INTERNATIONAL MONETARY FUND

SELECTED ISSUES PAPER

Labor Market Implications of Artificial Intelligence

Sweden

Xin Tang

SIP/2026/077

2026
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 SIP/2026/077

IMF Selected Issues Paper
European Department

Labor Market Implications of Artificial Intelligence

Prepared by Xin Tang

Authorized for distribution by S. Pelin Berkmen
August 2026

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ABSTRACT: The rapid uptake of Artificial Intelligence by Swedish enterprises is poised to reshape the country's occupational landscape. While the technology offers substantial potential gains for Sweden's workforce, more so than the EU on average, the associated labor displacement costs are likely to fall unevenly; Information Communication Technology professionals, less-educated workers, young people, and immigrants tend to face the greatest threat. Policies that facilitate labor mobility across regions and sectors, and better align the education system and labor market needs can help smooth the adjustment.

RECOMMENDED CITATION: Xin Tang. Labor Market Implications of Artificial Intelligence. IMF Selected Issues Paper (SIP 2026/077). Washington DC. International Monetary Fund.

JEL Classification Numbers:	J24
Keywords:	Labor productivity, artificial intelligence
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Labor Market Implications of Artificial Intelligence

Sweden

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[1] "The author would like to thank helpful comments from Stephen Ayrest, Diego A. Cerdeiro, Stephan Danninger, and John Hassler, as well as seminar participants from the Swedish authorities.

INTERNATIONAL MONETARY FUND

SWEDEN

SELECTED ISSUES

June 29, 2026

Approved By
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LABOR MARKET IMPLICATIONS OF ARTIFICIAL INTELLIGENCE

The rapid uptake of Artificial Intelligence by Swedish enterprises is poised to reshape the country's occupational landscape. While the technology offers substantial potential gains for Sweden's workforce, more so than the EU on average, the associated labor displacement costs are likely to fall unevenly; Information Communication Technology professionals, less-educated workers, young people, and immigrants tend to face the greatest threat. Policies that facilitate labor mobility across regions and sectors, and better align the education system and labor market needs can help smooth the adjustment.

A. Introduction

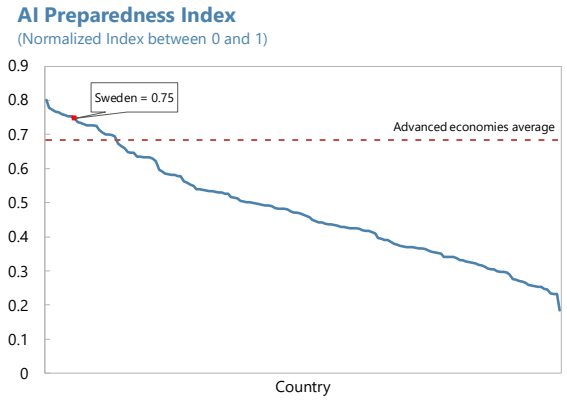
1. Artificial Intelligence (AI), like earlier waves of major technological breakthrough, bring substantial long-term benefits, but can create uneven short-term outcomes across society. It has the potential to transform daily life in many dimensions, from raising productivity, relieving workers from repetitive tasks, stimulating innovation, improving everyday convenience, and so on. These gains, however, do not accrue uniformly and may even lead some groups worse off, such as senior people with limited digital knowledge, or workers whose jobs are directly substituted by AI. Conscious policy efforts are therefore needed to maximize the opportunities while managing the associate challenges.

2. The Roadmap for Sweden produced by the AI Commission argues that Sweden is well positioned to benefit from AI, though some gaps remain.[1] Sweden has strong foundations across key building blocks of the AI ecosystem (Figure 1). Sweden's geographic location grants it strong comparative advantage in fossil-free energy generation, and its cold climate is attractive for hosting data centers. The labor force is relatively skilled and adaptable, and Sweden hosts one of Europe's deepest venture capital markets. Moreover, Sweden has extensive high-quality long time-series of data—a critical input for AI development. Despite these advantages, AI adoption in Sweden lags peer countries, as reflected in Sweden's modest standing in several global benchmarks.[2] Key policy gaps include non-uniform implementation of EU regulations across member states, insufficient reskilling and retraining opportunities, a persistent mismatch between private sector skill demand and educational outcome, and obstacles to attracting and retaining international talent. Closing these gaps would require a holistic strategy backed by strong political leadership.

[1] The AI Commission is an independent state inquiry established by the Government.

[2] For example, in the Global AI Index from Tortoise Media, the overall ranking for Sweden has fallen from 17th in 2023 to 25th in 2024, out of 83 countries included. Sweden ranks particularly low at 57th in the area of government strategy; the recent published AI Strategy may elevate Sweden's position in this regard.

Figure 1. AI Preparedness



Sources: Cazzaniga and others (2024); and IMF staff calculation.

Sources: Cazzaniga and others (2024); and IMF staff calculation.

3. As part of ongoing efforts, Sweden's Digitalization Strategy 2025–2030 sets out clear objectives and concrete measures to support the country's digital transition. The strategy aims to fulfill both Sweden's national objective and EU-level commitments.[3] The strategy is structured around five strategic domains: digital competence, business digitalization, public administration, welfare services, and finally connectivity. It also identifies three cross-cutting areas—AI, access to data, and security—which would reinforce progress in the five strategic domains.

4. In parallel, the authorities have published a dedicated AI Strategy. The strategy outlines measures to enhance the efficiency and quality of public services, clarify regulatory framework for businesses and the public sector, and strengthen conditions for research, with the objective of positioning Sweden among the world's top 10 countries in AI. An accompanying action plan organizes proposed policy measures around three pillars: AI for societal benefit, sustainable development, and AI for competitiveness and innovation.

- *AI for societal benefit*: the measures seek to streamline legal and regulatory frameworks, expand data access and use, advance standardization, enhance security and defense, lead AI adoption in the public sector.

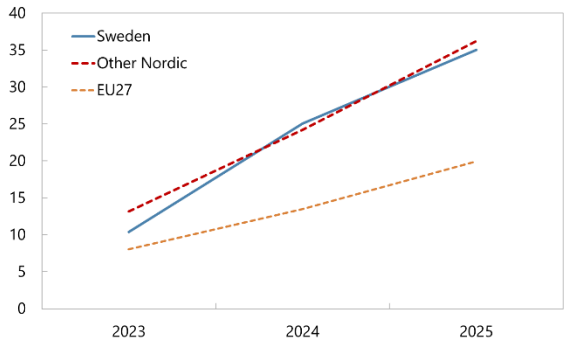
- *Sustainable development*: the measures aim to promote human-centric AI, develop national language models, support climate and energy objectives, and facilitate labor market adjustment and skills development.

- *AI for competitiveness and innovation*: the measures focus on strengthening the AI ecosystem, fostering business and entrepreneurship, scaling up digital infrastructure and computing capacity, and deepening research and expertise.

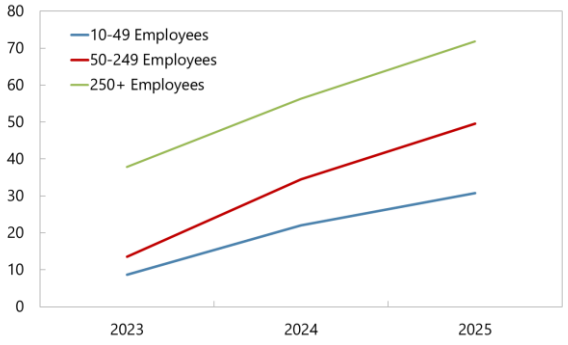
[3] Sweden's national goal, set by the Riksdag, is for Sweden to be the best in the world at using the opportunities offered by digitalization. Common EU-level goals, as established in the Digital Decade 2030 Program, span across the areas of digital skills, digital infrastructure, digital transformation of companies, and digitalization of public services.

5. Swedish enterprises adopt AI at a rapid pace. Among enterprises with more than 10 employees, the share of AI usage has risen from 10 percent in 2023 to about 35 percent in 2025, similar to other Nordic countries and well above the EU average of 15 percent. Large companies are at the forefront of this trend, given their business needs and the fixed cost associated with adopting AI (Figure 2 upper panels). At the NACE 1-digit level, Information Communication Technology (ICT) and Professional Services sectors record the highest uptake, consistent with the substantial scope for integrating AI into tasks in these industries, a concept referred to as exposure to AI henceforth (Figure 2 bottom left panel). Among enterprises using AI, nearly three-quarters of them deploy it for automating machine movement and close to 60 percent for image processing (Figure 2 bottom right panel), reflecting the prominent role of manufacturing, information technology, and life sciences in the Swedish economy.

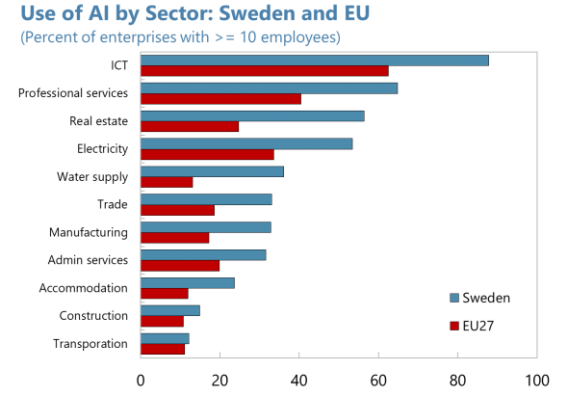
Figure 2. Swedish Enterprises Use AI Extensively



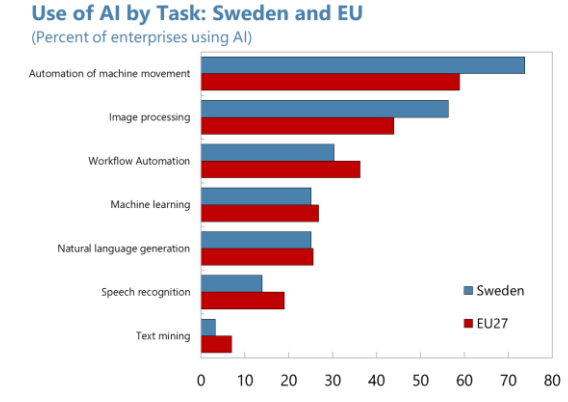
Sources: Eurostat; and IMF staff calculation.



Sources: Eurostat; and IMF staff calculation.



Sources: Eurostat; and IMF staff calculation.



Sources: Eurostat; and IMF staff calculation.

B. Labor Market Implications of AI

6. AI can either be complementary or substitutable to labor depending on the task content of work, and therefore its rapid deployment is expected to have significant short-term labor market effects. The task content literature establishes that technological change affects

labor market primarily at occupational level through the nature of tasks performed.[4] In this regard, Felten, Raj and Seamans (2021) developed an index of occupational exposure to AI (AIOE), which measures the overlap between key AI applications and the abilities required in each occupation. The index is extended by Pizzinelli and others (2023) to distinguish whether AI complements or substitutes labor in an occupation (Complementary-AIOE, C-AIOE). Workers in occupations with high exposure and high complementarity (HEHC) are likely to benefit from AI adoption, whereas those in high-exposure but low-complementarity (HELC) roles would face challenges. Occupations with low exposure (LE) are less affected directly.[5]

7. The C-AIOE index is applied to the 2023 EU Labor Force Survey (EU-LFS) at the 3-digit occupational level across various socio-demographic groups to assess AI-related labor market implications for Sweden. Occupations with AIOE value above the 3-digit median are classified as high-exposure, and those with complementary scores above the median, also at 3-digit level, are categorized as having high complementarity. The three mutually exclusive groups—HEHC, HELC, and LE—are defined by combining these two dimensions.

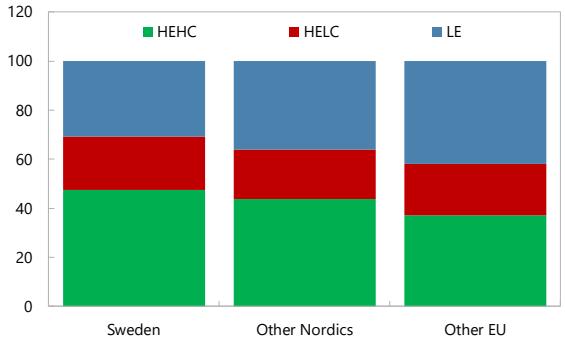
8. The considerable uncertainty surrounding the impacts of AI implies that findings from available evidence are far from conclusive. Empirical evidence on actual labor market effects is still tentative, even in the US, where AI is most extensively used, and studies using different methodologies often reach divergent conclusions (Kolko, 2026). The results in this note are based on the task content of occupations under current conditions. These task contents may evolve as AI technologies continue to develop, especially as Europe accelerates investment in data centers.

9. The Swedish labor force is more exposed to AI than most European countries, with a large share of workers positioned to benefit from AI adoption because their tasks tend to complement AI. Overall, about 70 percent of the Swedish labor force falls into high-exposure occupations, similar to other Nordic countries. Among these workers, roughly 70 percent are in occupations where AI is largely complementary, slightly higher than in the rest of the Nordic region. Sweden, together its Nordic peers, thus outranks other EU countries on both measures. HEHC occupations mostly consist of professionals across a range of fields, including business, education, science and engineering, and sales.

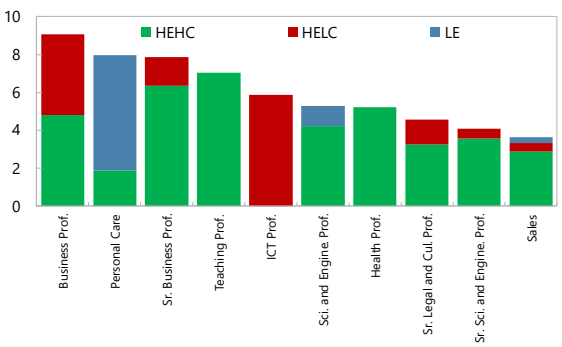
[4] Notable papers include Autor, Levy and Murnane (2003), Autor (2015), Acemoglu and Restrepo (2019), and Autor and others (2024); see Acemoglu, Kong and Restrepo (2025) for a recent survey.

[5] Nevertheless, workers in these occupations can be affected indirectly through spillover from the HE occupations, for instance from the complementarity in production or higher demand to the services they provide; see for example, Autor and Dorn (2013), Eeckhout, Pinheiro and Schmidheiny (2014), and Jaumotte and others (2026).

Figure 3. Exposure to AI of Swedish Labor Force by Occupation



Sources: EU-LFS; and IMF staff calculation.



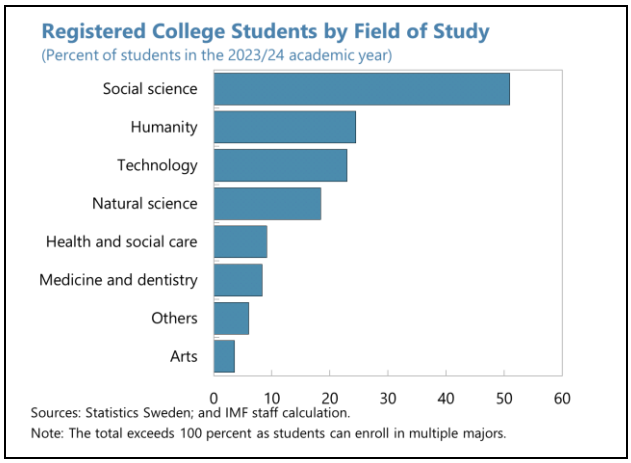
Sources: EU-LFS; and IMF staff calculation.

10. Nevertheless, ICT professionals in Sweden appear particularly vulnerable to labor market disruption from AI adoption. According to the C-AIOE index, all ICT professionals in Sweden belong to HELC occupations, and face greater displacement risk. These professionals, at the 3-digit level, correspond to software and applications developers, and database and network professionals (ISCO-08 codes 251 and 252). Among all 127 three-digit occupations, these two rank only in the 26th and 29th percentiles, respectively, which is well below the median in terms of complementarity, confirming that the concern reflects their underlying task content rather than a classification artifact.[6] This finding echoes recent Swedish evidence showing slower employment growth among young workers in AI-exposed occupations compared to other groups of workers (Lodefalk and others, 2026). In ICT industry, Swedish employers increasingly prioritize experienced, specialist profiles as routine programming tasks become automated, leaving new graduates at a disadvantage; nearly one-third of ICT graduates now have to work outside their field of training.[7]

[6] HELC business professionals (code 33) at 3-digit level include financial professionals (code 331), administrative secretaries (code 334), and government regulatory professionals (code 335), with their respective percentiles in AI complementarity being 35th, 21st, and 48th.

[7] The observation comes from the news release from Sweden's National Agency for Higher Vocational Education on December 17, 2025 (in Swedish).

11. Beyond ICT occupations, Sweden faces a broader challenge of skill imbalance, reflecting the labor market's difficulty in keeping pace with firms' demand for new competences. Jaumotte and others (2026, Figure 12.4) construct a new Skill Imbalance index comparing each country's degree of skill imbalance to that of the US. According to this measure, Sweden exhibits one of the highest degrees of excess demand among the 36 countries covered, second only to Luxembourg. The imbalance stems largely from the education system's limited capacity to equip students with emerging skills, as reflected in the Skill Readiness index developed in the same study, where Sweden ranks 11th out of 24. The Skill Readiness index has three components, capturing, respectively, a country's capacity to (1) supply graduates with new skills, (2) provide adults with opportunities in job-related training, and (3) the proficiency of the current workforce. Sweden's lukewarm performance is mainly driven by its weak capacity in (1), while it maintains leading positions in (2) and (3). One illustration is that in the 2023/24 academic year, 75 percent of the registered students enrolled in humanity and social sciences programs, while only about 40 percent in science and engineering fields (text figure).[8]

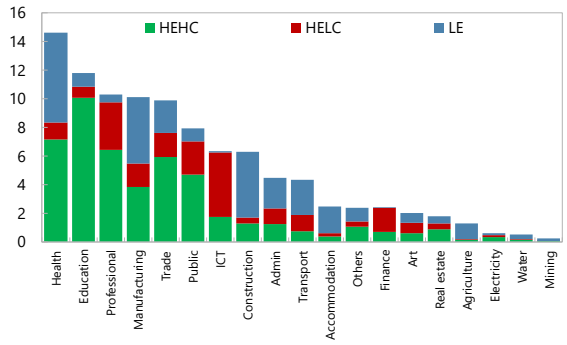


12. The public sector in Sweden has considerable potential to benefit from AI (Figure 4). The public sector is proxied by the public administration, education, and health care sectors (NACE 1-digit sectors O, P, and Q), which together employ about one-third of the workforce. Professionals in these sectors generally see strong complementarity between their jobs and AI, a pattern observed across almost all teaching, health care, and business professionals. By contrast, the higher vulnerability in the private sector mainly reflects ICT professionals and clerical occupations. Overall, close to two-thirds of public sector workers could experience productivity gains from AI adoption, compared with less than 40 percent of workers in the private sector. The pattern mirrors that in other Nordic countries and is more favorable than in the rest of Europe.

[8] The total exceeds 100 percent because students can enroll in multiple majors. In the 2023/24 academic year, about 40 percent of students choose double major.

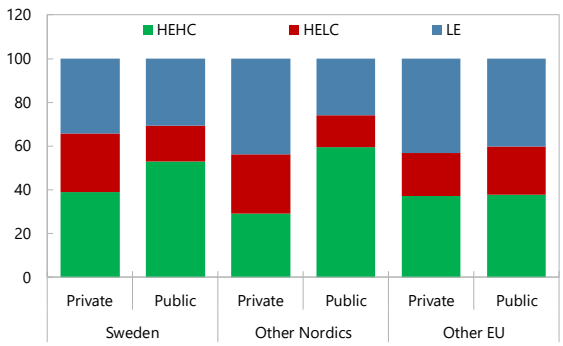
Figure 4. Exposure to AI of Swedish Labor Force by Sector

Exposure to AI by Industry: Sweden
(Percent of total employment)



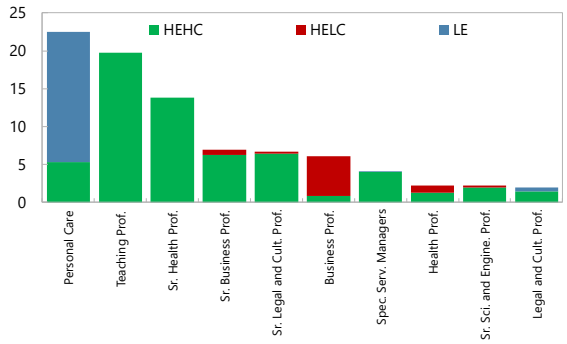
Sources: EU-LFS; and IMF staff calculation.

Exposure to AI by Broad Sector: Sweden
(Percent of employment by broad sector)



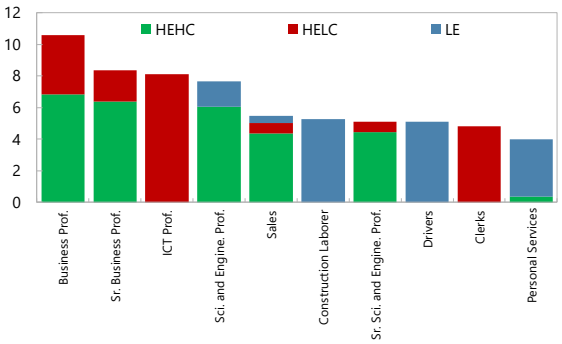
Sources: EU-LFS; and IMF staff calculation.

Exposure to AI by Occupation in Public Sector: Sweden
(Percent of public sector employment)



Sources: EU-LFS; and IMF staff calculation.

Exposure to AI by Occupation in Private Sector: Sweden
(Percent of private sector employment)

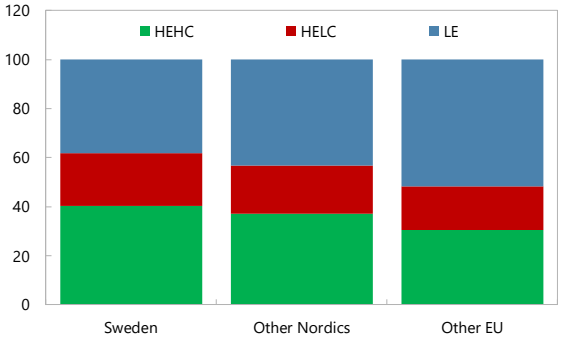


Sources: EU-LFS; and IMF staff calculation.

13. Female workers in Sweden are generally more exposed to AI and also display higher complementarity (Figure 5). Nearly 70 percent of women work high-exposure occupations, and more than two-thirds of these jobs also exhibit strong complementarity. For men, the corresponding shares are slightly lower, at 62 percent and 65 percent, respectively. Among vulnerable female workers, the main groups are financial professionals, administrative secretaries, government regulatory professionals, and general clerks, whereas vulnerable male workers are predominantly ICT professionals. At the same time, about 13 percent of female personal care and personal services workers, and 17 percent of male construction laborers, drivers, and machine operators are largely shielded from AI-related disruptions.

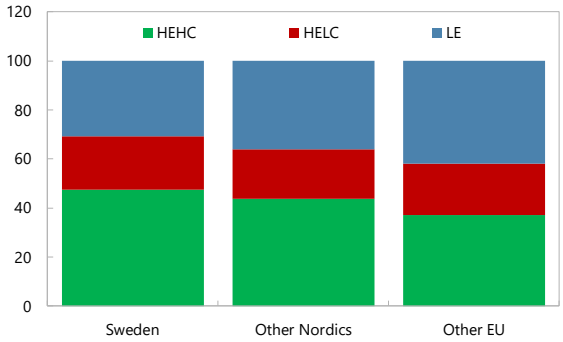
Figure 5. Exposure to AI of Swedish Labor Force by Gender

Exposure to AI for Men: Sweden and EU Countries
(Percent of male employment)



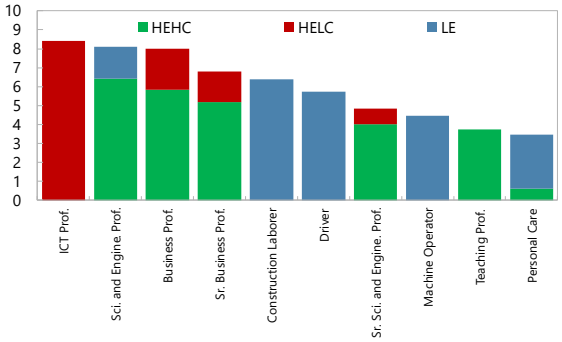
Sources: EU-LFS; and IMF staff calculation.

Exposure to AI for Women: Sweden and EU Countries
(Percent of female employment)



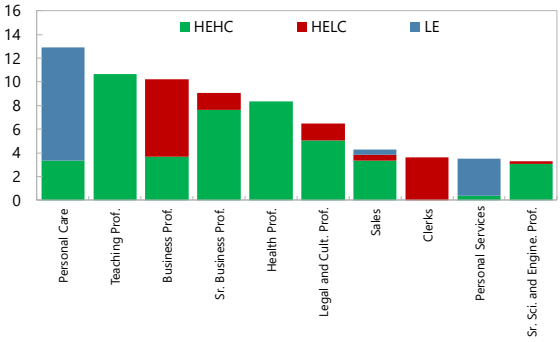
Sources: EU-LFS; and IMF staff calculation.

Exposure to AI by Occupation for Men: Sweden
(Percent of male employment)



Sources: EU-LFS; and IMF staff calculation.

Exposure to AI by Occupation for Women: Sweden
(Percent of female employment)

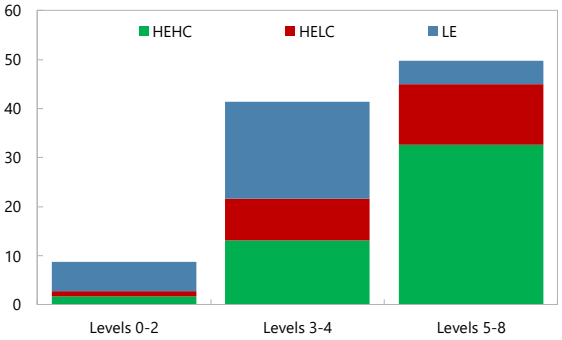


Sources: EU-LFS; and IMF staff calculation.

14. Less educated, low-income, young and immigrant workers may need additional support to navigate the labor market challenges (Figure 6). These groups often overlap, and given Sweden's generally skilled workforce, they make up only a relatively small share of workers; for example, fewer than 10 percent of workers have less than lower secondary education. Nevertheless, individuals in these socio-demographic groups are disproportionately unlikely to benefit from AI, either because their jobs have low exposure or low complementarity. Their limited financial buffers also make it harder for them to adjust to the transition without targeted assistance.

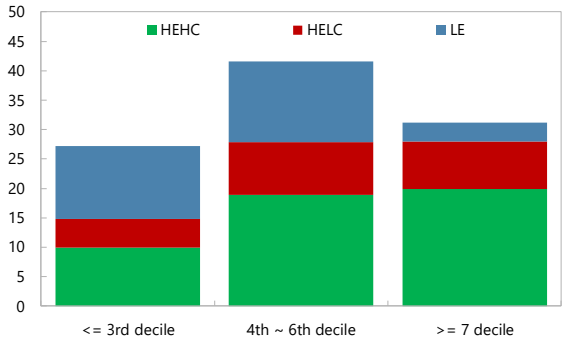
Figure 6. Exposure to AI of Swedish Labor Force by Other Standards

Exposure to AI by Education: Sweden
(Percent of total employment)



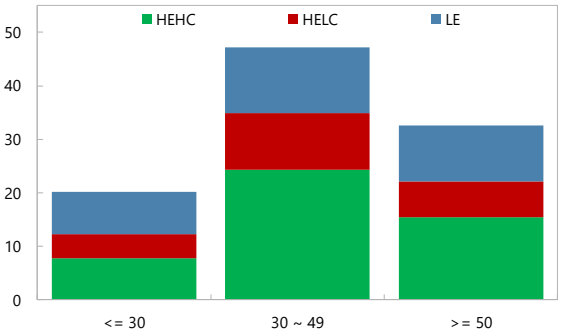
Sources: EU-LFS; and IMF staff calculation.

Exposure to AI by Income Group: Sweden
(Percent of total employment)



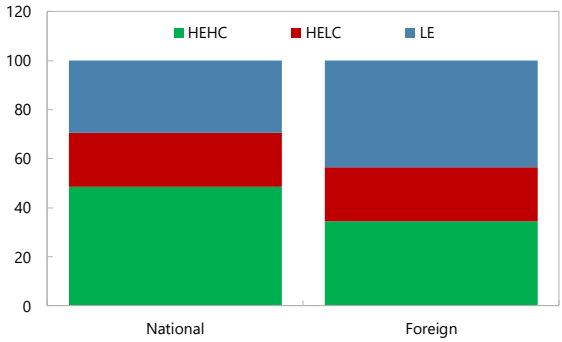
Sources: EU-LFS; and IMF staff calculation.

Exposure to AI by Age: Sweden
(Percent of total employment)



Sources: EU-LFS; and IMF staff calculation.

Exposure to AI by Immigration Status: Sweden
(Percent of employment by immigration status)

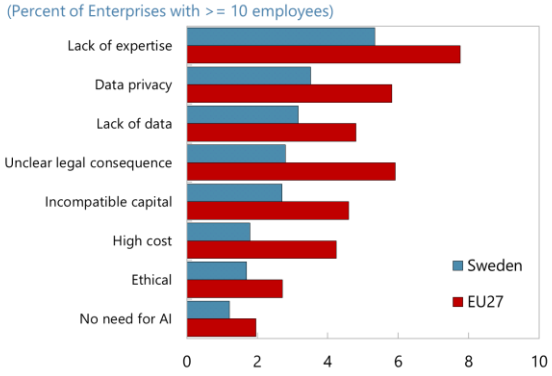


Sources: EU-LFS; and IMF staff calculation.

C. The Road Ahead

15. Sweden should continue to encourage AI adoption among enterprises, as nearly half of its labor force is well-positioned to receive a productivity boost. Swedish enterprises, on average, face fewer obstacles to deploying AI than their European peers. Nonetheless, difficulties in recruiting workers with the right skills, limited access to data, and legal uncertainties including around privacy protection, are among the most binding constraints (Text Figure). Given that Sweden's abundance of data is one of its key strengths in the AI ecosystem, clearer and more harmonized regulation, particularly the alignment with EU frameworks, is essential to easing the latter two barriers. Implementing relevant measures outlined in the Roadmap, Digitalization Strategy, and AI Strategy would substantially advance this agenda. Horizontal policies that promote

Barriers to Use AI: Sweden and EU
(Percent of Enterprises with >= 10 employees)



Sources: Eurostat; and IMF staff calculation.

technology diffusion and improve resource allocation (IMF, 2025; Productivity Commission, 2024, 2025) are equally relevant in supporting effective AI uptake.

16. Adapting the education system offers a fundamental solution to addressing skill imbalances in the labor market. Expanding the share of students choosing science or technology fields provides the most durable solution to evolving skill needs driven by technological changes. Key measures include raising the quality of pre-college education, improving guidance and information provided to students on choosing their fields of study, and strengthening linkages between universities and industry. Closer university-industry collaboration could enhance the employment and earning prospects of graduates in science and technology programs, while helping to alleviate the elevated unemployment pressures faced by labor market entrants.

17. Active labor market policies with targeted support for highly vulnerable groups can smooth their adjustment cost. Sweden already has strong capacity in upskilling and reskilling the workforce, but this can be further enhanced by expanding opportunities in adult education, vocational education and training, and on-the-job learning closely aligned with firms' skill needs. The social safety net should strike an appropriate balance between cushioning transition costs and maintaining incentives for retraining (Ljungqvist and Sargent, 1998). Labor market programs also need to be better tailored to individuals outside the labor force, particularly those with low educational attainment and immigrants.

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