# Competition and Artificial Intelligence

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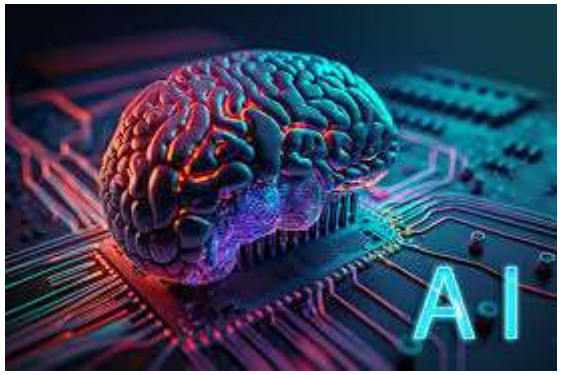
# Outline

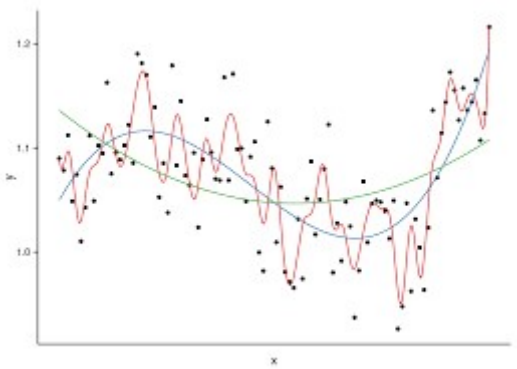
- Introduction
- AI value chain
- Potential risks to competition
- Response from competition authorities?
- Future areas of interest

# OECD Competition Committee latest AI work

- 2025:
  - **Competition in AI Infrastructure**
  - **AI and Competitive Dynamics in Downstream Markets**
  - **Competition in the Provision of Cloud Computing Services**
  - **Update on Competition in AI through Horizon Scanning**
- 2024:
  - **Artificial Intelligence, data and competition**, exploring:
    - *AI developments, including generative AI*
    - *Competition in the supply of AI*
    - *Competition authorities' tools and actions*

# What is AI?



- [OECD Recommendation on AI](#) defines AI systems as:

*"**a machine-based system that**, for explicit or implicit objectives, **infers**, **from the input** it receives, **how to generate outputs** such as predictions, content, recommendations, or decisions that can influence physical or virtual environments. Different AI systems vary in their levels of autonomy and adaptiveness after deployment."*

# Generative AI (GenAI)

- AI is not new, but hype has focused on GenAI (launch of OpenAI Nov ’22)
  - Other types of AI may also be prominent in the future

- Large Language Models (LLMs) & Natural Language Processing (NLP)
  - High level understanding of human languages
  - Many models now multi-modal

- GenAI still developing and end-use and commercial models still uncertain

# Potential impact of AI

- Potential for substantial economic impact, boosting productivity and growth
  - Goldman Sachs – “7% boost to GDP and raise productivity growth 1.5 pp”
  - McKinsey – “add US 2.6 – 4.4 trillion of value”

- Examples of potential use in customer service operations, marketing and sales, software engineering, financial services, R&D etc

- Evidence of productivity benefits:
  - access to a generative AI assistant allowed customer support agents to resolve 14% more issues per hour (Brynjolfsson et al., 2023);
  - it can increase productivity in work-based writing tasks and reduce quality differentials between workers (Noy et al., 2023); and
  - assisted software developers to complete programming tasks around 55% faster (Peng et al., 2023).

# Examples of use





# Generative AI

Market still in development (149 notable models launched in 2023)

Many players active, including Big Tech and computer hardware suppliers

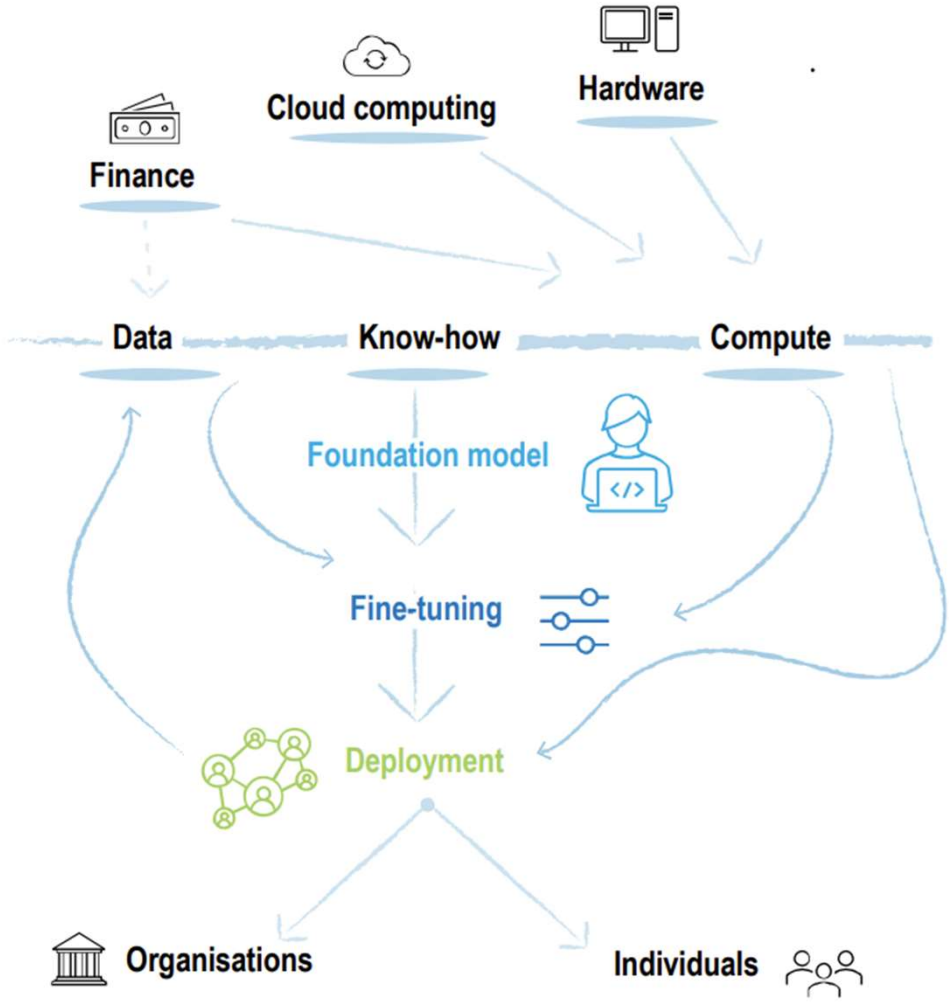
Models trained using vast amounts of data and compute power

Potential for substantial economic impact, boosting productivity and growth

Examples of use in customer service operations, marketing and sales, software engineering, financial services, R&D etc

# AI VALUE CHAIN

# Key stages of AI

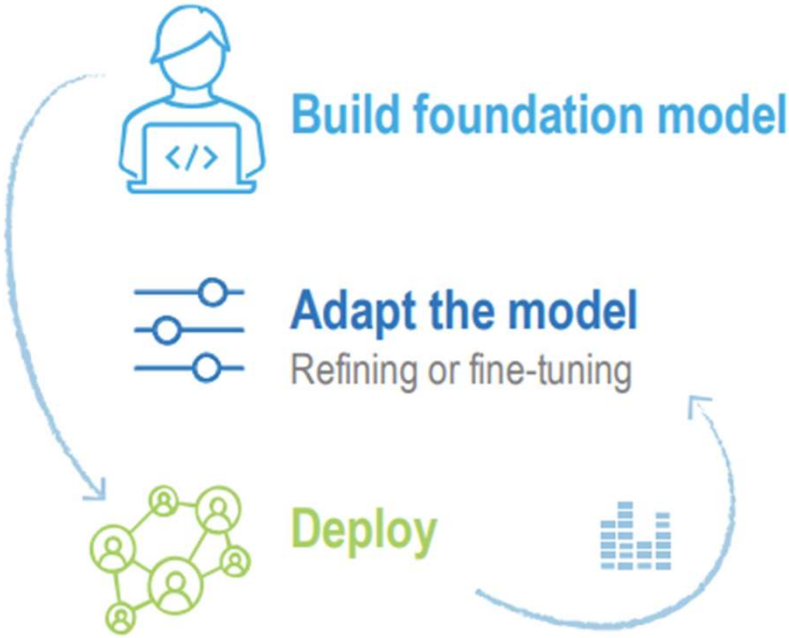



- Simplified focus on key segments of generative AI
  - ✓ Foundation models
  - ✓ Fine-tuning
  - ✓ Deployment
- Key inputs at various stages, including data and compute
- Several firms active across the system, but not limited to Big Tech
- Non-linear relationships

Artificial Intelligence, Data and Competition - OECD

# GenAI value chain

- GenAI still nascent
  - 2023: 89 “notable” models launched (Stanford Annual AI Index Report)
- However, initial value chain emerging



# Foundation models (FMs)

- Large (and expensive) models that underpin genAI
  - OpenAI: GPT3~US$ 4m -> GPT4~US$80m
  - Google's Gemini Ultra: US$ 190m


- Trained on very large datasets
  - Largely scraped data (is it running out?)
- Also require substantial compute
  - Importance of GPUs (Meta's Llama 405B reportedly used over 2000 GPUs to train)
  - Reliance on cloud computing

- Open-source v closed models

# Fine-tuning

- Option to fine-tune or refine FM
  - Specialise for a distinct purpose
  - Improve performance or remove errors

- Likely lower compute and data requirements
  - Note it requires access to a FM (licensed or open-source)
- Could require smaller but high-quality specific datasets
- Could provide route for cheaper effective models
  - E.g. Berkeley's Koala model

# Deployment

- Queries generate output from models, these outputs could have a range of uses
- Big difference from other digital technologies is non-zero marginal costs
  - Around 40% of GPU AI use responding to queries
- Many recent developments focus on efficiency of query response
- Distinction between individuals v organisations

# Deployment to individuals

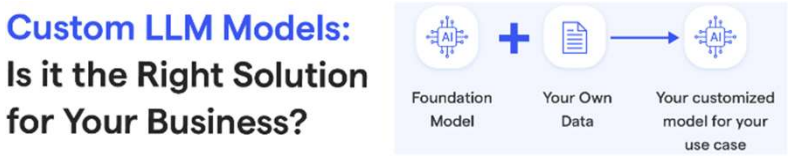
- Access through existing devices

- Increasingly integrated into existing digital solutions
  - E.g. Microsoft Copilot, Galaxy AI
- Mix of free, “freemium”, pay-per-use & subscription models


- Evolution of compute cost for queries could be key
  - On-device models, e.g Google’s Gemini Nano

# Deployment to organisations

- AI use could boost productivity in a range of sectors
- Leverage models into existing systems
  - Including access to their data
- May want bespoke models
- Solutions as a service
  - Accessed through platform / API
  - Potentially integrated into existing IT services



# POTENTIAL RISK TO COMPETITION

# Why worry about competition in an emerging sector?

- No certainty on the evolution of GenAI:
  - Technology and business models
  - Importance and impact of economies and society
  - Competitiveness

- Also, clear that AI has substantial potential benefits
  - Risk of intervention and overenforcement

- However:

# Potential competition concerns

Concerns focussed on

- Foreclosure of key inputs, such as compute or data, or users
- Partnerships in AI

Concerns that market power can be leveraged from adjacent markets, e.g. digital markets

Some concern around “window of opportunity” to address issues if market is prone to tipping as with digital markets

# Availability of key inputs

- Fears that key inputs may not be freely available due to foreclosure or other advantages

- Data
  - Economies of scope, vertical ownership or exclusivity (e.g. YouTube, Reddit, users?)
  - Potential for exploitative of vertical relationships to extract data?

- Compute
  - Input foreclosure concerns due to reliance on chips and cloud providers
- Other inputs like expertise and finance may be barriers to entry

# Access to users

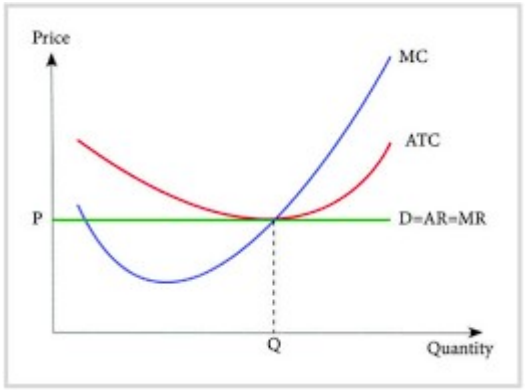
- Some concerns that competitors may struggle to access end users

- Bundling and tying
  - Software as Service (SaaS) bundles
  - Integration with digital ecosystems

- May be particularly important if there are economies of scale

# Risk of tipping / “winner takes all”?

- Direct network effects less obvious than in digital platforms
  - A technology not a two-sided market
  - Possible feedback effects from users

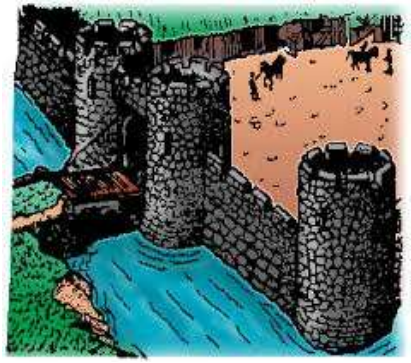



- Unclear cost curves, but MC non-zero
  - Likely economies of scale and scope, but how strong?
- Currently lots of suppliers including start-ups
- Tie-ups and partnerships could lessen competition

# Digital context

- GenAI developments take place in context of concentrated digital markets

- GenAI as a disruptor or entrencher?



- Fears of potential ability to leverage market power into GenAI
  - Vertical / Conglomerate / Ecosystem

# RESPONSE FROM COMPETITION AUTHORITIES?

# What have other authorities done?

- Several market studies:
  - CMA Initial Review into Foundation models (initial report and update) report, identifying some concerns. New update planned for Autumn 2024)
  - EU DG Comp and France launched public call for contributions on the sector. Hungary launched a market study in January 2024.
  - Other authorities released discussion papers on AI or generative AI, e.g. Portugal, Canada, Australia

- DG Comp, CMA, DOJ and FTC Joint Statement on competition in generative AI foundation models and AI products (July 2024)

- Increasing merger scrutiny

# Competition authority options

- Gathering information
  - Monitoring, advocacy, market studies
  - Investing in skills / knowledge

- Enforcement / Regulation
  - Monitoring potential breaches, such as abuse
  - Merger control - concerns about partnerships
  - Questions over ex-ante regulation

- International and domestic co-operation

# Monitoring and co-operation

- Tracking AI is technical and fast moving
  - Requires specialised skills and knowledge
  - Potential economies of scope for authorities

- Unlikely these will be nation-specific issues
  - Reduce duplicative efforts through coordination

- Could track:
  - Open-source access conditions
  - Bundling of services
  - Partnerships with investment or exclusivity

# Ex-ante regulations and AI

- Ex-ante regulations, such as EU's DMA or UK's DMCC, designed to focus on digital markets rather than GenAI

- AI not a DMA "core service". However, core services are captured in AI adjacent markets:
  - Cloud services:  relevant for training models and deployment
  - Services that might generate data
  - Services that could form part of ecosystems for users

- Regulation *might* restrict ability to leverage market power into AI from adjacent markets

# PARTNERSHIPS AND AI

# Partnerships (1)

Growing number of partnerships between firms operating at different levels of value chain (including those that compete horizontally).

Many are not traditional mergers, instead being investments, partnerships or even mass hiring of staff

- OpenAI/Microsoft
- Microsoft/Mistral
- Amazon / Anthropic
- Google/Anthropic

# Partnerships (2)

- No authority has prohibited/remedied a transaction in the genAI space, but increased scrutiny
- January 2024, the FTC launched a probe into various partnerships in order to better understand their effect on competition

- **Microsoft/ OpenAI:**
  - Germany announced in late 2023 that it was closing its review as not currently a merger situation
  - The CMA opened an investigation in December 2023 to see if a merger situation had been created

# Partnerships in Generative AI

As an emerging sector, several acquisitions and mergers in the AI space

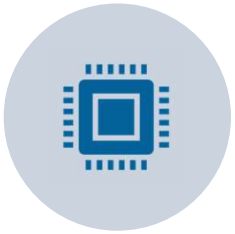
Also, many partnerships and supply contracts/investments between operators in the GenAI space

Several have been considered potential “pseudo mergers”

Various forms and degrees

# Benefits of partnerships

Partnerships can be pro-competitive



Can provide access to essential inputs and technology for entrants, avoiding high fixed costs

Combinations can improve product offerings for consumers

Partnerships may reduce transaction costs and uncertainty

# Potential competition concerns

- Nonetheless, reductions in firm independence has the potential to reduce competition

- There appear to be two main issues regarding AI partnerships:
  - Reduced independence of potential horizontal and/or vertical competitors
  - Dampening of independent incentives to compete compared to no partnerships
    - Traditional vertical issues
    - Conglomerate / entrenchment of existing ecosystems

# Risk factors for AI partnerships

- Each partnership is unique and needs to be assessed individually
- Several factors may increase risk of partnerships leading to anticompetitive effects:
  - The degree of lost independence, for example due to profit sharing, board positions etc
  - Elements of exclusivity
  - Creation of unique / non-replicable assets (such as data combinations)

# Authorities have been monitoring the space

- Competition Authorities have been actively monitoring the space, largely through merger control
  - Relatively few transactions qualify as mergers
  - Some concerns that transactions have been designed to “avoid” merger control
- To date, few cases based on horizontal agreements
- Other authorities considering issues through market study/enquiries
  - E.g. January 2024, the FTC launched a probe into various partnerships in order to better understand their effect on competition, released report in 2025

# Recent case examples

- **Microsoft/Inflection (UK, Germany)**
  - Microsoft hired several key employees frommodel developer inflection, resulting in caseCleared, but passed jurisdictional test in UK
  - One of the few cases to qualify for merger control in UK
- **Microsoft/ OpenAI (UK, Germany):**
  - Germany announced in late 2023 that it was closing its review as not currently a merger situation
  - The CMA opened an investigation in December 2023 to see if a merger situation had been created, but closed in March 2025 with decision it did not qualify
- **Nvidia / Run:AI (Italy, EU)**
  - Nvidia (market leader in GPUs) acquired a GPU software provider
  - Called in by Italian Competition Authority and referred to EU under Art 22
  - Cleared by EC in December 2024

# Potential theories of harm with partnerships?

# Theories of harm

- **Vertical effects**
  - By reducing independence between operators across a supply chain, risks of input or customer foreclosure
- **Conglomerate / strengthening of ecosystems ToH**
  - Potential for a merger to impact markets beyond those the focus of the merger and further entrench an ecosystem
  - Horizontal/vertical/conglomerate effects may overlap
- **Data-related theories** - data considered both as an input and for its potential to be accumulated and combined

# Theories of harm - horizontal

- **Elimination of potential competition**
  - Horizontal unilateral effects concerns with respect to potential competition that may have arisen between the parties in the future
  - Underlying ToH not novel, but process of formulating predictions about the future state of markets more difficult in digital markets
  - Potential constraint inevitably uncertain, but the impact of losing that constraint, if indeed it is lost, might be significant

# Is merger control sufficient?

# Merger control

- Typically two key questions for merger control:
  - Whether a relevant merger situation has been created?
  - Whether the deal triggers jurisdictional thresholds

- First part varies, but may hinge on the extent to which businesses acquire influence over each other or seek to be distinct

- Second, likely to involve an assessment of revenue

- There has been speculation that AI partnerships have been designed to challenge the first of these limbs
  - Particularly where there are no “call-in” powers

# Illumina/GRAIL implications

- General Court affirmed the EC's application of Art. 22.
- Illumina appealed the GC's decision before the ECJ
- 3 September 2024, ECJ affirmed AG Emiliou opinion disagreeing with the approach taken by the EC and the GC in interpreting Art. 22:
  - ECJ set aside the GC's judgement and annul the EC's decision
  - MS may not refer a merger to the EC for review where they have no competence to review the merger under national law

# Are more “call-in” powers required to allow authorities to review AI partnerships?

## Questions

- Have AI partnerships harmed competition or future competition?
- How to balance risks of competitive harm with potential stifling of pro-competitive partnerships?

# FUTURE AREAS OF INTEREST

# Broader effects on competition

- Productivity and disruption effects
  - Potential impact on importance of data and incumbency?
- Is there a risk of incumbent collusion on “safety” standards
- Virtual assistants
  - Reduced search costs or capture?
  - Algorithmic collusion
- Could it undermine content production
  - Copyright issues still ongoing

# Use of AI by competition authorities

- Unlikely we will be replaced that soon
  - But predictive models that can understand language are useful
  - Beware of quality issues

- Potential help in:
  - Evidence collection
  - Data management
  - Research
  - Editing/Drafting?
  - Monitoring / predicting competition issues

- Computational Antitrust

# Conclusion

- Unclear how GenAI will play out


- Appear to be some risks to competition, particularly given digital market context

- Authority monitoring and cooperation likely to be important
  - But lets not forget the potential benefits

# Thank you!

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