

## **Non-technical summary for 'Adoption of Emerging Digital General-purpose Technologies: Determinants and Effects'**

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Productivity growth is a key driver of living standards over the medium term. However, it has slowed over recent decades in Australia and other advanced economies. In part, this appears to reflect the fact that firms are adopting new technologies more slowly, thereby slowing the process of technology diffusion, which tends to be a key driver of productivity growth. This highlights the importance of understanding the barriers to and the effects of technology adoption.

Direct evidence on technology adoption is scarce. This paper fills this gap by developing a new database on technology adoption based on references to technologies in Australian-listed firms' earnings calls and annual reports. It combines this database with information on firms' performance, management and hiring to get a clearer picture of the drivers of and barriers to adoption. The focus here is on cloud computing and artificial intelligence/machine learning (AI/ML) – two emerging digital general-purpose technologies (GPT).

We ask:

- How has the adoption of GPT evolved over time in Australia?
- What factors influence a firm's decision to adopt GPT?
- Does the adoption of GPT affect a firm's profitability and hiring practices?
- What role do the skills of workers and the Board of Directors play in the profitable adoption of GPT?

### **Key findings**

- Rates of adoption of both cloud computing and AI/ML are lower in Australia than in the United States.
- There was a surge in adoption of cloud computing technology during the COVID-19 pandemic, but this was short-lived, with rates of new adoption quickly reverting to pre-pandemic levels.
- Larger and more liquid firms are more likely to adopt GPT, suggesting that financing frictions and large fixed costs may be barriers to adoption.
- Early adopters of these GPT tend to have a dip in profitability around adoption, but this is not the case for late adopters. This suggests that it has become easier to adopt GPT over time, potentially as the technologies themselves have evolved or as the skills needed to use them become more prevalent.
- Firms where the directors have experience with GPT are more likely to profitably adopt GPT. This likely reflects the importance of having skilled managers in profitable adoption.
- Firms with female representation on their board are more likely to profitably adopt GPT. This could reflect the benefits of internal diversity, though other factors could potentially explain both more female representation and more profitable adoption.
- After adoption, firms tend to demand more GPT-skilled workers, particularly those firms that have directors with GPT experience. This highlights the important role that having a skilled workforce could play in facilitating technology adoption.