Chapter 9. A European alternative to Tech Giants in the public interest

Massimo Florio University of Milan ORCID: 0000-0001-9315-3580 DOI: 10.54103/milanoup.180.c274

9.1 Introduction

In this brief contribution, I propose establishing a public and supranational alternative to the oligopoly of major information technology companies, commonly referred to as Tech Giants. Following this introduction, the text is divided into two parts: the first of which is a summary analysis of the scale of the problems we face, while the second relates to the proposal I initially formulated in the book "*The Privatization of Knowledge*" (Routledge, 2023).

It might seem naive or overly ambitious to make proposals for public policy beyond regulation in a field completely dominated by oligopolistic giants. However, I believe there is room for new feasible public policies. For example, the European Parliament recently voted on some legislative texts on environmental issues, that, while faced strong opposition from sectoral lobbies, are on their way. In a different field, that of the Big Pharma oligopoly, a majority of European members of Parliament, after a lengthy study on lessons learned from the pandemic, approved various recommendations to the European Commission and member states last July. These included the creation of a supranational public infrastructure dedicated to the research, development, and production of vaccines and drugs in the face of market failures. The proposal I am advancing for the digital economy is similar to that for biomedical research. It stems from the development of the concept of a European public enterprise with a high knowledge intensity, an idea matured since 2019 within the Forum on Inequalities and Diversity²¹, a think tank.

9.2 Some Facts

Tech Giants are not only the world's largest companies in terms of revenue and profits but also lead in research and development investment. The top five US Tech Giants spent nearly USD 400 billion in capital expenditures in 2022, of which over USD 220 billion was allocated to research and development

²¹ https://www.forumdisuguaglianzediversita.org/imprese-pubbliche-europee/

(R&D) (see Tables 9.1-9.2). By contrast, in 2019, the last pre-pandemic year, they had spent less than half of this amount on tangible and intangible investments, including R&D; they then doubled their investment in three years. Over the past decade, the nominal increase in capital expenditure has been eightfold, while R&D expenses have increased elevenfold. Relative to total net revenues, Meta, for example, spent more than one dollar for every five earned on research in 2020. This formidable spending capacity, facilitated by very high oligopolistic profit margins, lays the groundwork for market dominance that will likely persist for at least a generation. The scale of today's research investments will determine what businesses and consumers will purchase tomorrow, with the additional legal monopoly protection derived from thousands of patents.

In addition to artificial intelligence (AI), the technologies being developed extend beyond the Internet, smartphones, and cloud computing. These innovations are poised to transform the entire technological landscape. This has implications for software we use every day, even seemingly mundane ones like Excel or Word, where AI routines developed by startups, often later acquired by Tech Giants, could be embedded.

The role of acquisitions is a significant aspect of the broader picture. In recent years, 20% of Tech Giants' acquisitions have been in the field of AI. Job openings in these companies now list AI skills as a key requirement, reflecting its central importance to their strategies. Perhaps more impressive is the data on corporate acquisitions: in the last four years, the top five Tech Giants have taken control of 200 companies that had developed expertise in this field (see Table 9.3). A well-known example is OpenAI, a startup partly owned by Microsoft, ChatGPT, and Gpt4; Microsoft has invested \$11 billion, acquiring a 38% stake. This suggests the prospective value of these acquisitions in terms of expected profits.

Another example of this strategy is Gradient Ventures, controlled by Alphabet. In the period between 2019 and 2022 alone, it invested in 200 companies. In this case, it is usually not complete acquisitions but often portfolio investments, including minority stakes, in companies involved in AI. This strategy allows for access to information about the development of new products from within the most innovative startups, and potentially gaining control later. It is a strategy that has turned Big Pharma into an apparently impregnable oligopoly fortress.

Even from the perspective of scientific publications, Tech Giants dominate, surpassing universities in productivity. Researchers affiliated with Alphabet published 9,000 papers between 2020 and 2022, while those affiliated with Microsoft published 8,000. Thus, each of these companies publishes more in these fields than some prestigious universities.

In this sense, we are facing an unprecedented oligopolistic concentration of knowledge production, exclusively aimed at capital accumulation. Our societies, the relationships between classes and nations, and the orientation of governments and public policies will be defined by these formidable concentrations of power, in addition to those of Oil & Gas, Big Pharma, Automotive, and other sectors with rigid hierarchical structures.

Company	R&D in 2020 (USD billion)	Percentage on revenues
Amazon	42.7	11%
Alphabet	27.6	15%
Huawei	22	16%
Microsoft	19.3	13%
Apple	18.8	7%
Samsung	18.8	9%
Meta	18.5	21%

Table 9.1 Who spends the most in the world on R&D

Source: https://www.statista.com/statistics/265645/ranking-of-the-20-companies-with-the-highest-spending-on-research-and-development/

The Five Tech-Giants combined: Alphabet, Amazon, Apple, Meta e Microsoft		
Year	Capital expenditure (USD billion)	R&D (USD billion)
2013	50	20
2014	70	30
2015	90	40
2016	100	50
2017	120	70
2018	160	90
2019	180	110
2020	220	120
2021	298	150
2022	398	220

Table 9.2 - Expenditure on capital and R&D

Source: «The Economist», 26 March 2023, Big tech and the pursuit of Ai dominance.

Company	Share of the total
Apple	45%
Meta	23%
Microsoft	23%
Alphabet	10%
Amazon	7%

Table 9.3 - Acquisitions of companies related to Artificial Intelligence (2019-2023)

Source: «The Economist», 26 March 2023, Big tech and the pursuit of Ai dominance.

9.3 Proposals

How does politics react to this dangerous concentration of oligopolistic power? The ability to influence public policies - and thus the very foundation of sovereignty - hinges on the critical confrontation between governments and entities like Tech Giants. This confrontation is essential for addressing and managing the vast power wielded by these corporations and for safeguarding democratic governance and market fairness. The government of the People's Republic of China, which is home to some of the major players such as Tencent (fintech and online services), Alibaba (software and retail), China Mobile (Telecom), Huawei (Telecom and devices), Jd.com (retail) - with cumulative revenues of USD 550 billion in 2021 - has shown the ability and willingness to exert authoritarian control over the sector, including both public and private enterprises. In response to this global dynamic, essentially between US and Chinese companies, the European Commission appears to be pursuing a dual approach: adopting forms of supranational regulation, such as EU legislation on data protection, the Digital Services Act, and through competition supervision actions, including bans and fines.

Details of this EU strategy cannot be discussed here in depth, but it is worth quoting verbatim the recently approved position of the European Parliament in June 2023 on AI, which served as the basis for negotiations with the EU and member states²²:

As part of its digital strategy, the EU aims to regulate Artificial Intelligence (AI) to ensure better conditions for the development and use of this innovative technology. AI can bring many benefits, such as improved healthcare, safer and

²² https://www.europarl.europa.eu/news/en/headlines/society/20230601STO93804/ eu-ai-act-first-regulation-on-artificial-intelligence

cleaner transportation, more efficient production, and cheaper and more sustainable energy. In April 2021, the Commission proposed the first EU regulatory framework for AI. It suggests that AI systems used in various applications be analyzed and classified based on the risk they pose to users. Different risk levels will entail greater or lesser regulation. Once approved, these will be the world's first AI rules. The Parliament's priority is to ensure that AI systems used in the EU are safe, transparent, traceable, non-discriminatory, and environmentally respectful. AI systems should be supervised by humans, rather than automation, to avoid harmful consequences.

The risk classification, from "unacceptable" to "limited risk," is shown in the Appendix (note that the Commission initiated the legislative process in 2021, and it is not expected to be completed by this Parliament. An agreement between Parliament and Council for an Artificial Intelligence Act was reached December 9, 2023, but further steps will be needed for a bill to be approved). Meanwhile, the AI landscape is evolving rapidly.

The EU approach is defensive: AI is acknowledged as potentially useful but it is admitted to be in the hands of entities over which the EU and its institutions have no direct control. Consequently, risks are classified and efforts are made to contain them, somewhat like dealing with the dangers of chemical compounds and toys, for example.

The current strategy is inadequate. Even though in some cases there are encouraging political signals, it is difficult to counter Tech Giants with such an approach, let alone with antitrust actions that require years of litigation and are themselves defensive by definition.

An alternative policy option should establish strong public entities producing digital knowledge and related services. Rather than merely overseeing the actions of others, these public entities would actively drive research and development in directions that align with societal needs and priorities.

Perhaps there is an initial sign of this ambition not to be just a guardian by the European Commission with the Gaia-X project, which should be a federation of clouds, open to participation by hundreds of public and private enterprises that have joined a European association under Belgian law. However, a closer examination of Gaia-X reveals that, despite its aspirations, the current scale of its activities, budget, and staffing is significantly smaller compared to the vast resources and operations of the Tech Giants. Gaia-X is an idea put forward by Germany at the Digital Summit in Dortmund (2019), subsequently joined by France and others. The aim was to create an "Airbus Cloud", analogous to the Airbus consortium, which successfully challenged US dominance in the aerospace industry. Without Airbus, Boeing would likely be the sole major player in the field, with regulatory and antitrust policies having limited impact. The goal of Gaia-X is similar: to establish a European cloud infrastructure that can compete with the dominance of US tech giants. Gaia-X envisions a cloud federation adopting common protocols, with specialized clusters such as Gaia-Health, Gaia-x4futureMobility, with variable geometry for memberships. Essentially, it would be a "cloud of clouds" characterized by a single standard for data sharing. This ecosystem will harmonize the protocols of various network providers and interconnections, integrating both Cloud solution providers and High-Performance Computing centers. According to the latest public information²³, 350 entities have joined the project, organized into various thematic groups. But looking at the concrete landscape²⁴, certain facts become clear. Focusing on the "platforms" segment of the digital economy, the market value of companies active in the field was distributed as follows (Gartner data 2020): 74% in the hands of twenty US companies, 21% with sixteen Asian companies, 4% with nine European companies, 1% with one African company. Considering that, for example, nearly three-quarters of public services of all kinds in Europe are expected to rely on platforms within a few years, it seems unlikely that Gaia-X can compete with Tech Giants without a scale of investments in the order of several billion euros per year. Such investments would be needed to build the necessary infrastructure (servers, proprietary software, marketing) that convinces businesses and ministries of EU member states to migrate from US platforms. Currently, the largest provider in the EU has only a 2% market share.

The alternative proposal is fundamentally to have supranational technology hubs - new-types of public enterprises characterized by high knowledge intensity and a supranational nature. This concept draws from the merger of two existing models: on one side, large research infrastructures such as CERN and the European Space Agency, and on the other side, public enterprises in fields such as energy and telecommunications, which have ultimately proven to be just as efficient, if not more so, than private enterprises, despite being weakened by governments' reluctance to establish clear public missions.

The idea is to counter Tech Giants not only with speeches, rhetoric, and defensive regulation but instead with an entity armed with budgetary capacity, managerial expertise, and possessing tangible and intangible assets needed to compete. This entity would have dedicated personnel and the capacity to seriously counter the digital oligopoly. The combination of the concepts of research infrastructure and public enterprise, as I have already mentioned, is an idea that the Forum on Inequalities and Diversity is trying to develop in other fields as well. This includes biomedical research, to counter the oligopolistic dominance of Big Pharma, as well as in the field of energy transition and, precisely, in the digital economy.

²³ https://gaia-x.eu.

²⁴ As reported by the previous CEO of Gaia-X in a recent presentation at the University of Milan, https://gaia-x.eu/wp-content/uploads/2022/07/Gaia-X-standard-Presentation_06072022. pdf

The proposal is to establish a European supranational entity, essentially a company similar to the European Space Agency in terms of legal form and operational capacity. This entity would be equipped with resources open to partnerships with existing public and private organizations - excluding potential rivals that have joined Gaia-X. To be effective in countering the tech giants, the entity must operate on a sufficient scale, which means securing several billion euros in annual funding. Without such resources, the possibility of challenging the tech giants remains out of reach. To achieve this, highly competent individuals would need to be recruited. In Europe, there are tens of thousands of young talents at risk of being hired by the United States or elsewhere by Tech Giants, rather than being attracted by a project of public interest. It may be beneficial to imagine having a campus that serves as a central hub, but with several branches in different countries.

A concrete example can be found in the field of computer science. The European Bioinformatics Institute, part of the European Molecular Biology Laboratory (the "CERN" of molecular biology), has its own physical server infrastructure, a central office located at the Wellcome Genome Campus near Cambridge, UK, dedicated personnel, and ample resources. It serves the global biology community by providing free and open access to thousands of databases. It is not a weak federation of institutes; it is an entity capable of intervening and implementing a policy of digital knowledge. Hundreds of thousands of biologists rely on it through highly efficient online data acquisition procedures.

What could an entity of this kind achieve on a large scale? Firstly, it could provide users with the kind of guarantees that Tech Giants do not offer on how to use data; it could implement and manage a European cloud so that data remains in Europe and stays in a public digital space. Additionally, it could effectively deal with a series of technological adjustments, both on data transmission networks and computing, which need to be addressed in an integrated way.

To those who argue that the public sector cannot do these things, consider two notable examples. First, Fraunhofer in Germany, with an annual budget of 2.8 billion, has 28,000 employees and is among the main holders of technological patents. It is an entirely public structure, answering to the German federal government. A second example, less known to the general public, is the inter-university consortium for microelectronics in Leuven, which, with more than 5,500 scientists and 600 industrial partners, designs some of the chips that Tech Giants either purchase or further develop. Paradoxically, Europe has a de facto public, non-profit entity that designs semiconductors. These designs are purchased or further developed by Intel, and then all profits are privatized downstream by Tech Giants.

In conclusion, it is feasible to establish a European public enterprise in the digital field that embraces and develops the positive, public interest side of Artificial Intelligence and other technologies. This initiative could be considered

not just as a niche topic, but as a proposal of general interest for the future of the upcoming generations, which might otherwise be determined elsewhere.

Acknowledgments

This chapter is adapted from a previous paper (in Italian) in the Rivista delle Politiche Sociali, for a special issue on "Innovation, Artificial Intelligence, Social Needs", n.3, 2023, by kind permission of the Editors.

Appendix: Risk Classification of AI in the Proposal by the European Parliament

Unacceptable Risk:

Artificial Intelligence systems are considered to pose an unacceptable risk and are therefore prohibited when they constitute a threat to people. These include:

- 1. Cognitive behavioral manipulation of specific vulnerable individuals or groups, such as voice-activated toys encouraging dangerous behaviors in children;
- 2. Social classification, categorizing people based on behavior, socio-economic status, personal characteristics;
- 3. Real-time and remote biometric identification systems, such as facial recognition. However, some exceptions might be allowed. For instance, post-identification remote biometric systems, where identification occurs after a significant delay, will be permitted to address serious crimes and only with prior court authorization.

High Risk:

Artificial Intelligence systems that negatively impact safety or fundamental rights will be considered high risk and will be divided into two categories:

- 1. AI systems used in products subject to the EU General Product Safety Directive. These include toys, aviation, automobiles, medical devices, and elevators.
- 2. AI systems falling within eight specific areas must be registered in a EU database: biometric identification and categorization of natural persons, management and operation of critical infrastructures, education and vocational training, employment, worker management and self-employment access, access and use of essential private and public services and benefits, law enforcement, migration management, asylum and border control, assistance in interpreting and legal application of the law.

All high-risk AI systems will be assessed before being introduced to the market and throughout their lifecycle. Generative AI, such as ChatGPT, must adhere to transparency requirements: disclose that the content was generated by AI, design the model to prevent the generation of illegal content, and publish summaries of copyrighted data used for training. *Limited Risk*:

AI systems with limited risk should comply with minimum transparency requirements allowing users to make informed decisions. Users should be made aware when they are interacting with AI, including applications that generate or manipulate images, audio, or video content (e.g., deepfakes). After engaging with such applications, users should have the option to decide whether to continue using them.

References

Florio M (2023). The privatisation of knowledge. A New Policy Agenda for Health, Energy, and Data Governance, Routledge