GenAI risks and challenges for the economy

EY Parthenon

Building a better working world

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Executive summary

Generative AI (GenAI) has emerged as an important catalyst for growth and innovation. In the previous articles of our series, we showed that the economic impact of prior technological revolution can be significant. We estimated that the GenAI revolution could lift global GDP by $1.7t to $3.4t[1] over the next decade and meaningfully impact over half of the workforce globally.

Yet, GenAI risks and challenges could manifest in several ways, such as rising income inequality, increasing market concentration and "winner-takes-all" dynamics, and widening global disparities. These are important challenges that will need to be adequately tackled to harness the potential of GenAI in an inclusive way for households, businesses and economies throughout the world.

Our key findings are:

1. The economic gains from GenAI could favor company profits at the expense of labor. As organizations adopt and absorb GenAI technologies, they may substitute capital for labor, which could lead to lower labor demand and reduce workers' bargaining power. Moreover, rising market concentration as the GenAI industry becomes dominated by a few large businesses may lead to higher markups and result in a growing fraction of productivity gains accruing to a few corporations.

2. We predict that the uplift from GenAI will not be equally felt among households. In the case of the US, we estimated that the economic gains from GenAI will translate into a boost to household income worth between $675b and $1.3t[2] over the next decade. Over 50% of the gain will accrue to households in the upper income quintile while less than 5% of it will accrue to the bottom quintile. Globally, the effects on inequality could be similarly biased with higher-income workers benefiting from outsized gains, especially in economies where inequality and income polarization are high.

3. Wage inequality will likely increase as workers in high-paid occupations stand to capture a greater share of labor income gains. With GenAI showing the greatest potential to complement high-wage occupations relative to low-wage occupations, higher-wage workers are likely to see a disproportionate increase in their labor income, which could lead to a widening in inequality.

4. GenAI development is likely to spur greater market concentration and create "winner-takes-all" business dynamics. GenAI technologies offer first-mover advantages and large economies of scale that could lead to a growing divide between artificial intelligence (AI) leaders and laggards and the rise of "superstar" businesses that could reap most of the GenAI benefits. The risk of oligopolies and vertical integration raises the stakes for regulators to offset potential negative externalities.

5. The global economic boost from GenAI will be concentrated in countries at the forefront of GenAI development and those best equipped to harness the technologies. Pioneers in GenAI development such as the US and China and early adopters such as the UK, Canada, Japan, South Korea and India will probably benefit disproportionately from GenAI's economic boost, while developing countries that are the least prepared for GenAI adoption in sub-Saharan Africa, Latin America and South Asia will likely lag behind.

Addressing these GenAI divides will require a multifaceted approach:

- At the workforce level, implementing policies that help mitigate the less desirable impacts of GenAI on workers such as job displacement, and supporting training and upskilling of the workforce, to enable these new technologies will be critical.
- At the country level, encouraging the diffusion of new technologies among smaller organizations and implementing business strategies and policies that promote increased market competition could help the spread of GenAI's benefits are spread more broadly.
- At the global level, stronger cooperation to reduce technological disparities by expanding access to GenAI technology and infrastructure, and building digital skills could help bridge the GenAI divide.

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I am hopeful that GenAI can connect people as it interconnects data. CEOs who drive responsible, human-centric AI deployments will realize more sustainable impact for their business and shareholders.

Dr. Khalid Khan
EY Americas Strategy and Transactions AI Leader

1. Mind the gap: GenAI and inequality

How will GenAI risks related to distribution of income play out?

As GenAI continues to make large strides in adoption and diffusion, one of the most pressing concerns is that its benefits may not be shared equitably. GenAI could exacerbate two types of inequalities:

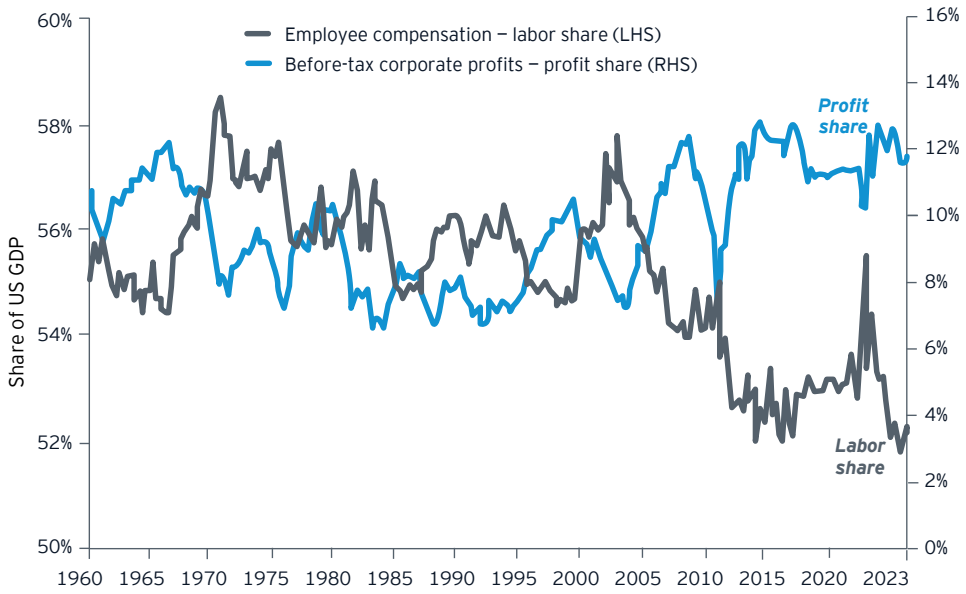
1. Inequality in the distribution of national income between corporate profits and labor
2. Inequality in the distribution of income across workers and households.

A smaller slice of the GenAI pie

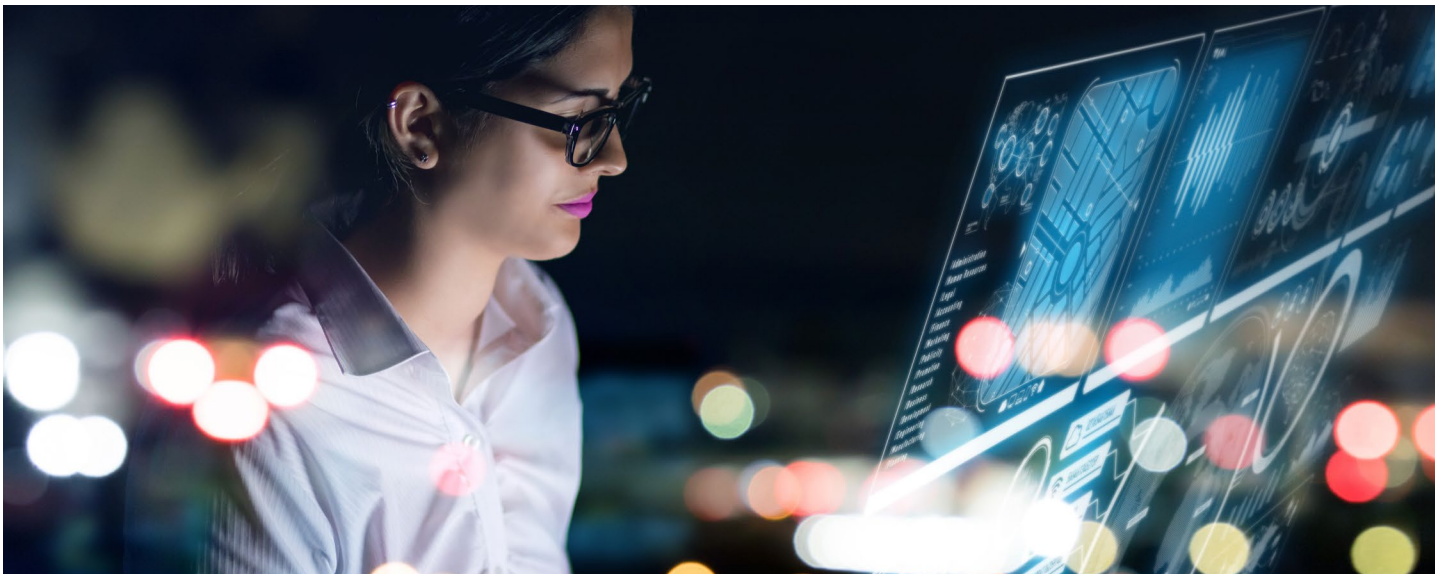
As GenAI technologies spur greater productivity gains, most of the increase in business output will be split between workers in the form of wages (labor share) and businesses in the form of profits (profit share). In advanced economies, this split has become increasingly unequal in recent decades with the labor share declining markedly since the late 1990s. In the US, it reached a record low of 52% of GDP in 2022 as the profit share reached record high levels of around 13%. This well-documented secular trend has been attributed to a combination of factors, including technological innovation and automation – with the International Monetary Fund (IMF) estimating that half of the decline in the labor share in advanced economies can be explained by technological change – and, more recently, industry concentration and market power[3].

Like prior technological innovation, GenAI will likely exert downward pressure on the labor share. As organizations adopt and absorb the new technologies, they will most likely increasingly substitute capital for labor. This would likely lead to lower labor demand and wage growth amid reduced workers' bargaining power. Elevated market concentration, as the GenAI market becomes increasingly dominated by a small number of large businesses, will also tend to generate higher markups and result in a growing fraction of productivity gains going to corporations.

Chart 1: US employee compensation and before-tax corporate profits as a share of GDP
1960-2023



Source: EY-Parthenon



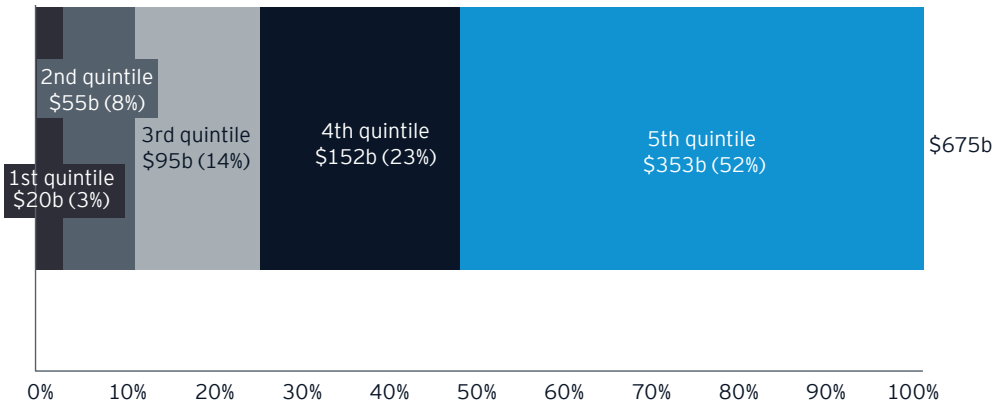
GenAI could reinforce income inequality

Rapid technological change, led by the digital revolution, has also been associated with a significant increase in income inequality across most major advanced economies over the past four decades. This widening wealth and income gap has been particularly salient in the US. Since 1980, the average income for US households in the bottom income quintile has quadrupled while the average income for those in the top quintile has increased sixfold. GenAI has the potential to perpetuate and potentially exacerbate these longstanding inequality patterns if not implemented in an inclusive way.

As we have highlighted, the GenAI-induced capital investment and productivity gains are set to provide a substantial lift to the global economy worth between $1.7t and $3.4t[4]. For the US economy, the real GDP boost could range between $900b and $1.7t[5] over the next decade. With personal income accounting for 75% of US GDP, the lift to aggregate household income could range between $675b and $1.3t[6].

If distributed equally among households, it would represent an average gain of $5,135 per household. However, the boost to income from GenAI will likely be uneven. Indeed, US households in the lowest income quintile received only about 3% percent of all income in 2022, compared with 52% for the highest income quintile. Assuming this trend holds, GenAI could increase the income gap between the top and bottom earners by nearly $33b annually in the next 10 years[7].

Chart 2: US distribution of household income gain from GenAI by income quintile, $bn



Source: EY-Parthenon

The risk of wage polarization

The extent and nature of the labor market disruptions from GenAI will be key for the trajectory of inequality. Globally, we find that 59% of occupations have a high to moderate exposure, with 67% in advanced economies and 57% in emerging markets[8]. We showed that that 66% of jobs will be moderately to highly impacted by GenAI. The remaining 34% of occupations have low AI exposure but will still be affected by GenAI via some tasks[9]. Unlike prior waves of technological innovation, which had the strongest impact on low- and middle-wage workers in routine jobs, higher-wage workers are the most exposed to GenAI augmentation.

Research from the IMF[10] shows that when GenAI is highly complementary to labor, the complementarity effect more than offset the displacement effect, particularly at the top of the income distribution, which leads to a smaller share of high-income workers facing potential job losses. With our GenAI augmentation scores generally stronger for occupations generating higher wages, earners at the top of the wage scale seeing stronger productivity gains could see a disproportionate increase in their labor income compared with low-wage earners who are less exposed to GenAI, which would lead to a rise in income inequality.

2. Superstars and winner-takes-all effect

GenAI may further widen the digital gap by pushing smaller businesses out.

Since the 1980s, technological innovation has led to a marked increase in market concentration where a small number of large organizations capture a larger share of the profits and value added.

This has been especially apparent in the digital economy with the US high-tech digital sector dominated by a few big players, leaving little room for innovators to break in. GenAI has the potential to deepen the current divide between technological leaders and laggards.

Research from the Organization for Economic Co-operation and Development (OECD)[11] has shown that technology diffusion is a highly uneven process as the productivity gap between the most productive businesses – global frontier organizations – and the rest increased significantly during the 2000s. Between 2001 and 2009, labor productivity in OECD countries grew 35% among "frontier firms," compared with only 5% for other businesses. This widening productivity gap has also been documented in more recent research[12] showing that the gap between leading and laggard organizations has increased over time, with the greatest increase in the IT sector.

The risk is that the benefits from GenAI – including higher productivity levels and stronger profitability – could accrue to a handful of "superstar" businesses that have the resources to successfully deploy GenAI solutions and applications, and develop these capabilities via access to the vital building blocks of GenAI, including:

1. **Large and robust datasets:** The data-intensive nature of GenAI means that companies will need to make significant investment in gathering, storing and processing data. This will likely hamper the ability of new players to enter the market and reinforce the dominance of large incumbent technology businesses that have access to the largest datasets.
2. **Computational power:** GenAI systems typically require significant computational resources to run and train sophisticated AI models, including deep learning and natural language processing models. This requires a sizable investment in physical and digital infrastructure that only the largest organizations can afford. For example, tech analysts estimate the GPT-4 model cost more than $100m to train during its initial development and requires about $700k a day to run.
3. **Skilled talent:** Developing a GenAI model also requires a workforce with a particular and currently relatively scarce set of skills, leading frontrunner businesses to impose and maintain non-compete clauses that prevent the free movement of talent across organizations and industries.

3. The global GenAI divide

Lack of GenAI readiness could put another wedge between the most and least advanced economies.

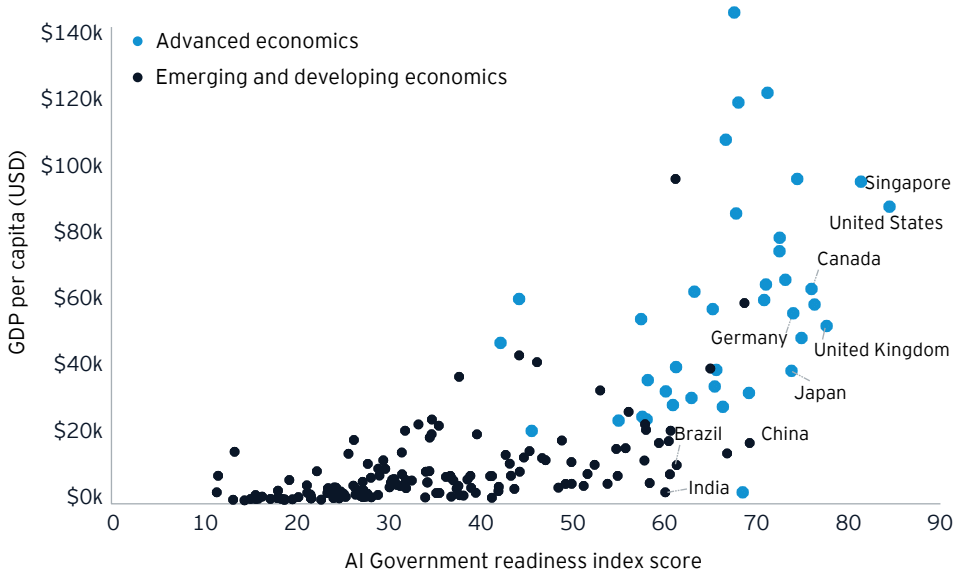
The deployment of GenAI is poised to provide a significant boost to the global economy. However, the benefits are likely to be unevenly distributed among economic regions and could widen global economic disparities as some economies are better equipped for AI adoption than others.

Oxford Insights' Government AI Readiness Index 2023, which assesses the capacity of governments to exploit the innovative potential of AI technologies, sheds light on these global gaps in AI preparedness. The index, which ranks 193 countries based on 39 indicators across three pillars (government, technology sector, and data and infrastructure) shows that there is a significant gap in AI readiness across countries and regions around the world, with low-income and developing economies with low GDP per capita levels generally lagging developed economies.

The Stanford Global AI Vibrancy Tool, which assesses countries' level of AI advanceement across various metrics related to research and development and the economy, paints a similar picture with most advanced economies better positioned to reap the AI benefits. However, China and India stand out as emerging economies ranking in the top three economies for their AI vibrancy with China leading in R&D and India in AI talent.

Chart 3: AI Government Readiness Index and GDP per capita by country

2022 (GDP per capita) and 2023 (AI Readiness)



Source: EY-Parthenon; Oxford Insights; IMF

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The risk of wage polarization

1. **Pioneers:** The US and China are leading the AI race and will likely experience the greatest economic gains from AI. Both countries combine the strongest research activity in AI and a high number of innovations. Indeed, most AI-related patent filings are made at the patent offices in the US and China, and the two countries account for most of AI-related scientific publications. However, the US continues to lead in the production of machine learning systems, with over half of the world's large language and multimodal models produced by American institutions in 2022[13].
2. **Front-runners:** This group is best positioned to adopt and deploy AI technologies and includes a range of economies and regions such as Singapore, Japan, South Korea, Canada, Europe, Australia and India. These are typically advanced economies with strong governance, and the infrastructure and human capital required to enable these technologies. India's abundant supply of qualified and highly skilled tech talent makes it well placed to harness the potential of AI technologies.
3. **Laggards:** This group includes the regions that are least prepared to reap the benefits from AI such as sub-Saharan Africa, some Latin American countries, and Central and South Asian countries. These countries will likely miss out on the initial wave of AI-driven productivity gains given their lack of essential infrastructure and skilled workforce to enable AI technologies and develop a broad AI ecosystem.

Such disparities in AI readiness and advancement could worsen inequalities between the most and least advanced economies. The risk is that the AI revolution could amplify the existing global digital divide – which refers to the disparity in access and use of information technologies such as the internet. Global cooperation aimed at reducing technological disparities by expanding access to AI technology and infrastructure and building digital skills will be critical to help bridge the global AI divide.

Figures in the content include those obtained from the Bureau of Economic Analysis (BEA), Bureau of Labor Statistics (BLS) and the Census Bureau.

References:

1. *EY-Parthenon analysis and estimates*
2. *EY-Parthenon analysis and estimates*
3. *Concentrating on the Fall of the Labor Share (Dorn, Katz, Patterson & van Reenen, 2017)*
4. *EY-Parthenon analysis and estimates*
5. *EY-Parthenon analysis and estimates*
6. *EY-Parthenon analysis and estimates*
7. *EY-Parthenon analysis and estimates*
8. *EY-Parthenon analysis and estimates*
9. *EY-Parthenon analysis and estimates*
10. *Gen-AI: Artificial Intelligence and the Future of Work (Cazzaniga et al., 2024)*
11. *The Best Versus the Rest: The Global Productivity Slowdown, Divergence Across Firms and the Role of Public Policy (Andrews, Criscuolo and Gal, 2016)*
12. *Changing Business Dynamism and Productivity: Shocks vs. Responsiveness (Decker et al., 2018)*
13. *Artificial Intelligence Index Report 2023, Stanford University*

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