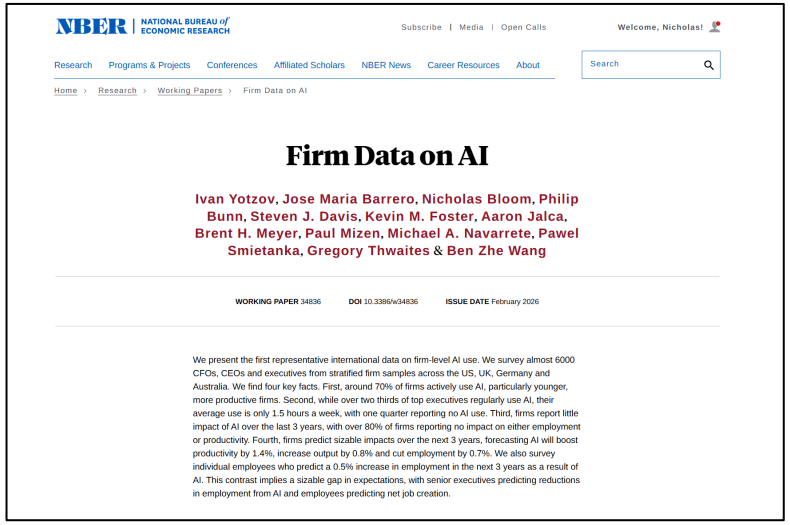
Firm Data on AI

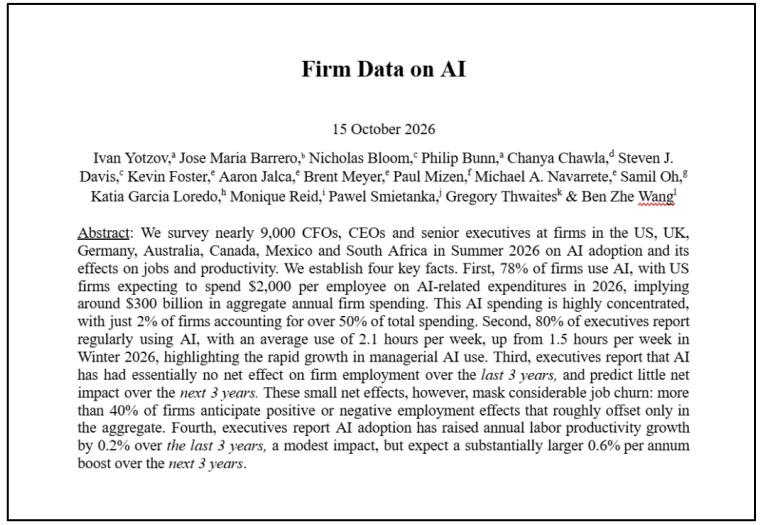
Ivan Yotzov, Jose Barrero, Nicholas Bloom, Philip Bunn, Chanya Chawla, Steven Davis, Kevin Foster, Aaron Jalca, Brent Meyer, Paul Mizen, Michael Navarrete, Samil Oh, Katia Garcia Loredo, Monique Reid, Pawel Smietanka, Gregory Thwaites and Ben Wang

Atlanta Fed, Bank of England, Bank of Canada, Bank of Korea, Bank of Mexico, Bundesbank, Kings, ITAM, Macquarie, Nottingham, South African Reserve Bank and Stanford

Cleveland Fed, November 17 2026



Feb 2026



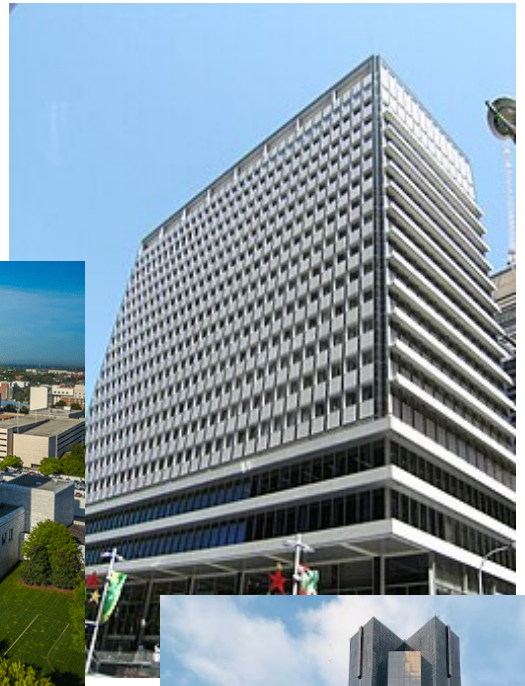
Oct 2026

For monetary policy critical to know impact of AI on the economy

Team of 8 Central Banks surveyed ≈10,000 CFO/CEOs in May-July 2026



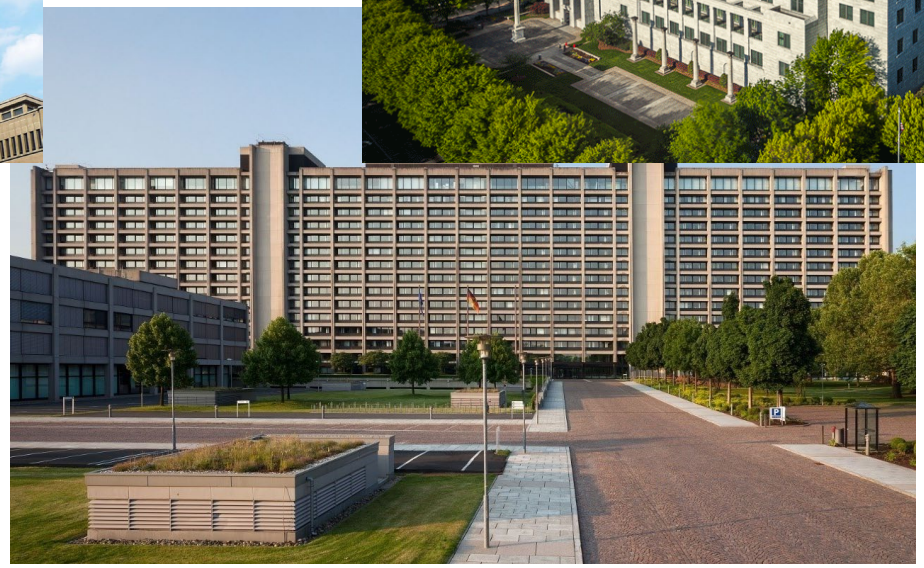


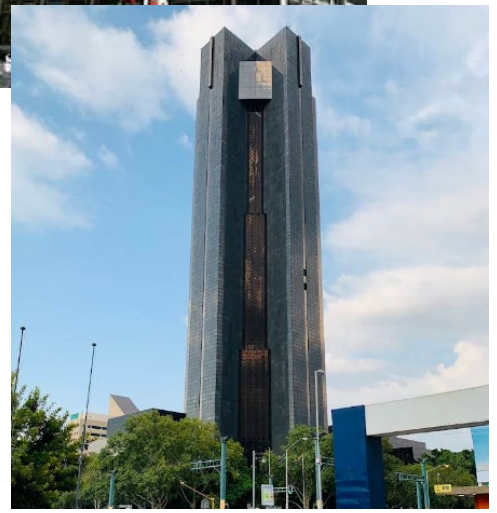










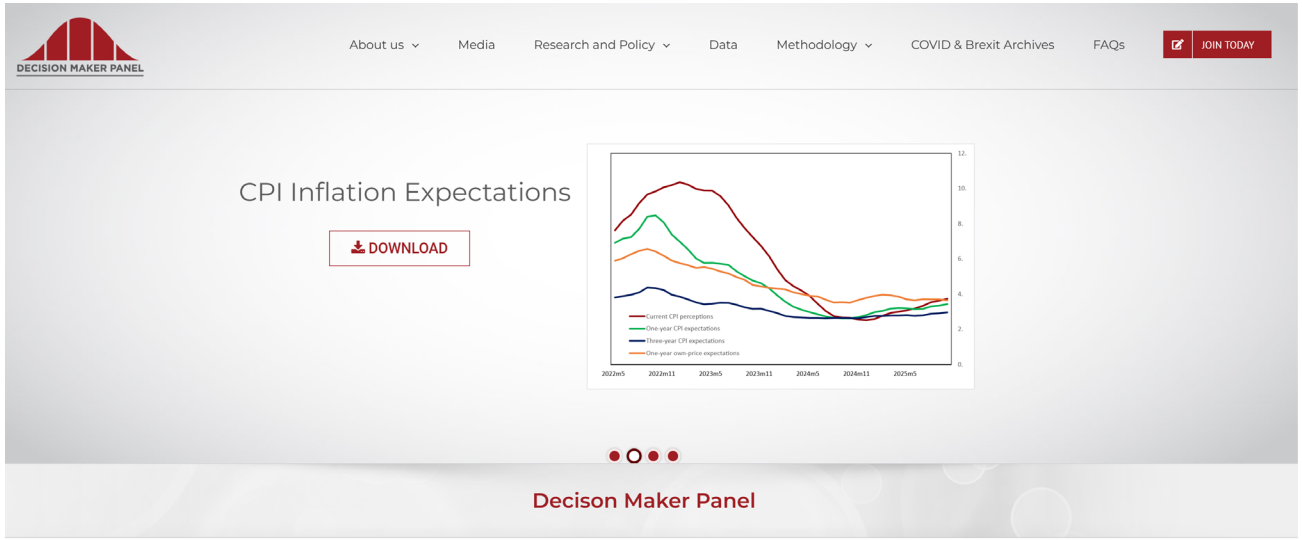


>>>> Our Survey Process

>>>> Results - executive and firm adoption

>>>> Results – employment & productivity

Use Central Bank firm survey panels – UK and US examples



Next month's Decision Maker Panel data will be published Thursday 4th December 2025

DECISION MAKER PANEL

LATEST DATA – OCTOBER 2025

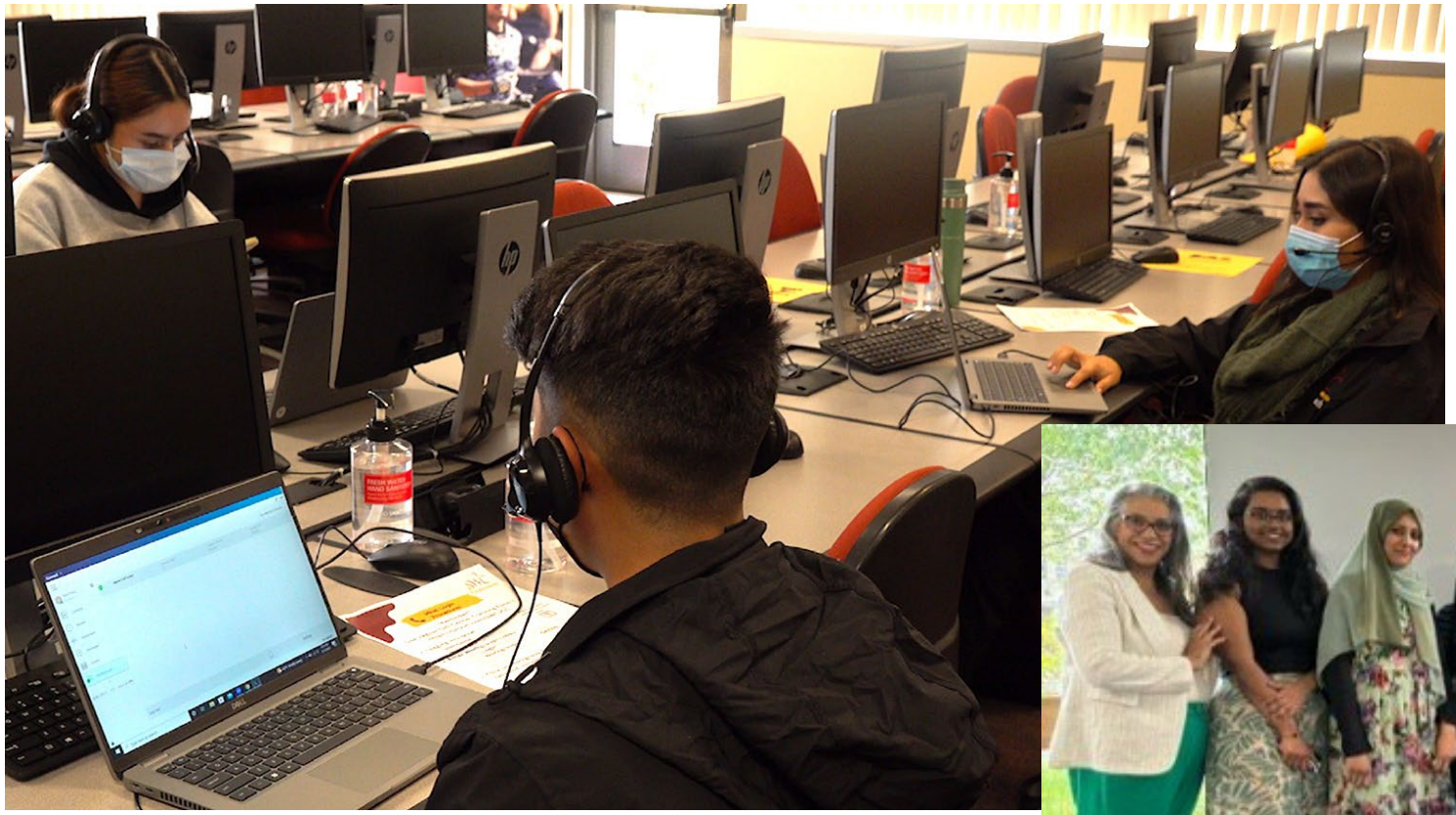
SIGN UP FOR NOTIFICATIONS

The DMP was set up in August 2016. It provides direct insight into business expectations and uncertainty, for example Covid-19, Brexit and Inflation. Our panel draws information from Financial Officers in UK companies operating in a broad range of industries and is designed to be representative of the population of UK businesses.

BANK OF ENGLAND GOVERNOR'S LETTER TO DMP MEMBERS



These Surveys Panels Phone Recruit Execs and then Move them to an Online Panel (So You Know It's a Real Exec Answering….)

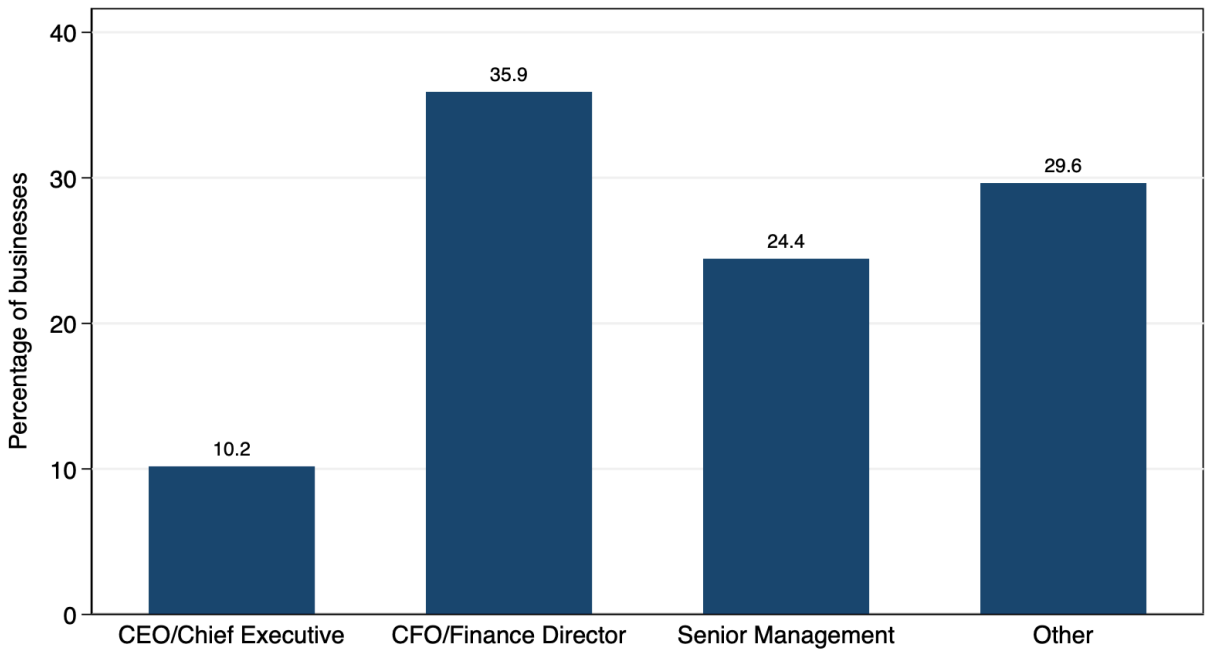


Random sampling from population of firms with 10+ employees (median ≈250)

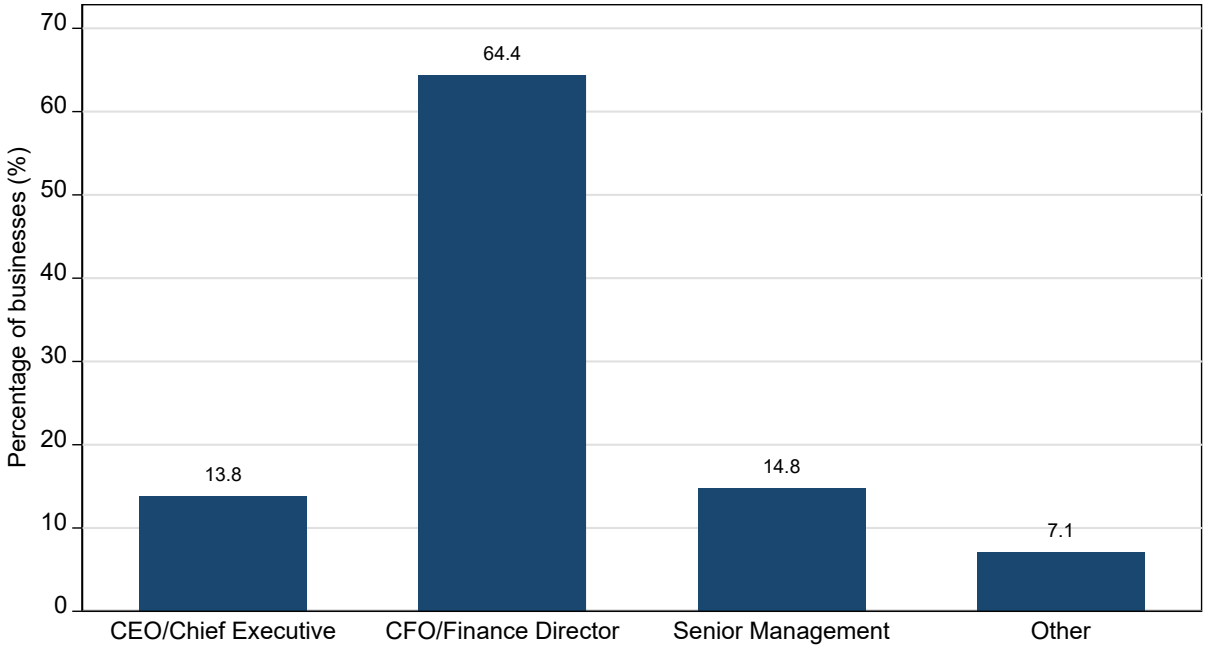


Our Recruitment Team Targets CFOs, CEOs and Senior Execs

US Firms



UK Firms



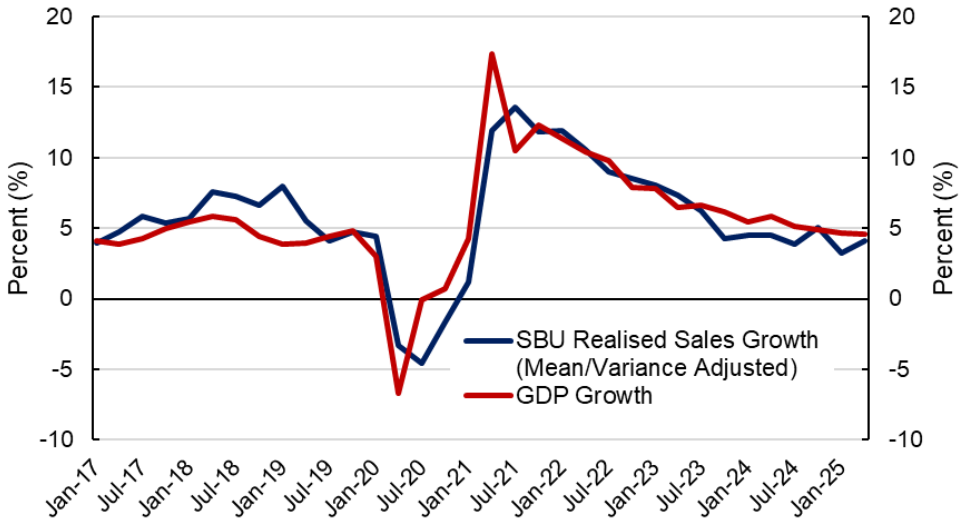
***Notes**: This figure shows the position of survey respondents. Panel A shows data from the US Survey of Business Uncertainty (SBU), averaged over January 2017 to January 2025. Panel B shows data from the UK Decision Maker Panel (DMP), averaged over 2017-2025.*

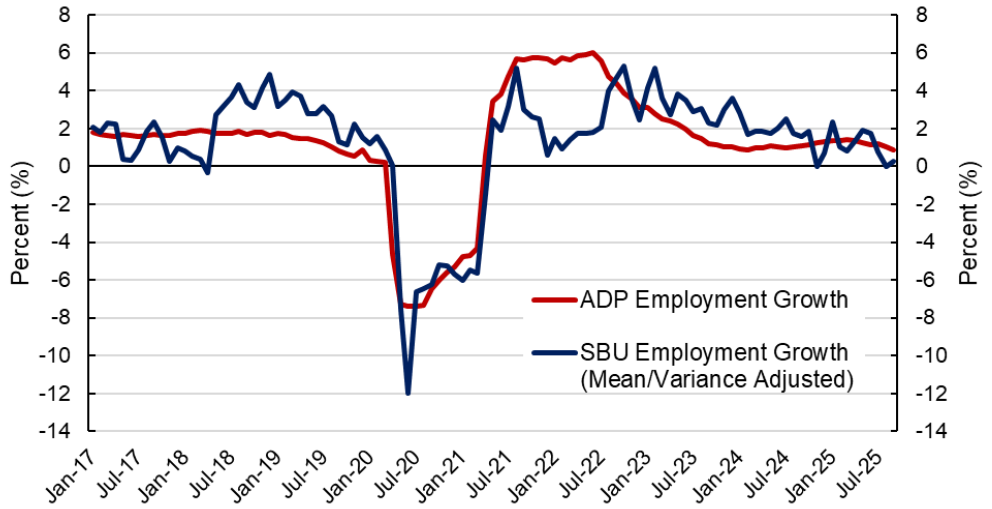
Data Quality Check: Historic Data Aligns with Macro Data

Panel A Sales growth

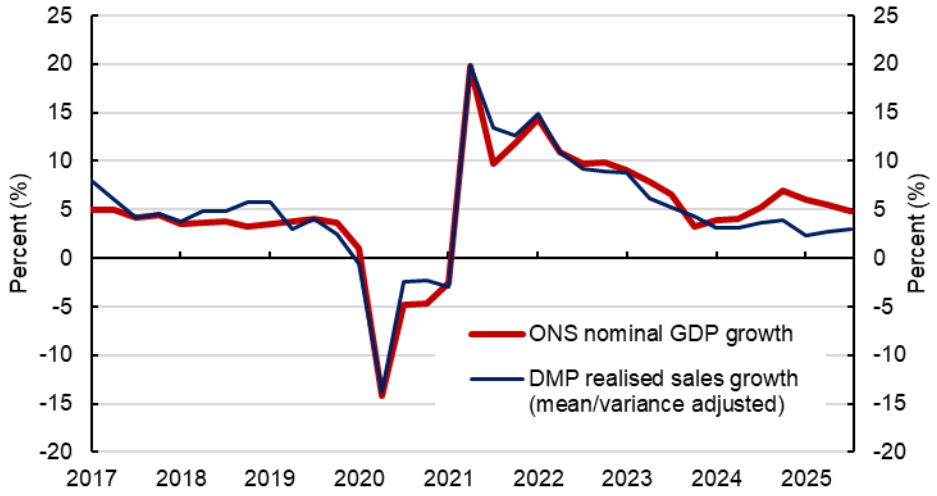
Panel B Employment growth

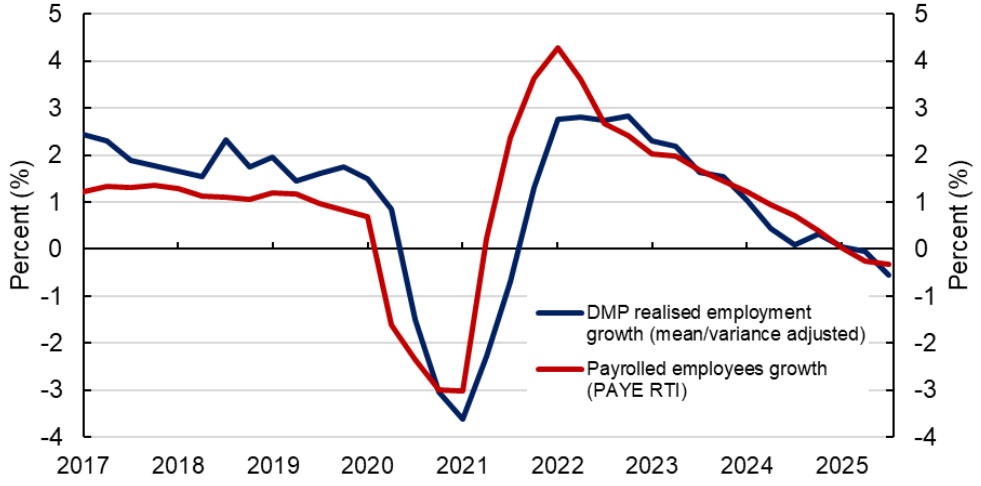
US Firms (SBU)





UK Firms (DMP)





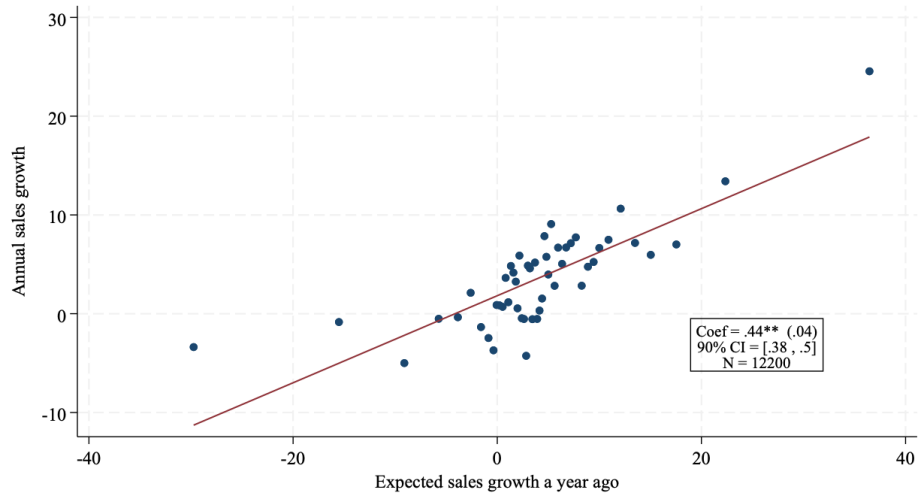
***Sources**: SBU; ADP; BEA; DMP; ONS; HMRS and authors' calculations. **Notes**: SBU sales data are compared to GDP growth from the BEA. SBU employment growth data are compared to ADP employment growth. DMP sales data are compared to whole economy nominal GDP growth at current market prices. DMP employment (for the private sector) is compared to ONS/HMRC data on the number of payrolled employees. DMP and SBU data are adjusted to match the mean and variance of growth in the corresponding ONS, HMRC, GDP, and ADP series over the time period shown on each chart.*

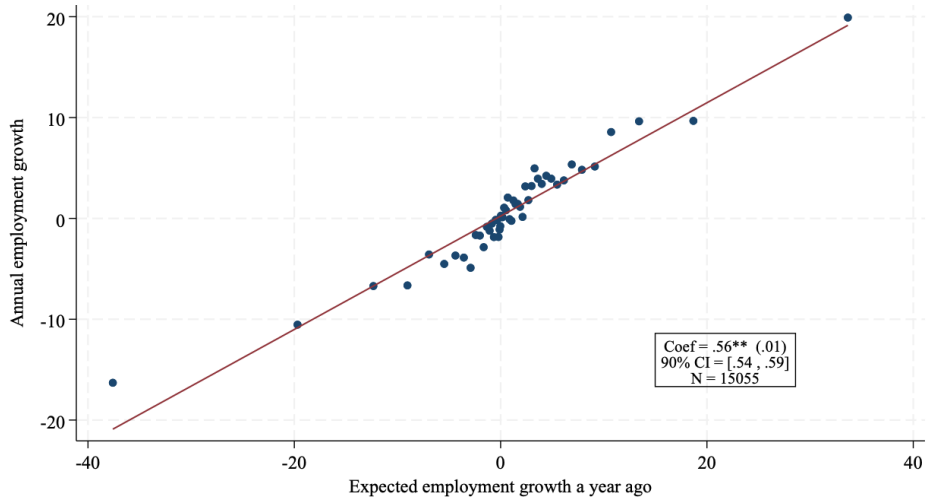
Data Quality Check: Forecasts Look Good (e.g. Sales & Employment)

Sales growth

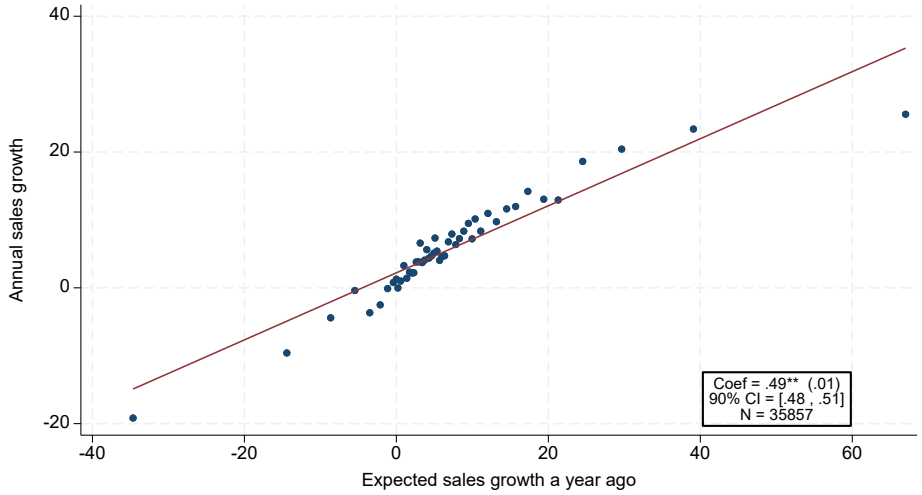
Employment growth

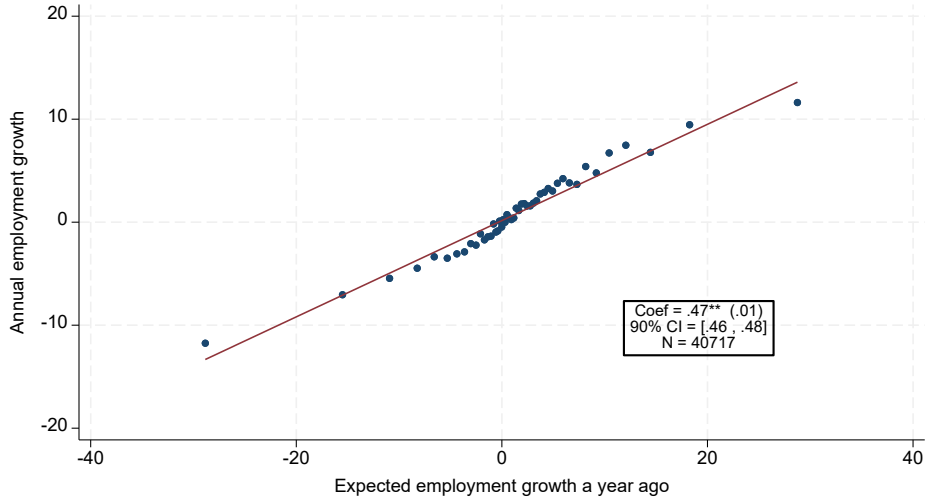
US Firms (SBU)





UK Firms (DMP)





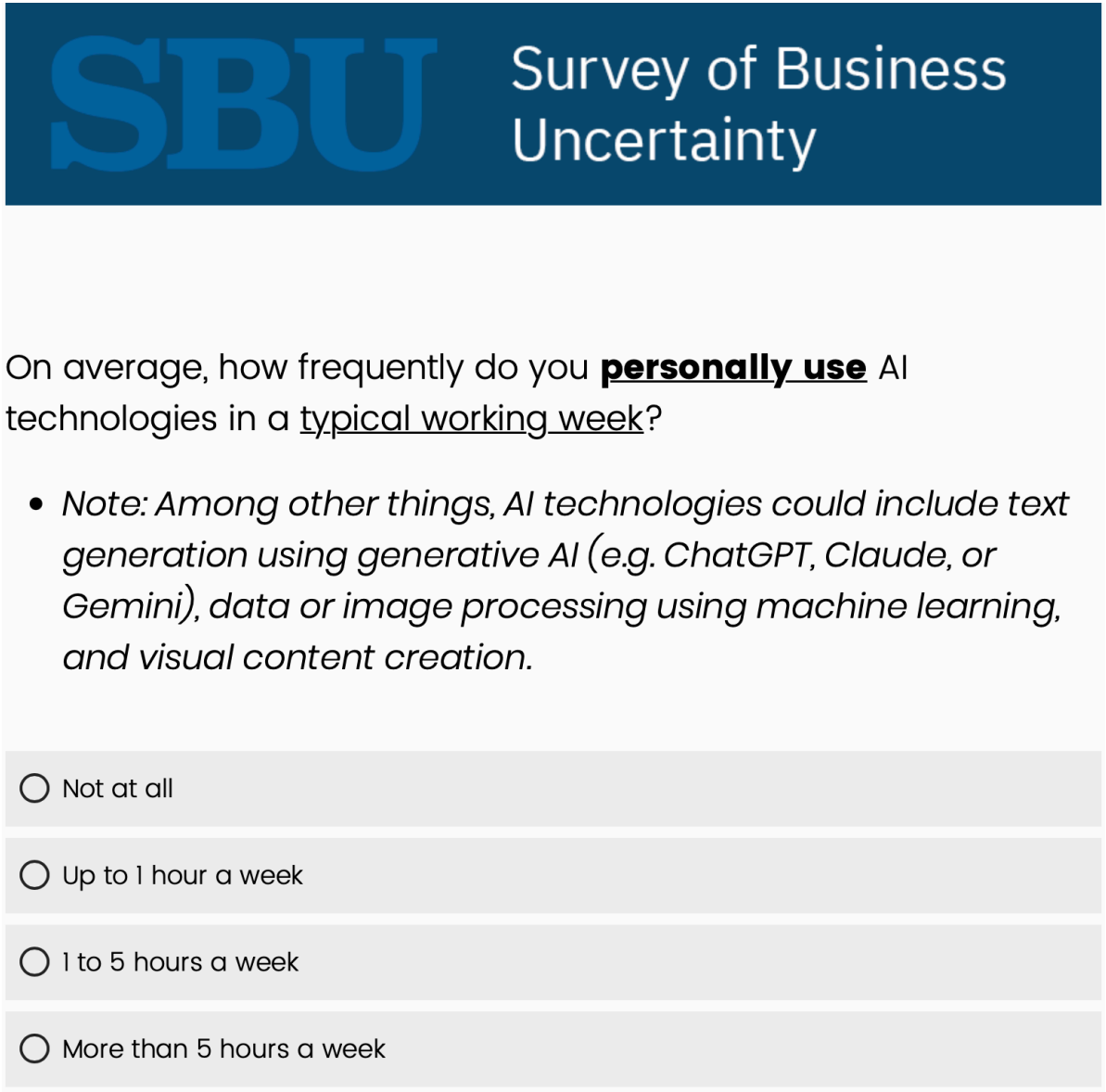
***Notes**: This figure shows binned scatter plots of the relationship between expected year-ahead sales growth and annual sales growth a year later at the firm level (Panel A) and expected year-ahead employment growth and annual employment growth a year later (Panel B). The sample from the SBU covers 2014-2025. The sample from the UK DMP covers 2017-2025.*

>>>> Our Survey Process

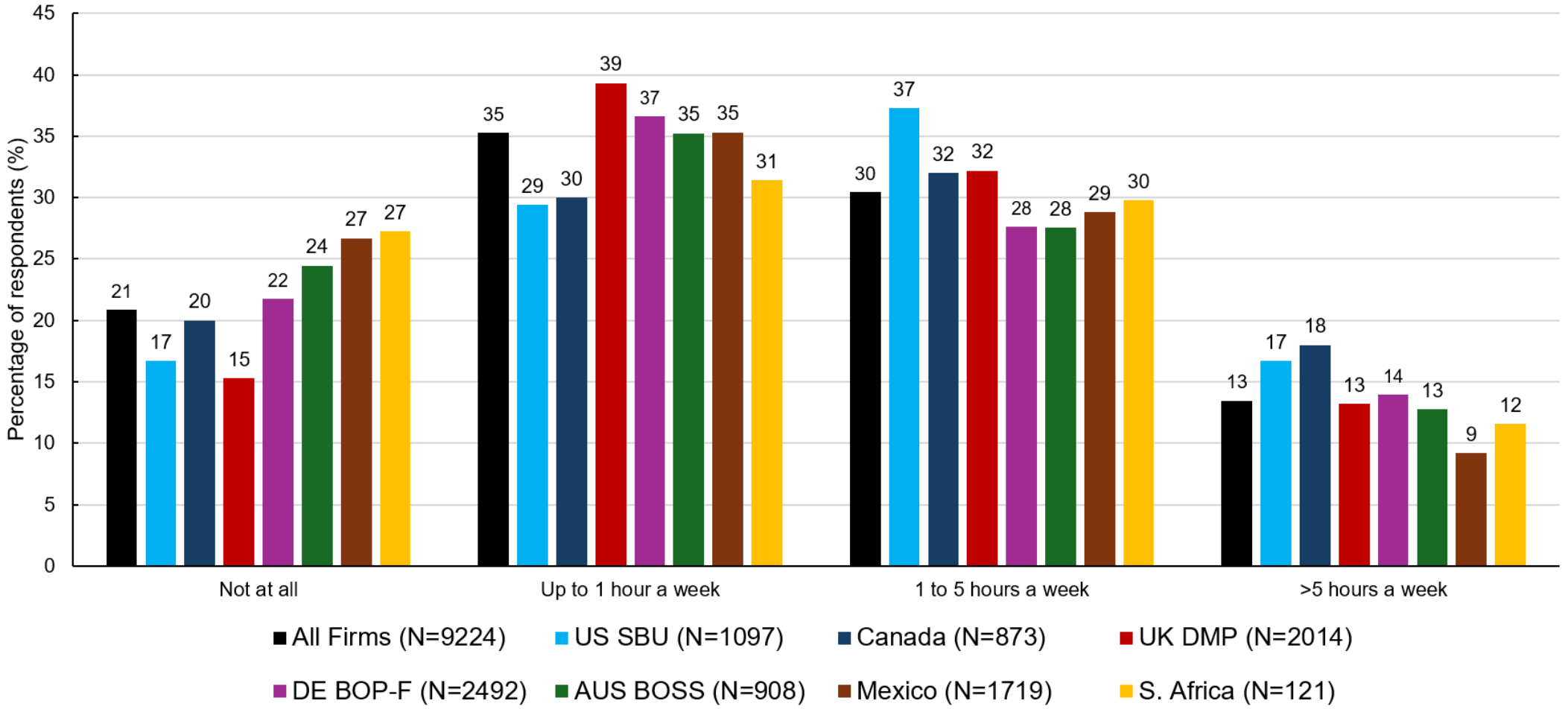
>>>> Results – exec and firm adoption

>>>> Results – employment & productivity

The Survey Starts with a Question on AI Use by the Exec themselves

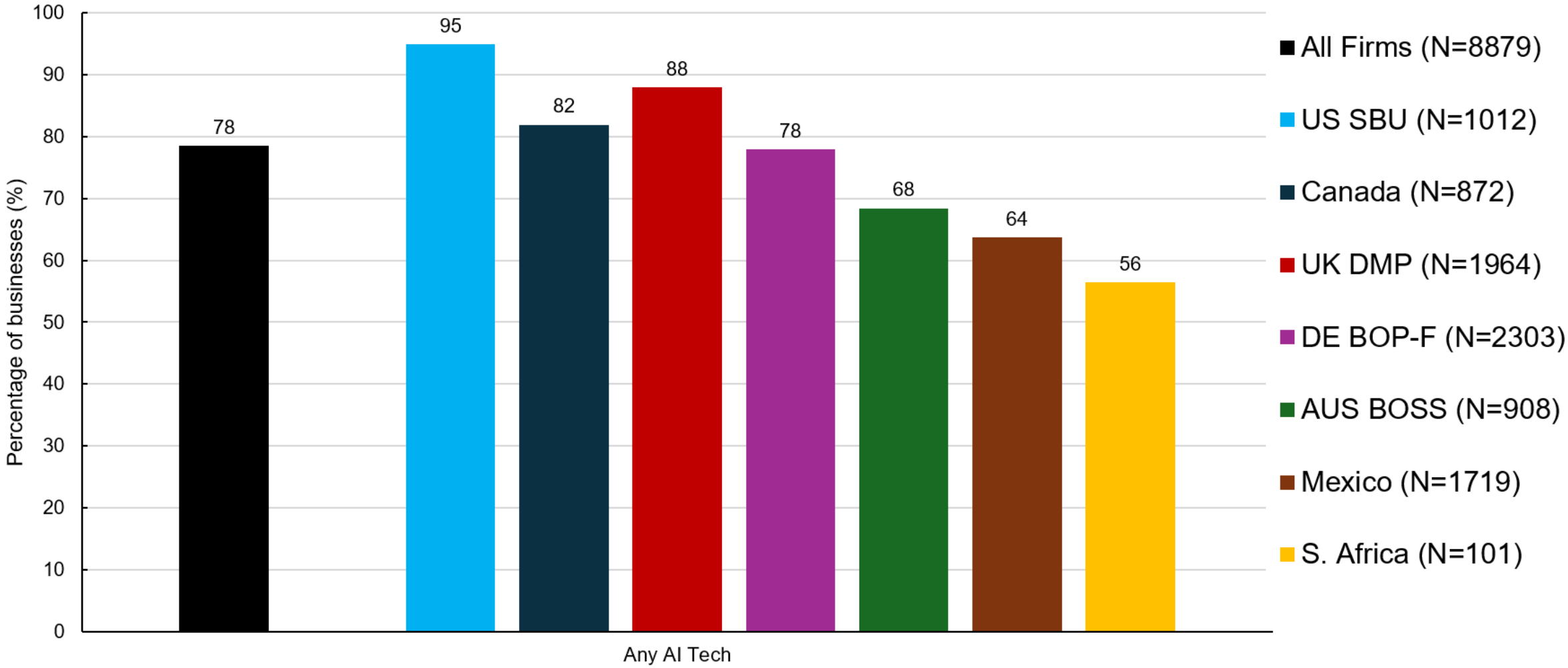


Most CFO/CEOs use 1 to 5 hours a week, ≈20% report never using AI



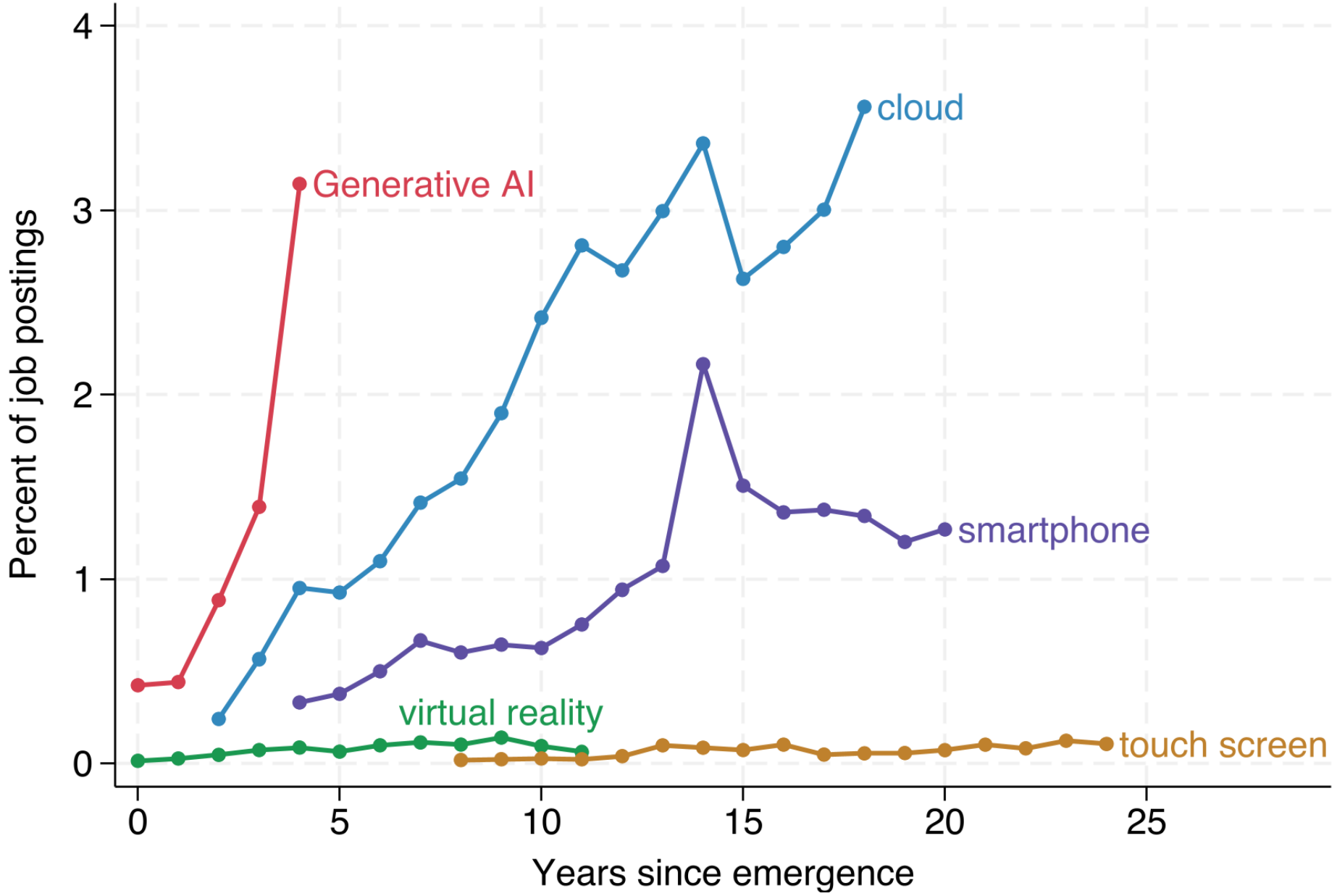
***Notes**: This figure is based on responses to the question: "On average, how frequently do you personally use artificial intelligence technologies in a typical working week?"*

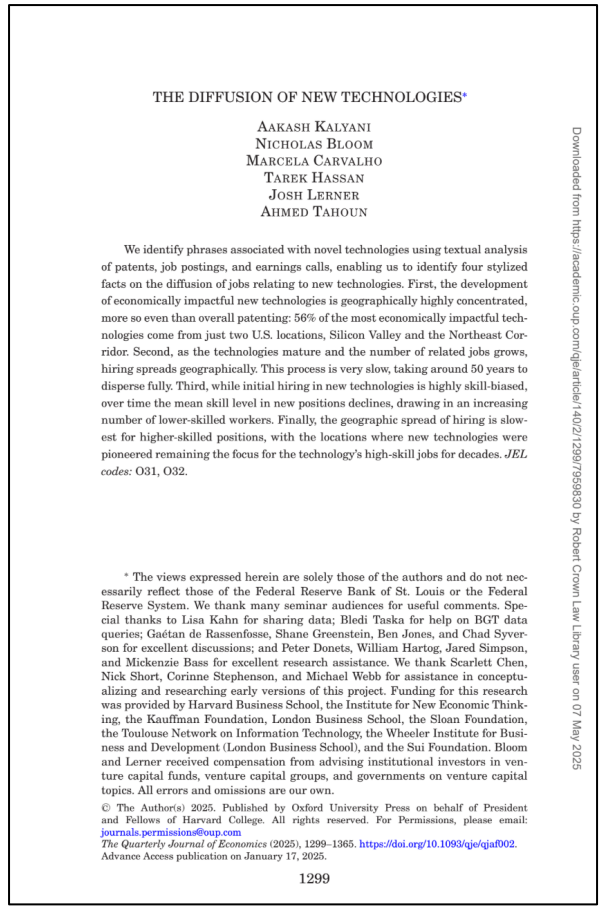
Also ask about AI use by their firms – 95% US firms report using AI



***Notes**: This figure is based on responses to the question: "Which of the following artificial intelligence technologies, if any, does your business currently use?" Firms could select more than one option. The results for all firms is the average of the four surveys, weighted by the respective number of responses.*

This adoption rate for AI appears very fast compared to other tech





THE DIFFUSION OF NEW TECHNOLOGIES*

AAKASH KALYANI
NICHOLAS BLOOM
MARCELA CARVALHO
TAREK HASSAN
JOSH LERNER
AHMED TAHOUN

We identify phrases associated with novel technologies using textual analysis of patents, job postings, and earnings calls, enabling us to identify four stylized facts on the diffusion of jobs relating to new technologies. First, the development of economically impactful new technologies is geographically highly concentrated, more so even than overall patenting: 56% of the most economically impactful technologies come from just two U.S. locations, Silicon Valley and the Northeast Corridor. Second, as the technologies mature and the number of related jobs grows, hiring spreads geographically. This process is very slow, taking around 50 years to disperse fully. Third, while initial hiring in new technologies is highly skill-biased, over time the mean skill level in new positions declines, drawing in an increasing number of lower-skilled workers. Finally, the geographic spread of hiring is slowest for higher-skilled positions, with the locations where new technologies were pioneered remaining the focus for the technology's high-skill jobs for decades. *JEL codes:* O31, O32.

* The views expressed herein are solely those of the authors and do not necessarily reflect those of the Federal Reserve Bank of St. Louis or the Federal Reserve System. We thank many seminar audiences for useful comments. Special thanks to Lisa Kahn for sharing data; Bledi Taska for help on BGT data queries; Gaétan de Rassenfosse, Shane Greenstein, Ben Jones, and Chad Syverson for excellent discussions; and Peter Donets, William Hartog, Jared Simpson, and Mickenzie Bass for excellent research assistance. We thank Scarlett Chen, Nick Short, Corinne Stephenson, and Michael Webb for assistance in conceptualizing and researching early versions of this project. Funding for this research was provided by Harvard Business School, the Institute for New Economic Thinking, the Kauffman Foundation, London Business School, the Sloan Foundation, the Toulouse Network on Information Technology, the Wheeler Institute for Business and Development (London Business School), and the Sui Foundation. Bloom and Lerner received compensation from advising institutional investors in venture capital funds, venture capital groups, and governments on venture capital topics. All errors and omissions are our own.

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The Quarterly Journal of Economics (2025), 1299–1365. https://doi.org/10.1093/qje/qjaf002. Advance Access publication on January 17, 2025.

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Also ask about $ AI spending

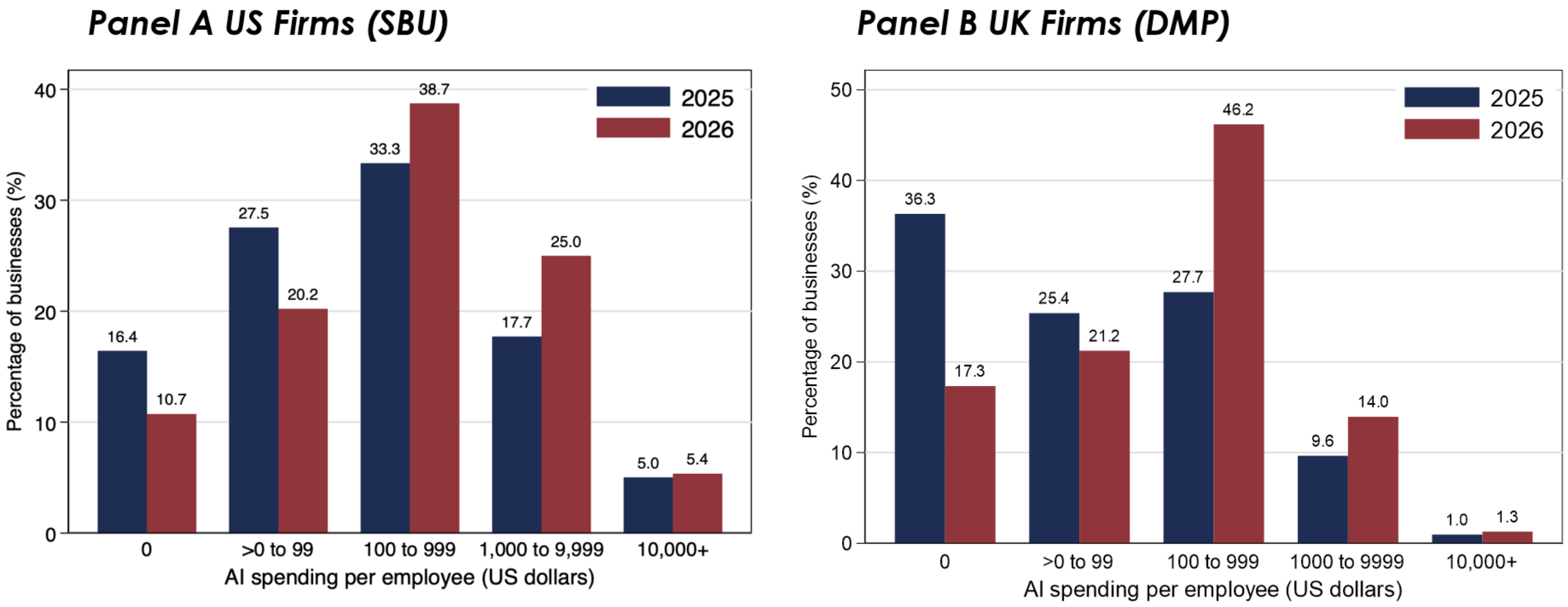


For calendar year 2026 -- how much will your firm spend on **AI and AI-related technologies**?

- *Include software, subscription services, hardware, worker training, and IT staff support*

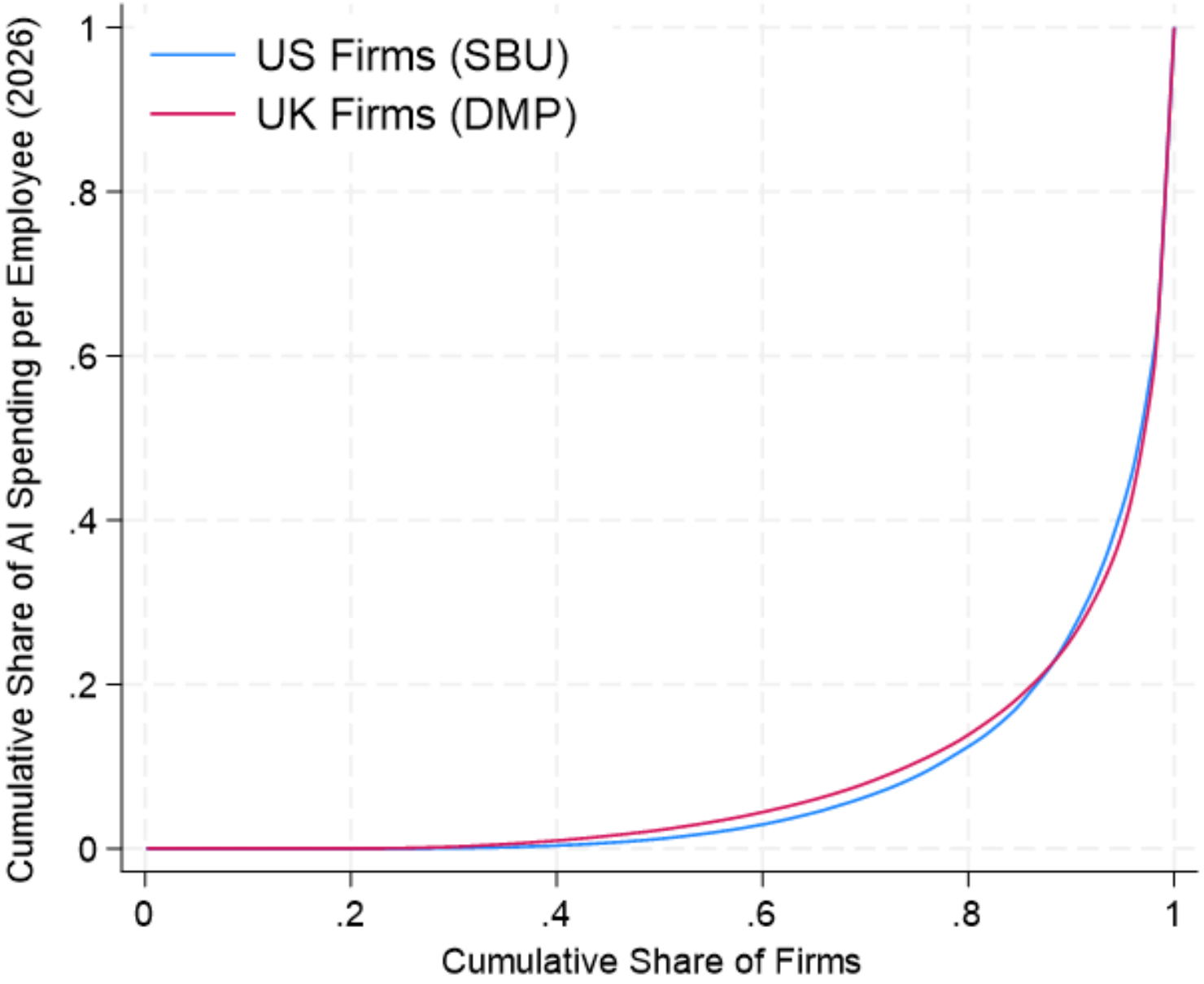
Billions	Millions	Thousands
$		
		, 0 0 0

US firms average spend on AI $2k per employee → $300bn total



***Notes**: Respondents asked to answer the following two question: (1) Thinking back to last year (calendar year 2025), approximately how much did your firm spend on artificial intelligence adoption and AI related technologies? Include software, subscription services, hardware, worker training and IT staff support. (2) Now think about this year. For calendar year 2026, approximately how much do you expect your firm will spend on artificial intelligence adoption and AI related technologies? Include software, subscription services, hardware, worker training and IT staff support. Panel is based on 845 responses from firms in the US Survey of Business Uncertainty in March 2026. Panel B is based on 636 responses to the Decision Maker Panel in August 2026. Original responses in Panel B are in GBP and converted to USD using exchange rate of 1.35 $/£"*

Firm level spending is very skewed, with 50% by the top 2% of firms



***Notes**: Respondents asked to answer the following two question: (1) Thinking back to last year (calendar year 2025), approximately how much did your firm spend on artificial intelligence adoption and AI related technologies? Include software, subscription services, hardware, worker training and IT staff support. (2) Now think about this year. For calendar year 2026, approximately how much do you expect your firm will spend on artificial intelligence adoption and AI related technologies? Include software, subscription services, hardware, worker training and IT staff support.*

Gini coefficient of AI spending is ≈0.8 in UK and US compared to ≈0.4 for income

>>>> Our Survey Process

>>>> Results - exec and firm adoption

>>>> Results – employment & productivity

Also asked about past and expected future impact on productivity

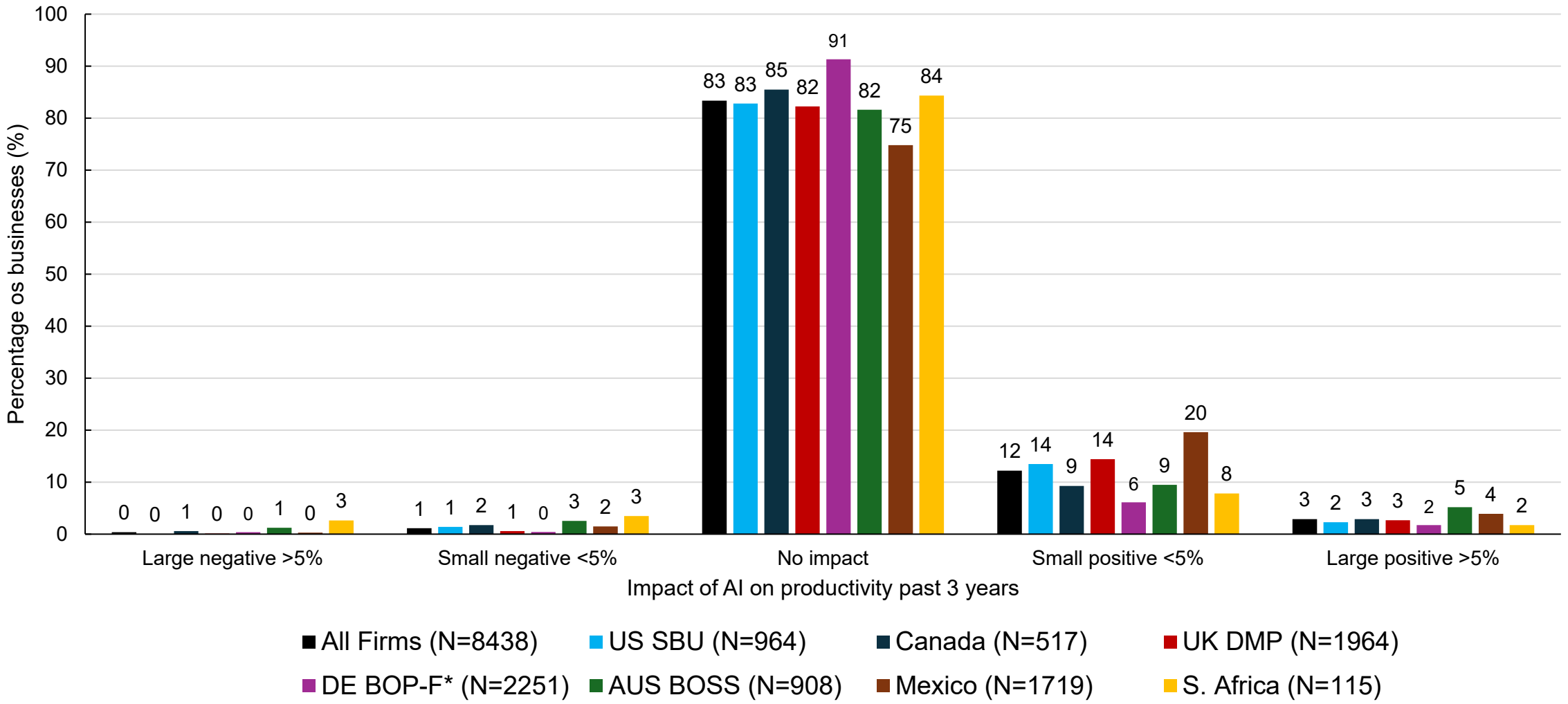


How has the adoption of A.I. technologies affected the volume of SALES PER EMPLOYEE of your business over the **past three years**?

And how do you expect this to affect your volume of SALES PER EMPLOYEE over the **next three years**?

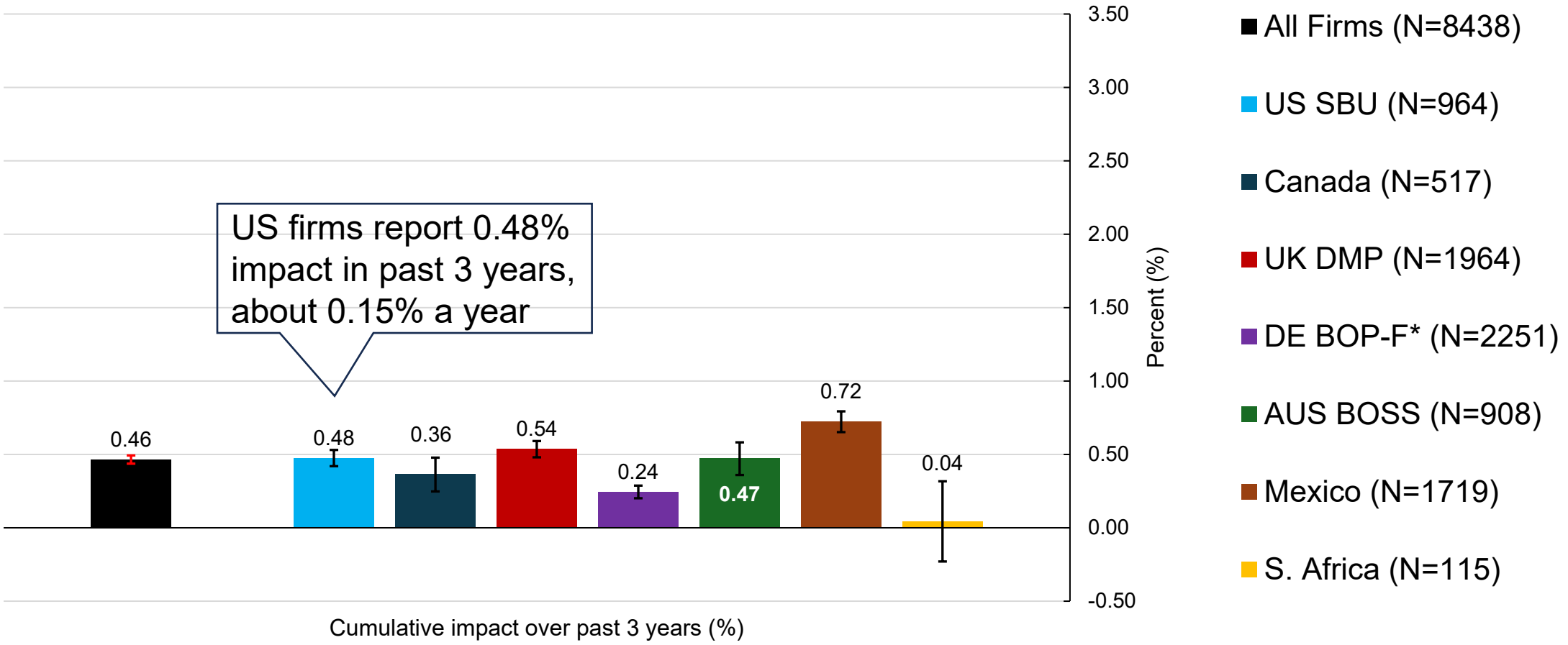
	Past 3 years	Next 3 years
A large negative influence, subtracting 5% or more	○	○
A minor negative influence, subtracting less than 5%	○	○
No material impact	○	○
A minor positive influence, adding less than 5%	○	○
A large positive influence, adding 5% or more	○	○

Execs reported small positive impact on productivity over past 3 years



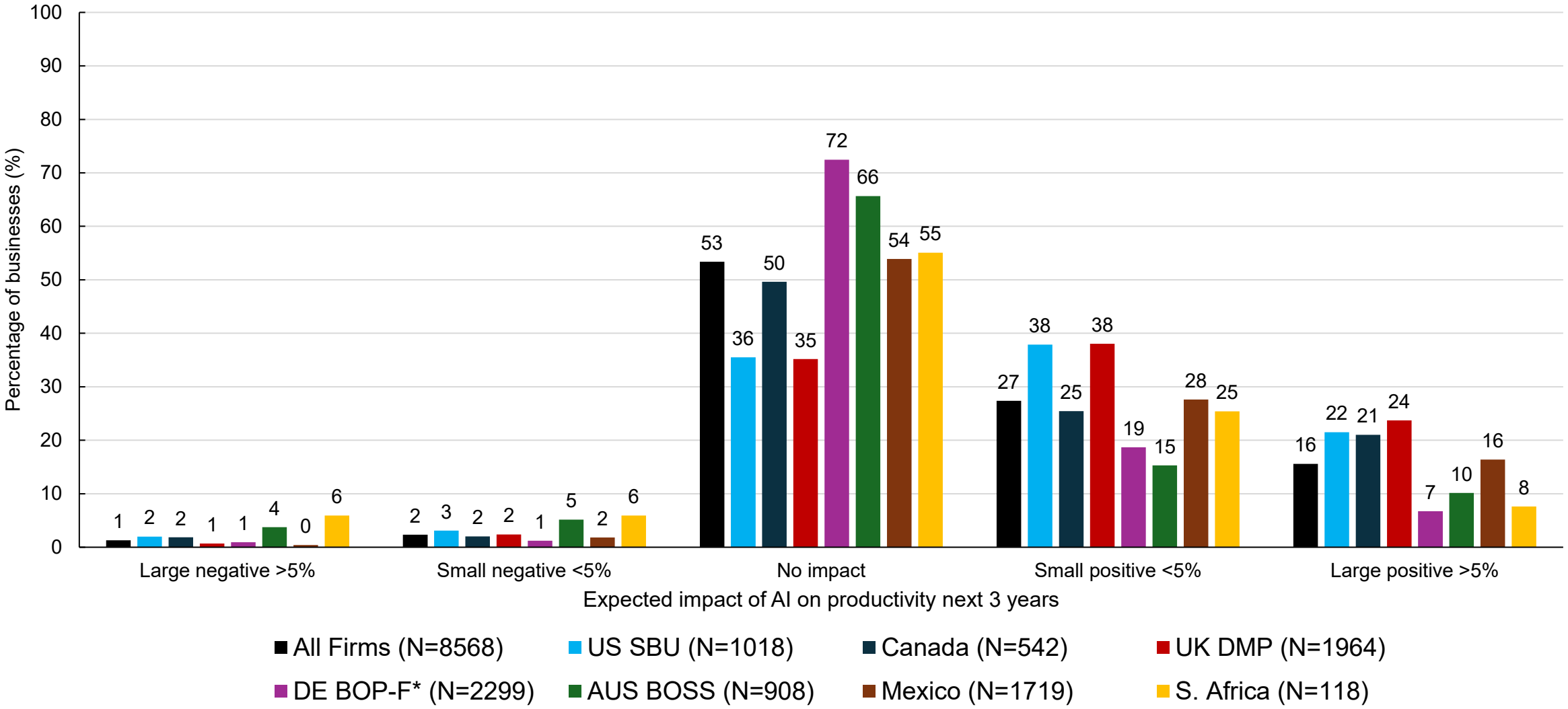
***Notes**: This figure is based on responses to the question: "How has the adoption of artificial intelligence technologies affected the volume of sales per employee in your business over the past three years?" The data for the US, Canada, the UK, Australia, Mexico, and South Africa were collected over May-July 2026. The data for Germany were collected in January 2026.*

Execs reported small positive impact on productivity over past 3 years



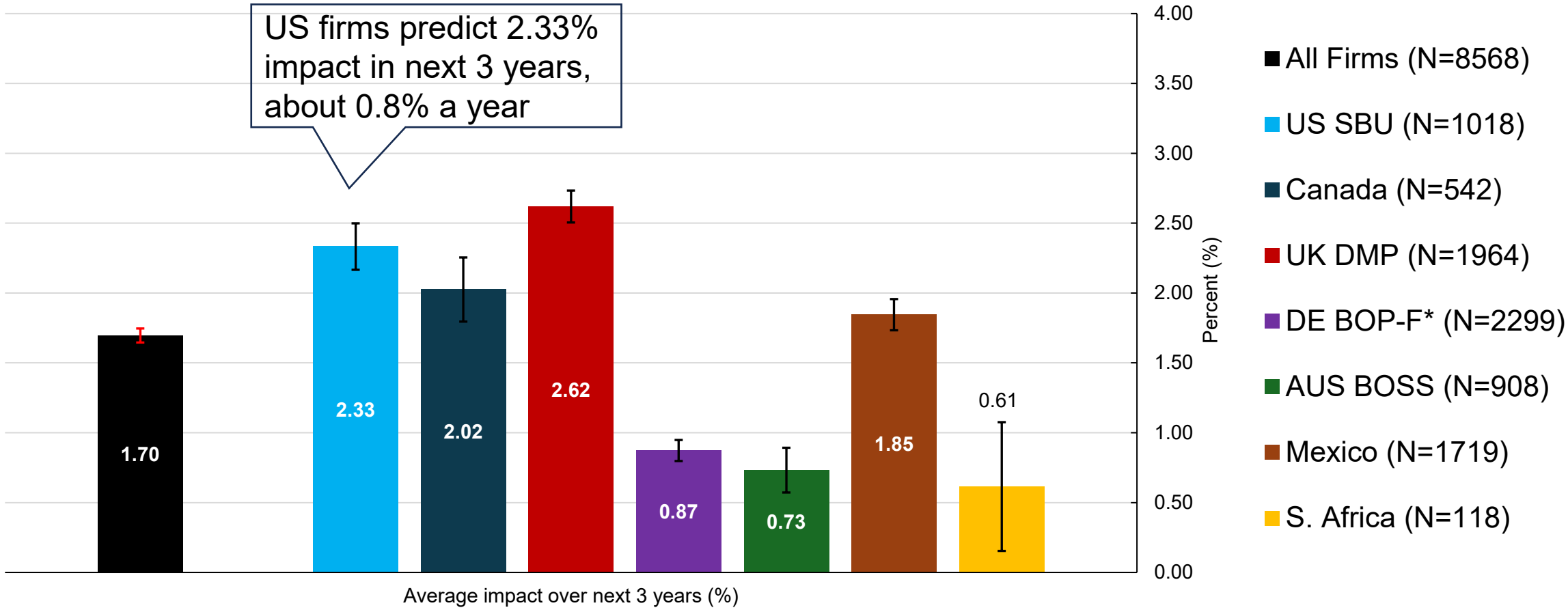
***Notes**: This figure is based on responses to the question: "How has the adoption of artificial intelligence technologies affected the volume of sales per employee in your business over the past three years?" To calculate the average impacts, values are assigned to each of the options in Panel A: large negative/large positive impacts are treated as $\pm 7.5\%$; small negative/small positive impacts are treated as $\pm 2.5\%$. The impact for all firms is the average of the impacts for the seven surveys, weighted by the respective number of responses. 90% confidence intervals are shown for these impacts. The data for the US, Canada, the UK, Australia, Mexico, and South Africa were collected over May-July 2026. The data for Germany were collected in January 2026.*

Execs reported clear positive impact on productivity over next 3 years



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Also asked about past and expected impact on employment

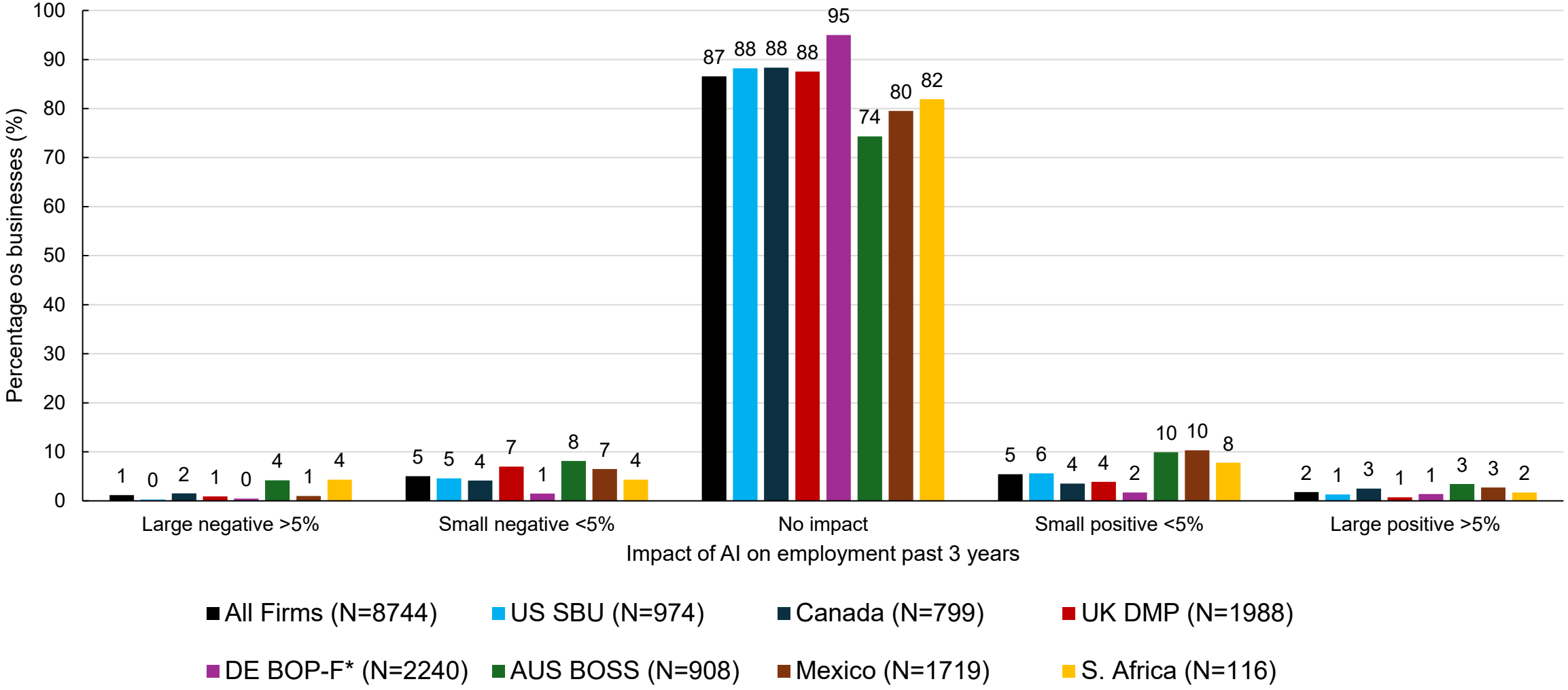


How has the adoption of A.I. technologies affected the NUMBER OF EMPLOYEES of your business over the **past three years**?

And how do you expect this to affect your NUMBER OF EMPLOYEES over the **next three years**?

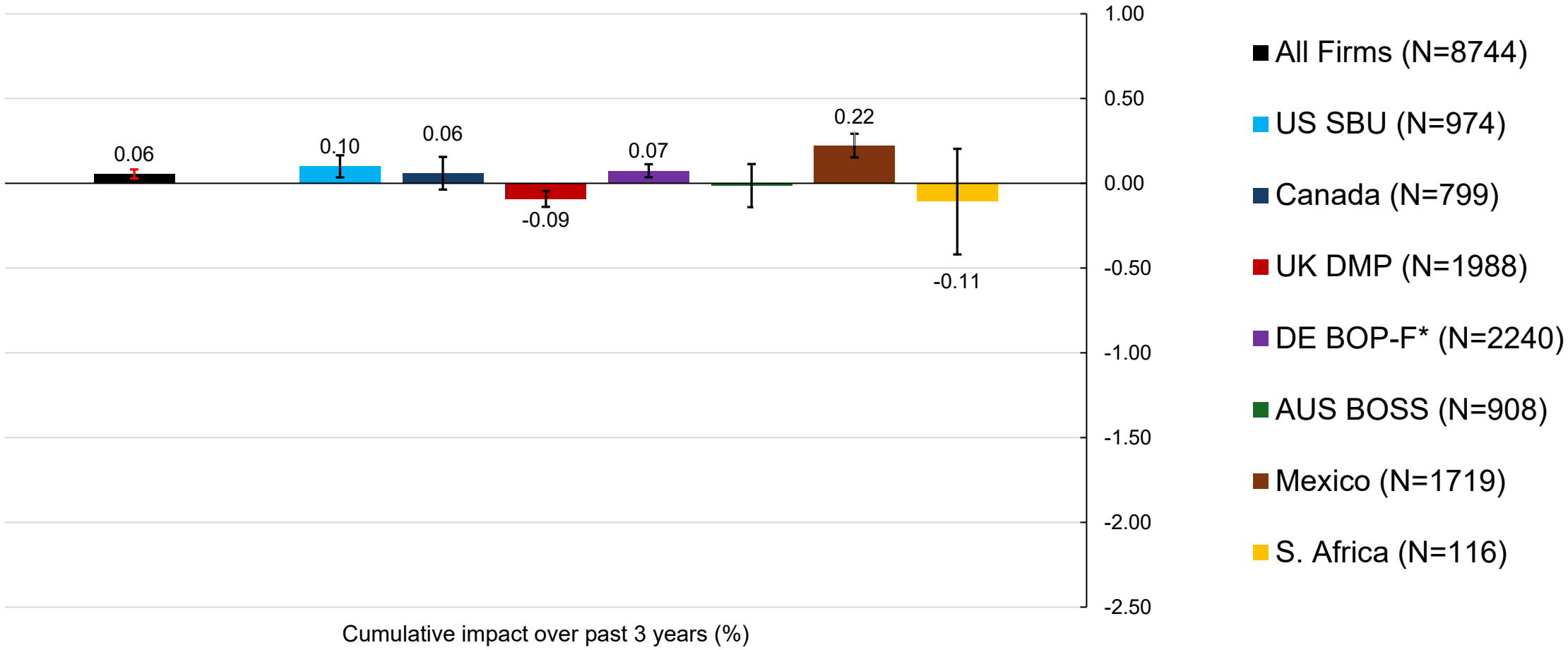
	Past 3 years	Next 3 years
A large negative influence, subtracting 5% or more	○	○
A minor negative influence, subtracting less than 5%	○	○
No material impact	○	○
A minor positive influence, adding less than 5%	○	○
A large positive influence, adding 5% or more	○	○

Execs reported no impact of AI on employment over past 3 years



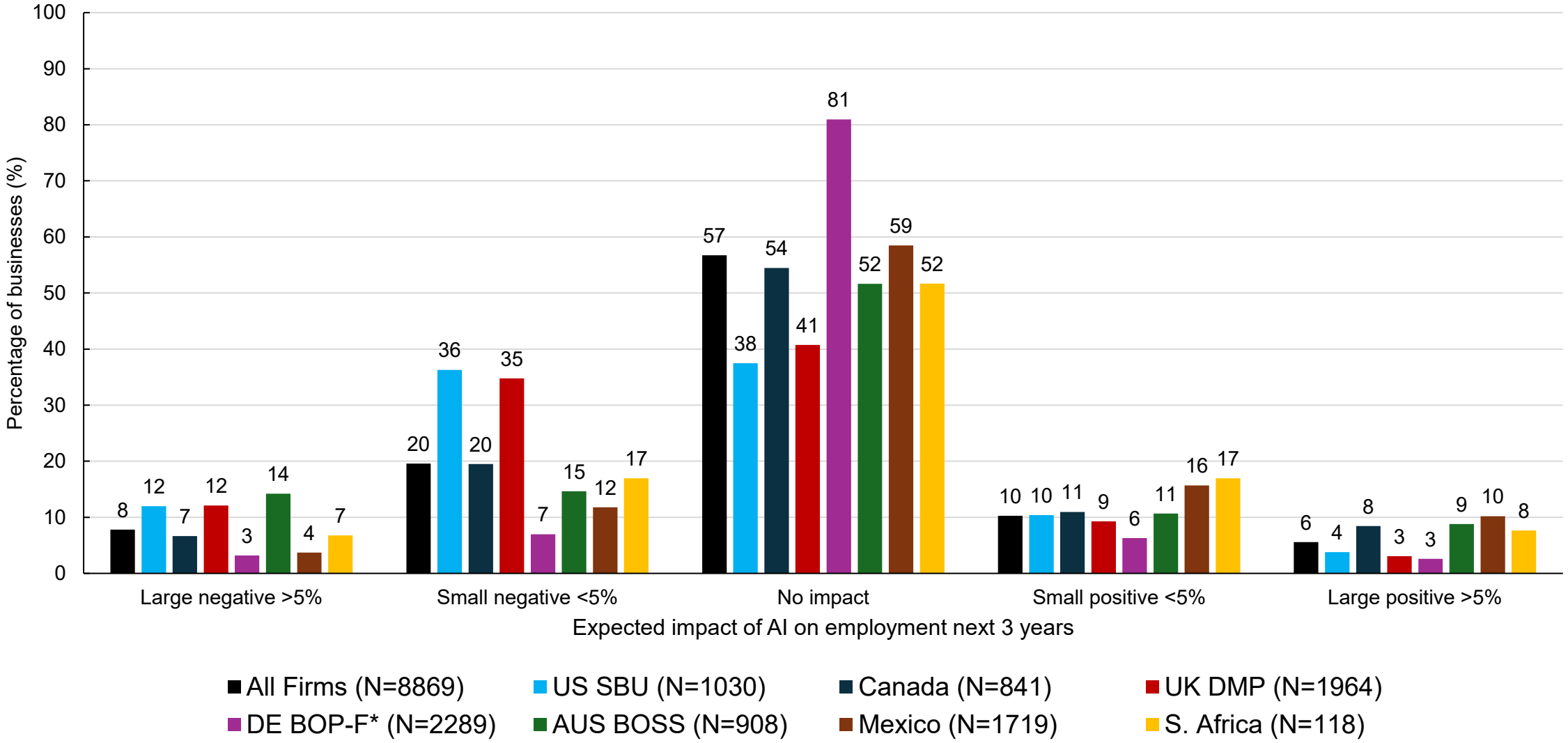
***Notes**: This figure is based on responses to the question: "How has the adoption of artificial intelligence technologies affected the number of employees in your business over the past three years?" The data for the US, Canada, the UK, Australia, Mexico, and South Africa were collected over May-July 2026. The data for Germany were collected in January 2026.*

Execs reported no impact of AI on employment over past 3 years



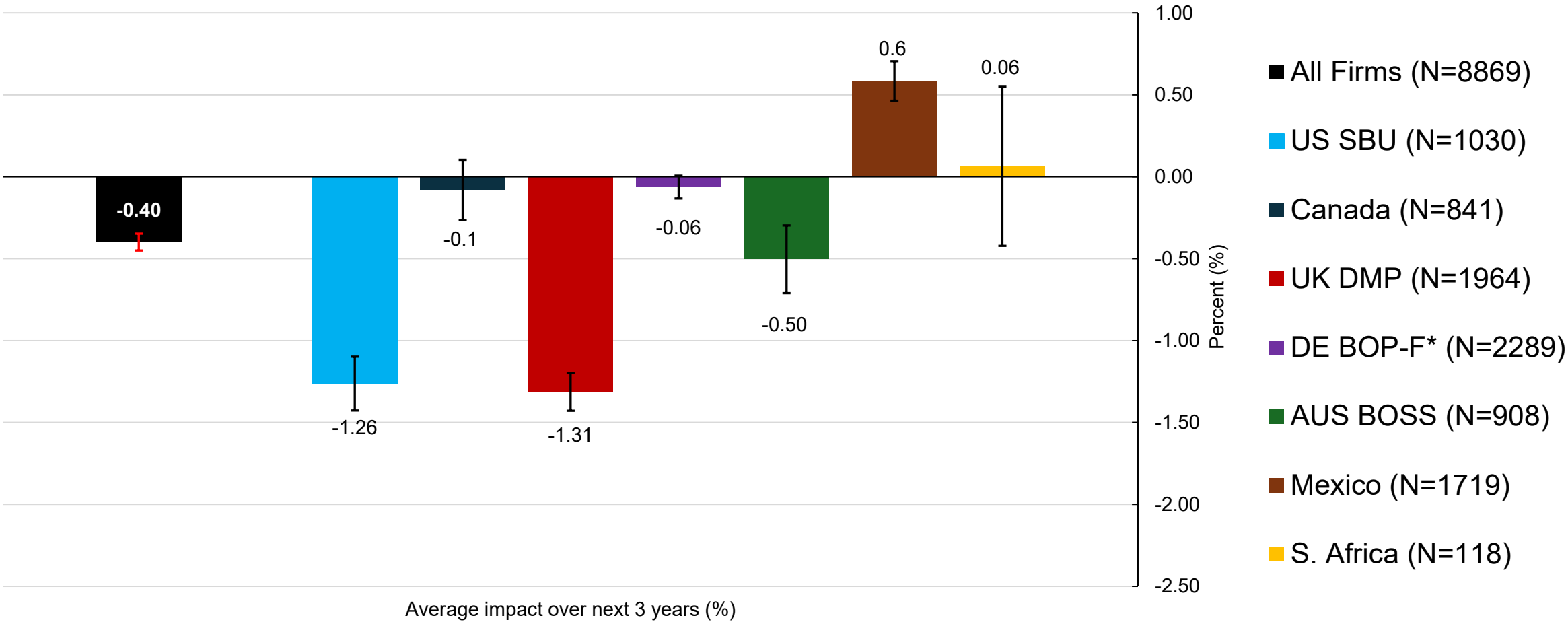
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Execs reported mixed impact of AI on employment over next 3 years



***Notes**: This figure is based on responses to the question: "How has the adoption of artificial intelligence technologies affected the number of employees in your business over the past three years? And how do you expect this to affect your number of employees over the next 3 years?" The data for the US, Canada, the UK, Australia, Mexico, and South Africa were collected over May-July 2026. The data for Germany were collected in January 2026.*

Execs reported mixed impact of AI on employment over next 3 years



***Notes**: This figure is based on responses to the question: "How has the adoption of artificial intelligence technologies affected the number of employees in your business over the past three years? And how do you expect this to affect your number of employees over the next 3 years?" To calculate the average impacts, values are assigned to each of the options in Panel A: large negative/large positive impacts are treated as $\pm 7.5\%$; small negative/small positive impacts are treated as $\pm 2.5\%$. The impact for all firms is the average of the impacts for the seven surveys, weighted by the respective number of responses. 90% confidence intervals are shown for these impacts. The data for the US, Canada, the UK, Australia, Mexico, and South Africa were collected over May-July 2026. The data for Germany were collected in January 2026.*

Summary – CEOs and CFOs report

Individual use of about 2 to 3 hours a week, but ≈20% have no use

Almost all US firms use AI, but highly skewed with top 2% generating 50% of spend

No net impact on employment, but increased labor-market churn in next 3 years

Small positive impact on productivity last 3 years, large 0.8% p.a. next 3 years

