-content/uploads/2025/03/LUHNIP-Monthly-Brief-on-EU-Industrial-Policy-March-2025.pdf

[38] See also Balland and Renda's call for a 'Airbus moment' for AI: https://www.ceps.eu/ceps-publications/forge-ahead-or-fall-behind/

[39] https://www.worksinprogress.news/p/how-airbus-took-off

The EU has been focusing on innovation and has somehow ignored diffusion, which is more tedious and less 'disruptive'. While it is true that new industries are often kickstarted by radical innovation and new entrant firms, it is also the case that diffusion is key to remove bottlenecks to productivity growth. Contrary to many of the assessments on the state of European competitiveness, the economy of the continent is rather strong. For instance, Di Mauro et al (2024) estimate the 'relative state of technology', defined as relative 'start-up productivity', which is the minimum productivity firms can expect to achieve when entering the market. According to this measure, the EU has a better relative state of technology than the rest of the world across all manufacturing industries. European companies are competitive at the time of market entry, but the advantage is progressively lost as ecosystems fail to diffuse know-how and to guarantee access to technological infrastructure and user markets. Focusing on diffusion does not mean that the EU should not strive to push the innovation frontier. Rather, it bears reminding that industrial policies could be effective both for infant industries and for those producing legacy systems (e.g., non-cutting-edge semiconductor devices) which have low margins but large scope for diffusion across user sectors.

Ally with, rather than oppose, competition authorities. Industrial policy must be pro-competitive, otherwise it risks falling victim of the double weaponisation. This means that industrial policy priorities should not override the principle of ensuring a level-playing field or subordinate it to normative exceptions. As highlighted by Von Thun and Hanley (2024), competition authorities already have tools to prevent Big Tech from becoming Big AI in an uncontestable market. The EU can retain the best of both worlds by strong enforcement of competition rules, combined with investments in public infrastructure and Type-I champions. To achieve this, in the words of Lina Khan, former Chair of the US Federal Trade Commission, the EU 'must stop worshiping American Tech Giants'.[40] In addition, a sound combination of industrial and competition policies should help 'retrofitting' competition authorities to be able to deal with new forms of market power characterising the AI and digital domains, such as ecosystem competition and network market power (Rikap et al. 2024), that stem from the system nature of the technology itself. A strong competition policy is crucial in case champion-building does not produce the expected results. This is not a new problem: in the 1980s, Geroski and Jacquemin argued in favour of a vigorous antitrust policy, noting that "[i]n the 1960s, European industrial policy sought to create European super-firms large enough to compete with those in the United States. This policy has had limited success. Economies of large scale operation are less important than had been supposed, and the super-firms enjoyed considerable market power within a fragmented European market." (Geroski and Jacquemin 1985, p.169).

Adopting an AI industrial policy posture that complements competition policy will also help frame the pursuit of technological autonomy and sovereignty as a means, rather than an end that takes precedence over everything else. Wherever possible, the EU should continue to pursue the 'open' part of its open strategic autonomy strategy. Full decoupling may be feasible for China but is unlikely and not advisable for the EU. System coordination can also be beneficial across geopolitical blocks, despite rising tensions. For instance, in the defence sector, completely isolated and non-interoperable systems can harm, rather than improve, security.[41] Finally, policy attention has been focused on reducing dependencies. However, as already mentioned, the EU economy accounts for a significant share of the world economy. This means that the EU could exploit 'reverse dependencies', namely technologies and capabilities for which other actors depend on Europe.[42] Reverse dependencies imply the ability to act, but also to deny, for instance, access to technology or knowledge. Although reverse dependencies have been suggested as a tool to be used towards China, the EU could explore their potential in relations with the US. This recommendation echoes the idea that the EU should manage the tension between cooperation (e.g., in

[40] https://www.nytimes.com/2025/02/04/opinion/deepseek-ai-big-tech.html
[41] https://foreignpolicy.com/2025/02/24/military-ai-communication-technology-allies-emergency-response/
[42] https://dgap.org/en/research/publications/reverse-dependency-making-europes-digital-technological-strengths

science and technology) and the pursuit of autonomy by adopting a 'coopetitive' strategy (Crespi et al. 2025).

Deep pockets beyond deep learning. The final point of reflection relates to the financing of a European AI industrial policy. Fontana and Vannuccini (2024) argue that fiscal autonomy is the fundamental prerequisite for any form of strategic autonomy. Institutions, innovation schemes and support to champions are ineffective without adequate allocation of resources. In other words, a serious discussion on industrial policy – with or without AI – must not preclude, but instead open, discussions on the evolution of the EU budget. This is particularly true for the issue of the EU's own resources, which are necessary to develop truly supranational initiatives. With limited own resources, any European industrial policy will privilege reallocations and reorganisation of existing funds. While advocating generic, top-down increases in budget appropriations is also a fallacy[43], the fact that the EU would need an injection of additional investments in the order of hundreds billion of Euros per year is now a widely-shared position (Cerniglia and Saraceno 2024; Draghi 2024a).

European investments should leverage European resources; elevating investment decisions to the continental level should be the most direct way for the EU to avoid nationalistic subsidy races intensifying within its borders, as seems to happen with State aid (Di Carlo et al. 2024). Federal resources could directly finance policies supporting European champions: instead of being left with a set of national champions hoping to reach a continental scale and indirectly financed by national governments through state contributions to EU programmes, a competitiveness or sovereign technology fund endowed with the power to raise own resources could identify and support directly Type-I Champions across the Single Market.

In summary, in addition to a different narrative and appropriate institutions, a truly effective European AI industrial policy would require resources directly from a federal budget. However, a federal budget is a matter of supranational political unification. Proposals to make European AI a public asset will have to be complemented by bold but feasible ideas on how to increase the Union budget. In this regard, existing proposals range from improving the European venture capital market to mobilising private savings and pension funds.[44] More radical solutions look at the emergency experience of NextGenerationEU (Fontana and Vannuccini 2024). However, the latter only introduced non-permanent solutions. In a contest of geopolitical tensions, climate emergency and existential challenges (which have little to do with AGI) for humanity as a whole, further 'temporary Hamilton moments' cannot be the answer, as the EU needs permanent solutions for its long-term survival.

In considering the case of AI, the EU could draw inspiration from its past initiatives in other domains. The Union has experience in drafting a Treaty for a strategic asset: this is the case of the Euratom.[45] The Euratom Treaty includes provisions on financing and supply of input. For instance, Article 52 states that "[t]he supply of ores, source materials and special fissile materials shall be ensured, in accordance with the provisions of this Chapter, by means of a common supply policy on the principle of equal access to sources of supply."[46] If one substitutes "ores, source materials, and special fissile materials' with data and computing infrastructure, the parallel with AI becomes clear. Is replicating the Euratom for the case of AI (and other strategic technologies) a possible way to build a European industrial policy?

5. Conclusion

[43] https://www.imf.org/en/Publications/fandd/issues/2024/09/the-innovation-paradox-ufuk-akcigit.
[44] https://sifted.eu/articles/open-letter-european-tibi
[45] The idea of replicating the Euratom for other technologies and industries has been suggested to me for the first time by Dr. Alfonso Iozzo.
[46] https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:12012A/TXT.

AI has entered its geopolitical epoch, because *everything has*. In this paper, I use the case of AI to provide an analysis of the challenges and opportunities in designing a European industrial policy that (i) adopts a pro-competitive posture, (ii) does not fall victim of the risk of double weaponisation, and (iii) re-orients its goals away from the AI 'arms race' and to the provision of public goods. Such a policy orientation – and the instruments associated with it – would send an important geopolitical signal to a world that is spiralling into rivalries, tensions, and nationalistic decoupling of techno-economic systems.

The paper offers a view on AI as a system technology, on its industrialisation and commodification, and on its impact on market dynamics. The economic impact of AI is probably overestimated, so the EU is wrong to make it a central element of policies because of its role in fostering future competitiveness or, even worse, in achieving the mirage of AGI. AI should be a pillar of European industrial policy due to its strategic asset and dual-use nature. The AI industry is an infant industry, and the European digital stack enabling AI application is controlled by non-European actors, which reduces European autonomy and justifies policy support.

Beyond the focus on AI, I draw more general insights on the interplay between industrial and competition policies, in a context where the former resurges and the pursuit of guaranteeing the level playing field is increasingly subordinated to normative considerations and political priorities. This debate circles back to considerations regarding AI, as the forces shaping its development are a matter of both competition and industrial policies.

Finally, I present proposals on (i) the principles underpinning the European approach to AI, (ii) the vehicles that can ferry these principles towards global success, and (iii) the interdependence between policy design and budget allocations, which for the EU means addressing the issue of the Union's own resources. In summary, the contours of a European AI industrial policy should be drawn around three keywords: *public*, as in the public assets that the EU should aim to build on the basis of open source technology and in the public interest; *federated*, through variety and the decentralisation of AI solutions conceived as a non-oligopolistic European alternative to large scale systems; and *federal,* realising decoupling across the stack, when possible and advisable, through supranational tools, institutions, and finances.

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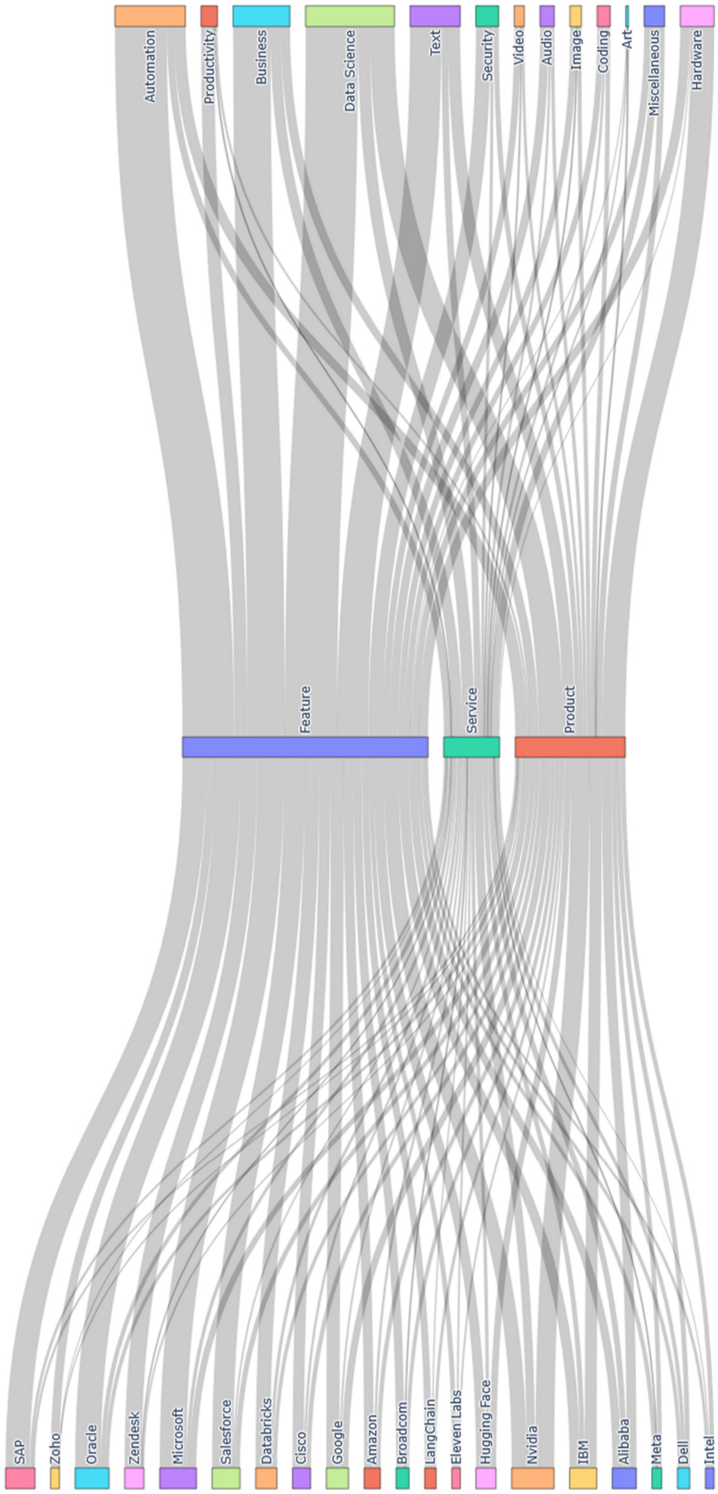
Appendix

Figure A1. Sankey visualisation of AI innovation as product, service, or feature.



Source: Wang and Vannuccini (2025), based on Futurepedia data for the period January 2023-March 2025: https://www.futurepedia.io/ai-innovations.

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