Mapping the Diffusion of Artificial Intelligence in Italian Firms: Evidence from Public Funding Data

AI@DII

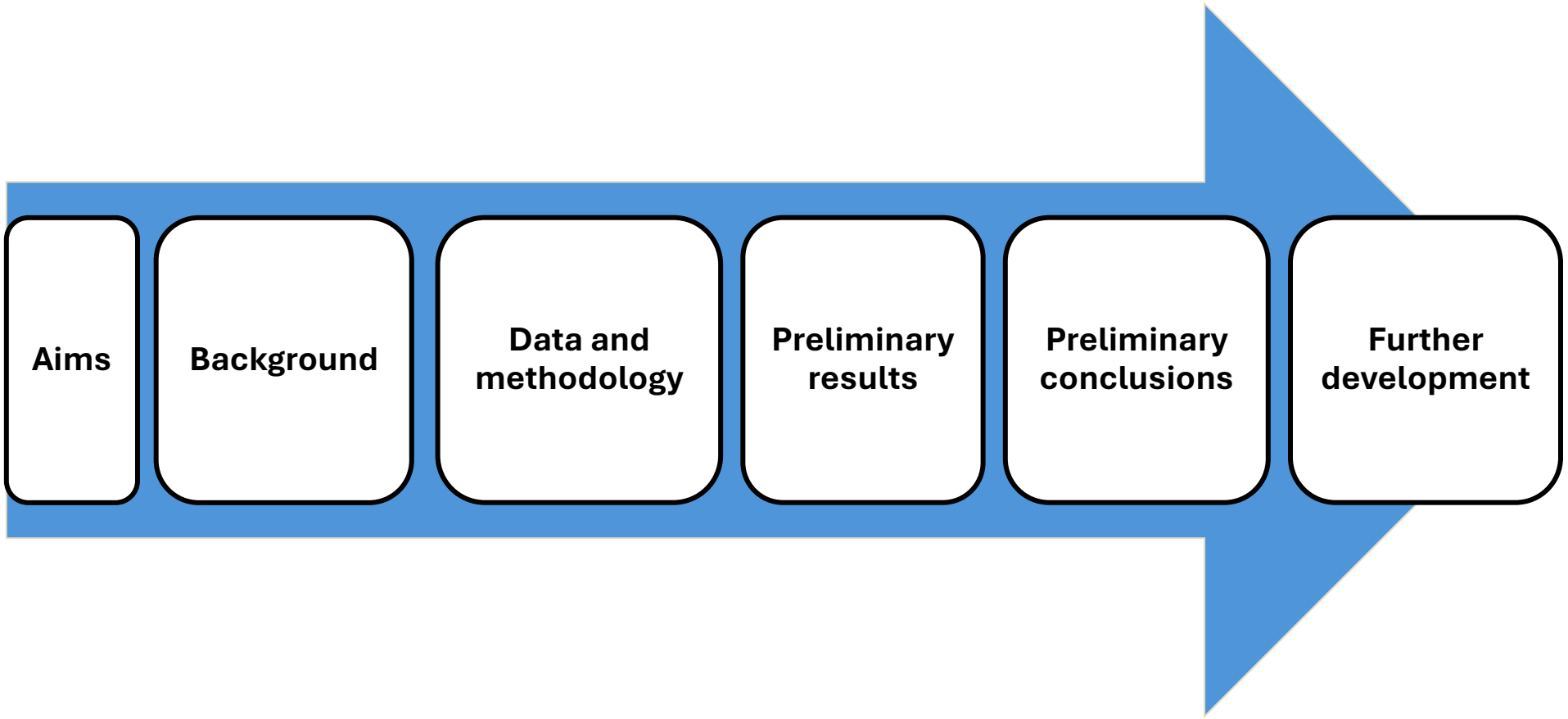
"Nuove frontiere nell'Ingegneria dell'Innovazione"

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Aims of the paper

The aim of this work is to **analyse AI adoption among Italian firms**, mapping the diffusion of technologies and application domains, with a focus on firms that have received public funding or incentives (**state aid**).

Furthermore, the paper aims to investigate the evolution and heterogeneity of AI diffusion **over time, across sectors and regions**.

The study provides:

- **policy insights** on the role of public support in shaping AI diffusion;
- **managerial implications** to support firms' strategic adoption of AI technologies.

Technology diffusion

The **diffusion of digital technologies** is widely recognised as a key driver of **competitiveness, productivity growth** and **economic resilience**.

However, in the Italian context, small and medium-sized enterprises (**SMEs**) often face **significant barriers** in adopting more advanced technologies, due to limited resources, capabilities, and organisational constraints (Giannini et al., 2025; ISTAT 2025).

Public support schemes have been largely designed as **horizontal policies**, aiming to foster broad technology uptake across firms.

Despite this, these policies have often shown **limited effectiveness**, with uneven adoption patterns and persistent gaps across firms, sectors, and territories (Cresti et al, 2020; Lucchese & Pianta, 2021).

AI adoption in Italy

Artificial Intelligence adoption among Italian firms is increasing rapidly, but it still involves only about 16% of companies (ISTAT 2025).

At the same time, adoption remains uneven and constrained by structural barriers, particularly among smaller firms.

- Low but growing adoption
- Strong gap between large firms and SMEs
- Skills shortages as a key barrier

Research Questions

Despite the growing relevance of Artificial Intelligence, **empirical evidence** on its diffusion across firms remains **limited.**

Moreover, the role of public funding in shaping AI adoption patterns and the resulting heterogeneity across firms, sectors, and regions is still **underexplored**.

This paper aims to provide an **empirical mapping of AI diffusion** among Italian firms using public funding data, and to analyse its evolution across technologies and application domains.

Research questions

R1: What are the key patterns of AI diffusion among Italian firms?

R2: How is public funding distributed across AI technologies and application domains, and what does it reveal about diffusion?

Data and methodology

This work is based on an original dataset from the Italian National State Aid Register, focusing on public subsidies to firms over the period 2014–2025, and built through a multi-step process.

1. **AI identification and mapping**
   - Keyword filtering combined with NLP techniques to identify AI projects
   - Classification into application domains and technologies
2. **Firm-level integration**
   - Matching with AIDA – Bureau van Dijk database
   - Firm characteristics: size, sector, financial indicators
3. **Empirical approach**
   - Descriptive and exploratory analysis
   - Focus on temporal, regional, sectoral, and firm-level patterns
   - Grounded in the Diffusion of Innovation framework.

Final dataset: **7,022** AI-related funded projects corresponding to **5,852** unique firms.

Preliminary results

AI diffusion in Italy

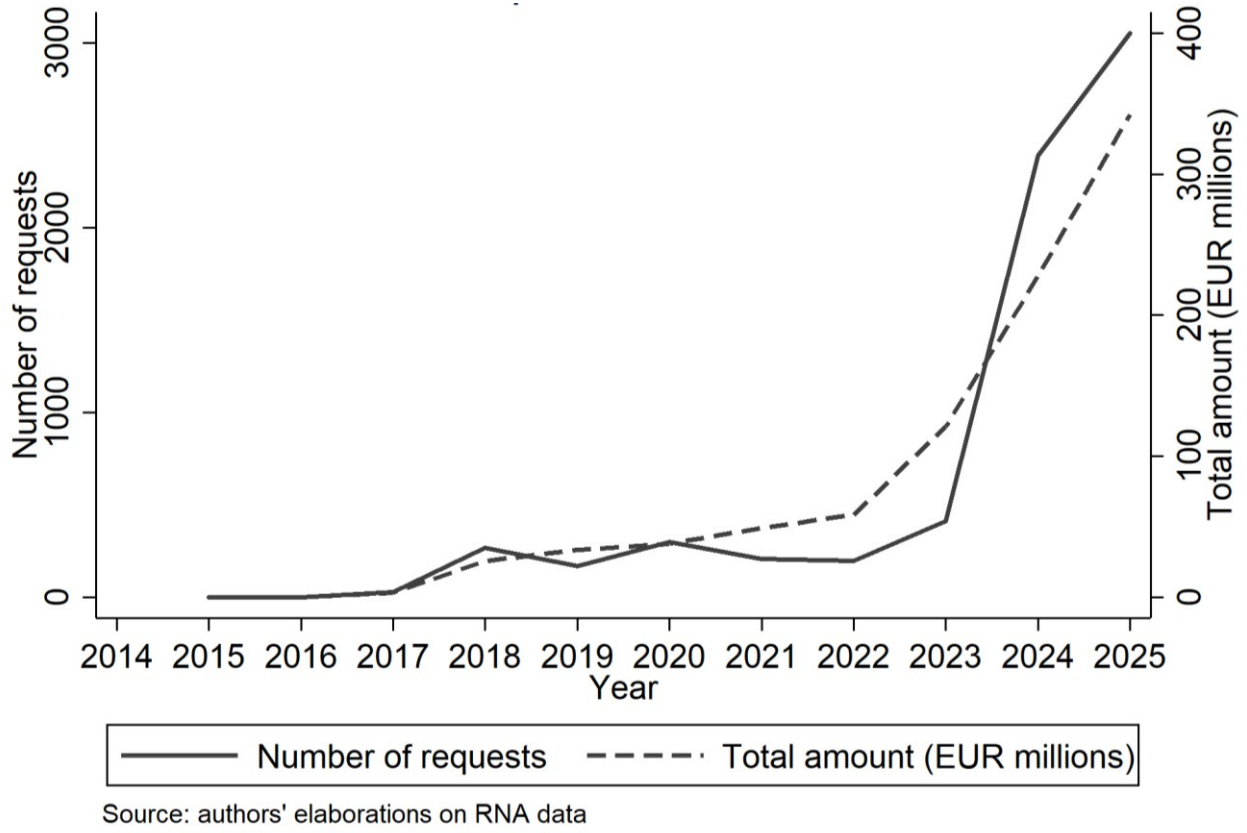
Patterns across time, regions, sectors, and firms

Martina Orci, *PhD*

Trend of AI requests and allocated amounts

Preliminary results

Fig. 1 – AI requests and allocated amounts, 2014-2025



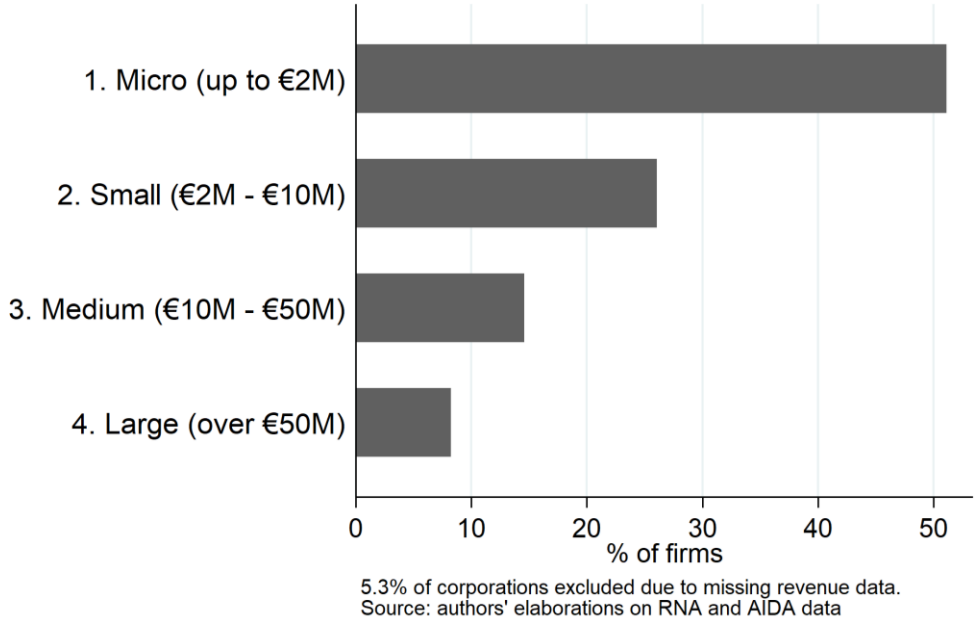
Source: authors' elaborations on RNA data

- A marked **increase** after 2023, reaching a peak in 2024–2025
- This expansion aligns with the emergence of **generative AI**

Characteristics of firms: size class

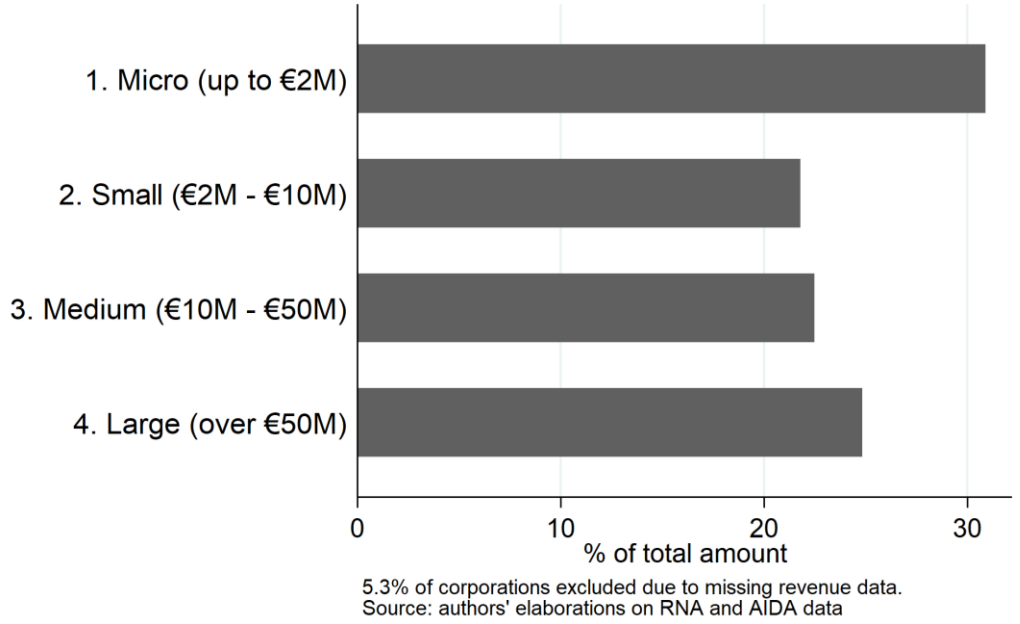
Preliminary results

Fig. 2 – Distribution of firms by size class (corporations only)



5.3% of corporations excluded due to missing revenue data.
Source: authors' elaborations on RNA and AIDA data

Fig. 3 – Distribution of state aid amounts by size class (corporations only)

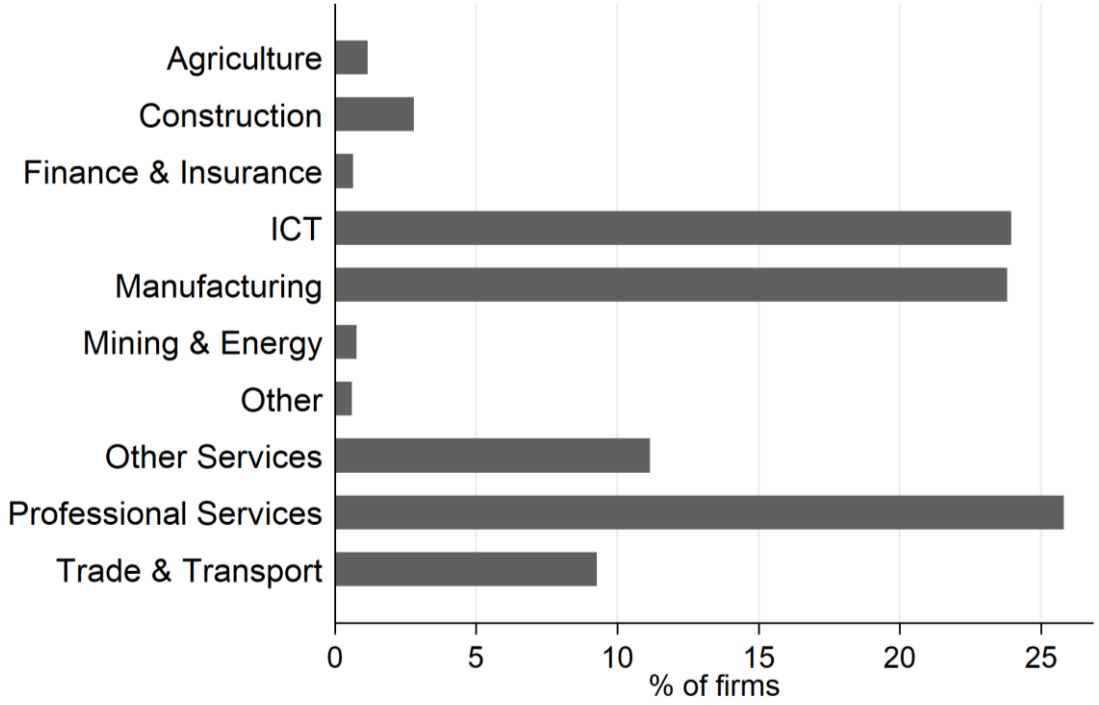


5.3% of corporations excluded due to missing revenue data.
Source: authors' elaborations on RNA and AIDA data

Characteristics of firms

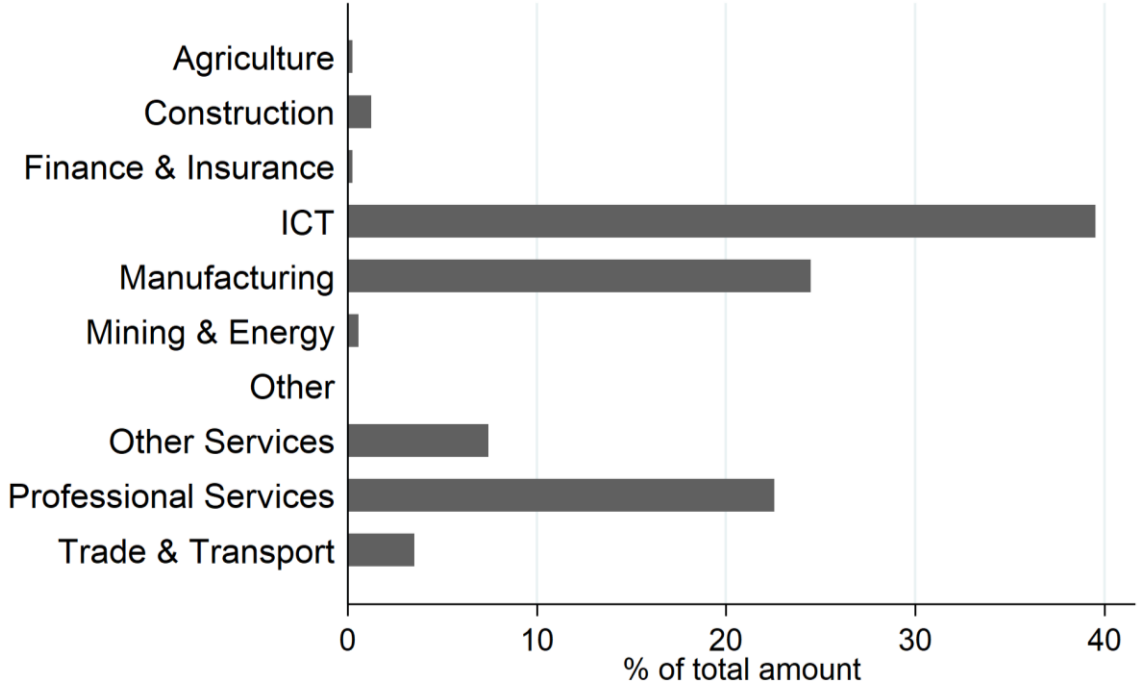
Preliminary results

Fig. 4 – Distribution of firms by macro-sector



Source: authors' elaborations on RNA and AIDA data

Fig. 5 – Distribution of AI aid allocated amounts by macro-sector

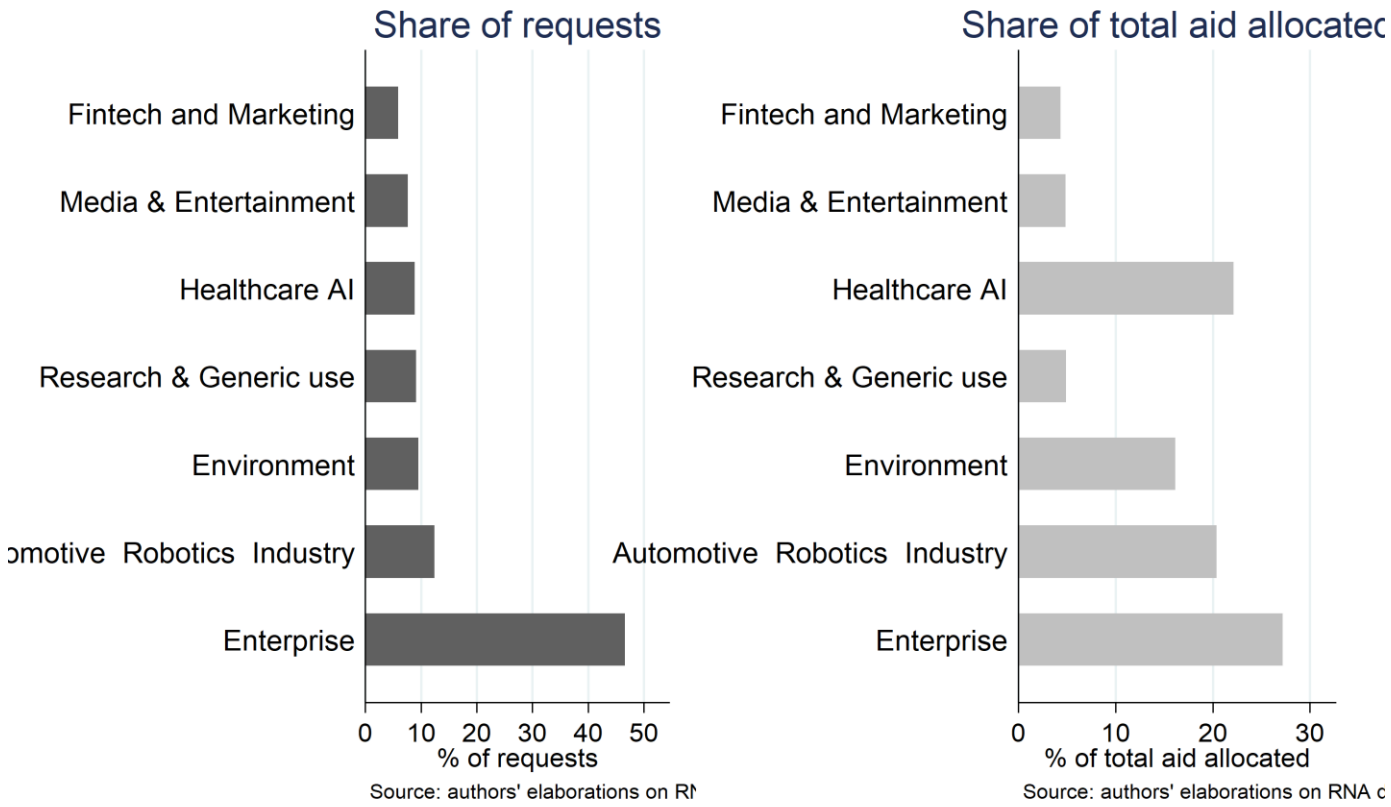


Source: authors' elaborations on RNA and AIDA data

AI application domains

Preliminary results

Fig. 6 – Distribution of AI aids by type of AI application domains



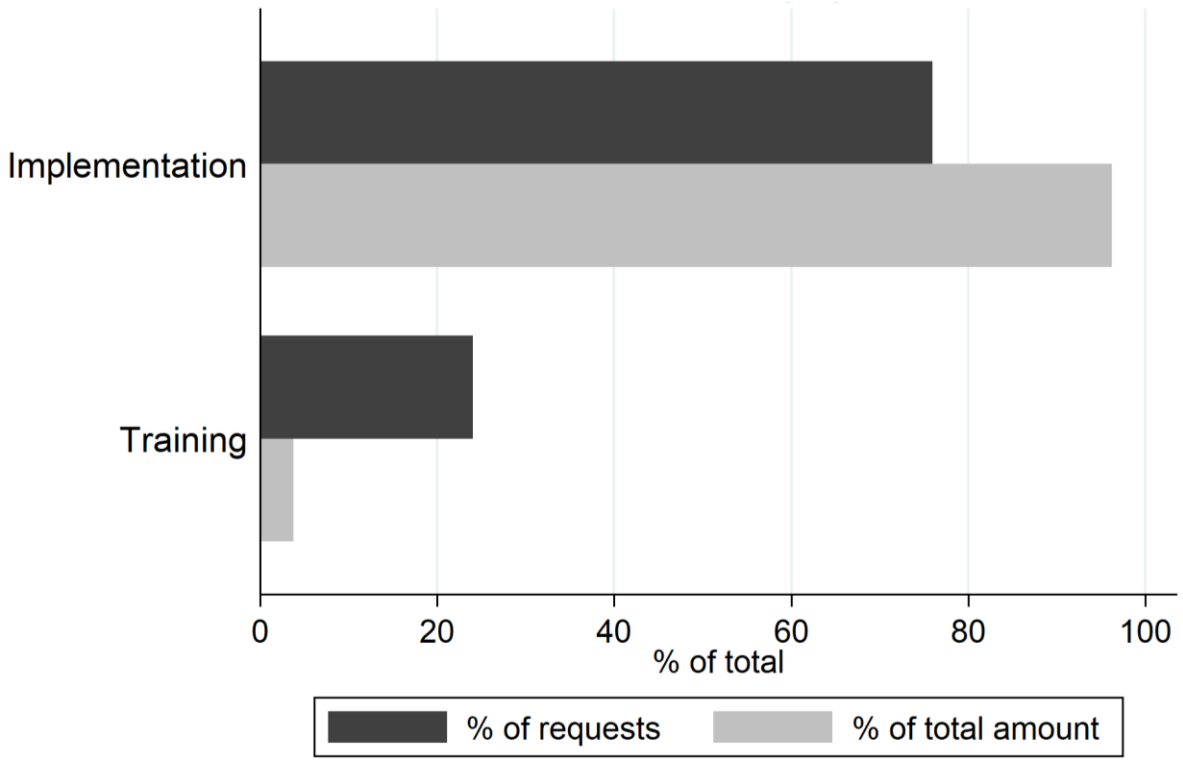
Source: authors' elaborations on RNA data

- Generic/enterprise AI leads in adoption
- More advanced domains attract larger investments per project

AI application domains

Preliminary results

Fig. 7 – Distribution of AI aids by type of AI use



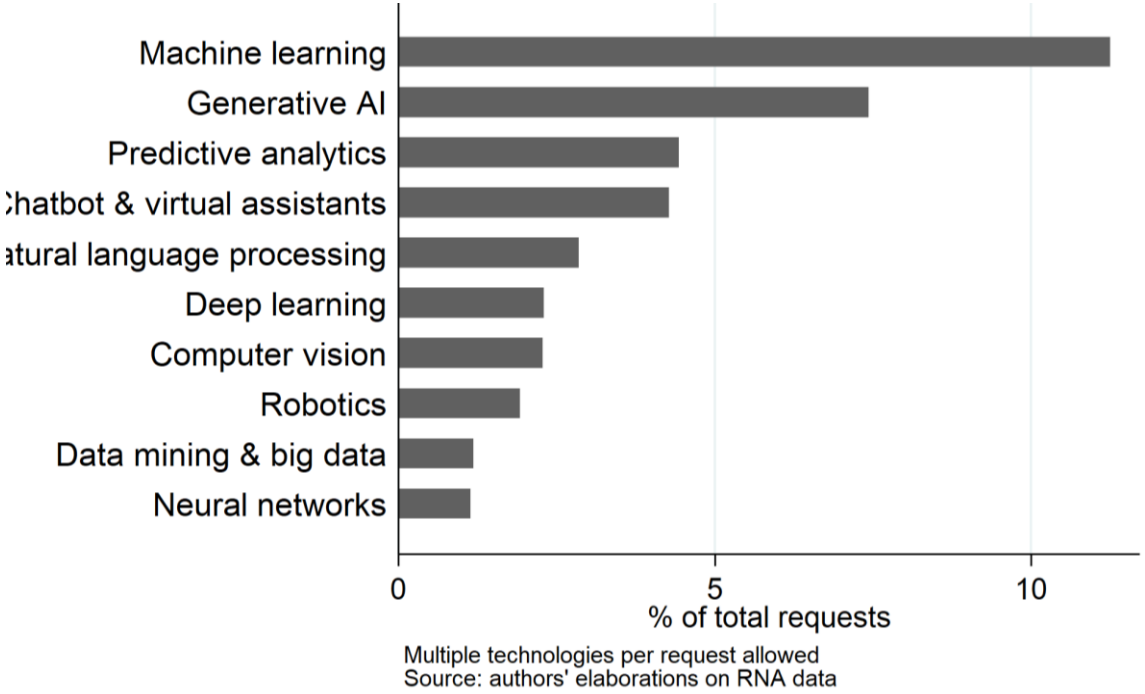
Source: authors' elaborations on RNA data

- Training remains underdeveloped compared to implementation
- Without adequate skills, AI investments risk being underutilized
- Combining technology and training is crucial to unlock full benefits

AI technologies

Preliminary results

Fig. 8 – Top 10 AI technologies by number of state aids
Generic AI excluded (65.98% of requests)



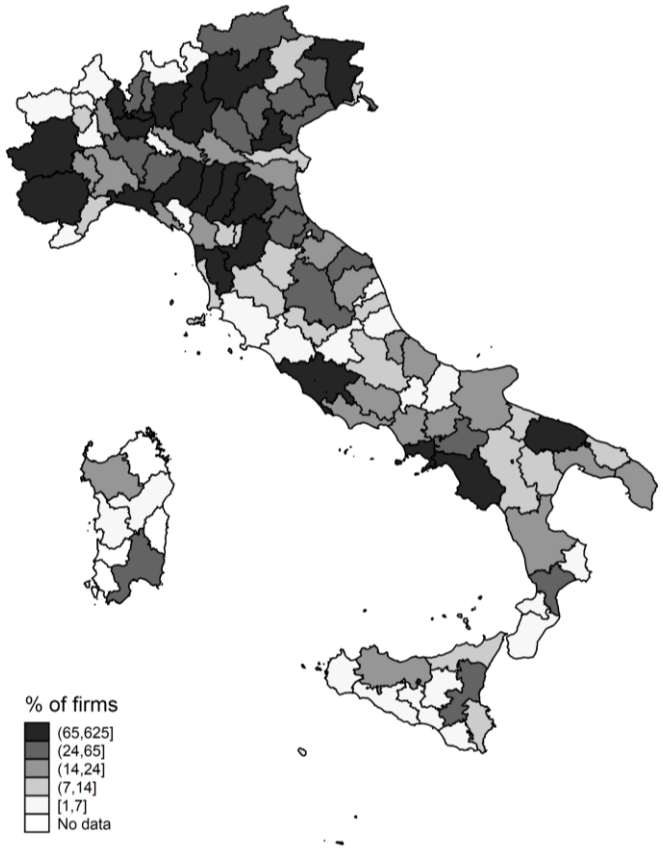
Multiple technologies per request allowed
Source: authors' elaborations on RNA data

- Core technologies (ML) remain central
- Emerging technologies (GenAI) gaining relevance
- Evidence of a heterogeneous technological landscape

Geographic distribution

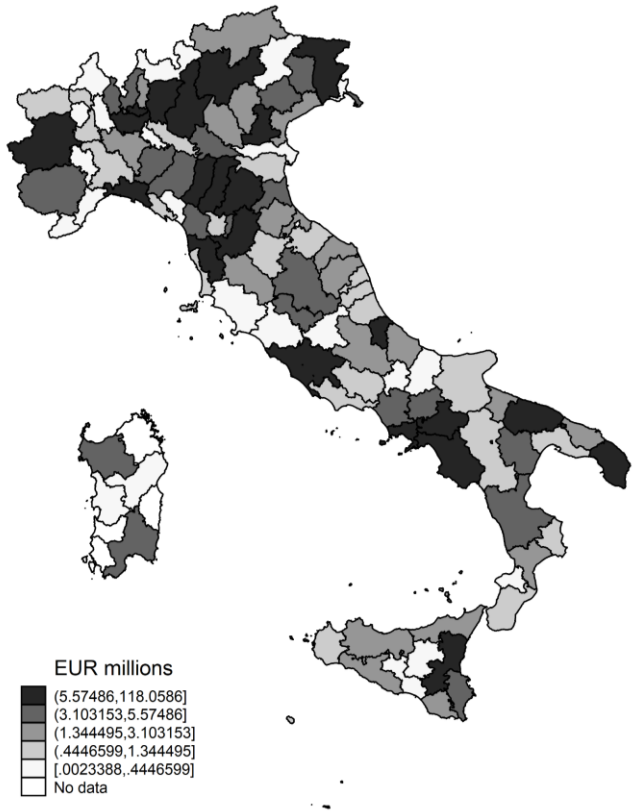
Preliminary results

Fig. 9– Geographic distribution of firms (corporations only)



Source: authors' elaborations on RNA and AIDA data

Fig. 10 – Geographic distribution of AI aid amounts (corporations only)



Source: authors' elaborations on RNA and AIDA data

- Very similar spatial patterns
- Funding mirrors firm distribution
- North–South divide

Preliminary conclusions

- AI diffusion in Italy is accelerating, especially after 2023
- General-purpose AI dominates adoption, while advanced domains are more capital-intensive
- Significant heterogeneity across firms, sectors, and territories
- Public funding seems to reflect existing industrial and geographical patterns

Link to research questions:
(R1) AI diffusion is uneven and structured, reflecting differences in firm characteristics, sectors, and regions

(R2) Public funding is concentrated in specific domains and actors, revealing priorities and asymmetries in the diffusion process

Further development

Open questions

1. What drives AI adoption in firms?

- What firm characteristics (size, skills, sector, digital capabilities) influence AI adoption?
- What are the main barriers and constraints (costs, lack of skills, uncertainty)?
- What is the role of public support and incentives in fostering adoption?

2. What is the impact of AI adoption on firm performance?

- Does AI adoption lead to improvements in performance (productivity, growth, innovation)?
- Do firms combining AI implementation and training achieve better outcomes?
- Are there differences depending on type of AI technology or application domain?

Thank you for your attention!

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