

More than just Plug and Play: Early Evidence on Organizational Capital and AI Adoption

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1. What do we study?

We examine the relationship between **structured management practices** and **AI adoption by UK companies**. We also compare the **managerial capability requirements of AI to other technologies** (cloud computing; robotics; specialized software; specialized equipment).

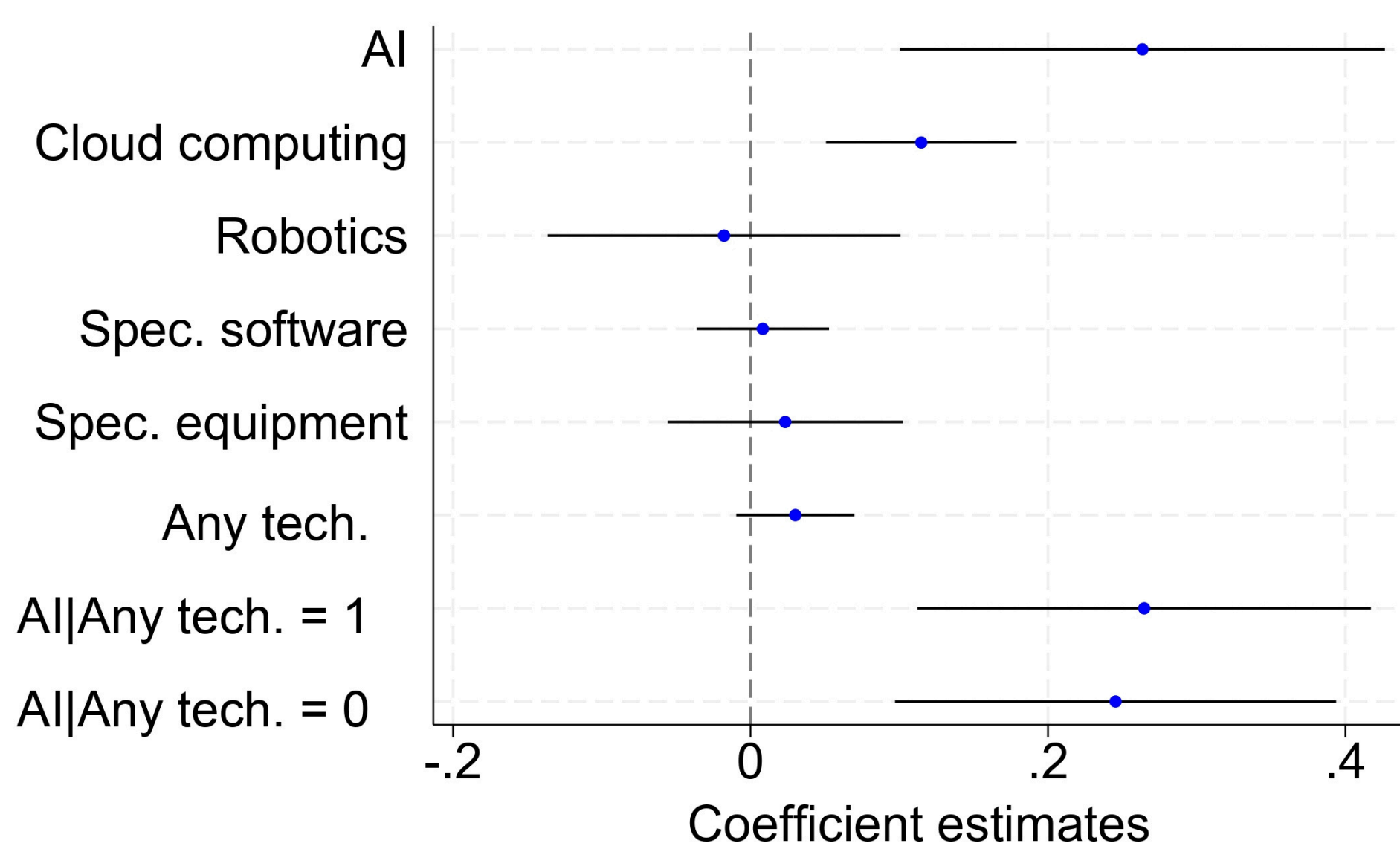
2. Our data and model

- **Data:** UK Management and Expectations Survey (MES), firm-level.
- **AI adoption in 2023:** binary variable - firms identified as having adopted AI if they use AI as part of processes or methods in 2023 (AI = 1).
- **Structured management score in 2020:** the average score (0-1) of **four elements** measuring different management practices: continuous improvement; use of KPIs; target monitoring; and employment practices.
- **Controls:** log labor productivity, family management status, foreign ownership status, and fixed effects (firm size, age, industry, and region).

$$\Pr(AI = 1)_{i,2023} = \beta_0 + \beta_1 \text{Management Score}_{i,2020} + \beta_2' X_{i,s,2020} + \beta_3' FE + \varepsilon_{i,1}$$

↳ Most firm-level studies into AI adoption use data prior to ChatGPT's public release in 2022, we use AI adoption data in 2023 - uniquely capturing the shift in AI accessibility and the boom of Large Language Models (LLMs)!

Figure 2: Effect of Management Practices on Technology Adoption



Note: The y-axis shows regression estimates from our models
Source: Authors' calculations, Office for National Statistics

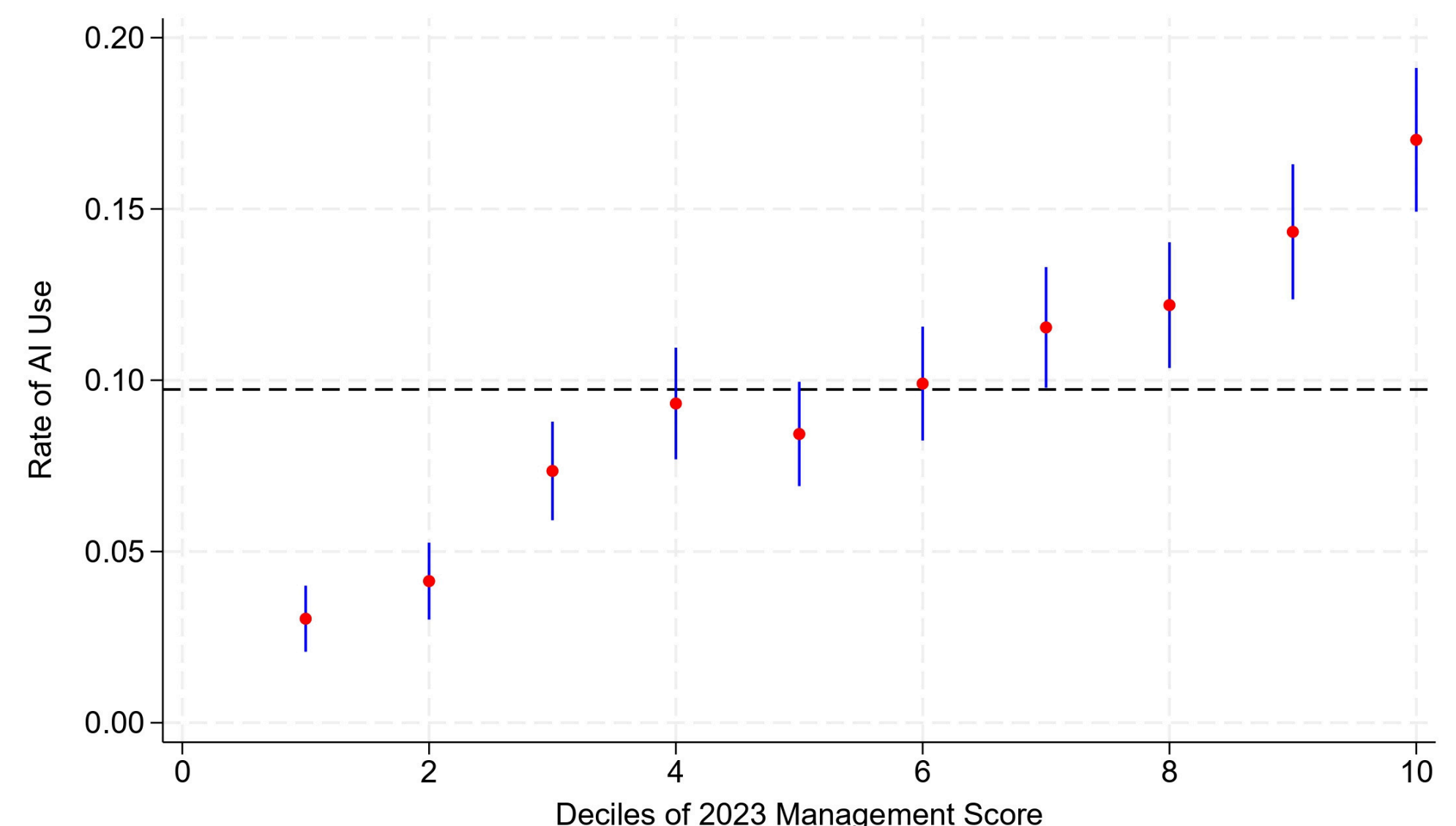
Other findings:

- Centralized decision-making structure for product development significantly inhibits the probability to adopt AI among UK companies that operate across multiple sites.

Implications:

- **Productivity:** managerial capabilities might be one of the binding constraints for early AI adoption. If not addressed, we risk widening the productivity gap and further entrenching the two-speed growth path.
- **Policy design:** different technologies require different types of organizational capital. Early AI adoption may not readily respond to subsidies or tax incentives without management capacity.

Figure 1: AI adoption rate per decile of management score



Source: Authors' calculations, Office for National Statistics

3. What are our key findings?

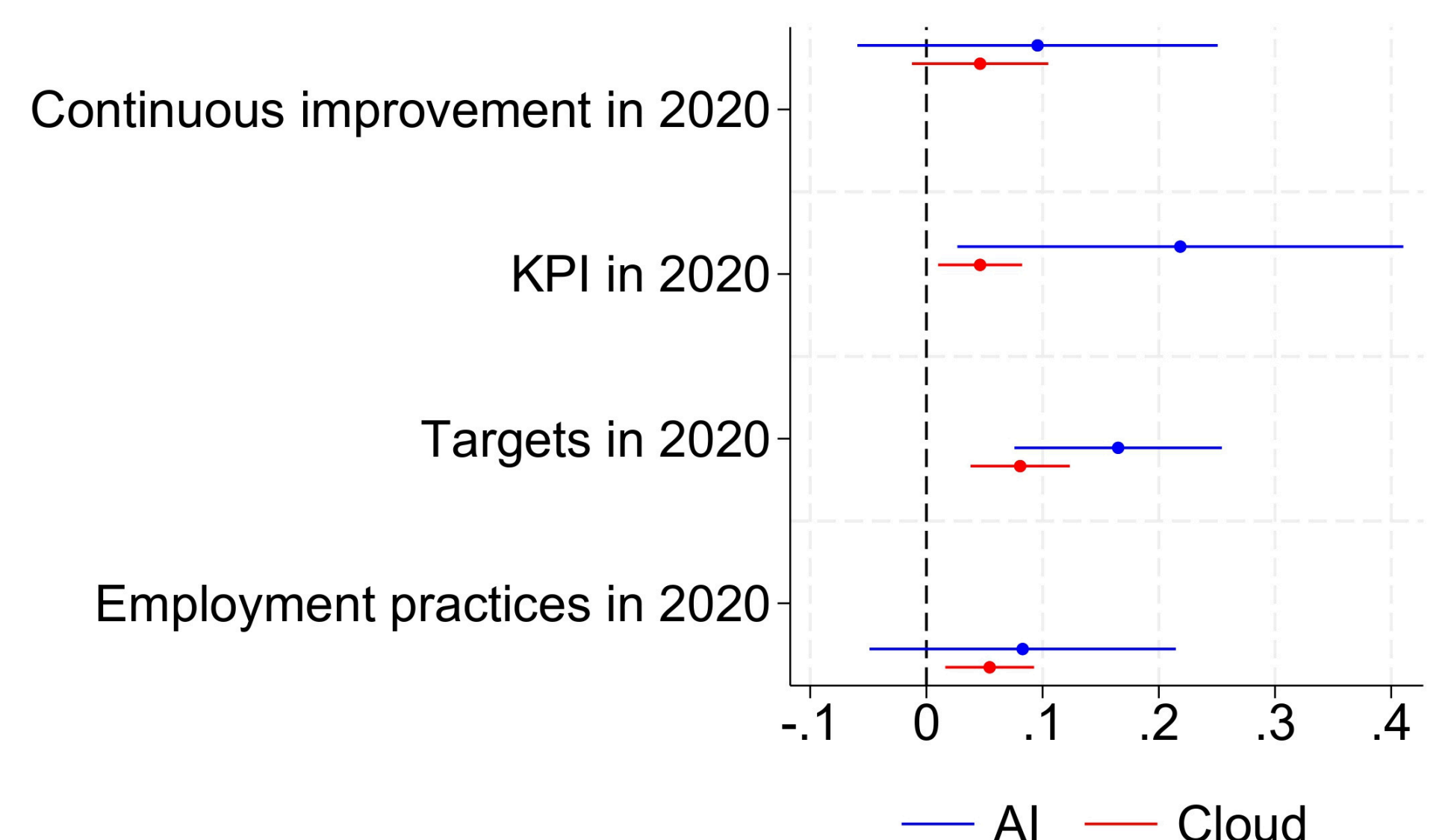
Structured management significantly and positively predicts AI adoption but not the adoption of other technologies

- Structured management in 2020 is **significantly and positively associated with the adoption of AI** and cloud computing but not for other technologies (**figure 2**).
- This positive estimate holds for AI adoption even after controlling for the use of other technologies (capture existing technological resources) and intangible capital (e.g. spending on advertising services).

Measurement-related practices matter most for AI adoption

- Out of the four elements of management quality, practices relating to **target monitoring and use of KPIs** are the most important for AI adoption (**figure 3**).
- Compared with other technologies, the **magnitude and significance** of these elements' effects are notably **stronger for AI**.

Figure 3: Which Element of Management Matters Most?



Note: The y-axis shows regression estimates from our models
Source: Authors' calculations, Office for National Statistics