

*The Office of  
the Chief  
Economist of  
the South Asia  
Region*

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# **Jobs, AI, and Trade**

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*Chief Economist, South Asia*



# Four Questions

**What are South Asia's growth prospects?** *Better than expected, still stronger than in other EMDE regions, with downside risks.*

**What would be the labor market implications of tariff cuts?** *Likely competitiveness-enhancing and job-creating, but more for higher-skilled, younger workers and in manufacturing firms.*

**Could AI boost services exports?** *Rapid AI adoption in BPO sector accompanied surge in exports and job losses for upper-mid-skilled, younger workers.*

**What are the labor market implications of AI adoption?** *A below-average share of South Asian workers exposed to AI, but productivity gains for experienced workers and hiring losses for entry-level workers.*

# Four Questions

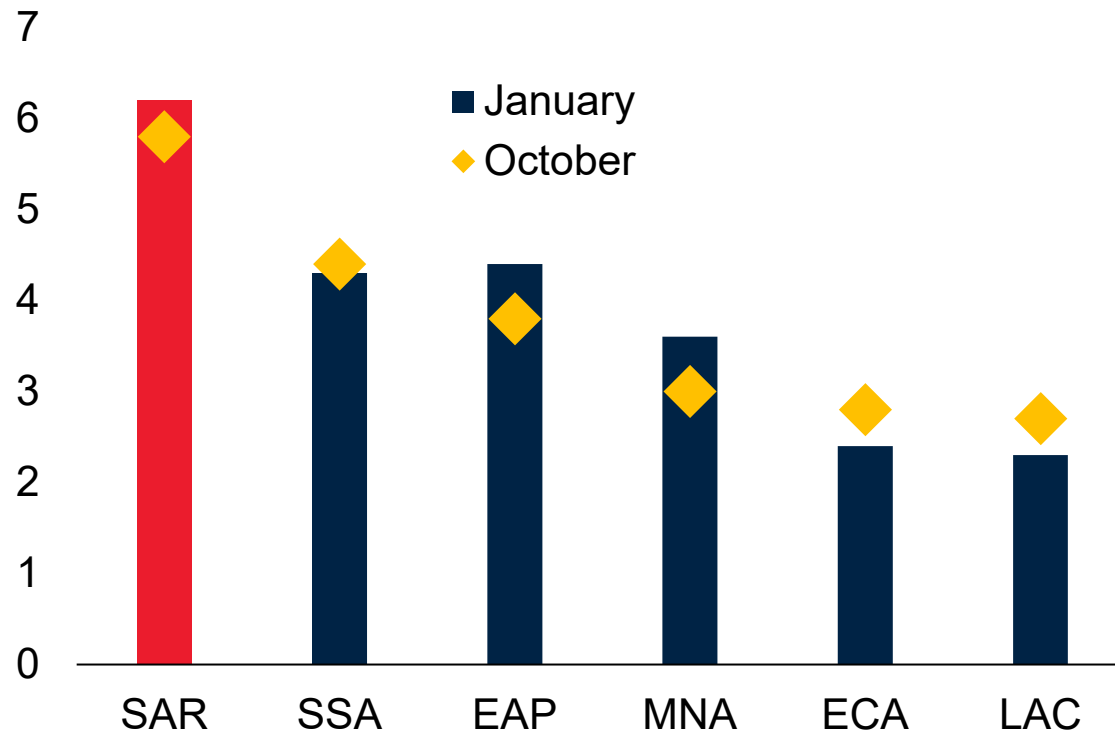
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What are South Asia's growth prospects?

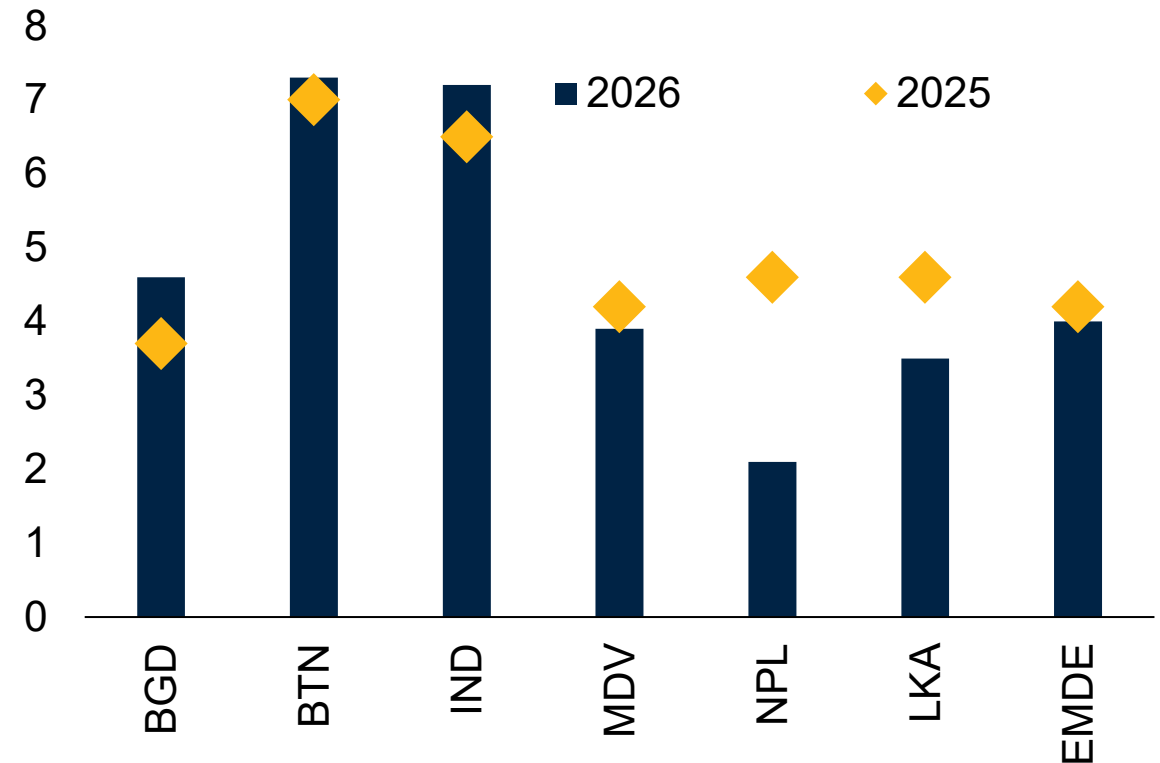
# SAR Growth Outlook

*Better Than Expected, SAR Will Remain Fastest-Growing Region*

**EMDE regions: Growth forecasts for 2026**  
(Percent)



**South Asia : Growth forecasts**  
(Percent)



Source: World Bank Macro Poverty Outlook; Haver Analytics; [South Asia Development Update October 2025](#), World Bank

Note: Number for 2026 are for calendar year for Maldives and Sri Lanka, for fiscal year 2025/26 for Bangladesh, Bhutan, and Nepal, and for fiscal year 2026/27 for India. Left Panel: Real GDP-weighted (at 2010–19 average prices and market exchange rates) average real GDP growth from October 2025 edition of the South Asia Development Update. There are 47 economies in SSA, 23 in EAP, 21 in ECA, 22 in MNA and 6 in SAR. Right Panel: Forecasts from October 2025 edition of the South Asia Development Update.

# Four Questions

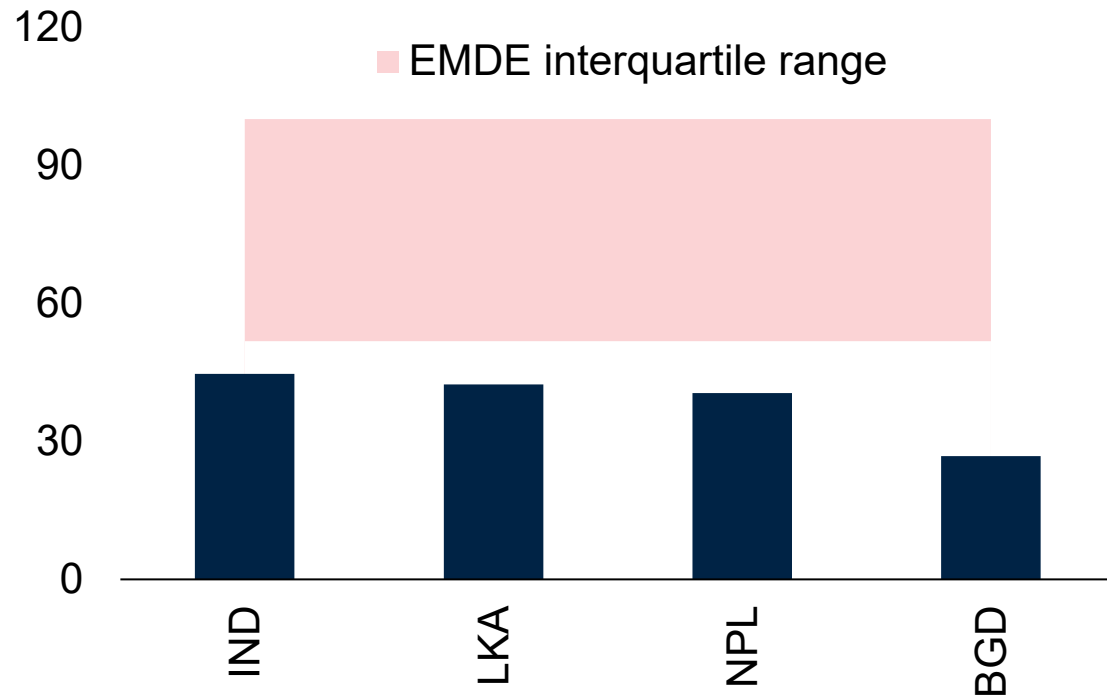
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**What would be the labor market implications of tariff cuts?**

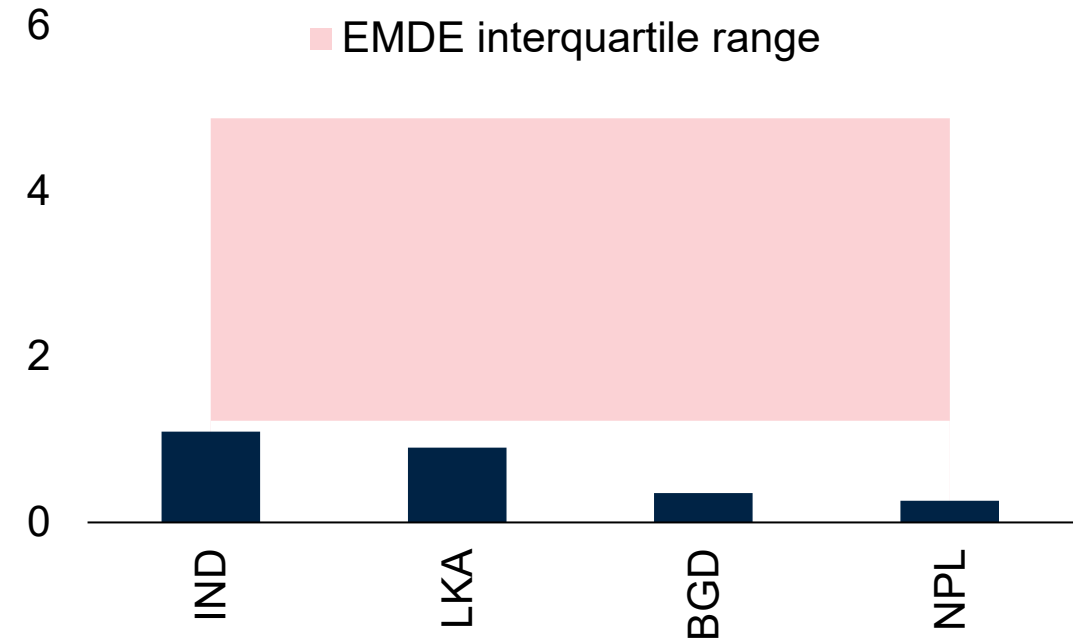
# South Asia's Exports

## Trade and FDI Are Small

**Trade, 2024**  
(Percent of GDP)



**Net FDI inflows, 2021-2024 average**  
(Percent of GDP)



Sources: World Development Indicators (database); World Bank.

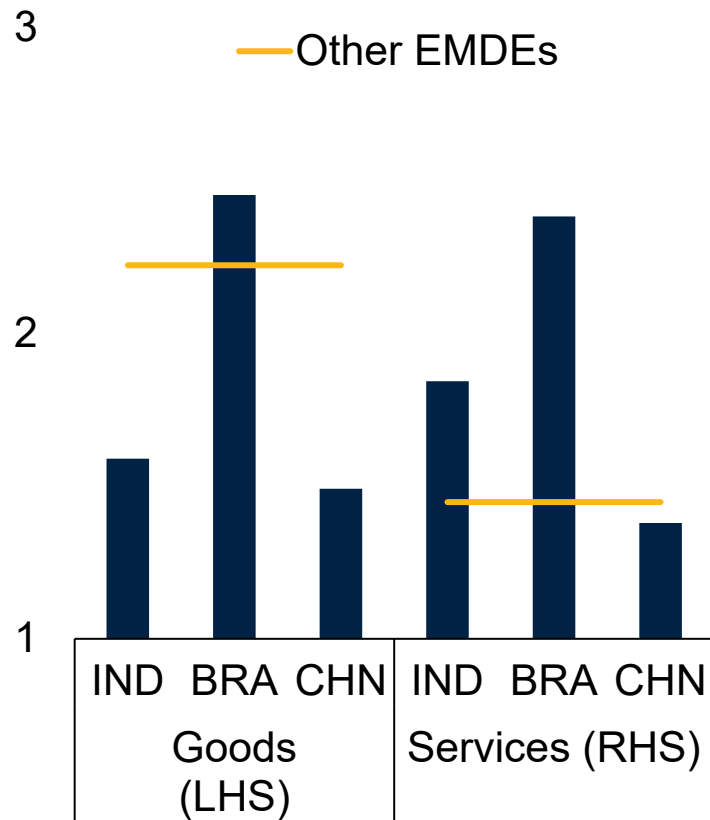
Note: BGD = Bangladesh; BTN = Bhutan; EMDEs = emerging market and developing economies; FDI = foreign direct investment; IND = India; LKA = Sri Lanka; MDV = Maldives; NPL = Nepal; SAR = South Asia. South Asia comprises Bangladesh, Bhutan, India, Maldives, Nepal, and Sri Lanka. A.B. Red-shaded region shows interquartile ranges for other EMDEs, comprising 97 economies (A); 70 economies (B). Gray-shaded region shows interquartile ranges for small state EMDEs (as defined by World Bank 2024b), comprising 10 economies (A); 15 economies (B). Bhutan and Maldives use 2023 data for trade. Bhutan and Sri Lanka use 2021–23 averages for FDI.

# India's Exports

## *Diversified Goods (Not Services) Exports, Geopolitically Centrist*

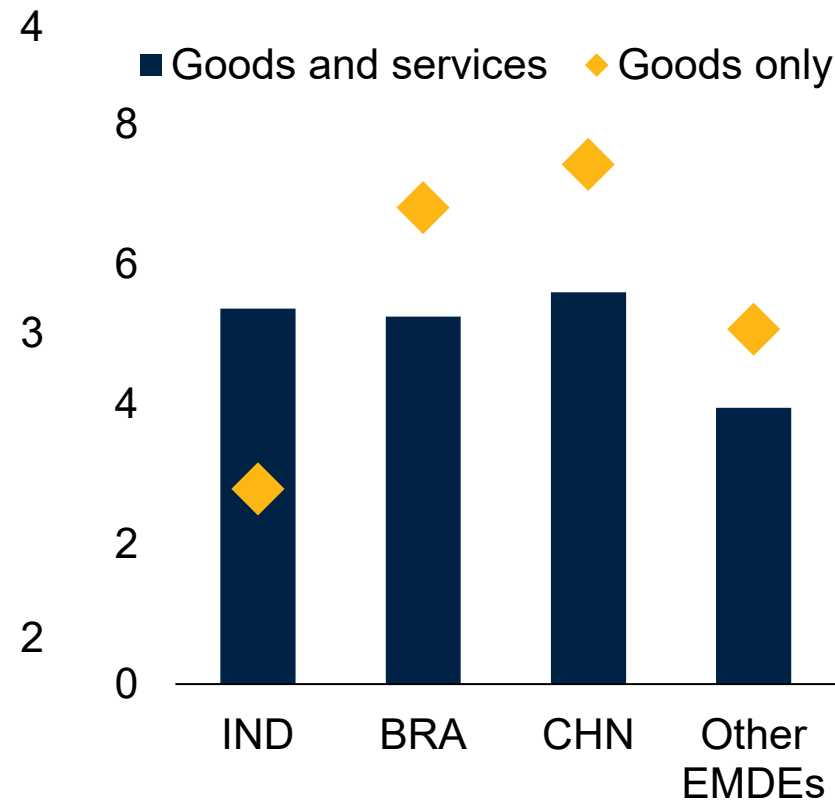
**Concentration of exports by markets, 2023**

*(Standard deviation)*



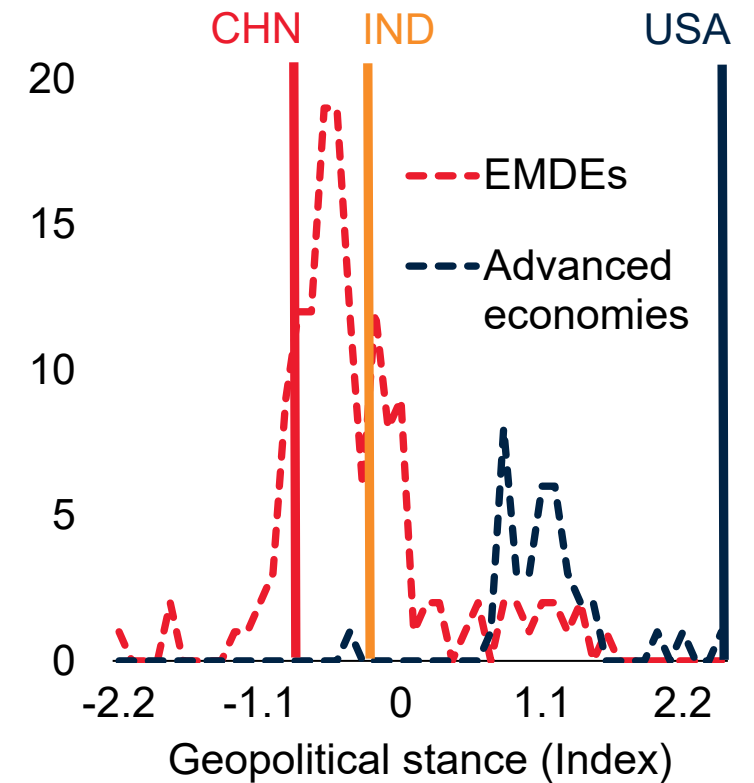
**Concentration of exports by sectors, 2023**

*(Standard deviation)*



**Distribution of geopolitical stances, 2023**

*(Number of countries)*

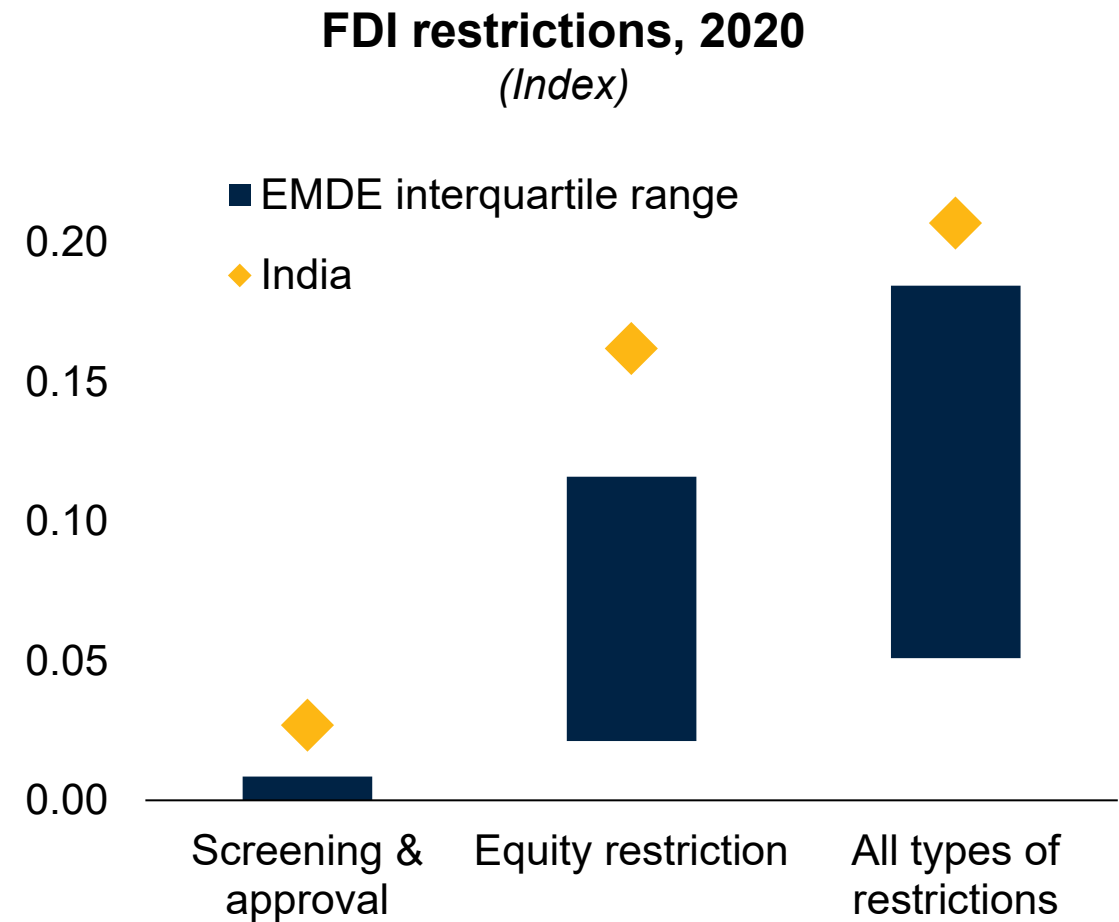
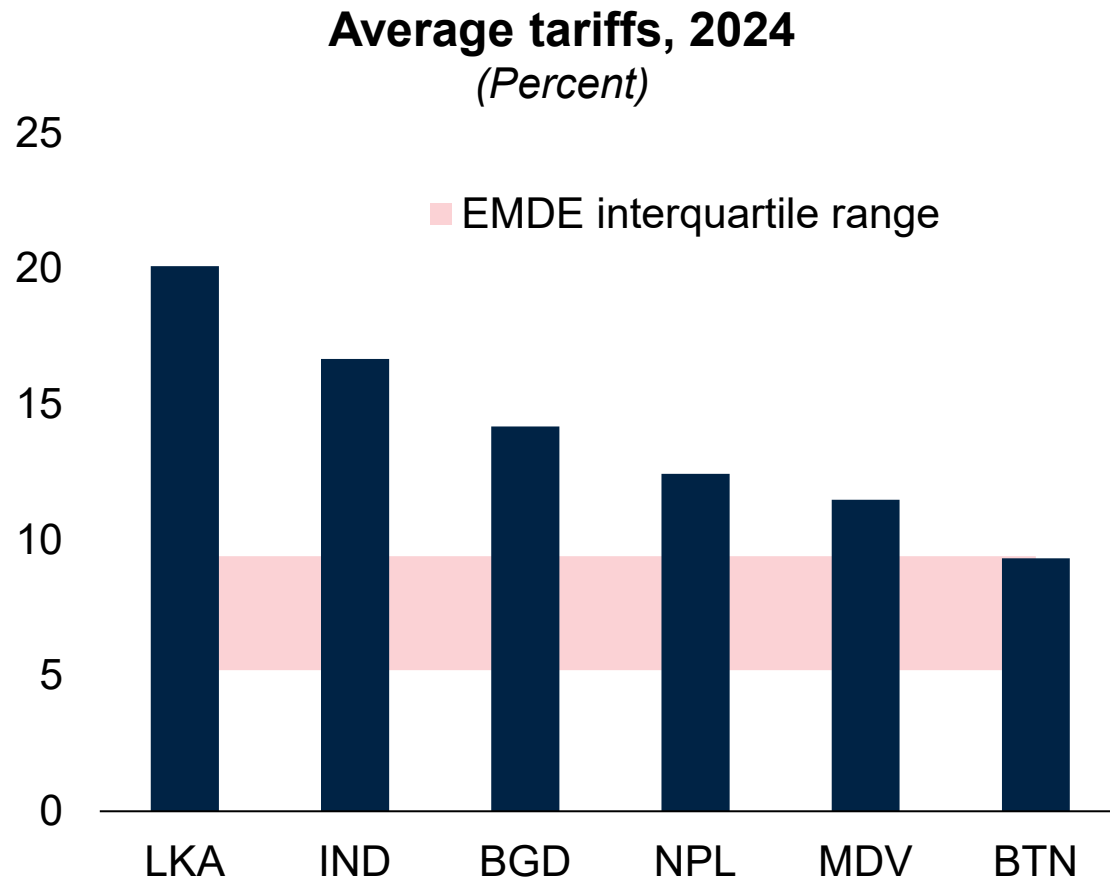


Sources: Asian Development Bank Multiregional Input-Output Tables (database); Bailey, Strezhnev, and Voeten (2017); World Bank.

Note: BRA = Brazil; CHN = China; EMDEs = emerging market and developing countries; IND = India. Left Panel: 193 goods export destination, 32 explicitly specified services export destinations. The rest-of-world is excluded as destination for services. Center Panel: Exports are disaggregated following the International Standard Industrial Classification of All Economic Activities, revision 3.1, with "Goods" comprising sections A-D and "Services" comprising sections E-Q. "Other EMDEs" as export origin (on the horizontal axis) is the weighted average across 32 explicitly distinguished EMDEs and the residual rest-of-world. Data explicitly distinguishes 72 economies and 35 sectors. Right Panel: Geopolitical stances are measured using the ideal point index of country voting patterns in the UN General Assembly.

# Policies on Global Trade and Investment

## *Above-Average Tariffs on Trade, Restrictions on Foreign Investment*



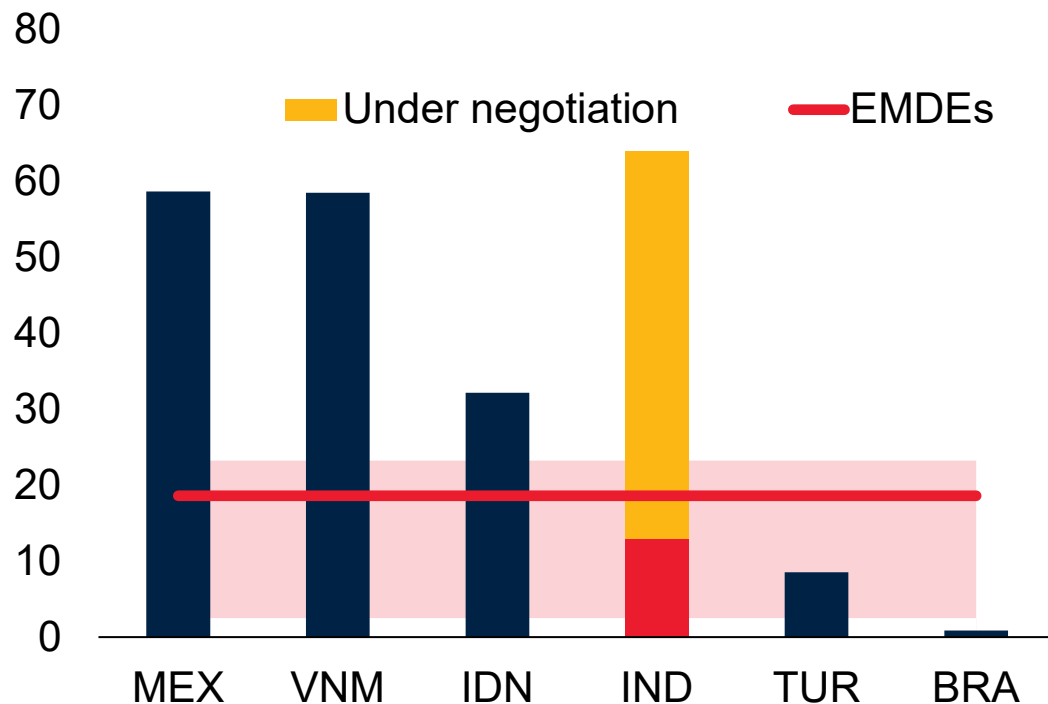
Sources: OECD Foreign Direct Investment Regulatory Restrictiveness Index (database); WTO Analytical Database; World Bank.

Note: BGD = Bangladesh; BTN = Bhutan; EMDE = emerging market and developing economy; IND = India; LKA = Sri Lanka; NPL = Nepal; NPL = Nepal. Left Panel: Simple average of the ad valorem most favored nation duties applied in latest available year, that is 2023 or 2024. For Sri Lanka, data include para-tariffs. Red share denotes interquartile range across 29 other EMDEs. Right Panel: Latest data are for 2020. Sample comprises 50 EMDEs.

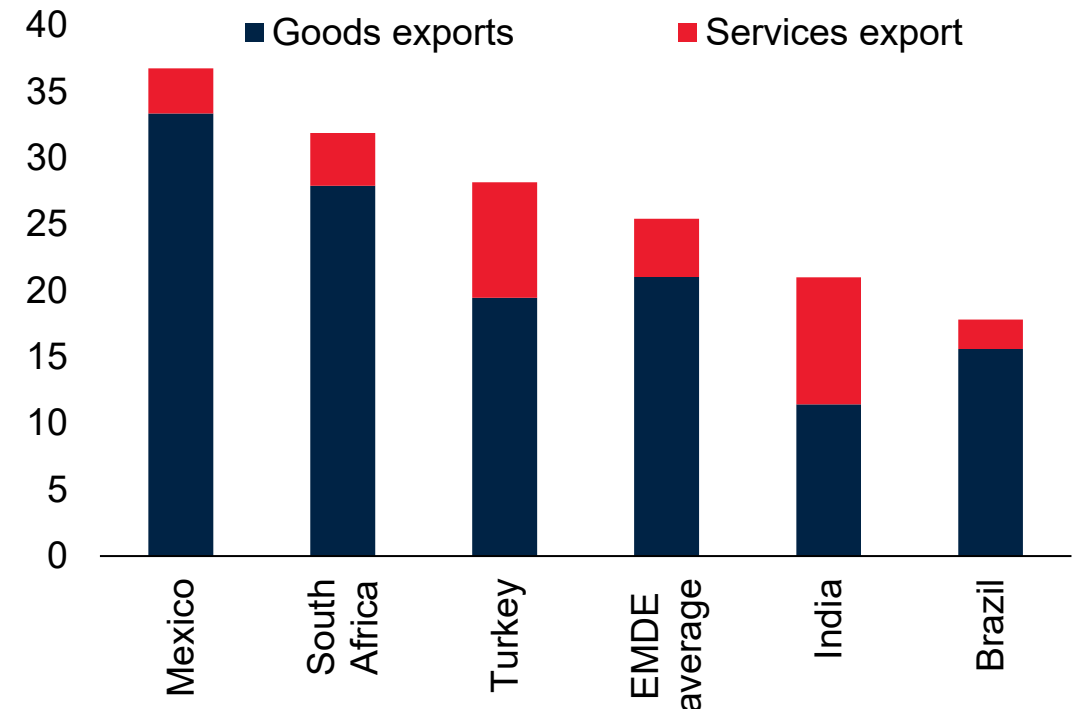
# Trade Openness

*Less Than in Other EMDE; More Services-Based*

**Market size of trade agreements, 2023**  
(Percent of global GDP)



**Composition of exports, 2024**  
(Percent of GDP)

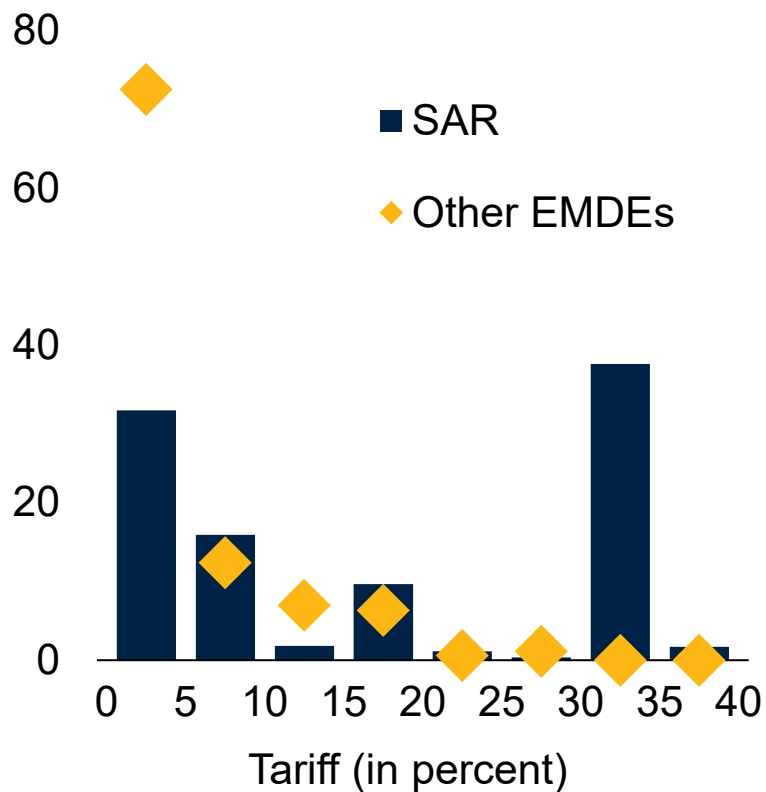


Sources: ADB Multiregional Input-Output Tables (database); World Development Indicators(database); World Bank Deep Trade Agreements (database); WTO Analytical Database; World Bank.  
Left Panel: Red shaded area represents the interquartile range across 29 other EMDEs; FTA-covered trading partner's GDP in global GDP in 2023. India is currently negotiating with Australia, Canada, the European Free Trade Association, the European Union, the Gulf Cooperation Council, the United Kingdom, and the United States. Right Panel: EMDEs include 73 economies, weighted by real GDP in average 2010–19 prices and market exchange rates.

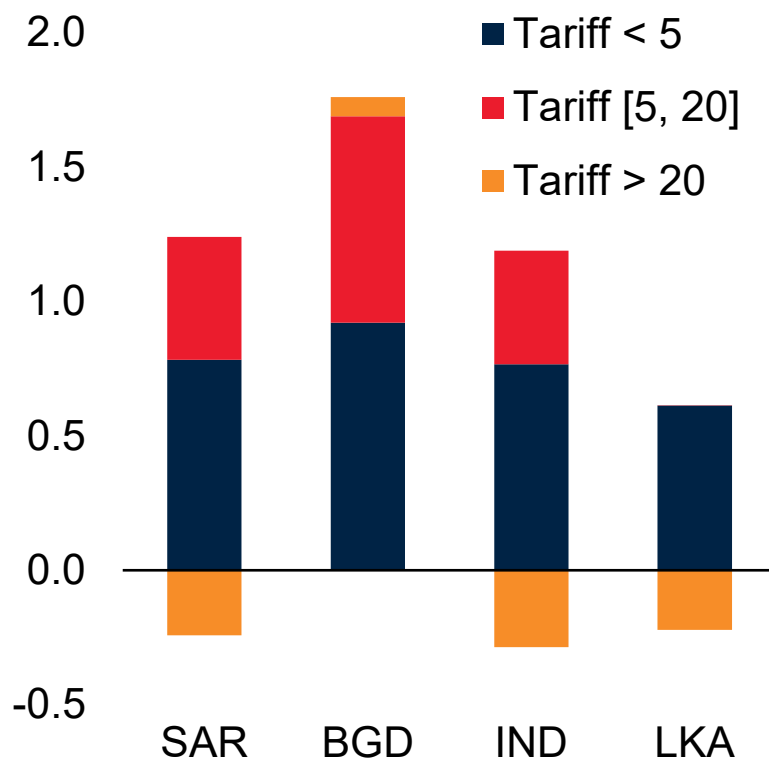
# Labor Market Impact of South Asia's Current Tariffs

## Protecting Low-Skilled, Older Workers in Shrinking Sectors

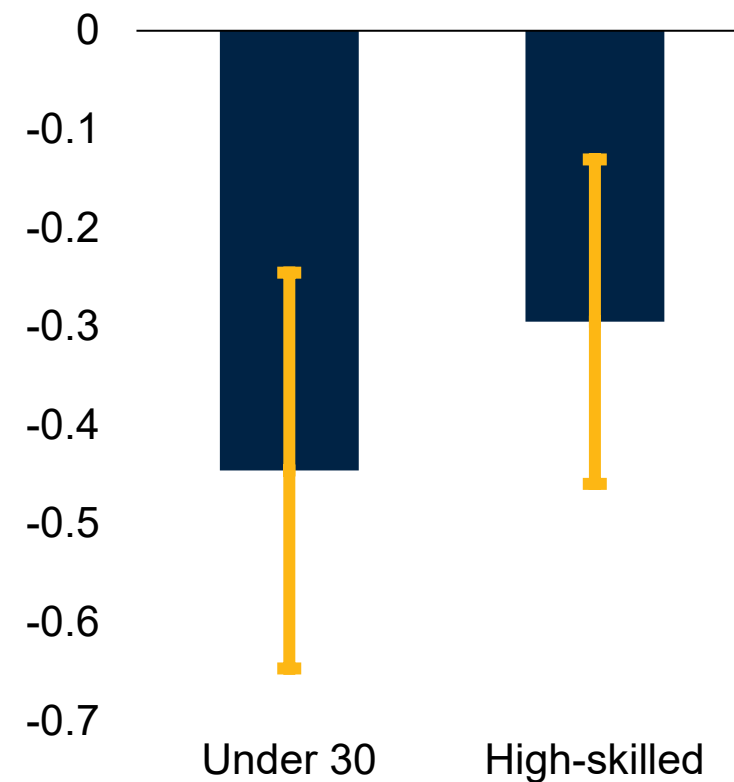
**Workers by tariff bracket**  
(Percent of total jobs)



**Contribution to average annual employment growth, 2010-23**  
(Percentage points)



**SAR: Probability of worker characteristics for 1 ppt higher tariff**  
(Percentage points)

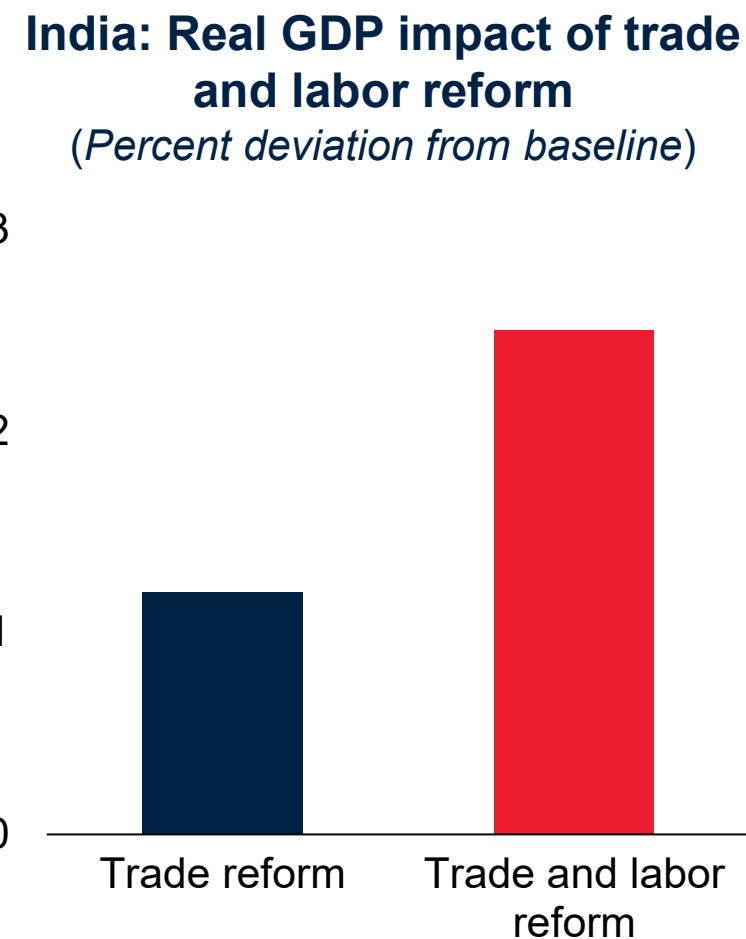
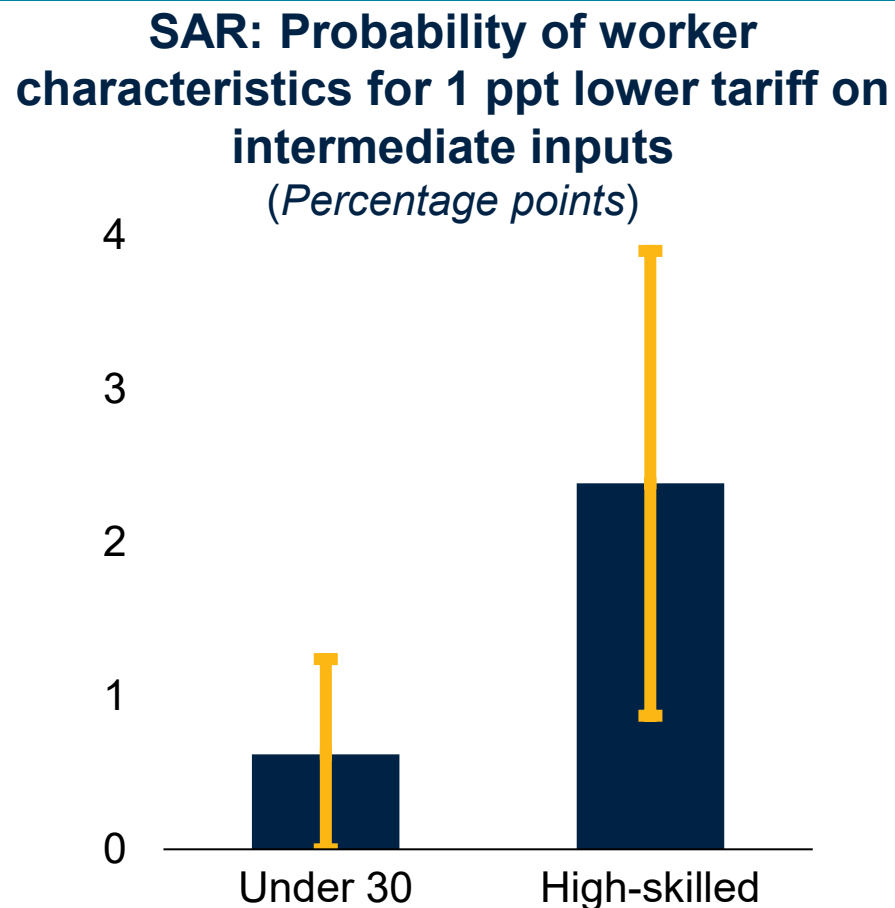
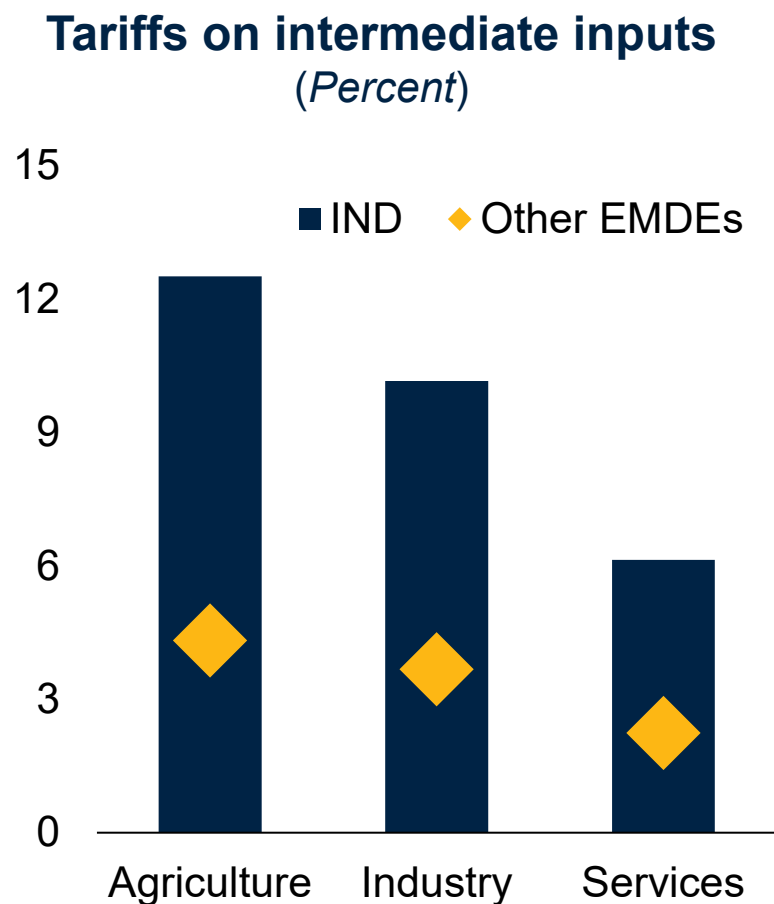


Sources: Global Labor Database labor force survey microdata (database); World Trade Organization Analytical Database; World Bank.

Note: BGD = Bangladesh; EMDEs = emerging market and developing economies; IND = India; LKA = Sri Lanka; SAR = South Asia. Left Panel: South Asia comprises latest data for all six countries in the region and other EMDEs comprise Brazil, Georgia, Mexico, Mongolia, Philippines, Thailand. Center Panel: South Asia sample is restricted to Bangladesh, India, and Sri Lanka only due to the availability of employment data on the two-digit level between 2010 and 2014 to compute growth rates for at least a decade. Right Panel: Bars show marginal effects from probit regressions with the respective worker characteristic as binary dependent variable. Standard errors are clustered at the country-sector level. Whiskers indicate 90 confidence intervals.

# Labor Market Implications of Potential Tariffs Cuts

*Would Benefit Younger, More Skilled; Labor Reforms Could Ease Transition*



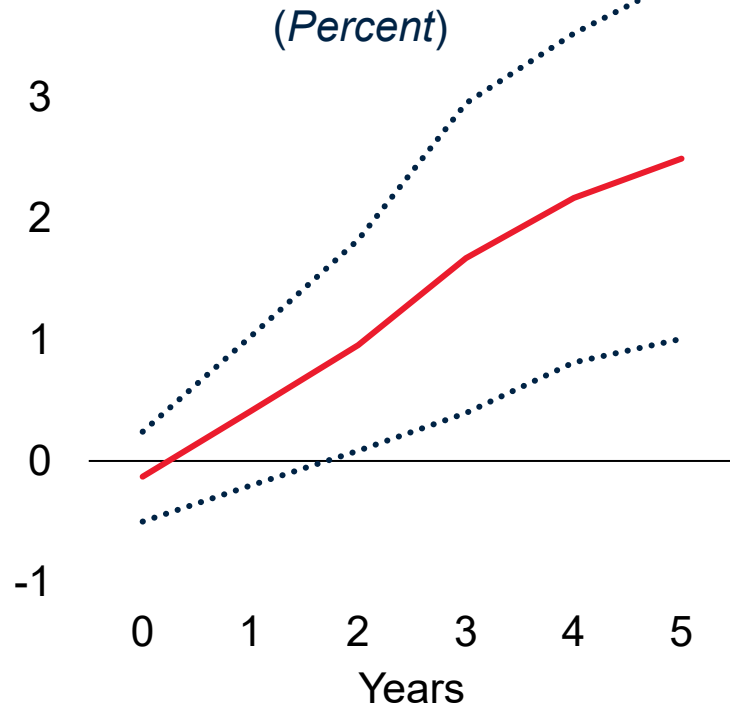
Sources: Asian Development Bank Multiregional Input-Output Tables (database); Global Labor Database labor force survey microdata (database); World Trade Organization Analytical Database, Trade Bank.

Note: EMDEs = emerging market and developing economies; SAR = South Asia. Tariff data are the latest available, trade and input shares use 2023 data. For Sri Lanka, includes para-tariffs. Left Panel: Input tariffs are calculated as the weighted average of tariffs on intermediate inputs (split from HS6 product codes using the Classification by Broad Economic Categories). Center Panel: Bars show the marginal effects of probit regressions with the respective worker characteristic as the binary dependent variable. Standard errors are clustered at the country-sector level. Whiskers indicate 90 confidence intervals. Right Panel: Effect on GDP per capita as a result of the trade policy reform (a halving of the gap from the EMDE average for trade policy cost in each country and sector) and labor market reform (a 5 percent reduction in the cost of transitioning between jobs) in South Asian countries. Effects are estimated using a dynamic quantitative multi-sector open-economy model following Caliendo, Dvorkin, and Parro (2019). The model is calibrated in changes relative to data in 2023 for 73 economies, including a rest-of-world aggregate.

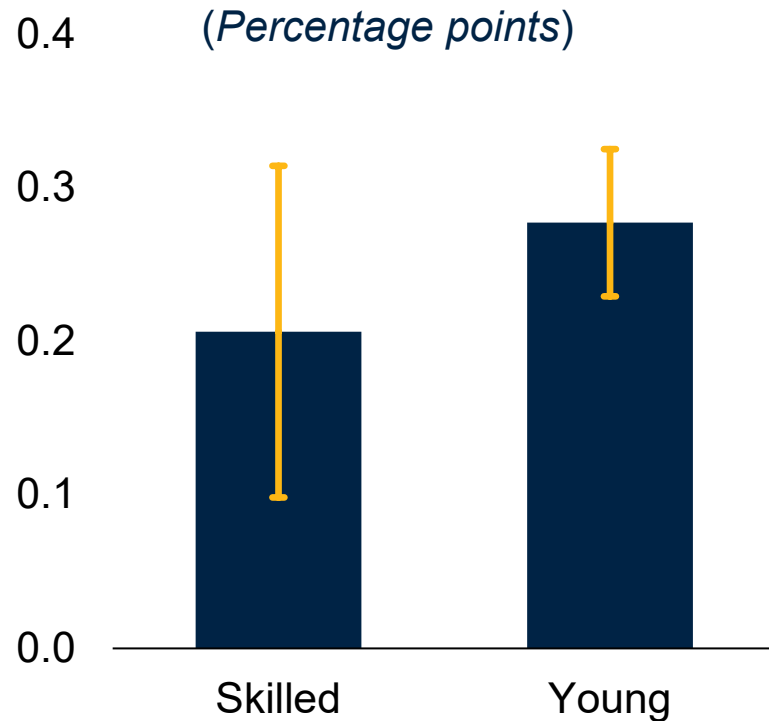
# Labor Market Implications of Tariff Cuts Globally

*Job-Creating, But More for Skilled and Younger Workers; Limited Revenue Impact*

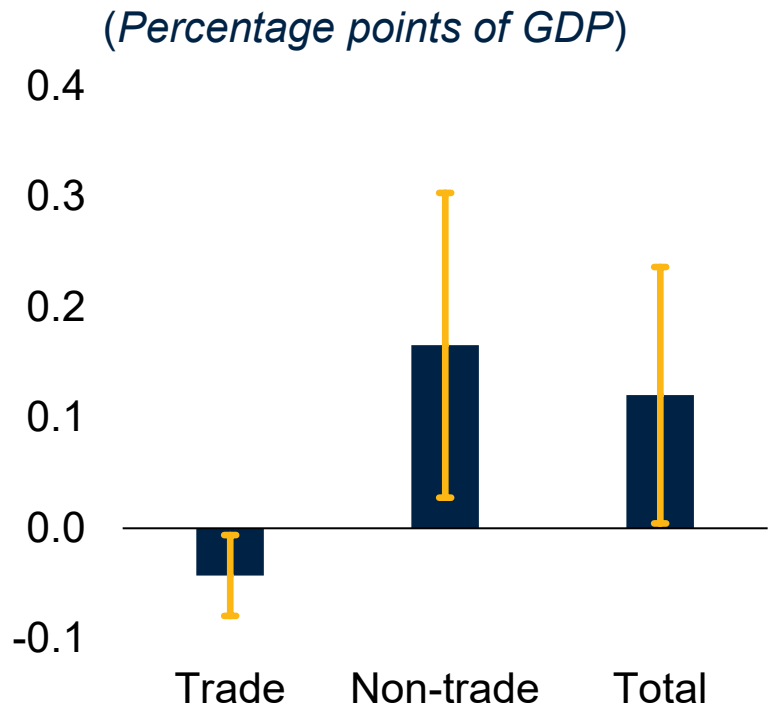
**Cumulative impulse response of employment to start of tariff reduction episode**



**Likelihood of positive significant estimate: Differential impact of tariff cut on employment**



**Differential between annual change in revenue during and outside episodes**



Sources: IMF World Economic Outlook database; UNU-WIDER; U.S. Agency for International Development Collecting Taxes; Vegh and Vuletin (2015); World Trade Organization Analytical Database; World Bank Fiscal Survey; World Development Indicators (database); World Bank.

Note: Tariff reduction episodes are defined as the largest decile of one-year and five-year tariff reductions among up to 122 countries during 1995–2022, during which 31 countries had 33 tariff reduction episodes. Left Panel: Impulse response function is from a local projection estimation of cumulative changes in log employment on a dummy variable of the start of the tariff reduction episode. Dotted lines indicate 95 percent confidence intervals. Center Panel: Based on a review of 83 studies on the effect of own country trade-liberalizing measures. Bars show the estimated marginal likelihood that the impact of tariff cut on employment is statistically significantly more positive for skilled or young worker. Whiskers indicate one-standard error band. Right Panel: Blue bars show the difference in the annual average revenue-GDP ratio between the first five years of an episode and all years outside of episodes, derived from a country fixed effects regression. Whiskers indicate 90 percent confidence intervals.

# Four Questions

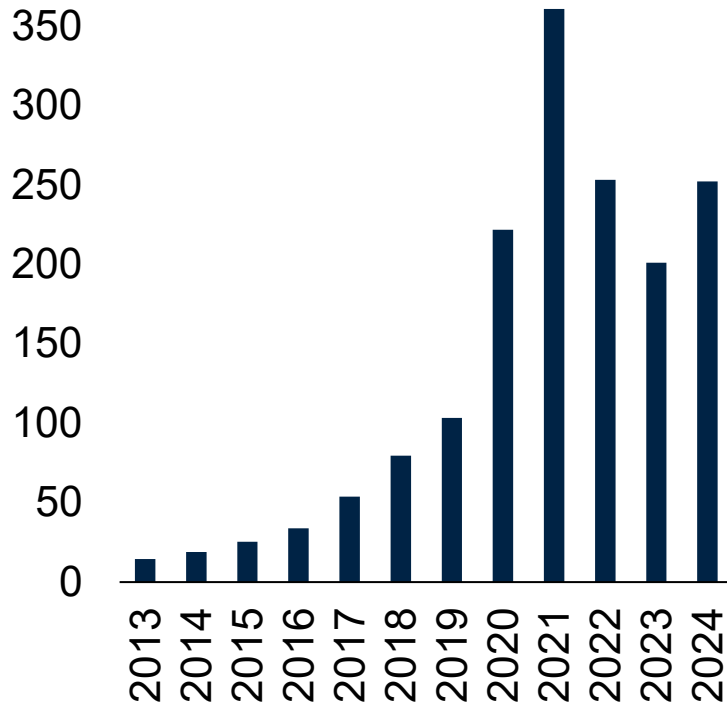
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**Could AI boost services exports?**

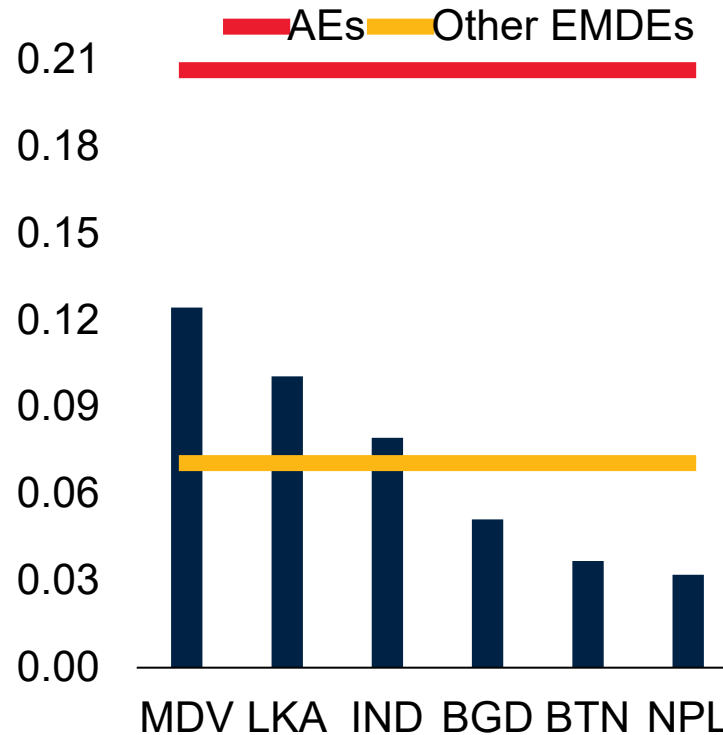
# The Global Rise of Generative AI

## Rapid Development and Take-Up of New AI Tools

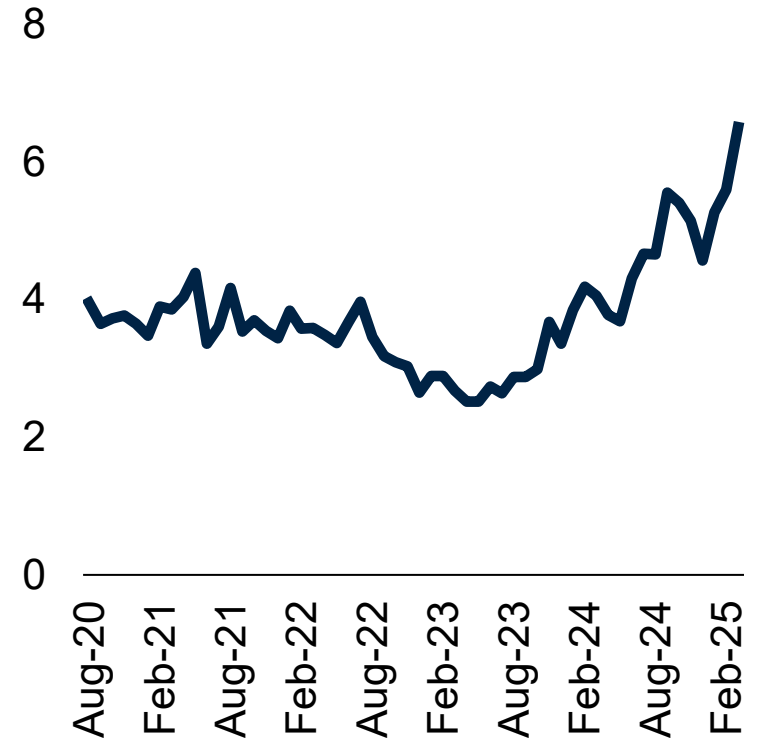
**Global corporate investment in AI**  
(Billions of USD)



**ChatGPT usage in South Asia**  
(Users per capita)



**South Asia: AI-related job listings**  
(Percent of job listings)

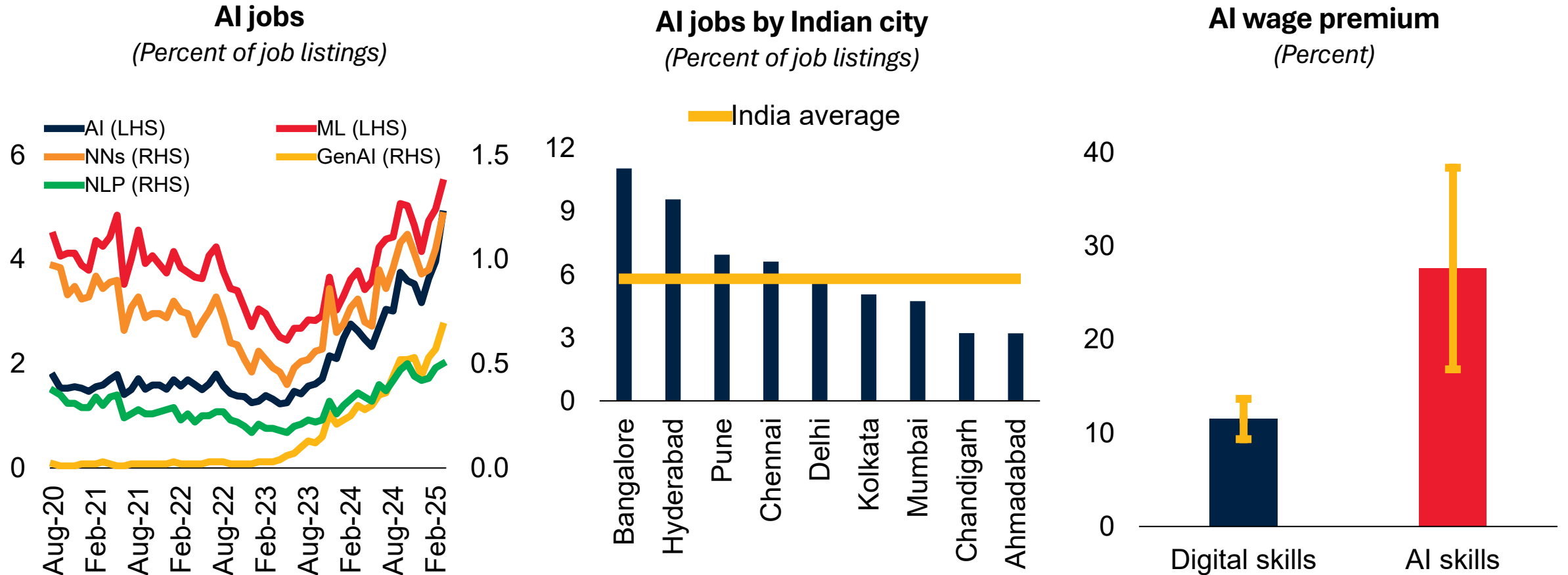


Sources: International Labour Organization; Lightcast (database); Liu and Wang (2024); Maslej et al. (2025); World Bank.

Note: AEs = Advanced economies; EMDEs = emerging market and developing economies; BGD = Bangladesh; BTN = Bhutan; IND = India; LKA = Sri Lanka; MDV = Maldives; NPL = Nepal; AI = general artificial intelligence; Gen AI = generative artificial intelligence. Left: Bars represent the total amount of investments made by global corporates from 2013 to 2024. Middle: Bars show the number of ChatGPT users per capita in SAR countries. Yellow line shows the ratio in other EMDEs, and red line shows the ratio in AEs. "Other EMDEs" are EMDEs excluding SAR countries. Right: Line shows the share of AI-related job postings in all Lightcast South Asia postings from August 2020 to February 2025.

# South Asia: Demand for AI Skills

## Strong Growth in Labor Demand for AI, High Returns to Skill



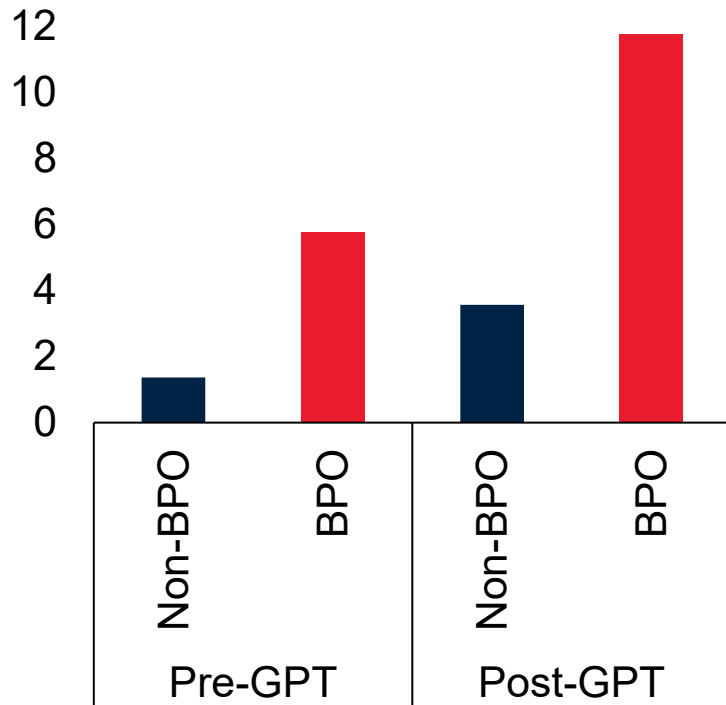
Sources: Lightcast (database); World Bank.

Note: AI = artificial intelligence; GenAI = generative artificial intelligence; LHS = left-hand side; ML = machine learning; NLP = natural language processing; NNs = neural networks; RHS = right-hand side. Left: Lines show the share of AI-related job postings in all Lightcast South Asia postings by AI skill required from August 2020 to February 2025. Center: Bars show cities in India with the highest share of AI-related jobs postings in 2025. Yellow line shows the overall share of AI jobs in Indian postings. Right: Bars show the estimated wage premiums associated with digital and AI skills. Wage premiums are estimated from a job listing-level regression of log posted salaries on indicators for digital or AI skills, controlling for country-year, location, and occupation fixed effects. Yellow whiskers represent 95 percent confidence intervals, with standard errors clustered at the occupation level.

# BPO Sector

## Rapid AI Adoption; Hiring Slowdown; Export Surge

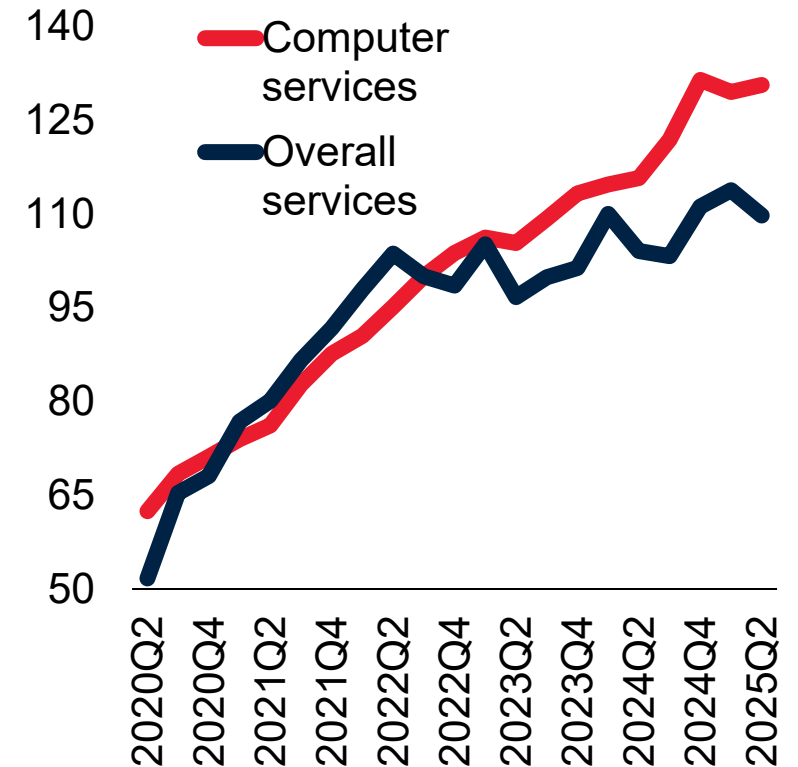
**Jobs that require AI skills**  
(Percent of jobs)



**SAR: Impact of ChatGPT on BPO jobs and wages**  
(Percent)



**India: Services exports**  
(Index, Q3 2022=100)



Sources: Felten, Raj, and Seamans (2023); Lightcast (database); Pizzinelli et al. (2023); Reserve Bank of India; Oxford University, Government AI Readiness Index; Stanford University; Tortoise Media; World Bank. Note: AEs = advanced economies; AI = artificial intelligence; EAP = East Asia and Pacific; ECA = Europe and Central Asia; EMDE = emerging market and developing economies; IND = India; LAC = Latin America and the Caribbean; MNA = Middle East and North Africa; SAR = South Asia; SSA = Sub-Saharan Africa; U.S. = United States. Left Panel: Bars show the share of jobs that require AI-related skills by sector, before and after the introduction of ChatGPT. Pre-GPT shares are measured in November 2022, the month of ChatGPT's release, while post-GPT shares are measured in March 2025, the final month of data. Center Panel: Bars show coefficients from occupation-month regressions of log of job postings and log of wages on the interaction between post-ChatGPT and a BPO-occupation indicator, conditional on occupation and month fixed effects. Golden whiskers represent 95 percent confidence intervals, with standard errors clustered at the occupation level. Right Panel: Lines show indexed values of BPO exports and total exports (Q3 2022 = 100) in India from Q2 2020 to Q2 2025, with Q3 2022 marking the quarter before the release of ChatGPT.

# Four Questions

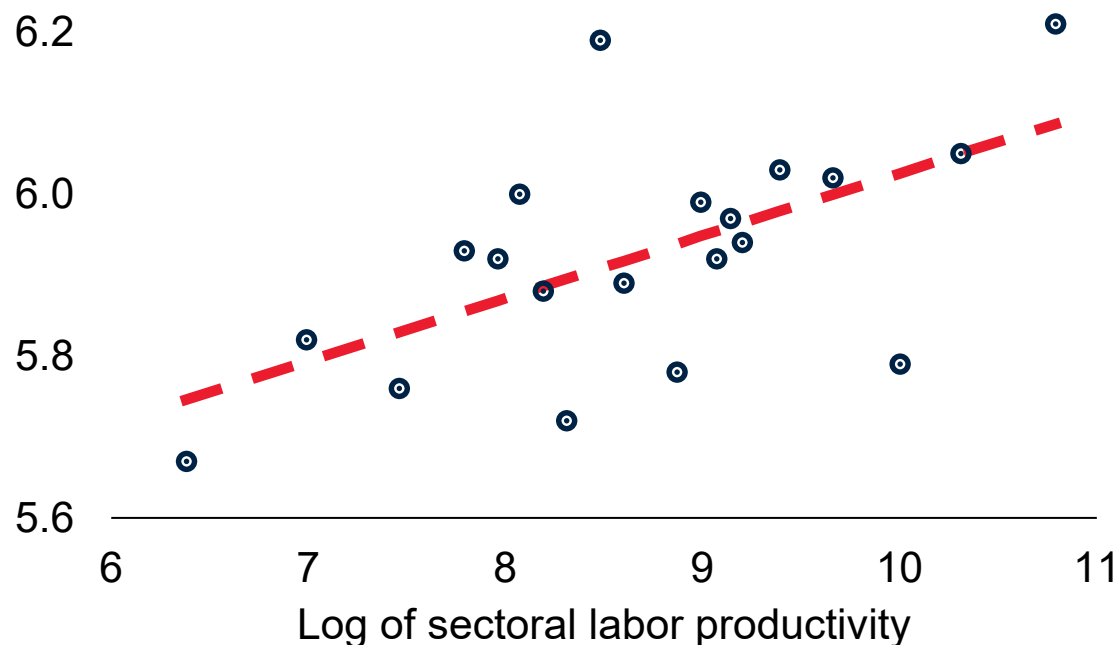
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**What are the labor market implications of AI adoption?**

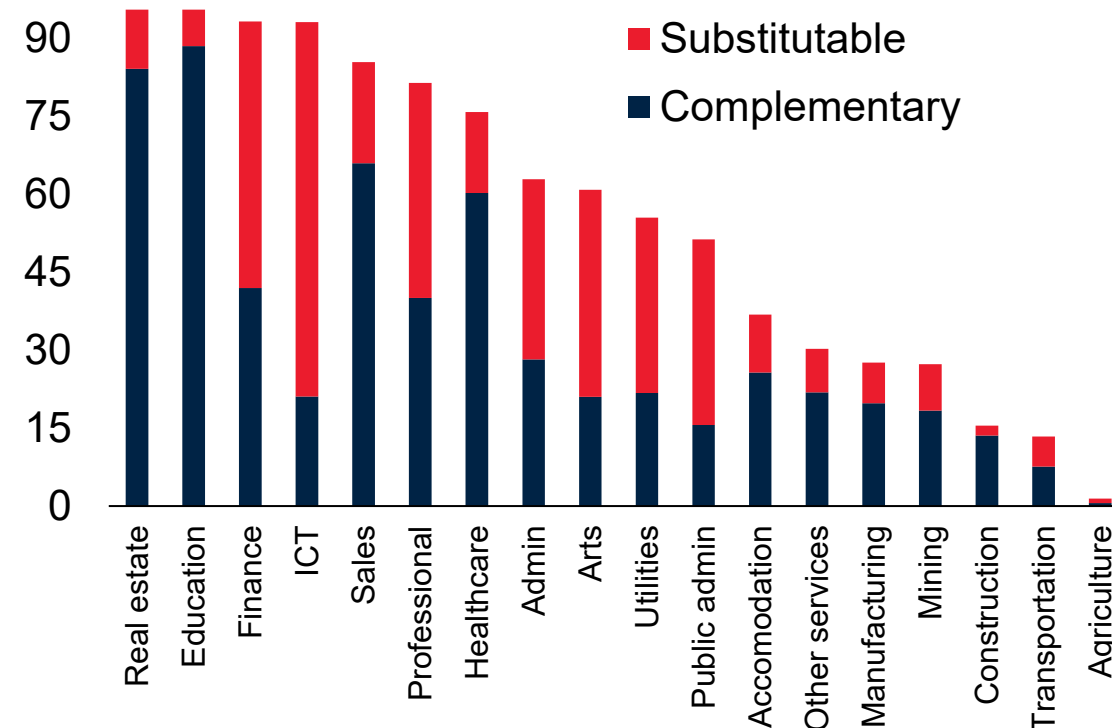
# EMDEs: AI Exposure Across Skills and Sectors

## *Greatest Exposure Among Most Productive Sectors*

**Labor productivity**  
(AI exposure index)



**Share of labor earnings exposed to AI by sector**  
(Percent)



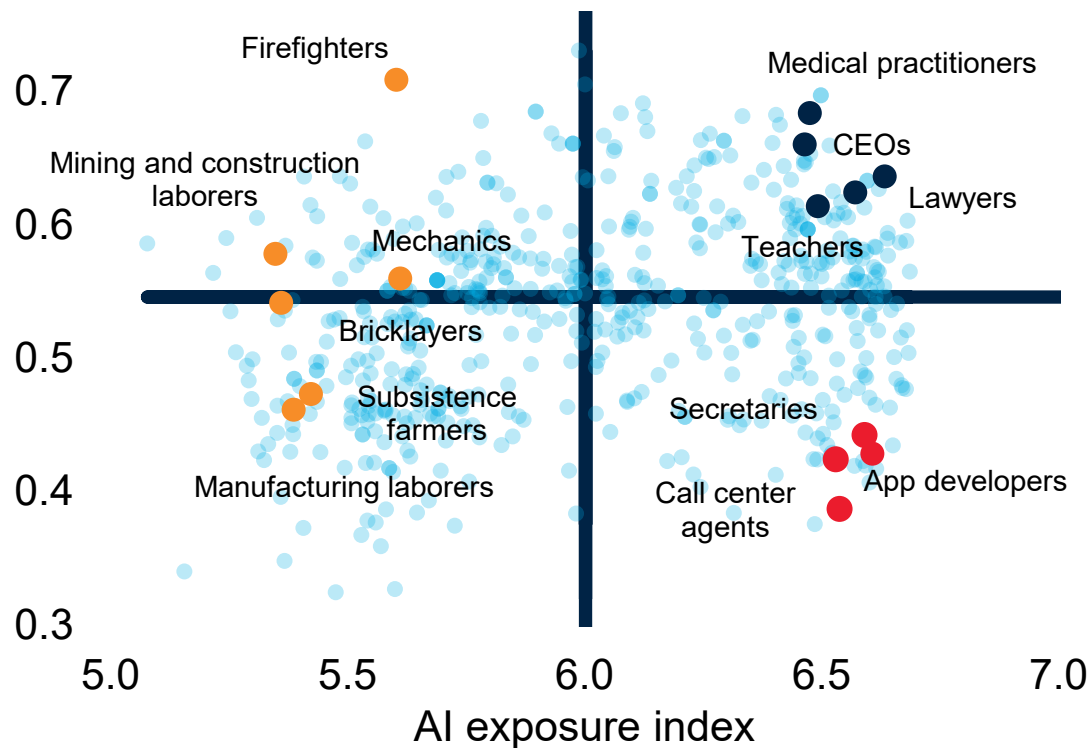
Sources: Felten, Raj, and Seamans (2023); Pizzinelli et al. (2023); World Bank, Global Labor Database.

Note: AI = artificial intelligence; LHS = left-hand side; RHS = right-hand side; SAR = South Asia. AI index is defined as average unstandardized exposure across all domains in Felten, Raj, and Seamans (2023). Sample is five SAR countries and 26 other EMDEs for which labor force surveys are available. All averages and regressions are weighted by the working population (people aged 15 to 64). Exposure to AI is defined as a composite AI exposure score greater than the median score across occupations. Complementary (substitutable) jobs are defined as a complementarity score above (below) the median score across occupations and above-median exposure. Left: Scatter plot shows the binned relationship between log sector-level average labor productivity and the unadjusted AI exposure index, binned at 20 quantiles of the distribution of sectoral labor productivity. Red dashed line represents a linear fit on the underlying data. Right: Bars show share of total labor earnings with differing levels of AI exposure by 1-digit ISIC sector of activity.

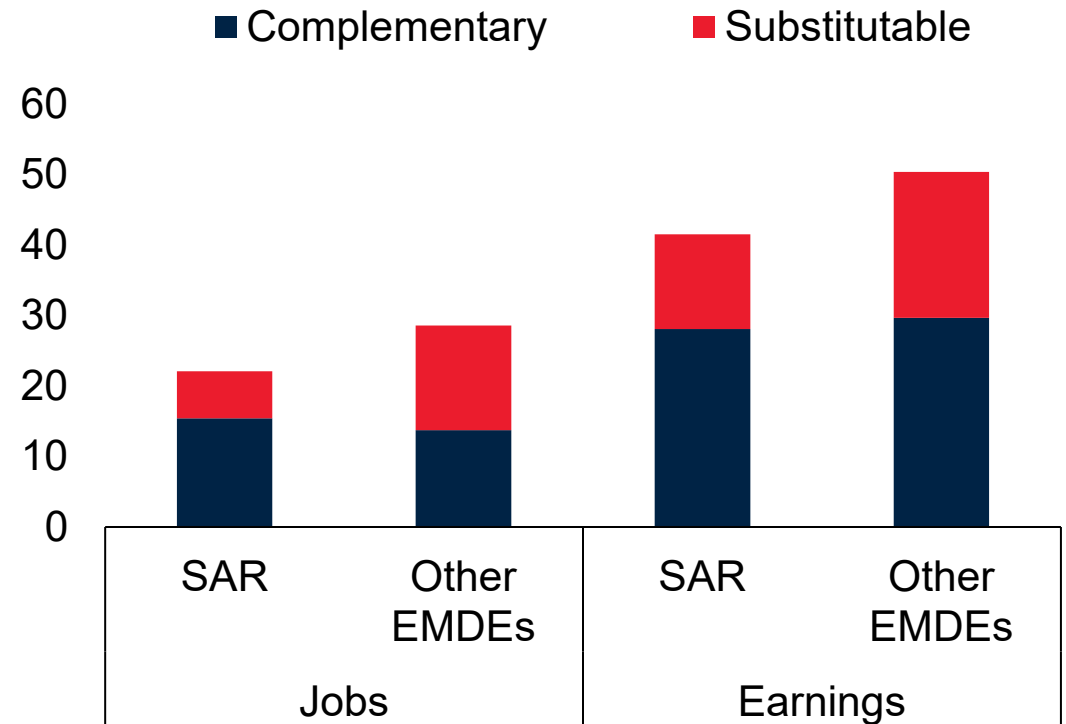
# Labor Market Implications of AI Adoption

## AI Will Benefit Workers in Complementary Jobs

**AI exposure and complementarity by occupation**  
(Complementarity index)



**Share of jobs and labor earnings exposed to AI**  
(Percent of jobs)



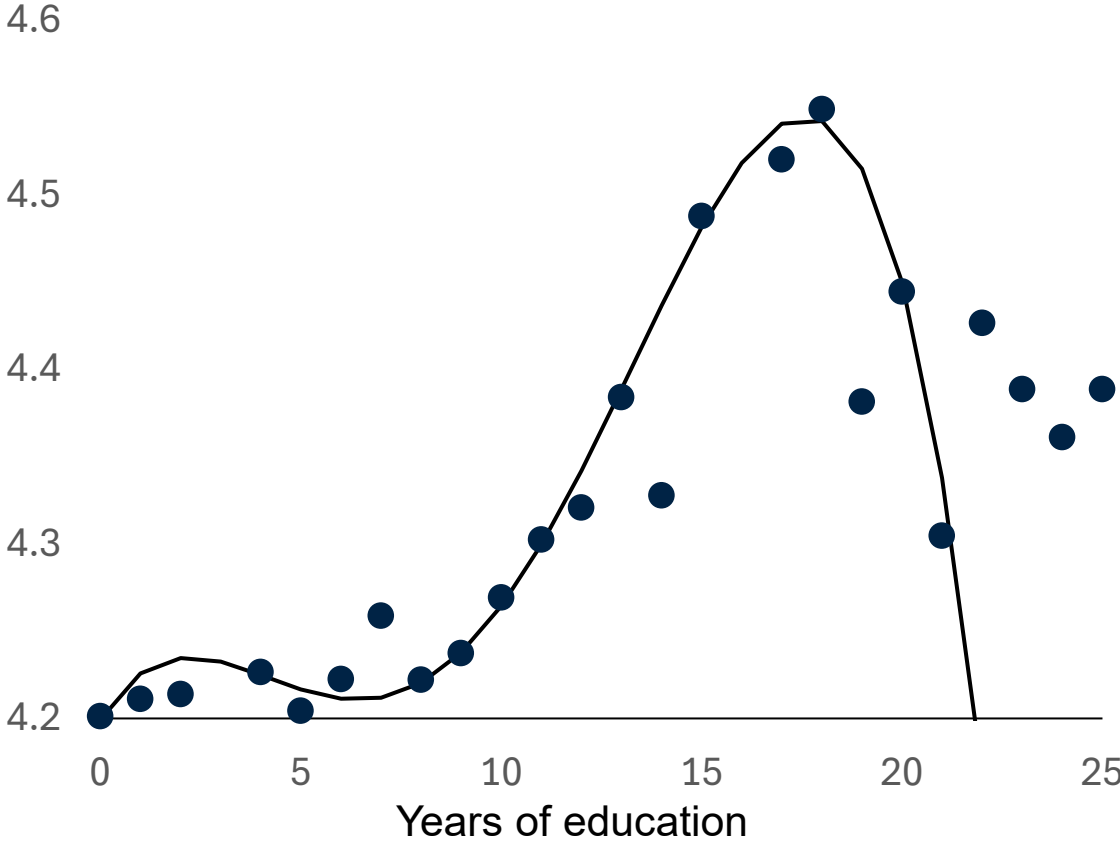
Source: Felten, Raj, and Seamans (2023); Global Labor Database labor force surveys; Lightcast (database); Pizzinelli et al. (2023); World Bank.

Note: AI = artificial intelligence; EMDEs = emerging market and developing economies. Charts are based on exposure and complementarity levels for 583 4-digit ISIC-08 occupations. Exposure to AI is defined as a composite score above the median across occupations. Complementary (substitutable) jobs are defined as a complementarity score above (below) the median score across occupations and above-median exposure. Left: Black lines indicate median values for complementary and exposure indices. Right: Blue bars show the share of jobs and total wage earnings that are either exposed to AI, complementary with AI, or substitutable with AI.

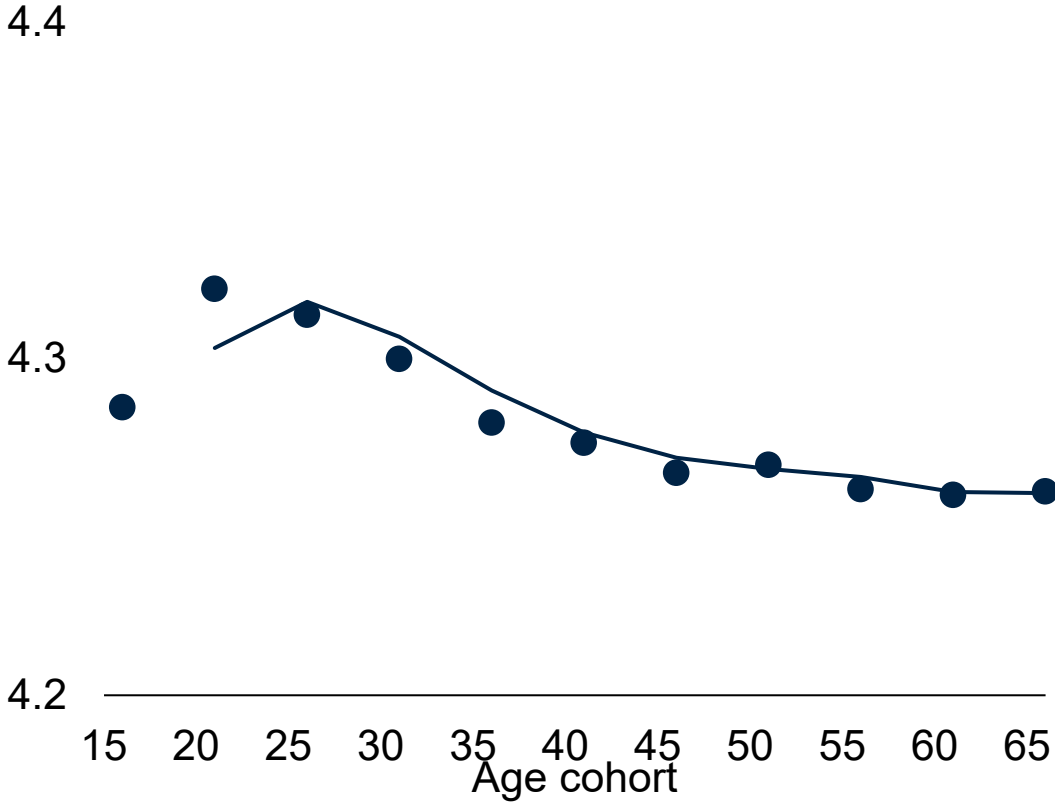
# Labor Market Implications of AI Adoption

## Greatest Risk for Younger, Upper-Mid-Skilled Workers

**SAR: AI exposure by education**  
(Complementarity-adjusted index)



**SAR: AI exposure by age cohort**  
(Complementarity-adjusted index)

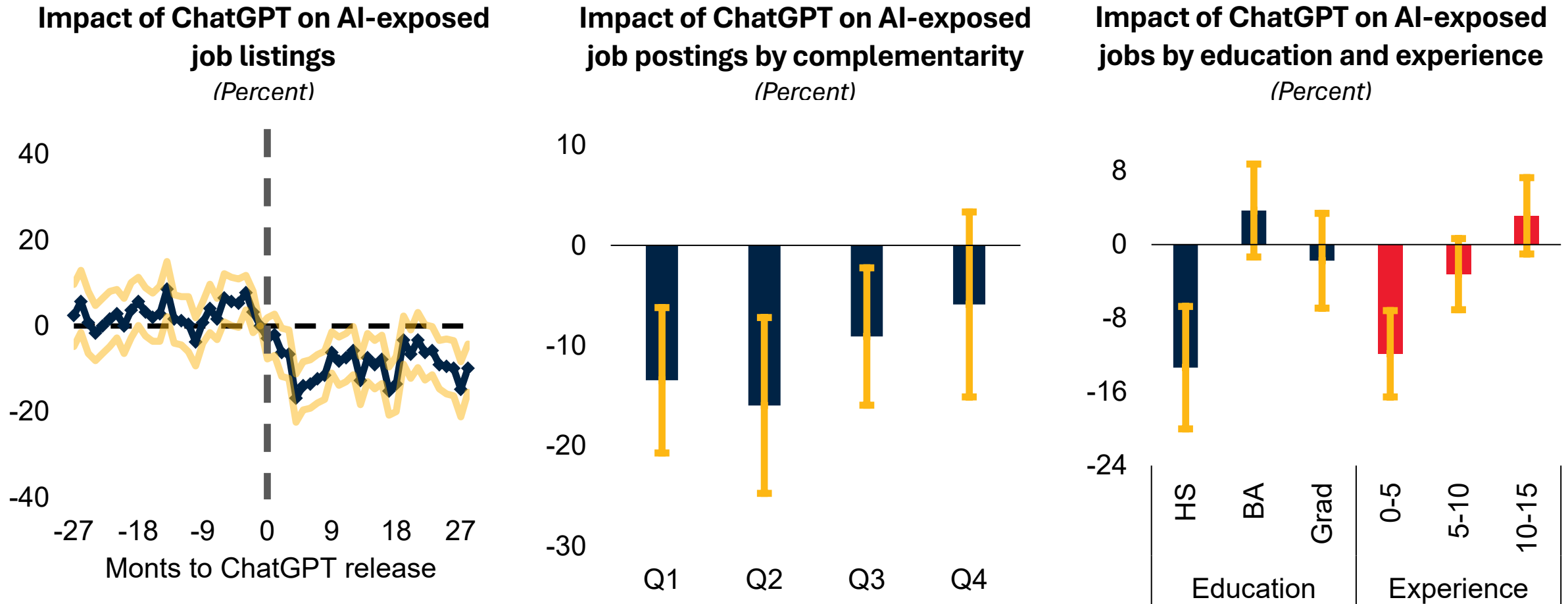


Source: Felten, Raj, and Seamans (2023); Global Labor Database labor force surveys; Lightcast (database); Pizzinelli et al. (2023); World Bank.

Note: AI = artificial intelligence; LHS = left-hand side; RHS = right-hand side; SAR = South Asia. AI index is defined as average unstandardized exposure across all domains in Felten, Raj, and Seamans (2023). Complementarity-adjusted AI exposure comes from Pizzinelli et al. (2023) and is calculated as multiplying the original AI exposure index by  $1 - \theta$ , where  $\theta$  is the complementarity parameter. Charts are based on exposure and complementarity levels for 583 4-digit ISIC-08 occupations. Left Panel: The scatter plot shows the relationship between years of education and the average AI exposure index, adjusted for complementarity. Dashed curves indicate quartic polynomial fit on the underlying data. Right Panel: The scatter plot shows the relationship between age cohorts and average AI exposure indices, adjusted for complementarity. A higher index indicate greater risk of substitution by AI.

# South Asia: Labor Market Impacts of AI Adoption

## Major Hiring Slowdown Underway in Substitutable, Entry-Level Jobs



Source: Felten, Raj, and Seamans (2023); Lightcast (database); Pizzinelli et al. (2023); World Bank Global Labor Database.

Note: BA = bachelors degree; Grad = graduate degree; HS = high-school degree. Golden whiskers represent 95 percent confidence intervals, with standard errors clustered at the occupation level. The dashed vertical gray line marks the public release of ChatGPT. Left: Charts show coefficients and 95 percent confidence intervals from event-study regressions at the 4-digit occupation sector by month level, where the log of total occupation-level job listings is regressed on an indicator for post-ChatGPT release interacted with AI exposure, with occupation and month fixed effects. Coefficients show impact of a 1SD increase in exposure. Center: Bars show average effects of a one-standard deviation increase in occupation-level AI exposure on job listings after the release of ChatGPT. Effect is estimated at each quartile of occupation-level complementarity: Q1 represents occupations with the lowest complementarity and Q4 the highest. Right: Bars show coefficients from a difference-in-differences regression at the 4-digit occupation-by-month level. The log of total occupation-level job listings for each education category is regressed on an indicator for post-ChatGPT release, with occupation and month fixed effects.

# Four Questions

**What are South Asia's growth prospects?** *Better than expected, still stronger than in other EMDE regions, with downside risks.*

**What would be the labor market implications of tariff cuts?** *Likely competitiveness-enhancing and job-creating, but more for higher-skilled, younger workers and in manufacturing firms.*

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