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Automation Inequality: Will AI Widen the Gap Between Rich and Poor?

With the development of artificial intelligence and robotics impacting the world economy, there is a pivotal point in our time when these advancements can either uplift the majority of people or solidify a world full of economic inequality. In this paper, I will explore the impact that the automation age will have on bridging the gap between wealthy nations and underdeveloped countries, as well as the potential impact on unskilled labourers.

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Introduction

Whether walking through the streets of the IT districts of Lahore, or the technological corridors of Silicon Valley, the story remains the same. Artificial Intelligence (AI) is the future. Discussions about machine learning, automation, robotics, and efficiency are becoming more frequent. Politicians boast of their digital transformation initiatives, whereas corporations spend millions on automation technology to enhance production efficiency, decrease costs, and increase profit margins. Despite all the positivity around these developments, there is increasing anxiety about their implications for economics, employment, and sustainability.

We find ourselves at a technological inflection point, according to economists—a stage where minor technological changes can bring about major shifts to the economic structure. Such situations occurred at times like the onset of the Industrial Revolution, electricity, and computers in history. These transformations brought about new industries, the extinction of others, and societal change altogether. However, this is not the case with the current revolution since it is taking place at a much faster rate compared to past events.

One of the worrying developments that is beginning to take shape based on data generated recently involves the shift from technologies that increase productivity to those that act like "labor-shifting" mechanisms. Unlike what has been seen in the past, technological progress has shifted towards the creation of machines that make workers less productive rather than more so. For instance, with a factory machine, one individual could manufacture ten times the number of goods he/she used to do without.

Naturally, developing economies like that of Pakistan were supposed to reap the same benefits from this paradigm via the demographic dividend. With a large population of youth, Pakistan was looking forward to attracting foreign investments, especially in the form of industries that would exploit its lower costs of labor to boost economic growth and increase per capita income.

However, the emergence of studies published by credible institutions such as IMF and renowned academic institutions indicates that automation could upset this trend. With robots becoming increasingly efficient and inexpensive compared to human labour, industries are increasingly resorting to automation in order to save on costs.

The present paper delves into the reasons behind the emergence of automation inequality, considering factors like investment shifts, wages, and globalization of production chains. Moreover, it studies the effects of the “so-so automation” strategy and considers implications for developing countries, such as Pakistan.

> ***"AI is not just taking people’s jobs, but transforming who controls the economy, potentially transforming the demographic bonus of developing countries into a surfeit of unemployed.."***

Technology Overview

The problem of inequality must be approached through a redefinition of our understanding of automation in the modern era. Previously, automation had been used to describe machines that could execute repetitive mechanical processes. Assembly line robots in manufacturing plants were prime examples of automation.

In the contemporary environment, however, the scope of technology has expanded beyond simple hardware to include a comprehensive suite of software technologies. Software applications can analyze information, find patterns within information, generate new content, and make decisions. In doing so, computers have moved beyond simple mechanical tasks.

AI programs now carry out tasks traditionally attributed to human cognition, such as report writing, language translation, disease diagnosis, forecasting market trends, and creating artwork. The advent of generative algorithms has created a fuzzy distinction between mechanical and cognitive tasks.

One interesting theoretical approach to studying automation is the Task-Based Approach. This model is popular in economics and focuses on individual tasks instead of whole occupations. Occupations are made up of several tasks, some simple and some complicated.

Unlike the traditional model, which focuses on occupational replacement, the Task-Based Approach studies individual tasks. Automation does not mean replacing entire occupations; rather, it involves automating certain repetitive tasks within an occupation. As time progresses, better technology will automate more complicated tasks.

For a long time, technological advancement was referred to as skill-biased since skilled laborers benefited more from machines compared to unskilled workers. Skilled laborers used machines to be more productive, whereas unskilled laborers were displaced. This trend was common during technological upheavals in the past.

Nevertheless, recent trends show that new technology tends to displace more workers than assist them. Modern technology does not complement worker activities; rather, it replaces them completely.

A number of terms have been developed by economists to categorize innovations based on their impact. Perhaps one of the best-known contributions is the work of economist Daron Acemoglu, which distinguishes between high-productivity innovations and "so-so automation."

The innovation of high productivity introduces a whole range of novel tasks that never existed before. As an example, the invention of the internet has brought many new industries, including website development, digital marketing, cybersecurity, and cloud computing, which have led to job creation and additional economic growth.

On the other hand, "so-so automation" involves innovations that replace human labor in repetitive actions but do not contribute significantly to productivity improvements. The main benefit of these innovations is reducing labor costs.

Probably the most interesting thing about modern automation is the emergence of generative AI. Text, image and software code generation pose challenges to traditional views of human superiority.

Figure 1: Automation Inequality.

Key Findings & Impact

Not all countries, sectors, or workers in the world are affected in the same way by the Artificial Intelligence Revolution. In actuality, the influence of the revolution varies widely, thereby perpetuating and even exacerbating already-existing economic disparities. Scholars investigating global automation trends have revealed various economic channels of divergence between developed and developing countries due to the revolution.

In essence, these economic channels overlap and compound one another, leading to the creation of ripple effects within various economic dimensions when automation advances in developed countries. Such ripple effects then contribute to the transformation of global economic structures.

Knowledge about such channels is critical in forecasting the effect of automation on the future world of work. Indeed, there is evidence showing that divergence between countries is brought about by three main economic channels, namely Share-in-Production, Investment Flows, and Terms-of-Trade, besides one case study of wage inequality in the United States.

1. The Channel of Share in Production

In the Channel of Share in Production, we discuss the effects of automation in terms of its role in changing the share of labor and capital in the production process. Traditionally, in economic systems, labor was the main component in the production process. Labor was involved in building goods and performing managerial tasks. Capital served only as an assistance factor to labor.

However, in advanced countries, automation enables capital to serve as a replacement for labor. Capital performs functions that were previously done by labor.

There is one more explanation as to why advanced nations resort to automation at a much quicker pace – higher wages. Higher wages mean higher motivation for investments aimed at automation as automation will help save money due to lower wages costs. Furthermore, automation leads to higher efficiency which means that wages in high skill sectors may increase.

With time, it leads to long-term disparity among countries. Rich countries will continue to amass wealth while poor countries will have difficulties raising capital. It is not because poor countries do not have enough workers; it is because workers in poor countries become increasingly irrelevant for production processes.

Also, there is the question of technological preparedness. Countries that are technologically advanced have the right infrastructure, electricity supplies, and technical personnel that can handle complex machines and other automation equipment. They can implement the technology much faster compared to poor countries.

For instance, an assembly plant in Germany or Japan can utilize robotics in their operations because of the high technical skills available and steady electricity supplies. In case of the same assembly plant in poor countries, operations might be hampered by issues such as lack of power supply, lack of skills, and machine maintenance.

The effect is that the rate of productivity growth will differ. With automation, the rate of productivity in rich countries will increase. They will therefore produce more products and earn a bigger slice of global production compared to poor countries.

2. The Investment Flow Channel

The Investment Flow Channel looks at how automation affects capital flows around the world. It is important to know about investment decisions that affect whether countries grow or lag.

Since more lucrative investment becomes possible through the use of automation, investors start allocating their money to areas where such investment can take place. Developed countries attract investments due to their stability, workforce, and well-developed transportation systems.

This leads to the process of capital diversion where investment from developed countries is directed towards automation projects. Such diversion limits the growth of developing countries.

In the past, investment flows went to places rich with workers. Multinational corporations opened manufacturing facilities in Asia, Latin America, and Africa to lower manufacturing costs.

Financial markets also contribute to the perpetuation of inequality through their attraction towards stability and predictability of returns, both features found in advanced economies. The Investment Flow Channel creates widening GDP growth rate disparities over time; countries gaining investments enjoy technological innovations and productivity improvements, while those losing investments undergo economic stagnation.

3. The Terms-of-Trade Trap

Terms-of-trade traps arise due to global pricing trends resulting from automation. Terms of trade reflect the ratio between export and import prices, where an increase in the former against the latter indicates a rise in the terms of trade, leading to lower volume production requirements for purchasing a particular quantity of foreign goods.

Developing countries tend to focus on labor-intensive industries like agriculture, textiles, and simple manufacturing processes. These industries employ large numbers of workers, thereby increasing susceptibility to automation.

With the improvement in efficiency by robots in completing mundane jobs, the availability of goods manufactured using automation increases. The rise in supply lowers the prices of goods that are labor-intensive, thus lowering the earning capacity of workers from developing countries.

Simultaneously, high-tech goods including machines, semiconductors, and software products continue to be highly valuable because of the intricacies involved and the intellectual property rights associated with them. Such an imbalance leads to adverse terms of trade for nations exporting less-valued goods.

Gradually, the Terms-of-Trade Trap results in the falling of income levels in a nation. The country needs to export more goods to purchase necessary imports, including health-care infrastructure, transport systems, and communication technology.

4. Wage Inequality for Forty Years in the U.S.

While the information obtained regarding global inequalities gives us great insight into the effect of automation, a closer look at the issue at the country level would give us an even clearer understanding of this problem. The U.S. is probably the best example in this context.

There have been notable transformations in the American labor market since the 1980s. There have been advancements in computers and other forms of digital technology.

Data shows that inflation-adjusted incomes for male non-high-school graduates have fallen by roughly 15 percent since the previous four decades. On the other hand, the pay for highly-educated people, especially those who hold graduate-level diplomas, has surged significantly.

The disparity can be explained through a shift in the need for skill. There is a significant drop in the number of occupations where the employees must undertake repetitive tasks. In contrast, the occupations demanding problem-solving, imagination, and technological expertise have grown in numbers.

According to studies conducted by experts from reputable academic organizations, 70 percent of the growing inequality in salaries is attributable to automation. Such data emphasizes the critical part played by technological innovation when considering income distribution

What's Next?

What Comes Next? Policy, Training, and Accountability

There is no one-shot policy answer that will solve the increasing problem of inequality caused by automation. The change that is being brought about by artificial intelligence is a multifaceted phenomenon, with effects on every industry imaginable, including education, governance, tax systems, and international commerce. Yet, although there is not one answer to all problems related to automation, there are a number of key strategies that leaders can adopt to limit inequalities and ensure that automation is used to its greatest advantage.

Such policies must be proactive and not reactive, for if the wait-and-see approach is taken until many workers lose their jobs, social upheaval may become a difficult situation to remedy.

The Importance of Increasing TFP

Among the areas that need reforms is the area aimed at enhancing Total Factor Productivity (TFP), which refers to the efficiency in which the factors of production such as labor and capital interact within an economy.

In many developing economies, the problem faced does not come from poor working efforts from employees but rather due to poor systems and inefficient use of capital.

Productivity can be improved when investments in fundamental systems, such as transportation systems, communications infrastructure, and energy, are made.

Without such investments, technological progress would not be realized since it is not possible for any piece of technology to perform optimally without such infrastructure.

For instance, automation of manufacturing plants would only work well with adequate electric supply and efficient internet connectivity.

Frequent blackouts would render such systems useless and expensive to operate, while the inefficiencies in the logistics chain would make exports difficult.

Simplification of bureaucratic processes and creation of supportive policies can help in improving TFP.

Research and development activities should be encouraged by the government as part of efforts to improve productivity.

Rapid Educational Reforms

Education serves as the strongest tool against automation disparity. The current educational models developed for industrial societies have become incompatible with the demands of the digital industry era.

Education systems need to change their emphasis from rote memorization to critical thinking, innovation, and flexibility.

It is essential that students learn to think creatively to resolve problems. It necessitates restructuring the entire educational curriculum from elementary school up through university level.

It becomes necessary that digital literacy be imparted as an essential ability akin to reading and writing. It means knowing how to use software, data analysis techniques, and the moral ramifications of artificial intelligence technologies.

The acquisition of soft skills such as communication, teamwork, and empathy remains crucial. Human attributes that cannot yet be replicated by machines offer a comparative advantage.

It is necessary to update vocational training courses. Workers who lose their jobs due to automation will probably not enroll in regular colleges but could profit from specialized training courses.

E-learning courses provide opportunities for reskilling. It is possible for governments and organizations to cooperate to develop inexpensive certification courses in programming, cybersecurity, and data analysis.

Taxation and Redistribution

With the advent of automation, taxation systems will have to adapt to the new economic situation. The old models of taxation are largely based on income taxation on employees' wages. Yet, with automation leading to unemployment, the state will be unable to collect as many taxes as before. At the same time, corporations will earn more because of decreased expenses connected with paying salaries.

In order to ensure stable fiscal policy, governments will have to rethink their taxation systems. Some experts suggest creating a tax system for automated machines and industrial productions that require expensive equipment. These taxes would serve the purpose of redistributing wealth earned through automation.

Additionally, some economists recommend increasing social spending financed by corporate taxes. The tax revenues earned from innovations can be used for funding public services such as education and health care.

Finally, universal basic income is one of the most common policy options. It implies that all citizens receive money every month regardless of their occupation. Those who favor this idea claim that universal basic income guarantees financial security in times of unemployment.

Nevertheless, redistribution systems can decrease motivation for technological advancements. For that reason, taxation systems will have to be adjusted accordingly.

Public-Private Responsibility

The responsibility for addressing automation inequality is not only borne by governments but extends to private entities as well.

Companies in the tech industry gain much from automation processes and therefore hold some of the responsibility for minimizing the negative impact of such practices. Social responsibility strategies include the financing of work training programs.

Companies can collaborate with universities to develop training programs that are relevant for specific industries. Internships and apprenticeships offer practical training that makes graduates more employable.

Design principles can guide the development of technology. Long-term implications need to be considered in place of immediate profits.

Another strategy that can be employed is launching awareness campaigns directed at workers. Workers will learn more about possible job prospects which can prompt them to develop skills.

Involvement of both public and private sectors will ensure that technological advancements benefit all members of society.

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References

[1] C. Alonso, S. Kothari, and S. Rehman, "AI could widen the equality gap between rich and poor nations," *World Economic Forum*, Dec. 8, 2020. [Online].

[2] P. Dizikes, "Study: Automation drives income inequality," MIT News, Nov. 21, 2022. [Online].

[3] D. Acemoglu and P. Restrepo, "Tasks, Automation, and the Rise in U.S. Wage Inequality," *NBER Working Paper 28920*, June 2021.

[4] A. Gilfoyle, "The Impact of Automation on Income Inequality: A Cross-Country Analysis," *arXiv:2304.07835*, Apr. 16, 2023.

[5] S. Benzell and K. Myers, "Automation Experiments and Inequality," *arXiv:2510.24923*, Oct. 28, 2025.

[6] International Monetary Fund, "Global Economy in the Shadow of War," *World Economic Outlook*, Apr. 2026.

[7] MIT News Office, "Study finds stronger links between automation and inequality," Nov. 21, 2022.