THE ECONOMIC IMPLICATIONS OF AI ON INCOME DISTRIBUTION AND GLOBAL INEQUALITY

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Abstract. Today, the emergence of artificial intelligence (AI), along with a number of positive effects, leads to uneven distribution of income in the economy and global inequality, and has a great impact on the development of the world economy. The integration of AI technologies into various industries has created drastic differences in the job market. In particular, the demand for highly skilled workers is increasing, and many people are losing their jobs because of the automation of tasks performed by low-skilled workers. This situation exacerbates income inequality in developed countries. Globally, the uneven adoption of AI technologies is deepening the economic divide between countries, as developed countries benefit from advanced infrastructure while developing and underdeveloped countries lag behind. To reduce these impacts, the article proposes solutions such as retraining programs, introducing tax systems to redistribute income from AI technologies, and establishing international cooperation to ensure equal access to AI opportunities.

Key words: artificial intelligence, income distribution, global inequality, job polarization, automation, AI divide, reskilling, economic disparity, taxation, policy interventions.

Introduction

Artificial intelligence (AI) has emerged as a transformative force reshaping global economies, raising critical questions about its implications for income distribution and inequality. As AI-driven automation continues to redefine labor markets, it introduces both opportunities and challenges. On one hand, AI enhances productivity and economic efficiency, potentially creating new wealth. On the other hand, it has the potential to exacerbate income disparities by disproportionately benefiting those with access to AI technology and skills. High-income workers and businesses adopting AI can see significant gains, while low-skilled laborers face the risk of job displacement, contributing to wage polarization and social tension. The global digital divide further complicates the scenario, as developed countries are better equipped to harness AI's potential, leaving developing nations at risk of falling further behind economically.

To address these challenges, policymakers are encouraged to implement adaptive measures such as training programs, equitable taxation, and inclusive digital strategies. The transition to an AI-driven economy must prioritize fairness to mitigate the risk of deepening inequality within and among nations. This topic remains at the forefront of

economic and technological discussions, emphasizing the importance of sustainable and equitable integration of AI technologies into global economic frameworks.[1]

The Impact of AI on Job Markets

Artificial Intelligence (AI) is transforming job markets globally, creating both opportunities and challenges. On one hand, AI is automating repetitive tasks across industries such as manufacturing, retail, and finance, leading to job displacement in roles requiring low to medium skill levels. However, AI is also generating demand for new job categories, particularly those requiring advanced technical skills, creativity, and problem-solving abilities. Positions such as AI specialists, data scientists, and ethical AI policymakers have seen significant growth in recent years.[2]

The polarization of the labor market is another critical concern. AI technologies are automating repetitive, routine tasks across various industries, leading to the displacement of jobs that involve low- to medium-skill levels. For instance:

- In manufacturing, AI-powered robotics have replaced many manual labor roles.
- In retail, automated checkouts and inventory systems reduce the need for cashiers and stock clerks.
- Even in service sectors, AI applications like chat bots are replacing customer service agents.

This trend highlights the vulnerability of workers whose roles involve predictable tasks. For example, the research suggests that nearly 47% of jobs in the United States could eventually be automated.[3]

While automation eliminates some roles, AI creates new jobs requiring technical expertise, such as:

- AI developers and engineers who design and improve AI systems.
- Data scientists and analysts managing data for AI training.
- Ethics consultants addressing ethical concerns in AI development.

[1] https://www.imf.org/en/Blogs/Articles/2024/11/21/g20-economies-should-target-reforms-to-boost-medium-term-growth-prospects
[2] https://www.frontiersin.org/journals/artificial-intelligence/articles/10.3389/frai.2022.832736/full
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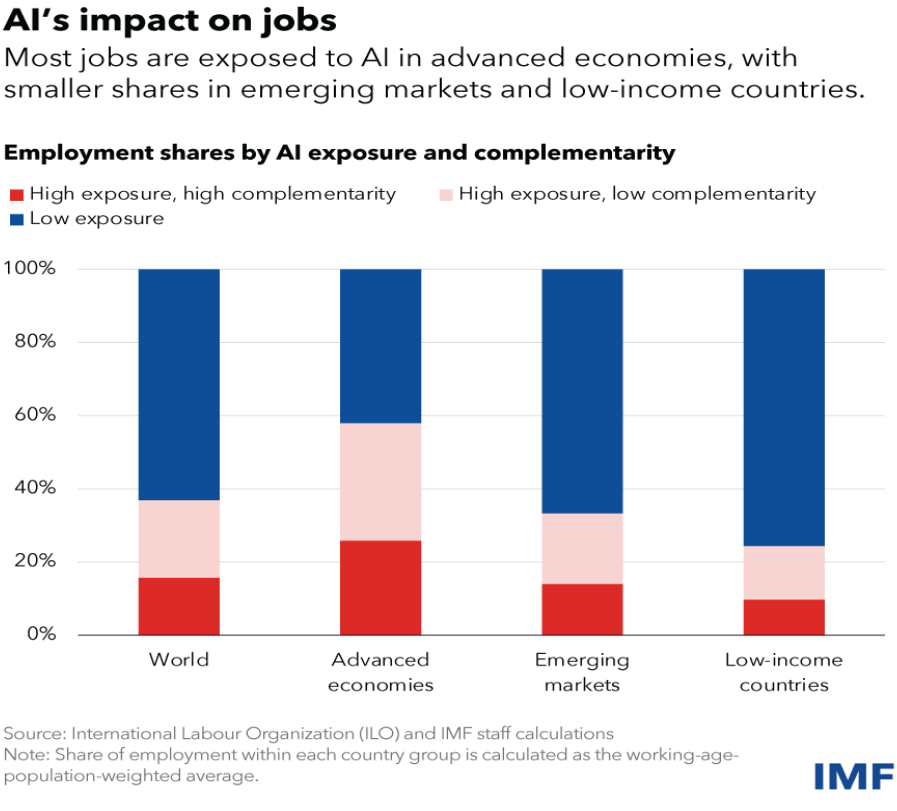

[4]

According to a report by the World Economic Forum, AI could create approximately 97 million new roles globally by 2025 in fields like data analytics and digital marketing.[5]

AI's integration into the workforce leads to a polarized labor market:

- High-skill, high-wage jobs benefit the most from AI advancements.
- Low-skill workers face declining demand, while middle-skill roles experience stagnation or decline.

This polarization exacerbates income inequality. For instance, studies show that regions with high levels of automation have seen greater wage gaps between tech-savvy and less-skilled workers.[6]

Global Income Distribution and AI

In the past, we have seen that previous technological waves, like the Industrial Revolution and the rise of the ICT era, produced deep and persistent income inequality - benefiting wealthy nations much more than others. With AI, we may well find ourselves to be on a similar path for two reasons.

1. Richer countries are better equipped to harness AI's benefits.

High-income countries, along with wealthier developing nations, hold a distinct advantage in capturing economic value from AI thanks to superior digital infrastructure, abundant AI development resources, and advanced data systems.

[4] https://www.imf.org/en/Blogs/Articles/2024/01/14/ai-will-transform-the-global-economy-lets-make-sure-it-benefits-humanity
[5] https://www.frontiersin.org/journals/artificial-intelligence/articles/10.3389/frai.2022.832736/full
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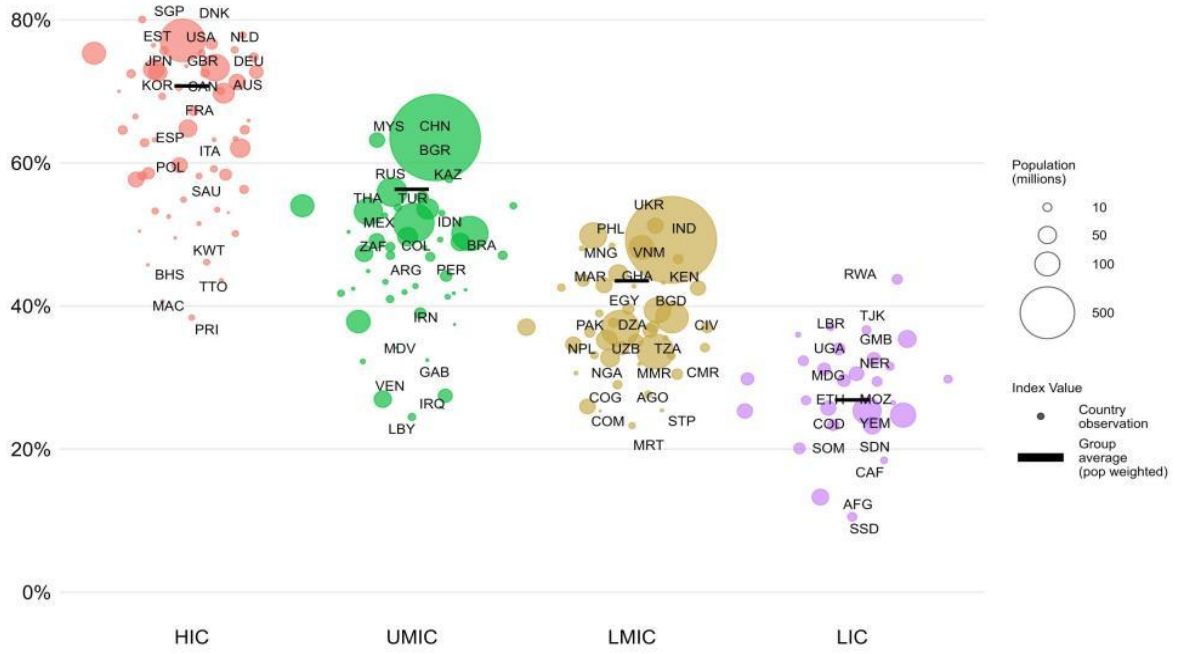
AI Preparedness Index by Country Income Group, 2024



Source: IMF, 2024.[7]

Note: Acronyms: high (HIC), upper- middle (UMIC), lower-middle (LMIC) and low (LIC) income countries. Countries with labels are those with a population over 25 million or those who are in the top or bottom five of each income group.

2. Poorer countries may be less prepared to handle AI's disruptions.

Just as the benefits of AI may be unevenly distributed, so may be the disruptions it causes. While high-income countries may experience greater labor market displacement—given their larger share of skill-intensive jobs that are more susceptible to AI automation—they are much better positioned to manage these shifts. Their better-developed social safety nets and active labor market policies, such as in Germany, can cushion the blow, retrain displaced workers, and stimulate new job creation.

Conversely, poorer nations face a different reality. Limited resources and underdeveloped social protection systems mean they are less equipped to absorb the economic and social shocks caused by AI-driven disruptions. Many lower-income countries already struggle with high rates of informal employment and fragile labor markets, leaving workers highly vulnerable to sudden economic shifts.

The lack of fiscal space also restricts these countries from investing in crucial areas like reskilling programs, infrastructure upgrades, or targeted welfare schemes to support affected communities. Without such mechanisms, the impact of AI-related job losses could exacerbate unemployment and deepen poverty. Poorer nations risk falling further behind as they lack the tools to manage AI's disruptive effects on their labor markets and economies.[8]

[7] https://www.imf.org/external/datamapper/datasets/AIPI
[8] https://www.cgdev.org/blog/three-reasons-why-ai-may-widen-global-inequality

Policy Implications and Solutions

Developing countries face significant challenges in navigating the implications of artificial intelligence (AI). However, strategic interventions can enable them to mitigate potential negative outcomes and harness AI's benefits effectively:

Investing in Digital Infrastructure: Robust internet and data systems are fundamental for AI development and deployment. Public policy must prioritize making internet services widely available, affordable, reliable, and inclusive, treating them as essential public goods. India serves as a notable example with its Digital India initiative, which has connected over 600,000 villages to high-speed broadband by 2023, fostering AI-driven advancements in sectors like education and agriculture.

Ensuring Reliable Electricity: Addressing the increasing energy demands of AI, particularly for data centers, requires modernized power grids, energy efficiency optimization, and diversification of energy sources. Kenya's successful diversification of its energy mix, generating over 40% of its electricity from geothermal power, illustrates the potential of sustainable energy solutions in meeting AI-driven energy needs.

Enhancing Education and Skills Training: Preparing the workforce for AI-driven industries necessitates improvements in STEM education and vocational training. Governments and educational institutions should collaborate to integrate AI, machine learning, and data science into curricula.

Fostering International Collaboration: Partnerships with technologically advanced nations can help developing countries leapfrog technological stages and drive local innovation through joint ventures. For instance, aligning with the commitments outlined in the UN's Global Digital Compact ensures inclusive participation in global AI frameworks.

Promoting Local Innovation: Supporting region-specific AI solutions through funding, training, and enabling policies fosters sustainable development. Rwanda has demonstrated this approach by launching coding boot camps and AI programs targeting youth and women, encouraging grassroots innovation.

Preparing for Job Displacement: Policies must address potential workforce disruptions through social safety nets, retraining programs, and adaptive fiscal measures. Singapore's "Skills Future" initiative exemplifies proactive reskilling strategies. Additionally, governments should explore new taxation frameworks to address declining labor contributions and ensure fiscal sustainability.

By adopting these strategies, developing countries can better position themselves to capitalize on AI's opportunities while mitigating associated risks. Achieving this vision requires coordinated efforts from governments, private sectors, and international organizations to create an inclusive, resilient AI-driven future.

Conclusion

In conclusion, Artificial intelligence (AI) is transforming economies globally, offering opportunities for growth and innovation while presenting significant challenges. AI-powered automation has enhanced productivity across various sectors but has also led to job shifts. Research shows that automation does not lead to widespread job losses overall but tends to replace roles in low-wage occupations while increasing demand for high-wage jobs. This trend deepens economic inequalities, particularly affecting vulnerable groups with limited access to advanced skills or education. Globally, the impact of AI on income distribution reflects the widening gap between developed and developing nations. While wealthier countries are well-positioned to adopt AI and benefit from its innovations, many developing nations face obstacles such as inadequate digital infrastructure, unreliable electricity, and a lack of AI education. These disparities threaten to exacerbate global inequality if left unaddressed. To navigate these challenges, governments must adopt inclusive strategies. Developing nations should prioritize investments in digital and energy infrastructure, improve education systems to focus on AI-related skills, and foster local innovation to address region-specific needs. Encouraging collaboration with advanced economies can also accelerate progress by sharing expertise and resources. Additionally, policies must address potential job displacement by implementing social safety nets and retraining programs for affected workers.

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