ASIA ECONOMICS ANALYST

Gen-AI in India: Jobs Crosswinds, Productivity Tailwinds

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Generative Artificial Intelligence (Gen-AI) is likely to have wide-ranging effects on the macroeconomy. In our baseline view, we see the adoption of Gen-AI as a medium-term positive for India's growth outlook, even as the labour market effects are likely to be uneven.

- **More complement than substitute:** Extending our global team's methodology, we estimate that Gen-AI could perform 9-17% of the tasks currently undertaken by India's non-agricultural workforce, depending on assumptions about the level of task complexity that it can perform. We further classify occupations by the share of task content exposed to Gen-AI: occupations with high exposure are more likely to face substitution, while those with moderate exposure are more likely to be complemented. Weighting these occupations by employment across sectors, we estimate 8-12% of non-agricultural employment is at risk of substitution, while 42-48% of non-agricultural employment is likely to be complemented, with the balance remaining largely unaffected.
- **Gen-AI likely to reshape the composition of occupations:** Based on occupation-level analysis, we estimate employment declines are likely to be concentrated in occupations like routine clerical support, professional and technician. Meanwhile, routine-physical occupations, followed by craft and trade-related workers and machine operators, may see an increase in employment, as physical, manual and interpersonal tasks remain difficult to automate.
- **Exposure is concentrated in services:** Healthcare, education, financial and professional services appear more exposed to AI-related augmentation through diagnostics and data analytics, while IT-enabled business-process services (BPS) and postal & telecom services face greater substitution risk given their concentration in repetitive, codifiable tasks. Manufacturing is less directly affected given the more physical task mix. An important caveat is that Gen-AI adoption, as with earlier technology cycles, is also likely to create new job categories over time, which is outside the scope of this report.
- **Productivity gains could be meaningful, but timing is difficult to predict:** Our baseline suggests Gen-AI adoption could lift annual labour-productivity growth by around 0.4pp over a 10-year period, with a wider range of 0.1pp to 0.8pp depending on the complexity of tasks that it is able to perform.

Knowledge-intensive services i.e. healthcare, education, media, parts of financial and professional services look best placed to benefit, while gains in construction and manufacturing are likely to be limited.

- **Sequencing of adoption will matter.** The main productivity upside is likely to come from broad-based deployment across firms. If deployment of labour-augmenting Gen-AI is prioritized before substitution-intensive deployment, productivity gains would likely broaden before labour-market disruption becomes more visible.
- **Global capability centre (GCC) resilience may cushion substitution risks to routine business services**. In our view, while routine IT-BPS functions face substitution risk, aggregate tech sector employment (around 2% of non-agricultural employment), services exports, and GCC expansion remain resilient, as of now. We find that headcount rationalization has been concentrated in the top 6 IT services firms (net employment reduction around 64k out of 1.7mn), while the rest of the technology services sector (including the GCCs) have added around 0.7mn headcount to reach 4.4mn over the last three years.

Key risks to our baseline view:

- **Infrastructure remains a key constraint.** India's Gen-AI diffusion will depend not just on software capability, but also on compute affordability, data-centre buildout, reliable power, water availability, and broader digital infrastructure. With India's current data-centre capacity of only around 1GW (1% of global data centre capacity), scaling AI adoption will require substantial investment in both physical and digital infrastructure.
- **Rising protectionism in destination markets for services exports.** Beyond the usual dependence on global ICT spending, a more restrictive policy environment around cross-border data, digital services, and the use of foreign AI models could weigh on services export growth. For example, the EU has tightened scrutiny of cross-border data transfers, while the US has increasingly emphasized AI sovereignty, potentially advocating for restriction of deployment of Gen-AI models outside the US.

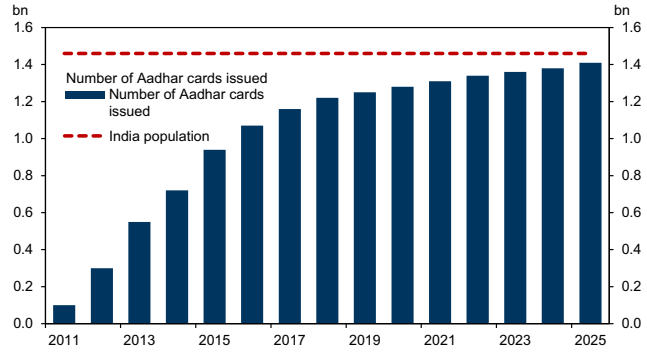
Gen-AI Adoption in India: More Complement Than Substitute

The rapid advancement of generative artificial intelligence (Gen-AI) marks the latest in a series of technological advancements that have shaped India's growth and labor markets over recent decades. In this Asia Economics Analyst, we place the current Gen-AI adoption in the context of India's past technology adoption cycles and assess the Indian labor market's potential exposure to Gen-AI and the scope for productivity gains from the Gen-AI adoption. We further document Gen-AI-related capex in India, including data centres, semiconductor chips and digital infrastructure. Finally, we explore what Gen-AI adoption could look like in India – specifically, compute and physical infrastructure requirements needed to scale Gen-AI use across its 1.4bn population.

History of Internet and Technology Developments in India

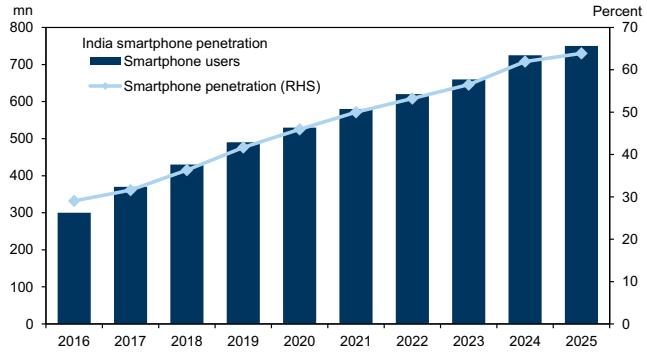
India's past technology adoption accelerated when connectivity costs fell and digital infrastructure scaled. In our view, Gen-AI adoption is likely to follow a similar path, with the pace and breadth of diffusion depending on cheaper compute, reliable power, and the build-out of supporting digital and physical infrastructure. India's digital evolution moved through successive infrastructure-led phases - from an early internet phase that was limited and rationed, to mobile and mobile internet adoption, and then to the build-out of digital public infrastructure (Exhibit 1). Over the last ten years, the expansion of the India Stack[1], broader smartphone penetration (Exhibit 2), and a sharp decline in mobile data costs have materially broadened digital access and usage.

Exhibit 1: The number of Aadhar cards (digital identification) issued has grown significantly since their launch



Source: UIDAI

Exhibit 2: India's smartphone penetration has more than doubled in the last decade

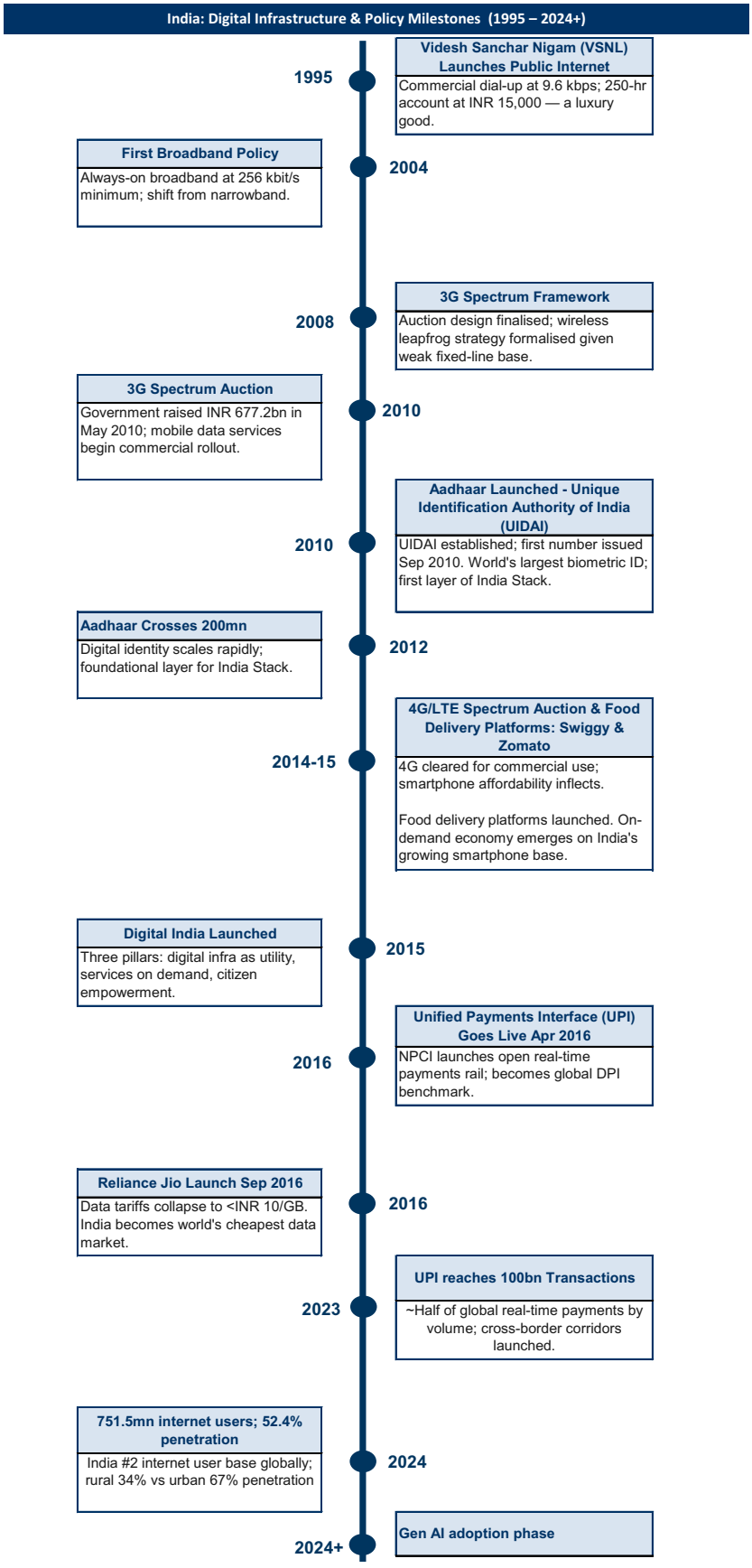


Source: Various news articles, Goldman Sachs Global Investment Research

Globally competitive digital services: These technology cycles also helped create a globally competitive digital services ecosystem. The rise of the Information Technology-Business Process Management (IT-BPM) sector embedded India more deeply into global services value chains, built a digitally skilled workforce, and reinforced the role of infrastructure and affordability as key enablers of technology diffusion. Affordable mobile internet and rising smartphone penetration also enabled the emergence of food delivery platforms in India, which scaled on digital commerce.

[1] The scaling of Aadhar-linked digital infrastructure, e-KYC, and United Payments Interface (UPI) created infrastructure for identity verification and payments while smartphone adoption expanded India's digital user base (India's active internet user base grew from around 300mn in 2016 to over 700mn in 2024).

Exhibit 3: History of Technology Development in India



Source: Goldman Sachs Global Investment Research

Prior technology waves in India were enabled by falling connectivity costs and scalable digital infrastructure. In our view, Gen-AI adoption is likely to depend similarly on compute affordability, power availability, and supporting digital infrastructure. At the same time, Gen-AI capabilities appear to be advancing materially faster than in earlier technology cycles, with recent models moving well beyond basic text generation toward a broader set of routine knowledge-based tasks, that are difficult to distinguish from human output. This unusually rapid improvement has important implications for India's labour market, and also points to potentially meaningful productivity gains, particularly across service-oriented and knowledge-intensive sectors.

Labour Market Impact from Gen-AI in India

To analyze these implications, we first examine the extent to which the Indian labour market is exposed to Gen-AI adoption, and then assess the degree to which it can augment the existing workforce.

We estimate Gen-AI's potential labour-market impact by combining task-level Occupational Information Network (O*NET) data with International Labour Organization (ILO) occupation-level employment data for India. We begin with O*NET, which contains information on approximately 900 occupations and 39 underlying work activities, in the US. We identify 13 of these 39 work activities as exposed to Gen-AI-related automation *(Please see Appendix 1 for details)* and use the associated task difficulty levels (on a 1-6 scale)[2] to construct a Gen-AI exposure score for each occupation, as per our global economics team's methodology.

Specifically, we take a complexity-weighted average of the tasks to estimate the share of each occupation's task content potentially automatable by Gen-AI. In our baseline, we assume that the difficulty assigned to similar tasks is similar across the US and India.

For instance, tasks like "*Studying scripts to determine project requirements*", "*Monitoring financial performance*" are assigned a **difficulty level 2**, while tasks like "*Monitoring a patient during treatment*" or "*Analyzing data to identify trends and relationships between variables*" or "*Research topics in area of expertise*" are assigned a **difficulty level of 6** (*Please see Appendix 1 for details*).

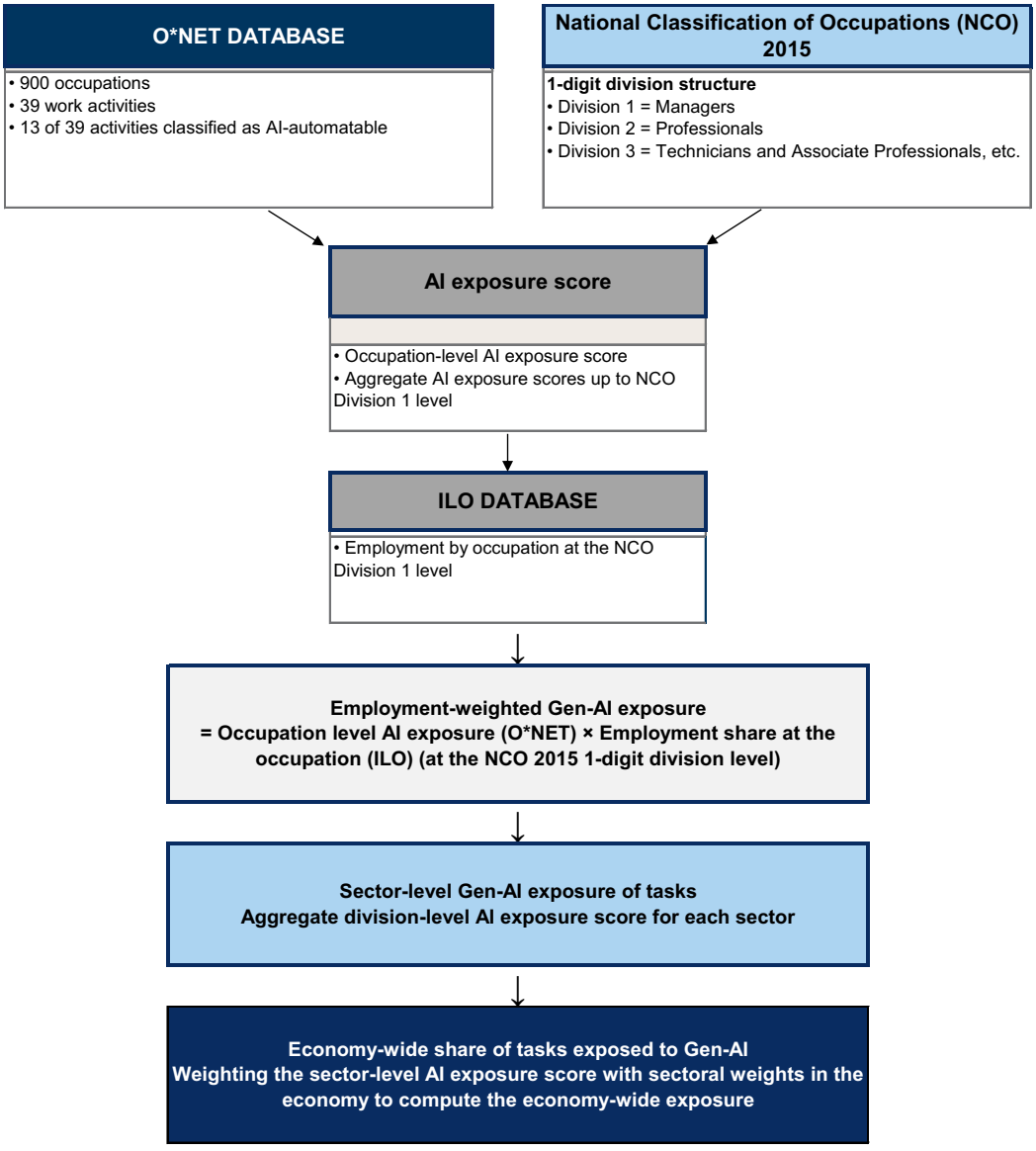
We then aggregate and map the occupation-level exposure scores to India's occupation structure using employment data from the ILO, which is available at the National Classification of Occupations (NCO) 2015 Division-1 occupational level (e.g., Managers, Professionals, Technicians and Associate Professionals, Clerical Support Workers, and others).

The ILO database also provides the distribution of these occupations across 22 broad sectors, allowing us to estimate the share of each sector's workload that is potentially exposed to Gen-AI. Since employment data for India are available only at the broad NCO-2015 Division-1 occupational level, we average the occupation-level Gen-AI exposure scores across the underlying sub-divisions to arrive at the exposure scores at the NCO-2015 Division 1 level, resulting in a narrower distribution of AI exposure score than at the more granular occupation level (Exhibit 4).

[2] The maximum difficulty level of a task (across occupations) in the O*NET database is 6.7

Finally, we aggregate these estimates across occupations and sectors to estimate the share of the economy's total task content that could potentially be exposed to Gen-AI-related automation and augmentation. In our baseline, we assume that occupations involving predominantly physical or outdoor tasks—such as in agriculture—have no exposure to Gen-AI-driven automation.

Exhibit 4: Framework for estimating the share of employment potentially exposed to Gen-AI-related automation



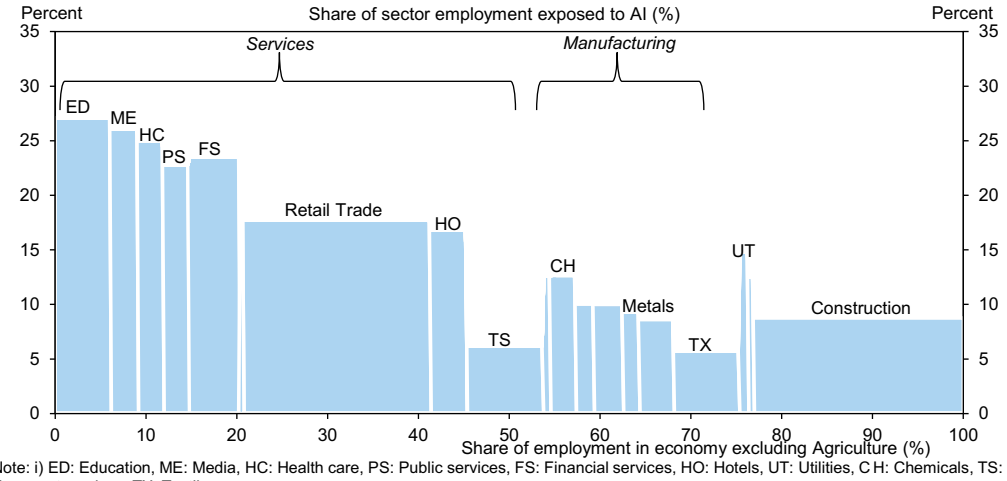
Source: Goldman Sachs Global Investment Research

Gen-AI exposure scores vary across occupations, ranging from around 2% to 40% of task content depending on both the occupation and the level of task complexity Gen-AI is able to automate. We first weight these occupation-level exposure scores by employment to derive sector-level estimates of the share of task content exposed to Gen-AI. We then weight each sector's exposure by its employment share in the overall economy to estimate the economy-wide share of tasks exposed to Gen-AI-related automation.

Under our baseline, if Gen-AI can complete tasks of difficulty levels up to 3-4, such as

"*monitor organizational compliance with regulations*" (difficulty level 3), "*examine financial records*" (difficulty level 3) or "*analyzing trends and relationships in data*" (difficulty level 4), then we estimate that around 13-15% of non-agricultural work tasks are exposed to Gen-AI-related automation. Exposure is high in the services sector, with education, media, and financial and professional services[3]. Meanwhile, more physically intensive sectors such as construction show relatively low task exposure (~8%) (Exhibit 5).

Exhibit 5: Services sector has the highest share of tasks exposed to Gen-AI related automation Note where is tech services sector



Note: i) ED: Education, ME: Media, HC: Health care, PS: Public services, FS: Financial services, HO: Hotels, UT: Utilities, CH: Chemicals, TS: Transport services, TX: Textiles.
ii) ILO's classification includes computer programming, information services and parts of consultancy activities in **media**, while parts of consultancy and professional services in **financial services**

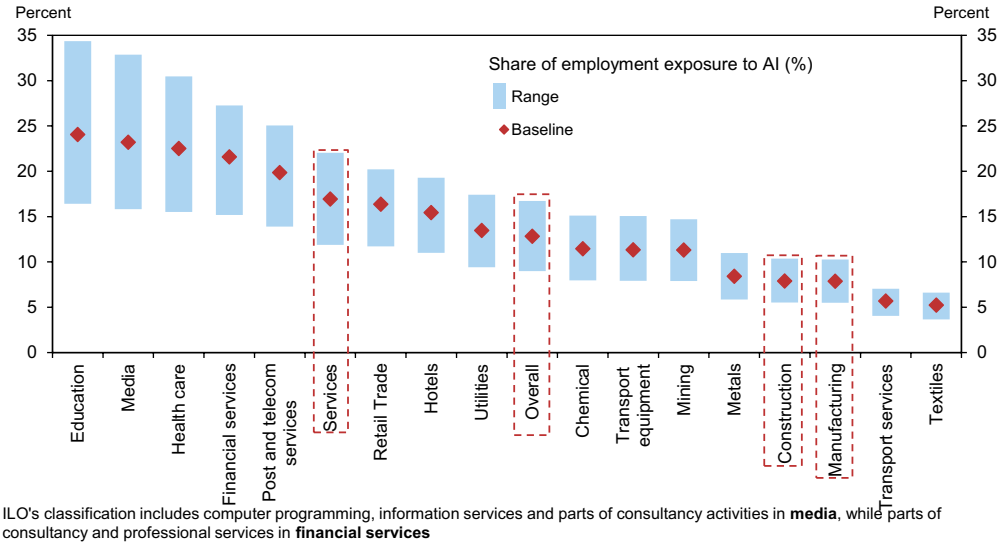
Source: O*NET database, ILO, Goldman Sachs Global Investment Research

We construct alternative scenarios by varying the difficulty threshold of tasks that Gen-AI can automate. If Gen-AI is able to perform only lower-complexity tasks (up to difficulty level 2), the share of tasks exposed to Gen-AI declines significantly to 9%. Meanwhile, if Gen-AI is capable of performing more complex tasks (up to difficulty level 6), the share of tasks exposed to AI rises to 17% (Exhibit 6).

Even under the upper-bound scenario, economy-wide share of tasks exposed rises only to around 17% for two reasons. Firstly, our framework identifies only a subset of work activities as potentially automatable by Gen-AI, while the remainder predominantly involve physical execution, interpersonal interaction or supervision that continue to require human input. Secondly, occupations with relatively high Gen-AI exposure scores—such as clerical support workers and technicians—are concentrated in sectors with a relatively low share in overall non-agricultural employment in the economy.

[3] Note as per ILO's classification,
i) Financial and professional services includes financial service activities, insurance, real estate activities, legal and accounting activities, management consultancy services, advertising etc
ii) Media, cultural, graphical sector includes motion picture, video and television programme production, computer programming, consultancy and related activities, information service activities etc.

Exhibit 6: Based on our estimates around 9-17% of India's current work tasks may be exposed to Gen-AI automation



ILO's classification includes computer programming, information services and parts of consultancy activities in **media**, while parts of consultancy and professional services in **financial services**

Source: Goldman Sachs Global Investment Research

More complement than substitute

We estimate that **around 9-17% of India's non-agricultural tasks are exposed to Gen-AI driven automation**, but the labor-market impact will depend on how much of each occupation's task content can be automated. Where exposure is limited, Gen-AI is more likely to complement workers by reducing time spent on routine tasks and freeing capacity for higher-value work. Where exposure is higher, substitution risks rise. Meanwhile, occupations dominated by physical tasks are likely to remain unaffected.

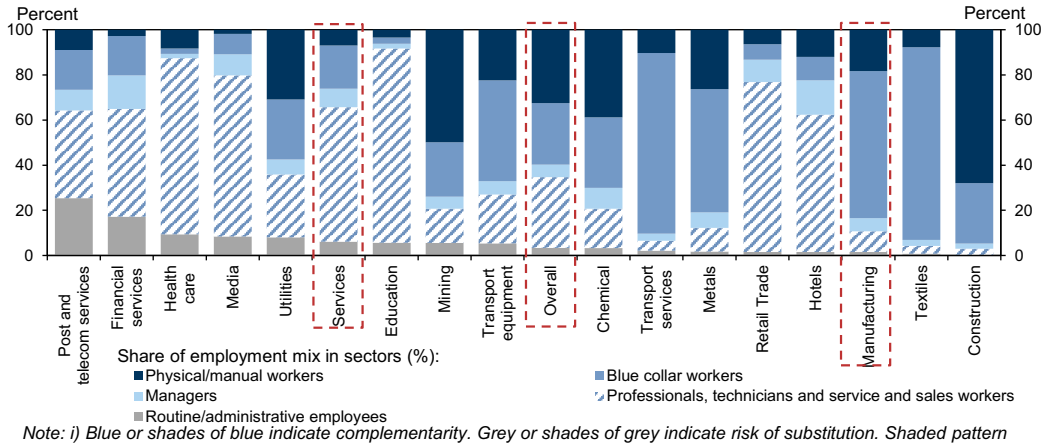
To illustrate this, we group workers into five broad categories: routine and administrative workers (clerical support), who face the greatest substitution risk; top-management employees (managers), who are more likely to be complemented; professionals, technicians and service and sales workers, who face a mixed outcome[4]; and blue-collar and manual workers[5], who should see more limited direct impact from Gen-AI adoption.

At the sector level, healthcare, education, media and entertainment, and parts of financial services appear more likely to benefit from labor augmentation, reflecting their relatively higher share of skilled workers. In contrast, post and telecom services, along with other routine service segments, face higher substitution risk given their greater concentration in customer support, documentation, and processing tasks. Sectors such as construction, manufacturing, and mining remain less directly exposed because task content is still more physical in nature. (Exhibit 7).

[4] Services and sales workers include personal service workers like travel attendants, conductors, cooks, hair stylists etc who are likely to remain unaffected, while cashiers, customercare executives, operators face a high risk of substitution

[5] Manual workers in elementary occupations include Cleaners and Helpers, Labourers in Mining, Construction, Manufacturing and Transport, Food Preparation Assistants, Street and Related Sales and Services Workers, Refuse Workers and Other Elementary Workers.

Exhibit 7: Skilled-service sectors appear better placed for AI complementarity, while routine service sectors face higher substitution risk Note where is tech services sector



Note: i) Blue or shades of blue indicate complementarity. Grey or shades of grey indicate risk of substitution. Shaded pattern indicates mixed outcome.

ii) ILO's classification includes computer programming, information services and parts of consultancy activities in ***media****, while parts of consultancy and professional services in* ***financial services***

Source: ILO, Goldman Sachs Global Investment Research

- For instance, in **financial services**, Gen-AI can complement analyst roles by automating some form of basic modelling (difficulty level 3), but may completely substitute routine back-office functions like basic compliance checks (difficulty level 1). As per ILO's classification, this sector accounts for around 6% of total employment (excluding agriculture).
- In **retail trade**, Gen-AI can complement sales staff through inventory management (difficulty level 2 to 4), while substituting cashier roles via self-checkout systems (difficulty level 1), some of which are already in place. This sector accounts for around 20% of total employment (excluding agriculture)
- In **healthcare**, Gen-AI can augment doctors by assisting in diagnostics and treatment planning (difficulty level 6), but is more likely to substitute administrative tasks like scheduling an appointment (difficulty level 2). This sector accounts for around 3% of total employment (excluding agriculture)
- In **education**, Gen-AI can complement tutors through personalized learning tools (difficulty level 3-4), while substituting routine tasks like grading assessments or tests with standardized answers (like MCQ tests (difficulty level 1)). This sector accounts for around 6% of total employment (excluding agriculture)

A classification issue is worth noting. Under the ILO employment data, parts of India's IT and IT-enabled services workforce sit within media and entertainment (high complementarity sector), while others are grouped within financial services (high substitution risk). India's IT and IT-enabled services sector employs 4.0 – 6.0mn[6] people, while the sector-level split based on the ILO data may understate the importance of AI for India's broader tech services sector. We therefore discuss implications for IT services and GCCs separately later in the report (See box: *India's Global Capability Centres (GCCs)*

[6] As per CMIE and Nasscom data as of FY25

and IT Services Industry – Gen-AI Risk or Opportunity?).

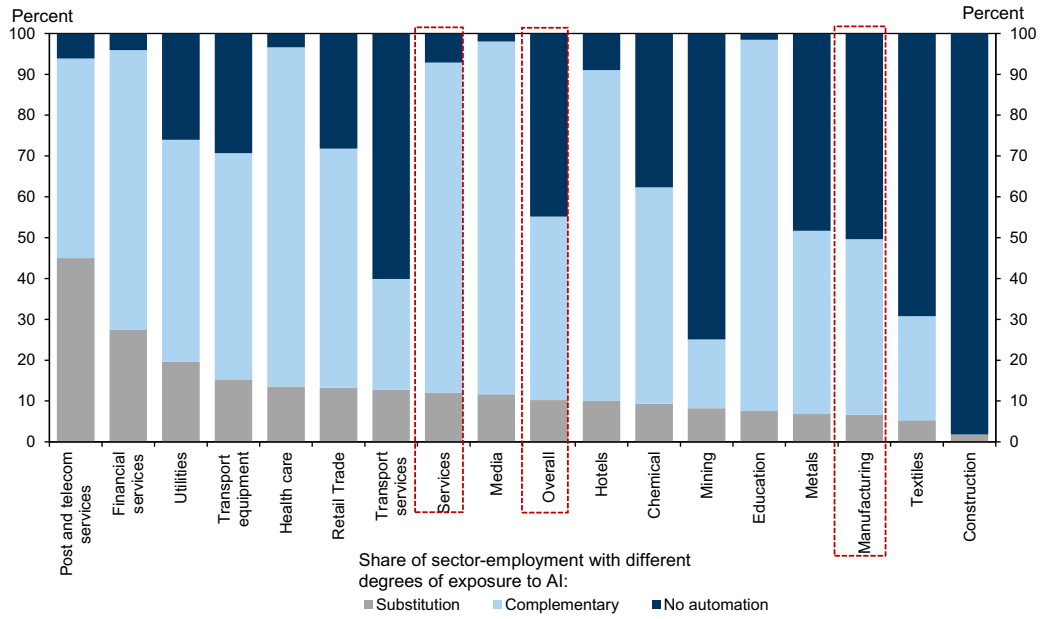
Labour Market Outcomes: More complement than substitute

To connect task exposure with potential labor-market outcomes, we classify the occupations into three groups. We assume that occupations where less than 10% of the task content is exposed are likely to remain largely unaffected. Occupations where 10-35% of task content are exposed are likely to be complemented. Finally, occupations where more than 35% of task content are exposed (top decile of the AI-exposure score in our distribution), may be substituted — proportionate to the share of task content exposed.

On this basis, we estimate that **around 8-12% of current non-agricultural employment is at risk of substitution, while 42-48% is more likely to be complemented, while the balance is likely to remain unaffected.** In our view, this suggests the labor-market effect of Gen-AI adoption in India is more likely to be augmentation than broad-based substitution.

At the sector level, healthcare, education, and media and entertainment appear most exposed to complementarity, while post and telecom services and parts of financial services screen as more vulnerable to substitution, reflecting the large concentration of customer-support and documentation that can be increasingly automated by Gen-AI (Exhibit 8). However, the aggregate employment effect may be contained where sectoral employment shares are relatively small, e.g. post and telecom services only account for around 0.5% of total employment (excluding agriculture).

Exhibit 8: Most AI-exposed employment in India is more likely to be complemented than substituted



Note: ILO's classification includes computer programming, information services and parts of consultancy activities in **media**, while parts of consultancy and professional services in **financial services**

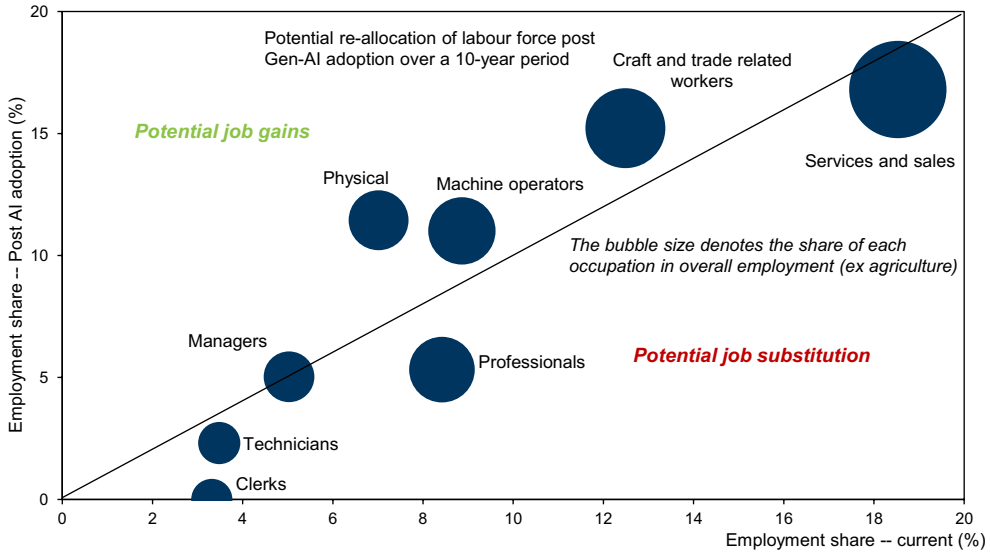
Source: O*NET, ILO, Goldman Sachs Global Investment Research

Potential occupational mix changes due to Gen-AI adoption: We next examine how

AI adoption could reshape the composition of employment across broad occupational groups. We first identify the granular occupations within each NCO 2015 division 1 level (e.g., accountants, software developers) that are classified as facing substitution risk under our framework and then aggregate these results to the broader occupational groups. Given that physical, manual and interpersonal tasks are likely less susceptible to automation via Gen-AI adoption, substituted workers may gradually transition towards such occupations through the Gen-AI adoption period.

Our estimates suggest that employment declines are likely to be concentrated in routine or administrative occupations like clerical support (around 3% of non-agricultural employment), followed by professionals (around 3%), services and sales workers (around 2%) and technicians (around 1%) (Exhibit 9). Meanwhile, physical occupations[7] may see an increase in employment (around 4%), followed by craft and trade-related workers (around 3%) and plant and machine operators (around 2%). Overall, Gen-AI is more likely to reallocate labour across occupations over the Gen-AI adoption period.

Exhibit 9: Gen-AI is likely to change occupational composition of employment



Source: ILO, Goldman Sachs Global Investment Research

Estimating the boost to Labour productivity growth from Gen-AI adoption in India

Gen-AI can affect labour productivity in India through two main channels. First, it can raise output per worker in AI-exposed occupations by automating routine tasks and freeing up time to shift toward higher-value tasks. For instance, formal-sector workers in IT services, GCCs, and business services may be redeployed into higher-value analytical, supervisory, or client-facing roles. Second, workers displaced from routine service functions may face weaker re-employment outcomes or move into lower-productivity roles. That said, productivity of this segment of workers can rise if displaced workers are

[7] Physical occupations include cleaners and helpers, labourers in mining, construction etc, street and related sales and services workers and refuse workers.

redeployed into new roles with higher productivity rather than remaining permanently out of work (as referenced in an ILO study).

India's past technology cycles suggest new technology adoption can raise productivity meaningfully. The IT-services expansion in the late 1990s and 2000s lifted services productivity through new digital technologies adoption and labour reallocation into higher value-added activities. The mid-2010s onwards digital stack creation and rising smartphone penetration reduced transaction costs, widened market access and improved utilization of labour and capital which enabled a reallocation of work toward more productive tasks. For example, for bank employees, digitization reduced time spent on paperwork and transaction processing, allowing workers to focus more on customer acquisition and service delivery.

Estimating the productivity boost

To estimate the productivity impact, we combine our Gen-AI exposure scores with RBI KLEMS sector-level labour productivity data. RBI KLEMS provides industry-level measures of labour productivity growth and labour income shares across 27 industries, which we map to the corresponding ILO sectors *(Please see Appendix 2 for details)*.

We decompose the Gen-AI-exposed workforce into three groups:

1. Those whose tasks are complemented (augmented) by Gen-AI and remain employed with higher productivity (augmented share denoted as λ_i)
2. Those whose tasks are substituted (displaced) by Gen-AI and subsequently reallocated to lower-productivity activities (substituted share denoted as δ_i)
3. Those whose tasks are not exposed to Gen-AI ($1 - \lambda_i - \delta_i$)

We assign distinct productivity growth to three worker groups within each sector:

1. Augmented workers, who experience a Gen-AI-adoption driven uplift toward the sector's historical peak productivity growth, further augmented by a labour cost saving channel (as we discuss next)
2. Substituted workers, who are assumed to be reemployed at jobs with productivity growth equal to the bottom quartile of the sector's labour productivity growth over FY12–FY23 (excluding the pandemic period)
3. Non-Gen-AI exposed workers, who continue on their historical baseline productivity growth path

We compute the Labour Cost Saving Rate (LCS_i) for each sector as the share of value added previously attributable to workers whose tasks are substituted by Gen-AI. We assume 50% of this productivity surplus accrues to the remaining workforce, generating an additional uplift to labour productivity. The sector-level LCS is estimated using the sector-level labour income shares from the RBI KLEMS database.

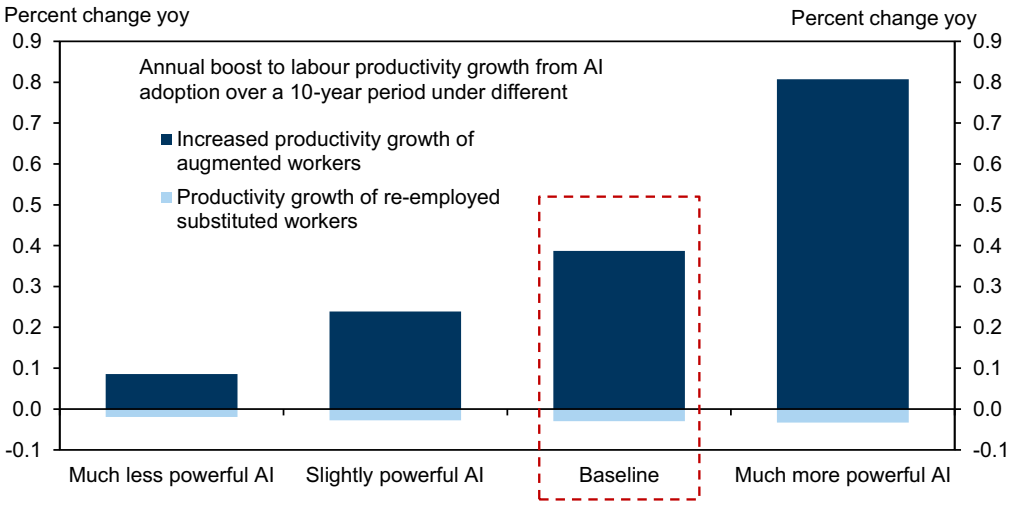
Finally, the displacement-adjusted aggregate labour productivity growth for each sector is computed as the weighted average of the three groups' productivity growth rates (*Please see Appendix for the detailed methodology)*.

Our baseline estimates suggest that the **annual boost to labour productivity growth from Gen-AI adoption in India can be around 0.4pp over a 10-year period**, if Gen-AI

can automate tasks up to a difficulty level of 3-4. Given the uncertainty around the estimated boost to labour productivity growth, we construct 3 additional scenarios depending on the level of difficulty of tasks that Gen-AI can complete.

Under the scenario, where Gen-AI can complete tasks only up to a difficulty level of 2 (i.e. "*Monitoring financial performance*"), we estimate a modest boost to labour productivity growth at around 0.1pp. On the other hand, if Gen-AI is much more powerful and can complete a task with a difficulty level of 6 (i.e. "*Analyzing data to identify trends and relationships between variables"),* then we estimate the boost to labour productivity growth to increase to as high as 0.8pp (Exhibit 10).

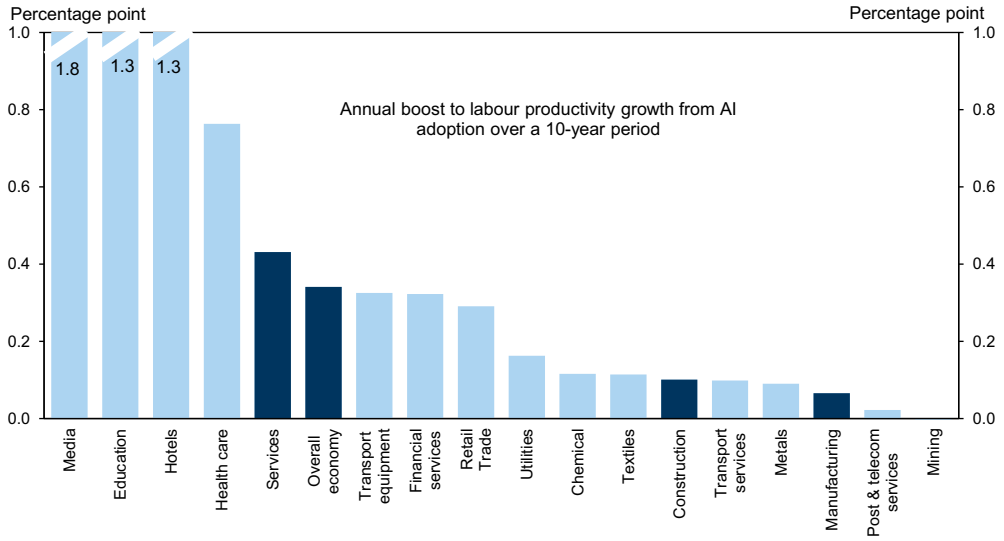
Exhibit 10: We estimate the annual boost to labour productivity growth from Gen-AI adoption in India can range between 0.1-0.8pp



Source: Goldman Sachs Global Investment Research

The largest productivity gains are likely to be concentrated in sectors such as **media and entertainment, education, and healthcare**, where AI is more likely to augment knowledge-intensive work. In contrast, productivity gains are likely to be more modest in sectors such as **textiles, construction and post and telecom services**, where a larger share of tasks remain physical in nature, having a limited impact from Gen-AI exposure (Exhibit 11).

Exhibit 11: Gen-AI adoption could lift India's annual labour-productivity growth over the medium term across sectors



Note: Note: ILO's classification includes computer programming, information services and parts of consultancy activities in **media**, while parts of consultancy and professional services in **financial services**

Source: RBI KLEMS, ILO, Goldman Sachs Global Investment Research

India's Global Capability Centres (GCCs) and IT Services Industry – Does Gen-AI Adoption Pose a Risk or Opportunity?

Investor concerns around Gen-AI have largely centered on whether India's IT services and GCC sectors face disproportionate disruption given their large exposure to routine data processing work. We look at recent evidence on these sectors in this section. While the overall technology sector accounts for only around 2% of non-agricultural employment (IT services sector a smaller share of non-agricultural employment), it is comprised of relatively higher-productivity and better paying jobs, and remains an important driver of services exports.

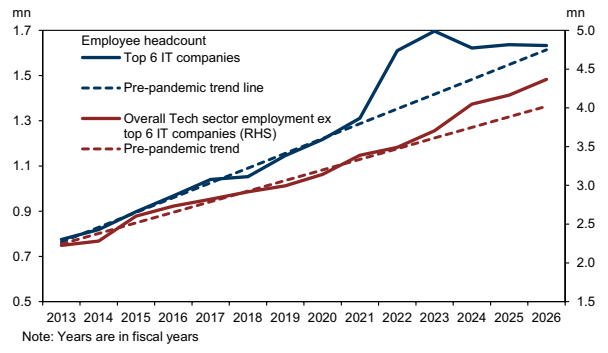
Employment fears appear larger than the evidence would suggest so far

Despite concerns around AI adoption, consistent with the observations in the US, aggregate employment in India's IT services industry has remained broadly resilient. Headcount rationalizations have been concentrated on the large listed IT firms following the post-pandemic hiring surge, while overall industry employment (around 75% of the sector share, ex top 6 IT firms) remains above the pre-pandemic trend (Exhibit 12).

Software services exports remain well above the pre-pandemic trend

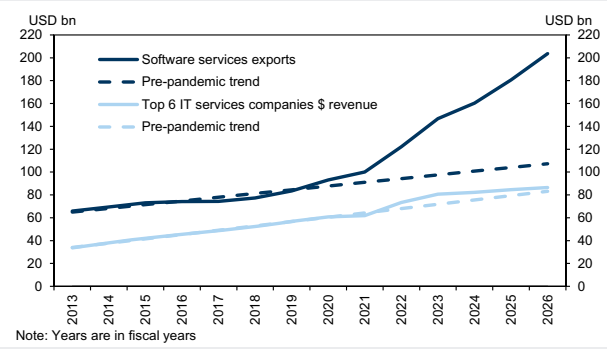
While revenue among the six largest IT services companies has remained around pre-pandemic trend, software services exports have remained well above pre-pandemic trend over the last six years (Exhibit 13). This suggests that software services exports has increasingly been driven by GCCs, and other mid-tier IT services firms.

Exhibit 12: Headcount rationalization has been concentrated among the large IT firms, while the broader sector continues to add jobs



Source: Company reports, NASSCOM

Exhibit 13: Software services exports have remained well above pre-pandemic trend, while revenues of the top IT firms have been in line with trend



Source: Company reports, Goldman Sachs Global Investment Research

Gen-AI may alter the composition of work

The occupations most exposed to substitution are typically routine coding, testing, documentation, data processing and basic business-process tasks. Further, as our equity analysts note, AI-driven productivity gains of large IT services companies are being passed through to clients via lower pricing, limiting the benefits to revenues and margins. They further note that revenue deflation from AI is currently being mostly offset by expansion in scope of work; however, if there were a timing mismatch (downside first and benefit later), revenue growth could come under further pressure. Thus, the net impact on revenues and margins will depend on whether AI-led productivity gains are primarily competed away through lower pricing or offset by a broader scope of work; at this stage, the balance between these forces remains

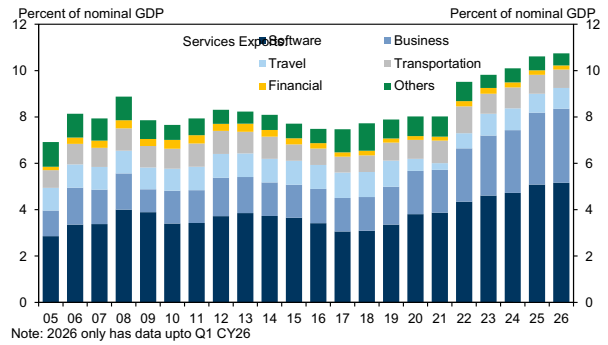
uncertain. Over time, it is possible that AI simultaneously increases demand for higher-value activities such as AI implementation, data engineering, and cybersecurity, which further increases scope of work.

GCC expansion and services exports continue to grow

Services exports from India remained robust over the last two years, rising to around 10.7% of GDP by Q1 CY26 (from 10.1% of GDP in CY24), with software and business services accounting for around 75% share, likely suggesting that productivity gains from automation are being accompanied by new demand for higher-value services (Exhibit 14). India continues to host one of the world's largest technology talent pools and has emerged as a preferred location for multinational corporations establishing GCCs across technology, analytics, finance, operations and product development functions. The number of GCCs in India has grown by around 3x over the last fifteen years, while the number of employees and revenues have grown by around 6x and 8x respectively (Exhibit 15).

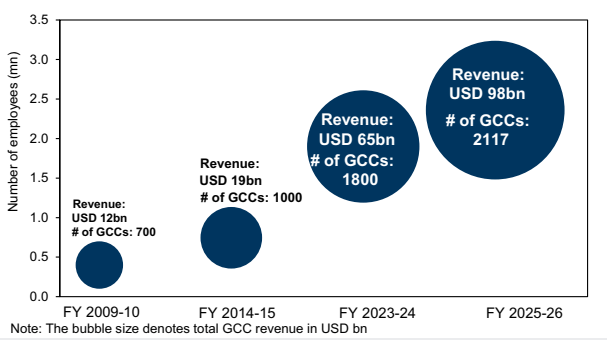
Several AI firms have expanded their presence in India, reflecting both the depth of the talent pool and the growing importance of the domestic AI market. For instance, media reports that OpenAI has established a local presence in India and is actively hiring across technical, customer success and enterprise functions, while Anthropic opened its Bengaluru office in 2026 and is recruiting local talent to support enterprise adoption and developer ecosystems. In addition, firms such as Nvidia employ around 10% of their global workforce in India — not just restricted to software services but engineering and design processes as well.

Exhibit 14: India's computer and business services exports remain strong



Source: RBI

Exhibit 15: Revenues of GCCs have grown nearly 8x over the last fifteen years



Source: NASSCOMM

India's main trade-offs: Key considerations and risks for AI adoption

In our view, India's AI opportunity is meaningful, and sequencing adoption is important. Gen-AI can lift productivity and lower costs, but unlike earlier technology waves, it also requires deeper investment in data, and compute capability. In our view, deployment is likely more complex than earlier technology adoption waves as firms need to restructure workflows, decision-making, and workforce organization.

Early gains are likely to be strongest where AI complements labour: In our framework, sectors such as GCCs, financial services, healthcare, and education appear better positioned to use Gen-AI to raise worker productivity rather than displace labour

outright. These sectors also exhibit some of the highest AI complementarity scores (healthcare has around 83% of tasks that are complementary, while financial services has around 68% of such tasks) in our framework, suggesting that Gen-AI is more likely to augment existing workers and raise productivity. Our analysis also suggests it is important to have augmentation before substitution, as the main risk for India is that if substitution arrives too early (and before adoption), the economy could face a period of weak employment growth before productivity gains broaden out.

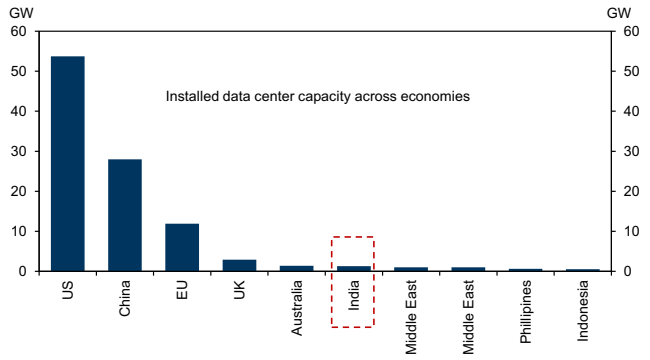
Rising protectionism in destination markets is an external risk to India's AI-linked services exports. Beyond the usual dependence on global ICT spending, a more restrictive policy environment around cross-border data, digital services, and the use of foreign AI models could weigh on export growth, particularly if firms in advanced economies increasingly prefer domestic hosting, local model deployment, or nationally controlled AI stacks. Recent policy moves in major markets include tighter scrutiny of cross-border data transfers in the EU and growing debate in the US and elsewhere around AI sovereignty, localisation, and trusted-compute frameworks.

Infrastructure needs to be buttressed so that it does not become a binding constraint: Gen-AI is not only a software story, but also requires affordable compute, reliable electricity, water, and data-centre capacity. India starts from a relatively low base in Gen-AI-related physical infrastructure, particularly data centre capacity. As Exhibit 16 shows, India's installed data center capacity remains significantly below that of developed markets and China, with the US accounting for around 47% of global installed capacity, followed by China at 25%, while India accounts for around 1% as of 2025[8]. More recent policies in India have made access to compute infrastructure affordable by offering subsidized usage of these facilities to startups and academia at around one-third of the global average cost.

Supporting data-center build-out will also require additional power infrastructure. Our equity analysts estimate that data-center related power demand could rise to around 1.4% of total power demand by FY30. While still modest, this incremental demand would add to peak power deficits of around 6% of demand by FY30, making power an important consideration for scaling AI infrastructure.

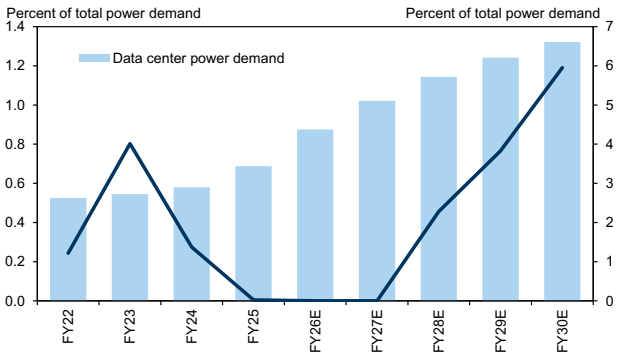
[8] Domestic conglomerates and global technology firms have announced roughly $30bn of annual capex over the next five years, although execution timing remains uncertain.

Exhibit 16: India has a relatively lower installed data center capacity when compared to developed markets and China



Source: Various news articles, Goldman Sachs Global Investment Research

Exhibit 17: Data center capacity build-out to add to peak power demand



Source: CEA, Company Data, Goldman Sachs Global Investment Research

Appendix 1

Exhibit 18: Gen-AI exposed work activities

AI exposed activities	Examples of tasks and associated difficulty
Getting Information	2. Read work orders to determine material or setup requirements. 4. Study scripts to determine project requirements. 6. Conduct research to increase knowledge about medical issues.
Monitoring Processes, Materials, or Surroundings	2. Monitor financial performance 4. Monitor external affairs or events affecting business operations. 6. Monitor patient conditions during treatments, procedures, or activities.
Identifying Objects, Actions, and Events	1. Identify job or employment opportunities. 3. Mark materials or objects for identification. 5. Identify strategic business investment opportunities.
Estimating the Quantifiable Characteristics of Products, Events, or Information	2. Measure distances or dimensions. 4. Measure physical or chemical properties of materials or objects. 5. Measure materials to mark reference points, cutting lines, or other indicators.
Processing Information	2. Reconcile records of sales or other financial transactions. 4. Check quality of diagnostic images 5. Verify accuracy of patient information
Evaluating Information to Determine Compliance with Standards	1. Proofread documents, records, or other files to ensure accuracy. 3. Assess compliance with environmental laws. 5. Evaluate green operations or programs for compliance with standards or regulations.
Analyzing Data or Information	2. Analyze project data to determine specifications or requirements. 4. Analyze test data or images to inform diagnosis or treatment. 6. Analyze data to identify trends or relationships among variables.
Updating and Using Relevant Knowledge	2. Stay informed about current developments in field of specialization. 4. Update job related knowledge or skills. 6. Research topics in area of expertise.
Scheduling Work and Activities	1. Schedule dining reservations. 3. Schedule repair, installation or maintenance activities. 5. Schedule operational activities.
Organizing, Planning, and Prioritizing Work	2. Plan work procedures. 4. Plan community programs or activities for the general public. 6. Develop detailed project plans.
Documenting/Recording Information	1. Maintain financial or account records. 3. Record information about parts, materials or repair procedures. 5. Present medical research reports.
Interpreting the Meaning of Information for Others	2. Communicate with clients about products, procedures, and policies. 4. Confer with family members to discuss client treatment plans or progress. 6. Explain medical procedures or test results to patients or family members.
Performing Administrative Activities	2. Process sales or other transactions. 4. Perform student enrollment or registration activities. 5. Process forensic or legal evidence in accordance with procedures.

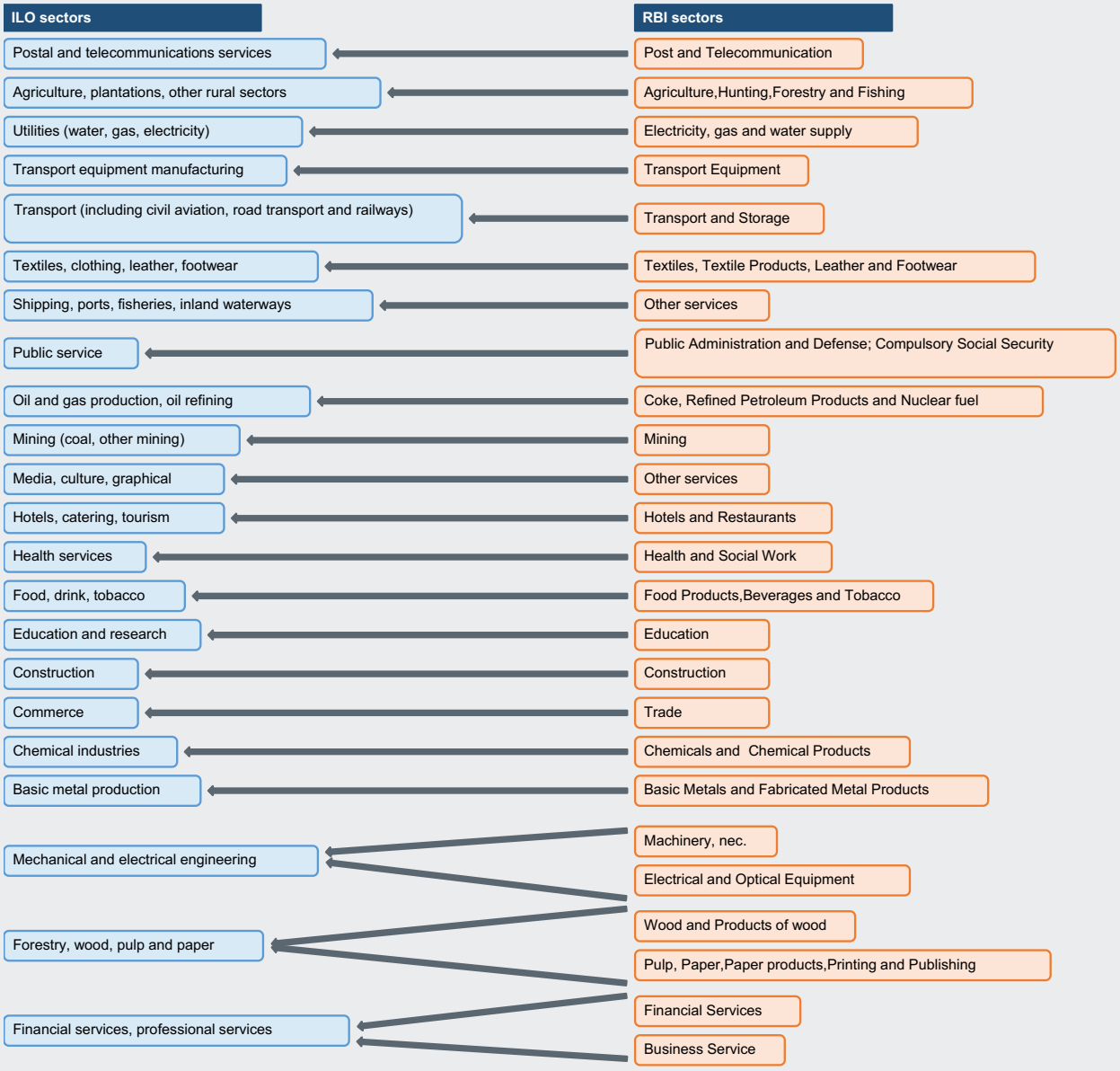
Source: O*NET, Goldman Sachs Global Investment Research

Appendix 2

RBI KLEMS sectors to ILO sectors mapping

Exhibit 19: RBI KLEMS sectors to ILO sector mapping

RBI to ILO sector mapping



Source: ILO, RBI

Appendix 3:

Methodology for computing the boost to labour productivity growth

We characterize the Gen-AI exposure of India's workforce at the sector level using a Gen-AI Exposure Score (AES_i) for each of the 22 ILO sectors, which measures the share of total workload of each sector exposed to

Gen-AI-driven task automation

For each sector i, total employment EMP_i:

Complemented (augmented) workers: $EMP_i^{aug} = AES_i \times \lambda_i \times EMP_i$

Substituted (displaced) workers: $EMP_i^{sub} = AES_i \times \delta i \times EMP_i$

Non-exposed workers: $EMP_i^{non\text{-}exposed} = (1 - AES_i) \times EMP_i + AES_i \times (1 - \lambda_i - \delta_i)$

By construction: $EMP_i^{non\text{-}exposed} + EMP_i^{aug} + EMP_i^{sub} = EMP_i$

Where:

- $AES_i \in [0,1]$ is the sector-level Gen-AI Exposure Score (share of total task content exposed to Gen-AI)
- $\lambda_i \in [0,1]$ is the share of Gen-AI-exposed workers who are complemented
- $\delta_i \in [0,1]$ is the share of Gen-AI-exposed workers who are substituted
- $(1 - \lambda_i - \delta_i)$ is the share of Gen-AI-exposed workers who are not exposed to Gen-AI

A.2 Normalised Gen-AI Exposure Score

To scale the productivity uplift for complemented workers by the depth of Gen-AI penetration in each sector, we construct a normalised Gen-AI exposure score:

$$\widetilde{AES}_i = \frac{AES_i - \min_j(AES_j)}{\max_j(AES_j) - \min_j(AES_j)}$$

where the min and max are taken across all 22 ILO sectors j. This ensures that sectors with the highest Gen-AI penetration receive the largest productivity uplift.

A.3 Baseline Productivity Variables from KLEMS

All baseline variables are computed from the RBI KLEMS database over the period FY12–FY23:

Sector-level average LPG (baseline):

$$\overline{LPG}_i^{2012-2023} = \frac{1}{12}\sum_{t=2012}^{2023} LPG_{i,t}$$

where $LPG_{i,t}$ is the log-change in labour productivity (value added per person employed at constant 2011-12 prices) from the RBI KLEMS database.

Sector-level maximum historical LPG:

$$LPG_i^{max} = \max_{t\in[2012,2023]} LPG_{i,t}$$

This captures the best historically observed productivity performance for sector i, over FY12-FY23 (excluding the pandemic period) representing the upper bound of the Gen-AI-driven uplift.

Sector-level average real value added growth:

$$\overline{VA\_g_i}^{2012-2023} = \frac{1}{12}\sum_{t=2012}^{2023} VA\_g_{i,t}$$

where $VA\_g_{i,t}$ is the log-change in real value added.

Labour income share in value added:

$$LSH\_va_i = \frac{1}{12}\sum_{t=2012}^{2023} LSH\_va_{i,t}$$

This represents the average share of value added accruing to labour in sector i.

A.4 Labour Cost Saving Rate

We compute the Labour Cost Saving Rate (LCSi) for each sector, as the share of value added previously attributable to workers whose tasks are substituted by Gen-AI:

$LCS_i = AES_i \times \delta_i \times LSH\_vi$

When Gen-AI substitutes the tasks done by the substituted workers, this share of value added (LCS_i) is no longer paid out as wages and becomes available as a productivity surplus. We assume that 50% of this surplus is redistributed to the remaining (complemented) workforce through higher wages, while firms retain the remaining 50% as higher retained earnings.

The **absolute labour cost saving per unit of value added** for sector i:

$$\Delta LC_i = LCS_i \times \overline{VA\_g_i}^{2012-2023}$$

This term enters the augmented productivity growth formula as an additional channel of productivity uplift for complemented workers.

A.5 Productivity Growth by Worker Group

a) Non-Exposed Workers

We assume that workers unexposed to Gen-AI grow at the sector's average historical labour productivity growth over FY12-23:

$$LPG_i^{non} = \overline{LPG_i}^{2012-2023}$$

b) Complemented (Augmented) Workers

Complemented workers experience a Gen-AI-driven productivity uplift above the baseline. The uplift is scaled by the normalised Gen-AI exposure score (capturing the depth of Gen-AI penetration in the sector) and the complementation share.

The role of the normalized Gen-AI exposure score is to ensure that sectors with shallow Gen-AI penetration receive only a modest uplift, even if some of their workers are classified as complemented — a constraint that prevents implausibly large gains in low-Gen-AI-penetration sectors.

$$LPG_i^{aug} = \overline{LPG}_i^{2012-2023} + \tilde{AES}_i \times \lambda_i \times \left[(LPG_i^{max} - \overline{LPG}_i^{2012-2023}) + LCS_i \times \overline{VA\_g}_i^{2012-2023} \right]$$

The uplift term has two components:

- **Historical performance gap**, representing how much productivity growth could improve if Gen-AI pushes the sector toward its historical maximum.
- **Labour cost saving channel**, representing the additional productivity boost from the reallocation of freed-up labour costs to the remaining workforce.

c) Substituted (Displaced) Workers

This is the productivity growth rate assigned to substituted workers upon reemployment, where P25(·) denotes the 25th percentile of the annual LPG observations for sector i, over FY12–FY23.

$$LPG_i^{sub} = P25\left(\{LPG_{i,t}\}_{t\in[2012,2023]}\right)$$

We assume this because displaced workers are most likely to be reabsorbed into lower-productivity activities within or adjacent to their original sector — for example, a displaced back-office worker in financial services is more likely to move into a lower-skill financial services role.

Aggregate labour productivity growth under Gen-AI

The aggregate labour productivity growth (LPG) for sector i under Gen-AI adoption is a weighted average of the three groups.

$$LPG_i^{GenAI} = (1 - AES_i) \times LPG_i^{non} + AES_i \times \lambda_i \times LPG_i^{aug} + AES_i \times (1 - \lambda_i - \delta_i) \times LPG_i^{non} + AES_i \times \delta_i \times LPG_i^{sub}$$

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Reg AC

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