



CPB Netherlands | Bureau for Economic Policy Analysis

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Parallel Session A1: Artificial Intelligence

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Discussion

- **Artificial Intelligence and Bank Profitability: What Really Matters?**
Paolo Nicola Barbieri, Alessandra Bettocchi, Andrea Fabrizi, Rita Romeo, Prometeia Spa
- **Does Using Artificial Intelligence Enhance Productivity? Firm-Level Evidence from a Small Open Economy.**
Iulia Siedschlag, Juan Duran, The Economic and Social Research Institute (ESRI), Trinity College Dublin
- **Developments in Artificial Intelligence Markets - New Indicators based on Model Characteristics, Prices and Providers.**
Christophe André, Manuel Béтин, Peter Gal, Paul Peltier, OECD

Dimensions of AI's economic impact

- **Market Dynamics and Competition (André et al., 2025)**
 - Focus: Supply-side (AI model development, pricing, market structure).
 - Methodology: AI Economic Frontier, quality-adjusted prices, market shares, churning rates.
- **Firm-Level Productivity (Siedschlag & Duran, 2026)**
 - Focus: Demand-side (firm adoption, labour productivity).
 - Methodology: LP-DiD estimates, PSM matching, productivity gains by AI application.
- **Sector-Specific Performance (Barbieri et al., 2026)**
 - Focus: Banking sector (profitability, cost efficiency).
 - Methodology: Text-based Digital Engagement Index (DEI), AI use cases, implementation stage, ROA, operating costs

AI is associated with economic gains (but heterogenous and short-term?)

- Quality-adjusted AI prices fell by 80% (2023–2025); high market dynamism (1,000+ models, 100+ developers) (André et al.)
- 2.9% labour productivity gain (fades after 2 years); 7.9–8.8% for marketing/ICT/Robotic Processing Automation (Siedschlag & Duran)
- Higher RoA, lower operating costs (in client profiling/process optimization) (Barbieri et al.)

Economic benefits of AI depend on

- Investing in complementary assets:
 - Human capital (skills, training) (Siedschlag & Duran)
 - Technological capital (cloud, open-source tools, digital infrastructure) (André et al.; Siedschlag & Duran; Barbieri et al.)
 - Organizational capital (process integration, regulatory readiness) (Barbieri et al.)
- Other conditions:
 - Sustained competition with diffusion of open-source/cheaper models (André et al.)
 - Maturation of AI from pilot to operational (Barbieri et al.)
 - Regulatory future (EU vs US/China)

André et al. (2025):

- Excluding Chinese models (due to access restrictions): how does this bias the AI Economic Frontier?
- Price declines for AI models, but what about other costs (e.g., energy, compute) or hidden tokens (e.g., reasoning steps in LLMs)?

Siedschlag & Duran, 2026

- Why do productivity gains fade?
 - Is it competitive diffusion (others catch up)?
 - Adjustment costs (short-term disruptions)?
 - Measurement difficulties
- The paper speculates but does not test these mechanisms directly.

Barbieri et al. (2026)

- Operational AI (client profiling) reduces costs, but regulatory AI (reporting) does not (in the short term):
 - Regulatory AI is harder to implement (are highly structured, auditable, and legally binding processes)?
 - It adds compliance costs without immediate returns (AI adds new costs e.g., model monitoring, audits, explainability tools)?
- The paper does not disentangle these channels.

Open questions

- Long-Term Productivity
 - How will adjustment costs (e.g., reorganization, reskilling) evolve over time?
- Concentration
 - Will AI reinforce incumbents (via scale economies, data advantages) or enable new entrants (via open-source, cloud access)?
 - Different switching costs? (in Banking high due to cybersecurity)
- Heterogeneity
 - Do the banking sector's findings (cost reductions, ROA gains) apply to other sectors (e.g., healthcare, manufacturing)?
 - Sector-specific barriers (e.g., regulation in finance, data access in healthcare)?
- Measurement Challenges
 - How to capture AI's economic impact (e.g., TFP, quality-adjusted output, spillovers)?
 - How to account for hidden costs (e.g., reasoning tokens, cybersecurity risks)?



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