

The Impact of Artificial Intelligence on Labor Markets and Wage Inequality: A Comprehensive Analysis

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Abstract

Artificial Intelligence (AI) has emerged as a disruptive general-purpose technology, which effectively restructured industries, economies and societies. In this paper, the general discussion of AI impact over the labor markets and consequently its impact on wage inequality is presented. Putting these two theoretical points of view and empirical evidence together, this paper will analyze the two-sidedness of AI as either replacement or addition of human labor. The paper shall begin with historical development of technological change and its effect on the labor market concerning parallelisms and difference to the industrial revolution in the past. It then turns to the details of how AI will affect the labor market (including automated work parities), the generation of employment, and the outlines of skills. Prominent among these is the unequal impact of AI on numerous jobs and skill levels dispersed and on demographic categories of people, which makes a crucial contribution to the growth in wage inequality. The analysis is indicated to have revealed that the impact of AI-based automation is disproportionately on the routine-intensive jobs, as well as on the middle-skill jobs, leading to the polarization of the labor markets. Meanwhile, it brings the requirement of skilled workers to develop, maintain and cooperate with AI systems, and demands the establishment of new, under-skilled service industries that are difficult to automate. This type of bifurcation compounds the wage gap between the high and the low skill employees. The mediation of education, policy and firm-level strategies, is also discussed in the paper on how the effects are mediated. We argue that action policy measures to focus more on education reform, lifelong learning, social safety nets, and progressive taxation are needed to better mitigate the adverse effects of AI on wage inequality and more fairly redistribute the fruits of this technological revolution to humanity in the form of productivity. It is concluded that despite being a threat to the stability and equality of the labour market on a serious level, AI could also serve to create new forms of work and mutual prosperity, provided that its use is supported by inclusive and prospective policies.

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I. Introduction

1.1 Background and Context

The dawning century of the 21st century has been characterised by digitally expanding and accelerated formulation of Artificial Intelligence (AI). Examples of AI include self-driving vehicles and state of-the-art diagnostic system in healthcare, personalized financial and artificial customer service, would not be limited to the future but is present-day reality that is sweeping profound economic and societal change. Similar to the steam engine, electricity and the internet, AI is a general-purpose technology (GPT) that can radically change the production process, generate new goods and services, and boost productivity across the entire global economy (Brynjolfsson and McAfee, 2014). However, the technological wave like the other volcanic waves in history have also caused a mountain of concerns about the future of the work system, the replacement of human labor and equitable distribution of the economic benefits. The central question on which this paper is based is how the diffusion of AI is altering the labor market and more specifically how it might be influencing the wage discrepancy.

The discussion on the impact of AI is mostly either/or. On the one hand, there is an optimistic interpretation of the technos produced by techno-optimists, according to which it can augment the capacity of humans, mechanize everyday life, and reveal new breeds of productivity and creativity, which will ultimately raising the standards of living. Conversely, skeptics and dystopians and caution about the mass unemployment, the obsolescence of human skills, and the establishment of a new useless category of people, resulting in the stratification of the society and economy (as never before) (Harari, 2017). Actually it is probably much more subtle, as economic history indicates, and a mix of job destruction, job creation, and job transformation. This knowledge will be essential to policymakers, business leaders, and workers alike as they work through the shift into an AI-driven economy.

1.2 The Research Problem: AI and Growing Disparities

Although technological advancement has in the past been a major catalyst to long term economic growth, advantages have not always been distributed evenly. An example is the dramatic rise in wage inequality in most developed economies in the late 20th century, driven by the digital revolution, which is widely discussed as the result of what is known as skill-biased technological change (SBTC), in which technology reinforced the high-skill workers, replacing middle-skill workers (Katz and Murphy, 1992). These trends appear to be strengthened under the present AI revolution with specific feature extras that could have more profound distributional impacts.

Compared to the last centuries of automation, which primarily presupposed the manualization and routine mental operations, modern AI, in particular, machine learning (ML), can now perform certain non-routine cognitive functions that were traditionally viewed as the monopoly of highly educated experts (e.g., medical diagnosis, legal research, financial analysis). This increases the potential shift in labour occupations to a more widespread range of occupations. The gist of the research problem, therefore, is to comprehend the manner in which precisely AI is altering the demand and the wages of labor and why the impacts appeared to be augmenting inequality. Is AI a more sophisticated version of SBTC, or does it already imply a new form of capital-based technological change, whereby capital returns are increasingly being vested in the owners of AI systems and capital, and not in labor? This is the goal of this paper to unpack this complicated issue that considers both the heterogeneous effects of AI on occupations and skills.

1.3 Research Objectives and Structure of the Paper

The primary aim of this research paper is to provide an organized and elaborate study on the effect of AI on the labor market and wage disparity. To do so, the paper has the following specific objectives:

A framework to familiarize oneself with the unique features of AI to survey and combined the accessible theoretical and empirical studies regarding the impact of technology on labor is needed.

- To recognize and estimate the main ways in which AI affects employment and wages, such as the automation, augmentation, and the generation of new work.
- To investigate the fact of job polarization and hollowing out the middle class as a side effect of AI-driven automation.
- To gauge the contribution of AI to increasing wage disparity between high and low skill employees and its role in the increase in the proportion of income accruing to capital.
- To address the mediation effects of education, corporate strategy, and public policy regarding the distributional consequences of using AI.

The paper is organized in the following manner. Section 2 gives an in-depth Literature Review which dwells on the theoretical basis of technological change and labor and includes the current research related to AI and robotics. Section 3 describes the Methodology/Approach, which includes conceptual framework of analysing the impact of AI on the labour market based on established economic models. Section 4 includes the main Analysis and Findings, which explain the workings of the impact of AI, the evidence of its effects on the structure of jobs and wages and the case studies in actual industries. Section 5 provides a Discussion on the implications of the findings critically in light of the limitation of current research and the wider implications on society. Lastly, it has the Conclusion, which sums up the main points and includes the recommendations on how to overcome the challenges and opportunities of the AI revolution in the future.

II. Literature Review

2.1 Theoretical Foundations: Technology, Labor, and Wages

The interrelation of technological innovation and labor markets is an issue of longstanding economical thinking. The classical economists, since Adam Smith, up to Karl Marx, were shaped to understand the two sides of the technology phenomenon: on one side, it provides the technological power to boost productivity and, at the same time, to displace workers and to redistribute the income. An early, visceral response to the disruptive force of automation is the Luddite movement of the early 19th century, where the textile workers themselves destroyed machines in response.

Current economic thinking has rejected this dichotomy to come up with more advanced models. The canonical model of interpreting this relation is the model of skill-biased technological change (SBTC), which has been prominent in the 1980s and 1990s, to explain the increase in wage inequality. The central belief of SBTC is that new technologies, and especially computers and software, augment the relative productivity and, by extension, the relative demand of skilled workers (e.g. workers with a college education) over unskilled workers (Acemoglu, 2002). This results in the enlargement of wage disparity between these groups. This model effectively described why even after the number of college-educated workers had increased substantially their wages still grew compared to other less educated workers.

The SBTC model however did not suffice to explain a more complex phenomenon that came to play in

the 1990s: job polarization. The task-based approach is one of these, developed by Autor, Levy and Murnane (2003), which holds that technology does not replace or complement workers on a wholesale basis, but rather it is task-focused. Their important discovery was that computerization was replacing mostly routine jobs, either manual (e.g., assembly line work) or cognitive (e.g., bookkeeping). These were jobs with well defined, codifiable rules, and occurred in middle-skilled, middle-wage jobs. Technology, conversely, had no significant impact on non-routine manual work (where situational flexibility and physical dexterity are the key requirements), but complemented non-routine abstract work (where problem solving, creativity and critical thinking are essential) typical of high-skill employment. The result was a hollowing out of the center of the labor market where the labour market growth was focused on the high-skill and low-skill sides and a polarization of wages towards the ends.

2.2 The Advent of AI and Robotics: A New Paradigm?

The latest wave of AI and robotics is a continuation of these previous trends with some new complexities. Acemoglu and Restrepo (2018) have come up with a potent framework in which technological change is modeled as a race between the automating (displacement) impact of technology and the invention of new tasks (reinstatement effect) in which labor has a comparative advantage. In their model, existing tasks can be automated by the new technology displacing workers and decreasing the share of income labor has. Yet, this is offset by a productivity effect (which will raise aggregate labor demand) and, most importantly, the invention of completely new work and jobs (e.g., AI ethicist, drone operator, data scientist). The overall influence on wages and employment will be in the balance of such forces in the long term. In case automation is faster than the development of new jobs, the number of jobs will decrease, and inequality will increase.

Empirical studies have tried to quantify such effects in recent times. Acemoglu and Restrepo (2020) analyzed the effects of industrial robots in the U.S. and discovered that each robot on a thousand workers lowers the ratio between employment and population by approximately 0.2 percent and wages by 0.42 percent. All these adverse effects were concentrated in the manufacturing industry and on standard manual jobs, which fell heavily on blue-collar workers. Using the data on 17 countries, Graetz and Michaels (2018) have discovered that, although industrial robots increased the productivity and value added, they also diminished the proportion of low-skilled workers in the employment spectrum.

2.3 AI's Impact on Cognitive Work and High-Skill Labor

Another notable difference of modern AI is that it can be utilized to do non-routine cognitive tasks. Medical images, draft legal documents and writing computer code can now be analyzed using machine learning algorithms and were previously believed to be unamenable to machine learning. This has prompted speculation that once AI is applied to the factory floor, it will spread to the office and white collar and professional jobs will be impacted.

Brynjolfsson, Mitchell, and Rock (2018) created a rubric, named Suitability for Machine Learning, that determines how vulnerable various tasks are to AI. They discovered that many jobs in the high-paying fields like management and scientific analysis contain elements that are vulnerable to ML automation. Nevertheless, they also highlight the potential of AI as an augmentation aid, where AI technology will support professionals, making them more productive and enable them to engage in more valuable work, such as strategy, creativity, and interpersonal interaction. As an example, an AI may assist a doctor to diagnose a disease more precisely, or it may enable a financial analyst to handle lots of data much faster.

This two-fold role of automation and augmentation implies that the effects of AI in high-skilled careers will be extremely diverse. Employees with work that can be automated by AI might be displaced or have their wages stagnate, whereas those who are able to use AI as an instrument might have their productivity and payment rise exponentially. This may result in a new type of within-group inequality, a separation of the so-called AI-enhanced superstars and other members of the same profession (Frank and Cook, 1995).

2.4 AI, Firms, and the Capital-Labor Split

In addition to individual employees and professions AI is transforming firm dynamics, as well as the general allocation of income between labor and capital. The emergence of superstar companies such as Google, Amazon, and Meta that use AI and data on scales has been associated with the decrease in the labor share of income (Autor et al., 2020). These companies are defined by a high productivity, high profitability and comparatively a low number of employees in relation to their market value. Their business concept is based on the intangible capital (software, algorithms, data) as opposed to the conventional labor and physical capital. With these companies becoming larger market shareholders, less of the national income is distributed to labor (wages) and more of the national income is distributed to capital (profits).

Moreover, AI is not taking place evenly throughout the economy. The more technologically advanced and large companies are prone to invest in and use AI, which means that they will create a divide in productivity

between them and smaller companies that are lagging behind. This may result in a higher concentration of the market and further reduction of the labor share since superstar firms are not always labour-intensive. Another important medium through which AI causes general wage and income inequality is this firm-level heterogeneity.

III. Methodology / Approach

3.1 Conceptual Framework: A Task-Based Model of AI's Impact

This paper is based on the task-based framework, first introduced by Autor, Levy, and Murnane (2003) and built upon by Acemoglu and Restrepo (2018), to organize the analysis of the influence of AI on the labor markets and wage inequality. The framework offers an agile and powerful perspective through which to observe how AI is engaging in a complex way with human labor. The main assumption is that economic production is achieved through a sequence of activities, which can be carried out by human labor, or capital (including AI). The advancement of technology in this perspective is the growth of the list of jobs that can be done by capital. The main channels by which AI has an impact on the labor market, according to our conceptual model, are three:

- The Displacement Effect (Automation): It happens when AI replaces the activities once carried out by humans. This has a direct negative impact in the demand of labor in those certain tasks. The size of this effect will be determined by the technical feasibility of automating a task and its economic feasibility. The fact that AI is able to work on non-routine tasks of cognition greatly expands the potential areas of displacement relative to previous technologies.
- The Productivity Effect (Augmentation): A Manifold is AI can also augment the remaining human employees in a particular process by automating some tasks to enhance the remaining human workers productivity. As an example, when collecting and processing data is automated by an artificial intelligence, more time can be devoted to analysis and strategic decision-making by an analyst. This rise in productivity may result in falling prices, higher output and, eventually, a rise in the demand of labor in the complementary activities and in the broader economy as well. This is able to partially or completely clothe the displacement effect.
- The Reinstatement Effect (Creation of New Tasks): Technological innovation always introduces new tasks and new roles and even new industries where human labor has a new comparative advantage. AI is generating the need of new classes of jobs including AI/ML engineers, data scientists, AI ethicists, model validators, and AI systems maintenance workers. These new activities are a reinstatement of the centrality of labor in the production process.

The overall employment and wage effect of AI will be a net effect of the three effects. In this context, wage disparity is the result of the difference in the heterogeneity of these impacts between the various skills and the different occupations.

3.2 Decomposing the Impact on Wage Inequality

- Under such a task-based framework, we will be able to break down the effect on wage inequality into a number of different mechanisms:
- Skill-Biased Displacement: In case AI automates low-skill or middle-skill workers more than high-skill workers, it will lower the relative wages of these workers relative to high-skill workers, enhancing the skill premium and wage inequality. This is the traditional job polarization channel.
- Skill-Biased Augmentation: When the AI tools mainly augment high-skill workers, it will increase their productivity and wages by a larger percentage relative to other workers, increasing the disparity between them and other workers. This generates a superstar effect.
- Capital-Labor Substitution: As far as AI can be viewed as a substitute of labor, which embodies capital, it can boost the national income allocated to the owners of capital (e.g., the shareholders of AI companies) at the cost of the labor share. This is a direct conversion to increased income inequality because ownership of capital is highly concentrated.
- Heterogeneous New Task Creation: It is also crucial how the new tasks created are of a nature. When the majority of new activities are highly skilled (e.g. AI research) or extremely low-skilled (e.g. delivery services on the gig economy), then it can strengthen the hollowing-out of the middle and further polarise wages.

3.3 Method of Analysis: Synthesis of Evidence

The qualitative, synthetic research methodology is used in this paper. It does not presuppose the primary collection of data or econometric modelling, rather, the systematic review, synthesis, and critical analysis of the existing body of knowledge are the main focus. The analysis will be done in three phases:

Economic Literature Review: We conduct a systemic review and synthesis of academic findings in the prominent academic journals in economics, public policy, and technology studies. These are theoretical models,

large-scale empirical studies based on data on the level of a country, and analyses of industry.

Reports and White Papers Analysis: We include the findings of high-profile reports by international bodies (e.g. OECD, World Economic Forum, IMF), governmental agencies, and leading consulting firms (e.g. McKinsey, PwC). These reports are not always peer reviewed, but may contain useful data and case studies of interest at the industry level and are usually current.

Examples of cases: In order to bring the abstract mechanisms to life, we will rely on the case studies in different industries, including manufacturing (robotics), finance (algorithmic trading), health care (diagnostic AI), and transportation (autonomous vehicles). These will demonstrate the practical implementation of the displacement, productivity and reinstatement effects.

This paper will make an effort to create a coherent and comprehensive story of how AI is defining the modern labor market and distributional consequences of its use by combining these various sources of evidence. The advantage of this method is that it helps to connect theoretical models, empirical evidence, and real-life applications and view a complex and fast-changing phenomenon as a whole and complex phenomenon.

IV. Analysis and Findings

4.1 The Displacement Effect: Automation of Routine and Non-Routine Tasks

The most immediate and the most well-debated influence of AI is its capability to automate the work, which causes the displacement of labor. Although earlier automation waves were addressed on routine manual and cognitive work, the hallmark of the AI revolution is the activities to which it encroaches on are in the category of non-routine tasks.

Routine Tasks: AI and robotics keep on enhancing the process of automating routine tasks. In production, sophisticated robots with machine vision and enhanced dexterity are replacing complex assembly and quality control jobs done by human beings. Robotic Process Automation (RPA) software can be used in clerical and administrative jobs to perform such activities as data entry, invoicing, and scheduling. It is an extension of the trend of hollowing out middle-skill, middle-wage jobs which defined the computer revolution, only at an accelerated pace and scale. To take an example, positions such as bank tellers, data entry clerks, travel agents are now heavily reduced due to automation technologies which have existed long before modern AI and are now being enhanced by it.

Non-Routine Cognitive Tasks: Authentic novelty of AI is the possibility to perform tasks that need to be pattern-recognized, predicted, and judged, which were once non-routine. For example:

In Law: Discovery of thousands of legal documents can now be done by AI-powered platforms, thousands of times faster than by a team of paralegals or junior lawyers and can find the relevant clauses with a high level of accuracy.

In Finance: Algorithmic trading, ML-led algorithmic trading has taken over stock markets. Automatic and cheap investment management offered by robot advisors pose a threat to the traditional role of human financial advisors.

Journalism: AI is used by news outlets to create the daily earnings reports and sporting briefs, so that journalists can have more time to conduct further investigative journalism.

In Healthcare: AI algorithms are already being shown to be as effective, or even more effective, than human radiologists in finding tumours in medical images.

This growth in the scope of automation implies that many more categories of workers are now competing directly against machines, including several highly educated workers. The empirical data point to the fact that mass unemployment has not been observed yet, but the labor market is currently churning, with the jobs that are highly susceptible to replacement by AI showing slower growth in employment and wages decreasing (Frey and Osborne, 2017; Acemoglu and Restrepo, 2020).

4.2 The Productivity Effect and the Augmentation of High-Skill Labor

The productivity effect is counterbalancing their displacement, by using AI as an effective instrument to enhance human potential, especially in skilled careers. Instead of replacing professionals, AI will be able to do the more mundane aspects of their work, and the professionals will be able to do what is more distinctively human: solve complicated problems, be creative, strategize, and empathize.

Examples of Augmentation:

The AI diagnostic tool will assist a doctor in making more accurate and quicker diagnoses whereby the doctor can dedicate time to attend to and design treatment plans.

Generative design software has the advantage of allowing an architect to experiment with thousands of possible building designs, given a set of constraints to meet (e.g., cost, materials, energy efficiency), and maximize his or her creative output.

An AI-powered code assistant (such as GitHub Copilot) can help a software developer to write and debug code more efficiently.

This is one of the main contributors of increasing wage disparity which is augmentation effect. It favors skillful employees who are technically and analytically skilled to operate with AI systems. This makes them more productive and hence worth more to employers, hence the increase in wages. This produces the so-called superstar effect, with just a few and very talented people in each industry, being boosted by technology, capturing a far larger portion of the market and revenue. The wage disparity does not only increase between the high skills and the low-skill labor force, but also among the skilled workforce, between those professionals who effectively use AI tools and those who do not.

4.3 The Reinstatement Effect: Creation of New Jobs and Tasks

The most challenging impact to foresee, though, probably, the most significant in terms of long-term employment is the establishment of completely new work and assignments. Technology has never destroyed more jobs than it has created and although this change may be painful the history has shown that technology always does. An AI is not an exception, and we can already observe the appearance of new positions that are directly related to the AI ecosystem:

AI Specialists: the demand is very high and the salaries of Data Scientists, Machine Learning Engineers, and AI Research Scientists are very high. These are the ones who construct, train and perfect AI models.

AI Enablers: The need to perform AI implementation and operation is growing, which necessitates the creation of such positions like AI Product Managers, AI Ethicists, and Model Validators, who will become the guarantors of fair, transparent, and human-oriented AI systems.

Human-in-the-loop Roles: A lot of AI systems do not eliminate the need to have human attention, intervention, and training. It has generated employment in such fields as data annotation and labeling (usually low-paying work) and remote vehicle control in autonomous driving systems.

Nevertheless, one important matter that Acemoglu and Restrepo (2018) raise is whether the rate of creating new tasks is high enough to balance with the automation rate. The evidence so far is mixed. As much as AI-specific jobs are growing rapidly, they are only a very small proportion of the total labor market. The overall reinstatement impact might be less than other technological revolutions to add to a slow demand of labor, and a median wage that is flat.

4.4 Evidence of Job Polarization and Wage Inequality

The accessibility of these channels is leading to a distinct tendency to the polarization of the labor market and a rise in wage inequality.

Hollowing out the middle: The displacement effect is largest among middle-skill jobs that are focused on routine tasks (e.g. administrative support, clerical work, some manufacturing jobs). In most developed economies, these jobs have experienced a fall in the proportion of total employment in the last twenty years.

Growth at the Extremes: Simultaneously, there has been growth of employment in two separate areas:

High-Skill, High-Wage Jobs: Abstract, non-routine cognition jobs (e.g. managers, professionals, tech workers) that are complemented by AI.

Low-Skill, Low-Wage Jobs: Non-routine, manual service jobs (e.g. home health aides, food service, cleaning) that are hard to automate because they require physical dexterity, flexibility, and human contact.

Increasing Wage Inequality: This polarization of work is automatically transformed into a wage polarization. The productivity effect of AI has made wages of skilled workers steadily rising at an accelerated rate. Meanwhile wages of low-skill workers have been growing far more slowly, and middle-skill wages have grown at best level, and diminished by far. This is one major area of divergence in overall growth in wage inequality in these countries such as the United States. The college education wage premium has remained robust, the wage gap between college and high school graduates remains non-negligible and among the college education workers the highly-skilled in what AI is not aimed at (e.g. STEM) is diverging.

V. Discussion

5.1 Implications for the Future of Work

The outcomes of our analysis give us a challenging and complex picture of the future of work. It is an account of the forthcoming general joblessness yet simultaneously of a huge and possibly painful structural reform in the workforce. The core of the matter, it is the dilemma of adaptation: over time, as more job positions are occupied by AI, employees will have to seek alternative occupation where alternative abilities will be embraced. Of particular concern is the hollowing out of jobs in the middle skill sets as they have traditionally represented a path to economic stability of much of the population. Absence of the fact that there are possible alternative ways would have led to increasing numbers of displaced workers being forced up into service jobs that are poorly paid and the outcome will be down-mobilities and a higher degree of economic insecurity. In addition, even the nature of work is changing. The so-called gig economy and the growing friendliness

toward AI-related content also set forth more precarious work regimes, such as reduced job security and diminished benefits and increased scrutiny through algorithms. Augmentation as the central theme suggests further that the burden of continuing learning and upskilling will also increase. It will compel employees to transform into life long learners in order to stay relevant as the technology frontier makes inroads onwards. The psychological impact of the race against algorithms and deskilling of jobs that are replaced by AI is one also worth noting that cannot be calculated solely economically.

5.2 The Role of Education and Skills

The significant role in this new terrain belongs to education system. The traditional front-loading model of education in the first 20 years of life will perish. The findings present the need of the paradigm shift that is lifelong learning and versatile skills.

Reevaluating Curricula: The curricula needs to be reviewed to incorporate skills that are complementary and not substitutable by AI. It means that one should abandon memorizing data (which AI is highly at) in favor of paying attention to critical thinking, innovation, multi-dimensional communication, collaboration, and socio-emotional intelligence.

Investment in STEM and Digital Literacy: More and more jobs will require fundamental skills in science, technologies, engineering, and mathematics (STEM), and digital literacy in general.

Vocational Training and Apprenticeships: The vocational education urgently requires a remodeling process, and the possibility of creating the modern apprenticeship programs could open the gate to well-compensated work career that does not necessarily require a four-year college education, particularly the skilled trades and technical fields associated with the maintenance and operation of AI.

Adult Retraining and Upskilling: Retraining and upskilling systems effective enough to recycle some of the mid-career workers whose jobs will be occupied by AI are one of the hardest to solve successfully. This connotes that the governments, employers and learning institutions should work in concert to provide pertinent training initiatives that are affordable and accessible.

5.3 Policy Interventions to Mitigate Inequality

Left to do its own devices, the AI market could result in socially and politically unsustainable levels of inequality. Proactive policy means should be ensured, thus, in order to include the benefits of AI in everyone.

Social Safety Net Needs to be reinforced: As more and more people shift in the labor market, the social safety net should be strong. It includes reforming unemployment insurance, providing health coverage that is not tied to a given employer or exploring other ideas like wage insurance (subsidizing salaries of unemployed workers who may take jobs with less pay).

Tax Policy Reform: This can be a use of tax as a redistributive tool. This can involve increasing the progressive nature of income tax, ensuring that capital gains and corporate profits (AI improved by AI) are subject to higher taxation and low paid workers have less payroll tax reduced to encourage employment. It has even been proposed to impose a tax on robots and this too is provocative since it will lead to negative effects in terms of innovation.

Policies on labor laws: Labor laws must be augmented to elevate the collective bargaining powers and the minimum wage may be augmented in a bid to moderate the forces of the market that are pushing down wages on the low- and middle-income workers.

Investment in Public Goods/R&D. Investment in R&D can also be used to encourage the character of technological change by allocating resources to R&D directed at the creation of human-complementary technologies rather than labour-substituting technologies. Publically funded infrastructure, education and healthcare can all be done in a way that creates jobs and improves overall productivity.

5.4 Limitations and Avenues for Future Research

There are a number of limitations to this analysis. First, AI revolution is not that old and its long-term impacts are very unpredictable. Empirical research currently is usually grounded in the effect of industrial robots or early-stage AI, with their conclusions potentially not fully applicable to the effects of more advanced, general AI. Second, evidence regarding the use of AI by companies remains limited and most of it is proprietary, so it is not as easy to conduct large-scale econometric analysis. Third, the effects of AI will be dramatically different in countries with different labor market institutions, education systems, and industrialization.

Further studies are needed to create superior scales of AI adoption in industries and companies. The longitudinal studies that will monitor individual workers through time will prove invaluable to the study of the transition pathways of people disposed of by technology. More also needs to be researched in the effectiveness of different policy interventions e.g. retraining program and social safety nets reforms in helping workers find their way through the AI economy. Finally, an interdisciplinary method that would make use of the insights of

sociology, political science and ethics will be soul in the widespread societal uses to this radical technology.

VI. Conclusion

6.1 Summary of Key Findings

The research paper provided has conducted a thorough investigation of the impact of Artificial Intelligence on the labor market and inequality of wages. Our theoretical and empirical accounts of both the theoretical literature and the empirical information draw up in a few key conclusions. To begin with, AI is extremely powerful general-purpose technology, which is as well an automation of labor, a labor-saving labor, and creation of new tasks and employment. How these conflicting forces will balance is where the net effect on employment is indeterminate and relies on the balance in the Monetary scene.

Second, the effects of AI are extremely diverse, in terms of activities and expertise. It also boosts the automation of routine jobs, and is furthering the trend of hollowing out middle-skill jobs. More importantly, it is also extending the automation frontier to non-routine cognitive tasks, leaving a greater variety of occupations vulnerable. Third, AI is a strong complement of highly skilled abstract labor and increases the productivity of professionals and managers. This is a skill-biased augmentation, along with the replacement of middle-skill labor, which is a major cause of job polarisation and increasing wage inequality. The outcome is an increasing polarization in the labor market, as wages increase among the technologically skilled elite, and flatten among many others. Lastly, there is the emergence of AI-powered superstar companies, which are leading to a falling share of labor in income, as an increased share of economic gains are going to the capital and intellectual property owners.

6.2 Concluding Remarks and Future Outlook

The AI revolution is not a dynamic force that cannot be resisted, and that has a pre-determined ultimate decision. It is a tool and how it is going to affect the society; this depends on the choice we make as individuals, organizations and governments. The problem with the age is to find a way of the tremendous productivity dividends of AI and to lessen its disruptive effect on the work environment. Technologically caused future mass unemployment is unlikely but a future shaped by a growing degree of inequality and social disruption is not unimaginable as long as we persist on a business-as-usual path.

This change will require a 4-pronged approach. Education and skills will be forced to reshape to create non-redundant human skills as alternatives to AI e.g. creativity, critical thinking and social intelligence. The social safety nets also member states should revise them to help workers switch jobs more frequently. Tax and labour market policies will have to be modified in such a way that the fruits of the productivity generated with the help of AI are distributed more equitably between capital and labour. It is not supposed to slow the process of innovation but is supposed to make it swing in the direction that strengthens the capabilities of humanity and leads to prosperity of all. No one knows what the future may hold, but a proactive and inclusive policy agenda may be one of the possibilities that would allow seeing how the era of AI will turn out to be neither another gilded age of inequality but a new epoch of sustainable economic growth and broad participation.

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