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Universal Basic Income (UBI) and Artificial Intelligence (AI): A Comprehensive Examination of Their Intersection for Social Justice and the Socio-Economic Transition

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Contents

Abstract

This paper offers an in-depth exploration of the interplay and ramifications of Artificial Intelligence (AI), Universal Basic Income (UBI), and Resource Redistribution (RRD) in the evolving landscape of governance models. Specifically, it scrutinizes these elements within the broader context of socio-economic transformation aimed at achieving social justice. The study employs a multifaceted approach to analyze the viability and implications of UBI and RRD under three different governance paradigms: human governance, AI governance, and human-AI co-governance. Through this lens, the paper indicates the potential efficacy of UBI as a direct and robust instrument across these governance models. It also raises critical questions at the same time, particularly about the capability of AI to outperform human decision-making, signaling the need for additional research and ethical considerations. Furthermore, the paper delves into the comparison involved in applying UBI and resource redistribution in the different governance models. Challenges related to taxation systems, power structures, and social equity derived from the new era are discussed in the paper. Alongside this, the paper also examines UBI within the New Ordoliberalism framework in the AI era. Concluding with preliminary policy recommendations and avenues for future research, the paper underscores the transformative role that AI and UBI are poised to play in the future global landscape.

Keywords: AI Governance; Artificial Intelligence (AI); Universal Basic Income (UBI); Resource Redistribution; Socio-Economic Transition; Social Justice; Automation; New Ordoliberalism

1.Introduction

From the very beginning, humans have strived to surpass their limitations. The birth of language solved the communication problem, telephones bridged long-distance gaps, and transportation inventions resolved issues with travel and migration. Machines and automation greatly increased productivity. Humans have invented tools that exceed their abilities, particularly after the first industrial revolution. Humanity's progress has been accelerating steadily.

And with the emergence of artificial intelligence (AI) and automation technologies, their potential impact on social and economic structures has become a widely discussed topic. This is similar to the situation when computers and the internet first appeared, as few could foresee how these technologies and their derivatives would profoundly change human society. For example, the advent of the internet and mobile phones greatly facilitated global information flow, altering people's ways of learning and communication – all dividends brought about by technological progress. Similarly, the combination of AI and automation has the potential to completely transform industrial production structures, even liberating individuals from tedious labor.

In this context, managing and guiding socio-economic transition under deep integration of AI has become an urgent issue. Particularly, two social-economic policies – Universal Basic Income (UBI) and resource redistribution – need further exploration and comparison regarding their advantages and disadvantages in AI-integrated governance. This article aims to answer one question: which is more suitable between UBI and resource redistribution under different AI social governance models and what might be the socio-economic transition? Currently, social welfare is mainly designed around employment (Neumärker, 2018). However, with the potential of AI, the definition of employment will undergo revolutionary changes in the future. A "good job" from decades ago may be completely eliminated in a few decades. In this situation, although UBI should not be the sole means of welfare, it will play a crucial role in the future development of human society.

This article will provide a detailed comparison and analysis of UBI and resource redistribution in various scenarios of AI social governance to explore which policy is better suited for a society. Simultaneously, it is important to conduct a thorough analysis and grasp the diverse roles of AI in UBI. And we must consider the significant impact and array of issues that AI and automation may pose to society in the future. In a society potentially deeply intertwined with AI, it is also worth exploring if New Ordoliberalism can offer valuable insights. Furthermore, this article will propose appropriate governance recommendations considering potential socio-economic transition.

2. UBI and AI: Theoretical Underpinnings and Practical Applications

2.1 UBI,AI and Social Justice

Money, as a medium of exchange, holds a significant role in society. It serves as an evaluation of information and a measure of value, facilitating transactions and economic activities. However, the distribution of money in society is not equal, leading to disparities and inequalities. The differences in information and resources among individuals often result in unequal wealth distribution, which in turn, contributes to poverty. Those who cannot acquire sufficient money find it challenging to meet their basic needs and survive, let alone thrive.

Universal Basic Income (UBI) is a form of social policy that has been gaining increasing attention in recent years. It involves providing all citizens of a country or other geographic area with a regular, unconditional sum of money, regardless of their income or employment status (Hoynes and Rothstein, 2020). The concept of UBI is not new, but it has been brought into sharper focus in recent years due to growing concerns about income inequality and job displacement due to automation. UBI is seen as a potential solution to these issues, providing a safety net for individuals and allowing them to meet their basic needs. This could potentially free individuals to pursue more fulfilling or creative endeavors, contribute to their

communities, or engage in lifelong learning, without the constant pressure to earn a living (Vlandas, 2020).

The origins of UBI can be traced back to the 16th century, with Thomas More's "Utopia" often cited as one of the earliest proposals of a basic income. In the 18th century, Thomas Paine proposed a form of basic income as a way to compensate people for the "loss of his or her natural inheritance, by the introduction of the system of landed property" (Paine, 1797). The idea gained more traction in the 20th century, with various models of basic income being proposed and tested. In the 1960s and 1970s, several experiments with negative income tax (a form of basic income) were conducted in the United States and Canada. More recently, the idea of UBI has been revived in response to concerns about income inequality and job displacement due to automation. UBI is seen as a potential solution to these issues, providing a safety net for individuals and allowing them to meet their basic needs. This could potentially free individuals to pursue more fulfilling or creative endeavors, contribute to their communities, or engage in lifelong learning, without the constant pressure to earn a living (Vlandas, 2020; Widerquist, 2017; Forget, 2011). The ultimate goal of UBI is to provide a basic level of financial security for all citizens, reducing the stress and uncertainty associated with job loss and potentially smoothing the transition to new types of work or employment structures (Van Parijs, 2004). The concept of UBI has evolved over the centuries, adapting to the changing economic and social landscapes. Today, UBI is seen as a radical yet feasible solution to the challenges posed by the modern economy, it has the potential as the support for people to say no (Birnbaum & De Wispelaere, 2021)**,** particularly in the face of increasing automation and the changing nature of work.

Artificial intelligence, on the other hand, is that activity devoted to making machines intelligent, and intelligence is that quality that enables an entity to function appropriately and with foresight in its environment (Nilsson, 2010). It refers to the simulation of human intelligence processes by machines, especially computer systems. These processes include learning, reasoning, problem-solving, perception, and language understanding (Moor, 2006). The field of AI has seen rapid advancements in recent years, with AI

technologies being integrated into various sectors including healthcare, education, transportation, and manufacturing. This has led to significant improvements in efficiency and productivity, but it has also raised concerns about the potential displacement of jobs, as tasks that were once performed by humans are increasingly being automated. This has led to questions about how society can adapt to these changes, and what kinds of skills and education will be needed in an increasingly automated future (Lee et al., 2004).

The origins of AI can be traced back to the mid-20th century, with the development of the first computers and the idea of creating machines that could mimic human intelligence. The goal was to create machines that could perform tasks that normally required human intelligence, such as playing chess or translating languages. Over the years, the field of AI has evolved and expanded, with advancements in machine learning and neural networks leading to the development of AI systems that can learn and adapt to new information, much like a human brain. However, despite these advancements, AI is still far from achieving the level of general intelligence seen in humans. The development of AI has been driven by a combination of technological advancements, increased availability of data, and improvements in algorithms. However, the path of AI development has not been smooth, with periods of rapid progress followed by periods of stagnation, known as "AI winters" (Korinek & Stiglitz, 2021).

The concept of "engineering informatics" has emerged as a significant area of study within the field of AI. This discipline focuses on the science of the information that flows through engineering processes, and it has grown in response to the increasing complexity of engineering problems being solved with AI. Early applications of AI in engineering were primarily driven by mathematics and computer science, but more recently, models of collaboration and representation, and the acquisition of collective knowledge have been introduced, driven by fields of social sciences such as ethnography and sociology of work (Subrahmanian & Sudarsan, 2008)

The intersection of UBI and AI presents a unique set of challenges and opportunities. On one hand, the implementation of UBI could serve as a

buffer against the job displacement caused by AI-driven automation. It could provide a basic level of financial security for all citizens, reducing the stress and uncertainty associated with job loss and potentially smoothing the transition to new types of work or employment structures. On the other hand, the advancements in AI could potentially lead to a society where work is no longer the primary means of income for many individuals. In such a scenario, UBI could become a necessity rather than a safety net, providing a basic income that allows individuals to maintain a decent standard of living even in the absence of traditional employment (Hoynes and Rothstein, 2020; Moor, 2006; Hall et al., 2019; Korinek & Stiglitz, 2021).

Social justice, a concept deeply rooted in philosophical discourses and supported by multidisciplinary research, is often defined as the fair and equitable distribution of wealth, opportunities, and privileges within a society (Doorn, Gardoni, & Murphy, 2018). It serves as a critical cornerstone of social resilience and human well-being, both of which are intricately influenced by the resilience of physical infrastructure and the prevailing socioeconomic context (Doorn, Gardoni, & Murphy, 2019). Far from being an idealized notion, social justice is integral to the process of human development and evolution, and its importance has been further underscored in the face of global challenges such as the COVID-19 pandemic (Fleetwood, 2020).Social justice, a concept deeply rooted in philosophical discourses, is often defined as the fair and equitable distribution of wealth, opportunities, and privileges within a society (Doorn, Gardoni, & Murphy, 2018). It is a critical aspect of social resilience and human well-being, which are influenced by both the physical infrastructure and the socioeconomic context (Doorn, Gardoni, & Murphy, 2018). Social Justice. Although it may sound like an idealized definition, this is also a crucial part of the process of human development and evolution.

2.2 New Ordoliberalism and Socio-Economic Transition

"New Ordoliberalism, a term coined in the German discourse as 'Neuer Ordoliberalismus,' represents an evolved and more comprehensive framework of traditional Ordoliberalism. This advanced approach is conceived to address the inadequacies of traditional Ordoliberalism,

particularly in the realms of normative and positive state economic analysis. New Ordoliberalism not only serves as a more robust political-economic safeguard but also integrates additional criticisms and challenges that the traditional framework failed to consider. Importantly, this new conceptualization significantly alters the traditional Ordoliberal relationship with mainstream economics, offering a more analytically and conceptually aligned stance (Neumärker 2017)."

With its focus on strong state-led regulation, New Ordoliberalism would likely advocate for a comprehensive ethical and labor market framework for AI. It could also align with the concept of Universal Basic Income (UBI) as a modern social safety net, fulfilling the state's responsibility for economic well-being. Furthermore, its principles would favor policies aimed at reducing economic disparities, thus contributing to social justice. Overall, New Ordoliberalism's tenets could serve as a balanced approach to addressing the complexities of AI, UBI, and social equity.

In terms of Socio-Economic Transition, it is crucial to comprehend the potential benefits that technological progress and development can bring to society. The emergence of computers resolved the long-standing issue of computing power, while telephones revolutionized long-distance communication and interaction among people. The transition from fixed devices to mobile phones had a significant impact on society as well. Additionally, the invention of the internet facilitated global information exchange and brought people closer together. Nowadays, anyone with a phone or mobile device has access to an abundance of information that was previously difficult for ordinary individuals to obtain.

Everyone has subtly integrated into this technology ecosystem and is participating in the Socio-Economic Transition driven by technological progress. Every new technology or invention aims at liberating productivity further. Technological advancements have been freeing up human productivity gradually, promoting interaction and evolution within human society but also bringing along various challenges. We believe these problems will be solved through further technological advances; for

instance, AI's rapid advancement may eliminate traditional translation industries due to its ability to overcome language barriers effectively.

Although we cannot predict future advancements in AI technology precisely, one thing is certain: AI will continue advancing based on overall social needs - namely further liberation of productivity - making UBI an essential safeguard for next steps in Socio-Economic Transition. The reason is that not all the achievements of technological progress or technological explosion can be enjoyed by everyone equally. Therefore, the existence of UBI will serve as a compensatory mechanism for social justice, maintaining social and economic stability and development while ensuring relative fairness. Of course, the most important factor is the overall increase in productivity. If productivity exponentially increases due to rapid developments in AI and automation, a true "communist" or "egalitarian" society may come earlier than expected. However, this development will still be limited by the allocation of Earth's total resources, resulting in social stratification into different classes. At this point, AI and automation will also play a crucial role in it. The integration of UBI and AI is poised to bring about significant socio-economic transformations. One of the most profound changes is expected in labor markets. With the rise of AI technology combined with automation, massive unemployment has a high probability of happening (Bessen, 2019). Just like the technology revolution has shifted several eras before, people in this era also face this dilemma. However, this shift could also lead to a redefinition of work and individual purpose. With the potential for mass unemployment due to AI and automation, people may need to find new forms of purpose and meaning beyond traditional employment. This could lead to a greater emphasis on creative, entrepreneurial, or social endeavors that provide personal fulfillment and social benefit. The role of education and lifelong learning in preparing individuals for this shift could also be discussed (Chrisp, Garcia-Lazaro, & Pearce, 2022).

Fortunately, due to the potential of Automation that greatly saves human's productivity and its potential to reduce the cost of living since the sophisticated and advanced automation with AI is able to lower the cost of a lot of products, even services, this would be a new angle that we cut in

(Bessen, 2019). This could lead to significant increases in productivity, potentially reducing the cost of goods and services and altering traditional measures of economic productivity. This could lead to a reevaluation of economic success beyond GDP and total factor productivity, towards measures that take into account social well-being and sustainability (Goolsbee, 2022).

The future structure of society might likely to highly incorporate with AI just like the society now that almost everyone has interaction with the Internet combined with their mobile phone. This is the inevitable trend. As this trend comes, so as the Socio-Economic Transition will be affected. The whole structure of the Manufacturing industry, Social relationship will fundamentally change by AI. However, the rise of AI could lead to new forms of economic inequality, particularly related to the ownership and control of AI technologies. This could lead to a concentration of wealth and power among those who own and control these technologies, potentially exacerbating existing economic inequalities. The ethical implications of this, including the fair distribution of the benefits of AI, could be discussed (Velicu and Barthès, 2022).

From my opinion, there might be different scenarios in the future:

1. **Human Leadership and Governance in the Age of AI:** In the emerging era of AI, human leadership and governance play a crucial role in shaping socio-economic transition. AI is integrated into a governance blueprint led by humans, incorporating data-driven insights into policy decisions and working alongside robotics to benefit society. The ultimate authority lies with human leaders who possess the skills to navigate diverse cultures, connect with people from different backgrounds, and make decisions that combine data analysis with human intuition. This human-centered approach holds great promise for regional and economic policy control, ensuring alignment with the specific needs and values of the population.

   The narrative explores the realm of human governance, where ethical considerations and moral values are central. This model is a crucible for merging ethics and morals, particularly in the

implementation of Universal Basic Income (UBI), aligning with New Ordoliberalism's vision of a social market economy. Additionally, human leaders possess an innate understanding of cultural nuances to ensure that policies, including UBI, resonate with diverse values and needs. The harmonious blend of data-driven decision-making and human intuition enhances the potential for balanced and empathetic policies crucial to nuanced UBI regulations.

However, the story of human leadership is not without its weaknesses and vulnerabilities. Even skilled leaders can struggle with personal biases and political pressures, becoming entangled in complex problems. As AI and technology continue to advance rapidly, human leaders may find it difficult to keep up, resulting in policies that fail to fully utilize technological advancements and ultimately leading to less than optimal outcomes for society as a whole. In comparison to AI-driven systems, the human governance model may lack the efficiency and precision needed to effectively administer UBI.

The combination of AI and human governance offers numerous opportunities. Integrating AI could improve the administration of UBI, aligning with New Ordoliberalism's efficiency principles while maintaining human oversight. Additionally, the merging of AI and automation will boost productivity, potentially reducing the cost of goods and services and reshaping traditional measures of economic productivity. This shift may prompt a reassessment of economic success, moving away from GDP and total factor productivity towards indicators that encompass social well-being and sustainability, as well as promoting environmentally friendly metrics.[1] The role of UBI in ensuring a fairer distribution of benefits resulting from increased productivity deserves scrutiny.

At the same time, there are threats on the horizon that cast long shadows. Resistance to integrating AI may hinder the efficient

[1] . Unmanned electric vehicles with AI offers a sustainable and effective solution for future transportation, reducing both congestion and emissions.

administration of UBI and impede the broader realization of New Ordoliberalism principles. This narrative extends into the realm of knowledge spillover phenomenon, where technological advancements may be confined within commercial or national boundaries, delaying wider societal benefits. This delay implies a scenario in which significant resources are invested in nurturing these technologies, yet society as a whole is unable to enjoy real-time benefits due to competition driven by humans or national defense strategies. In the discourse by Flagg, Lane, and Lockett (2013), the authors delineate the hurdles in engendering technological innovations with socio-economic impacts. They accentuate that traditional governmental policies often stumble in bridging the rift between scientific research and real-world applications, leading to missed opportunities and inefficiencies. This narrative underscores the potential pitfalls of human-led governance, especially when rapid socio-economic changes, driven by technology, can jolt traditional decision-making structures.

Moreover, the rise of AI may reveal novel forms of economic inequality, specifically related to the possession and management of AI technologies. This rise could lead to a consolidation of wealth and influence among those in charge of these technologies, potentially worsening current economic disparities. The ethical implications involved, including the equitable allocation of AI advantages, deserve discussion. Additionally, the potential role of UBI in alleviating these inequalities and guaranteeing a just distribution of wealth is worth investigating. The impact of AI and UBI extends beyond individual countries and affects the global stage. The distribution of AI benefits and the implementation of UBI may vary significantly across different countries and regions, leading to potential disparities. It is important to discuss the ethical dilemmas related to this, such as issues of global justice and equity. Additionally, exploring the role of international cooperation and policy coordination in addressing these challenges is worthwhile.

The situation could worsen in authoritarian regimes, where the combination of AI and automation could be used as weapons to create surveillance states. In these types of governing systems, robots and algorithms could have unrestricted access to personal data, violating individual privacy and freedoms. This would make achieving social justice a difficult if not impossible task.

2. **AI Governance in the Age of Automation and Advanced Algorithms:** In a governance model driven by AI, decision-making transcends human biases and limitations, aiming for optimal outcomes based on vast datasets and predictive analytics. The primary advantage of this model is its unparalleled efficiency and objectivity. AI can process information on an unprecedented scale, ensuring that policies are optimized for the greatest social good. This data-driven approach can be particularly advantageous for addressing global and systemic challenges, as policies are crafted based on empirical evidence and predictive modeling.

   Exploring an AI-driven governance landscape reveals a realm where flat-governance assumes control. This structure, similar to a benevolent dictator striving for maximum social welfare (Taylor, 2019), enables quick and consistent decision-making. The agility in decision-making emerges as a guiding light, ensuring prompt adjustments in UBI policies during socio-economic fluctuations. Furthermore, the era of AI governance presents a scenario where anyone equipped with a suitable device, such as a mobile phone, can engage in real-time conversations with AI and receive instant feedback. This democratization of interaction promotes fairness and paves the way for equal opportunities and rights for everyone. Thus, a renegotiation-proofness are likely to be achived in this circumstance.

   However, the narrative of AI governance isn't devoid of the echo of potential vulnerabilities. The same strength that stands as a pillar for this model could also morph into a weak link if not navigated with discernment.

The quality of training data and the algorithms guiding AI's development are crucial in shaping AI governance. When data is biased or algorithms are opaque, the resulting decisions may conflict with societal values and ethical standards. This model lacks human intuition and empathy, potentially leading to policies that lack a genuine understanding of cultural and emotional aspects important to people and might lead to chaoes in the human society.

The field of AI governance is intricately connected to opportunities, especially in the realm of social justice. AI, with its impartial perspective, creates an environment where fairness prevails in the implementation of laws and regulations. The unbiased nature of AI governance can serve as a defense against unequal resource distribution or biased treatment in UBI disbursements, laying the foundation for a more equitable society.

But there are still challenges ahead. The field of AI governance is filled with ethical and moral dilemmas. While AI technology is highly accurate, it may overlook important aspects such as moral judgment or certain ethical issues. These oversights could result in policy failures or worsen social inequalities, particularly in the distribution of UBI benefits. Additionally, there is a risk of moral hazard lurking in the background, where human nature's inclination towards deception could lead to misjudgments in AI governance. Such mistakes could have serious consequences, causing policy implementation failures and creating a society marked by extreme social inequality or a landscape where the wealthy manipulate AI for personal gain, making social justice seem unattainable.

Thus, the discussion delves deeper into the mysterious nature of advanced algorithms, often referred to as "black boxes," where the reasoning behind decisions remains unclear. This lack of transparency may lead to mistrust among people, particularly when it comes to AI-driven UBI policies. The narrative also explores how AI governance can promote equality and prevent excessive

concentration of resources, while highlighting the risks of neglecting moral and ethical considerations in policy-making.

In the paper by Kuziemski and Misuraca (2020), the authors delve into the challenges and opportunities of AI-driven public governance. They highlight the potential of AI in enhancing policy effectiveness and efficiency but also caution against its unchecked use without considering ethical and social implications. This underscores the need for a balanced approach, where AI's efficiency is complemented by human oversight and ethical considerations.

In this context, the same points regarding shifts in labor markets, changes in economic productivity, new forms of economic inequality, and global implications as discussed in the first scenario would apply.

3. Human-AI Co-governance: A Balanced Pathway for Future Socio-Economic Transition

In the rapidly evolving landscape of governance, the integration of AI and UBI presents both opportunities and challenges. The co-governance model, which combines the computational capabilities of AI with the nuanced decision-making of humans, emerges as a pragmatic solution for addressing the socio-economic implications of UBI and AI integration. In this scenario, both AI and humans helm the decision-making wheel, each contributing its unique strengths to the governance model.

The co-governance scenario involves the use of AI technologies to enhance the effectiveness and efficiency of UBI distribution. AI-driven algorithms analyze economic data, labor market trends, and individual needs to determine the optimal amount of UBI for each citizen. This data-driven approach ensures that UBI is distributed fairly and equitably, addressing the unique needs of different segments of the population. Notwithstanding the co-governance model recognizes that purely data-driven decisions may lack the human touch necessary to resonate with social values and cultural nuances.

In this model, human institutions and AI work together to formulate policies that ensure everyone's right to participate in governance, ultimately achieving optimal policies for social justice or Pareto improvement of society as a whole. This collaborative approach involves the active participation of various stakeholders, including government agencies, private sector organizations, and civil society groups. By integrating AI's analytical prowess with human empathy, cultural understanding, and ethical considerations, the co-governance model ensures that policies resonate with both logical and social values.

This scenario underscores the significance of transparency and inclusivity in governing UBI and AI technologies. It also emphasizes the necessity of proactive policymaking amidst rapid technological progress and socio-economic shifts. Policymakers must take into account the potential social consequences and policy suggestions outlined in this section as a basis for future research and policy formulation, particularly regarding transparency in policy making and ensuring people's satisfaction through active participation by all individuals involved in this scenario. It presents a well-balanced and acceptable approach to the future's socio-economic transition. Moreover, AI possesses the capability to assess and evaluate policies based on its continuous learning from society at all levels. Given its extensive database and superior data retrieval and analysis abilities, AI's recommendations hold significant value beyond human capacity.

Nevertheless, the model is not without challenges. For instance, wealthy individuals may attempt to bribe the poor and purchase their political influence, leading to erroneous judgments by AI and finally lead to the market failer or worse wealth redistribution. On the other hand, the co-governance model might trip over accountability hurdles. In the event of a wrong decision, pinpointing responsibility could become a complex endeavor. The intertwining of AI and human decision-making, while advantageous, may also cloud accountability, making it challenging to dissect and understand the root of certain

decisions, especially in scenarios where AI and human inputs conflict.

Dignum (2019) underscores the importance of creating AI systems that are ethically aligned. The essence of her argument is the harmonious integration of AI into social structures, ensuring that it complements human decision-making rather than overshadowing it. The co-governance scenario emphasizes the importance of implementing policies that promote social justice and economic stability in the context of AI-driven society, recognizing the need for a balanced approach that synergizes the strengths of both AI and humans it the priority to ensure a right direction to the social justice.

The path of co-governance isn't devoid of thorns. Skepticism from groups unfamiliar with AI, the pace of technological advancements outstripping policy evolution, and global AI adoption disparities pose significant threats. Furthermore, the risk of affluent entities manipulating the system by bribing underprivileged populations could potentially distort political outcomes, undermining the essence of fairness and equity the co-governance model strives to uphold.

These three scenarios have their advantages and disadvantages. In this case, UBI would play a crucial role in ensuring social fairness and protecting distributive justice. If artificial intelligence can seamlessly integrate with automation, it could lead to a long-term era of highly integrated collaboration between humans, machines, and AI. In this case, it is important to note that this optimistic assumption relies on the belief that AI will bring positive changes to society. While job loss may occur in some cases, those affected would receive appropriate compensation as a result of the evolving social structure. UBI is the optimal solution for compensating workers in industries like AI automation. Let's consider the emerging AI automation industry as an example. If this industry replaces traditional assembly line production, it will significantly enhance factory efficiency while reducing the need for human operators. Machines are more efficient than humans and require minimal rest, resulting in increased profits for factories even if raw material prices remain unchanged.

By implementing taxes on AI automation and utilizing the generated revenue to fund UBI, the government can effectively address job losses experienced by workers in this sector. Ensuring equal access for every citizen to policy transparency can guarantee strategy-proofness and renegotiation-proofness, while also potentially eliminating the issue of self-enforcement.

The impacts of AI and UBI, as well as their integration, extend beyond individual countries and have global implications. The distribution of AI benefits and the implementation of UBI may vary greatly across different countries and regions, potentially resulting in disparities. These ethical questions encompass concerns about global justice and equity that warrant discussion. Additionally, exploring the role of international cooperation and policy coordination can help address these challenges.

Overall, regarding the general direction of Socio-Economic transition, we can speculate that human civilization is likely on the eve of AI awakening. Everything related to weak artificial intelligence dialogue and knowledge input at present could become "prenatal education" for AI awakening. Since the birth of chatGPT, some industries have undergone tremendous changes in just a few months: copyright for human painting has been completely replaced by AI, leaving only some remnants of creativity; AI will gradually replace many mediocre intellectual laborers. With its vast knowledge reserves and logical thinking abilities alone, AI can already defeat most humans. In addition to its powerful memory storage and data retrieval capabilities, it can replace most intellectual labor based on energy guarantees. Although AI still needs human assistance to ensure human goals and purposes at present, if humanity really enters the era of AGI in the future, there will be a large number of "useless people" in society - literally useless humans whose knowledge and skills can be completely replaced by AI. At this point, AI will become true labor force and humanity will usher in a new wave of "liberation movement". Governments must consider issuing UBI for low-skilled workers to ensure basic survival for most humans while also maintaining social order stability.

3. AI as an Enabler of UBI: Implications for Social Justice

As we usher in the era of Robot Automation, the profound potential of AI and Automation unfolds before us, providing a glimpse into a future full of possibilities but also filled with dilemmas. The potential threat of losing employment casts a dark shadow on the future, sparking an important question - Job Loss Concern (BCG, 2021): is there any replacement? Unlike the industrial revolutions of yore that bore a cornucopia of new vocations, the AI-driven metamorphosis seems less promising in replenishing the job market, thereby entwining us in a complex web of socio-economic dilemmas.

The rapid evolution of AI and automation we are likely to bring human beings into a Robot Economy. Envision a world where robots transcend the boundaries of mere automation, move into indispensable cohorts assisting in household chores, culinary endeavors, and bureaucratic paperwork. This not only redefines human-robot symbiosis but also beckons a radical re-evaluation of our societal and economic paradigms.

When we enter the era of AI/AGI, a crucial question arises: how do we care for "obsolete" humans? The need for UBI in this era is growing, it is a solution and compensation to the economic challenges caused by advancements in AI.

3.1 AI as a facilitator or as an inhibitor of UBI

As we delve deeper into the role of AI in the context of UBI, it's important to consider the dual nature of AI. AI, with its advanced capabilities, can significantly contribute to the implementation of UBI. However, it also poses potential challenges that could inhibit its effective implementation. For instance, AI can lead to increased work intensity and stress, privacy concerns, and the deskilling of workers. Moreover, the evolution of AI from its early stages to its current state is a testament to its potential. In the early stages of AI development, AI itself was unable to assist humans in completing many tasks. But in 2023, there has been a qualitative leap in artificial intelligence, gradually enabling it to assist humans in accomplishing various tasks and significantly improving human productivity. This evolution

has been marked by AI's potential to lead to job displacement, particularly for routine tasks, and to affect employment patterns and wages (Zarifhonarvar, 2023, p.1, 6, 25, 23).

I. AI as a facilitator of UBI:

AI plays a pivotal role in facilitating UBI, with profound implications for social justice and inequality. AI's advanced capabilities allow for the processing and analysis of vast data sets, thereby ensuring a more equitable distribution of UBI. Specifically, AI algorithms can pinpoint those most in need of UBI, thereby ensuring that aid is directed towards the most vulnerable segments of society. This represents a significant advancement over traditional methods of UBI distribution, which may be subject to biases and inefficiencies. Indeed, Zarifhonarvar (2023, p.27) and Chrisp, Garcia-Lazaro, & Pearce (2023, p.34) discuss the potential role of UBI in an era of declining labor shares due to technological change, such as advancements in AI and automation, and how UBI could serve as a response to this trend, particularly in consumption-driven economies with liberalized markets.

AI can also contribute to social justice by enhancing the responsiveness and adaptability of UBI systems. For instance, AI systems can be designed to adjust UBI payments based on changes in individual circumstances or broader economic conditions. This can help to ensure that UBI provides a robust safety net for those in need, promoting social justice. Zarifhonarvar (2023, p.18) and Goolsbee (2018, p.6) also touch upon the issues of pricing, privacy, and competition policy in an AI-intensive economy, which are all relevant to digitalization and the implementation of UBI.

From a Pareto improvement perspective, AI can potentially lead to a situation where some individuals are better off without making anyone worse off. By enhancing the efficiency of UBI distribution, AI can help to maximize the benefits of UBI for recipients while minimizing the costs for society as a whole. This could lead to a Pareto improvement, with benefits for both UBI recipients and the broader society. Zarifhonarvar (2023, p.15) discusses the financing

of a UBI and its potential impacts on labor supply, which could be seen as a form of socio-economic transition. He also mentions that the size of the Alaska Permanent Fund Dividend might be too small to significantly impact labor supply, but a full-scale UBI could have different effects.

In addition to these points, AI's role in facilitating UBI can extend to various other areas. For instance, AI can be used to predict future economic conditions and adjust UBI payments accordingly, ensuring that they remain effective even in changing economic landscapes. AI can also be used to automate the administration of UBI, reducing administrative costs and ensuring that payments are made promptly and accurately. Furthermore, AI can be used to analyze the impact of UBI on various social and economic indicators, providing valuable data that can be used to refine and improve UBI policies over time.

The empirical research by Jacobs, Verhofstadt, & Van Ootegem (2023., p.1) and Colombino & Islam (2022, p.2) suggests that jobs with a high risk of automation tend to be less satisfying, indicating that AI and automation could have significant impacts on job satisfaction and, by extension, on the need for UBI. This underscores the potential of AI in facilitating UBI as a response to the challenges posed by automation. For many individuals, work is not solely about earning economic benefits. It encompasses implicit factors such as realizing personal values, building relationships and expanding social networks, acquiring advanced business knowledge, among others. However, the development of artificial intelligence and subsequent automation changes in the labor market may significantly alter these aspects. Consequently, the meaning of work will undergo a qualitative transformation for many people.

In light of this situation, it is crucial to address basic survival issues caused by income decline or lack of available income through UBI. This issue must be given top priority in society. In this regard, AI can prioritize UBI while promoting overall productivity progress in society. Heyman and Olsson’s (2023, p.29) research on the impact of automation on intergenerational mobility in earnings further strengthens the argument for UBI. As AI and automation continue to

advance and become more prevalent, they could have significant impacts on social and economic structures. This could potentially strengthen arguments for UBI as a way to mitigate the negative impacts of these shifts.

This illustrates the significant role of AI in ensuring renegotiation-proofness and strategy-proofness. Under the governance of future AI integration, people will be able to communicate with AI in real-time and propose their policy suggestions. They will also have the opportunity to ensure policy transparency, making their decision-making intentions stronger and reducing moral risks to some extent. Talking to and providing feedback to AI is better than doing so with politicians because politicians cannot provide simultaneous, real-time, and sincere feedback to everyone.

II. AI as an inhibitor of UBI:

Despite its potential benefits, AI can also pose challenges to the implementation of UBI in terms of inequality and social justice. The first and foremost issue is "AI bias". In many cases, we tend to think that AI, as a non-living entity, is objective.But the reality is that the judgments made by AI are often only superficially "objective", with many biases hidden within. As Gwen van Eijk (2017) points out, even risk assessment tools, which are designed to be objective, can have a built-in bias against socioeconomic marginality. This bias can lead to a higher risk score for underprivileged individuals, increasing the likelihood of a longer custodial sentence compared to their more privileged counterparts. If not properly managed, AI systems could inadvertently perpetuate or even exacerbate existing social and economic inequalities.

For instance, if an AI system is trained on biased data, it could end up favoring certain groups over others in the distribution of UBI. This could undermine the goal of UBI to provide a universal safety net and exacerbate social injustices. If artificial intelligence is trained under the values of the United States, it is likely to have "American values". Similarly, if artificial intelligence is trained under the values of China, it is likely to have "Chinese values". This may lead to deeper biases and even lead to the emergence of "authoritarian AI", which are

obstacles faced by UBI in promoting social justice and eliminating inequality.

A deeper concern is whether artificial intelligence can understand the human compassion system and the overall context behind individual unemployment. For example, before implementing UBI in a certain region and determining whether it needs to be distributed through artificial intelligence analysis of poverty reasons in that region, AI may only consider simple statistical data to draw objective conclusions. However, as humans with rich emotions and ways of thinking, if UBI distribution takes place in an isolated area that is poor and backward compared to other regions outside it, we not only need to analyze how UBI should be distributed but also consider how this area can establish connections with the outside world. This is currently something that AI cannot associate or lacks advantages. This concern is echoed in the work of O'Neil (2016), who discusses the potential for bias in AI systems and the need for careful management and regulation.

Furthermore, the potential for AI to displace jobs could lead to increased inequality, as those with skills that are complementary to AI benefit while those with substitutable skills suffer. This could increase the need for UBI, but also strain resources and challenge the sustainability of UBI programs. Brynjolfsson and McAfee (2014) discuss this issue in their work, highlighting the potential for AI and automation to disrupt the labor market and increase inequality. This is further supported by the work of Schlogl and Sumner (2023), who discuss the impact of automation on the global economy, particularly in developing countries, and how it could lead to deindustrialization and a shift towards service-based economies (Schlogl & Sumner, 2023, p. 27, p. 61).

In terms of Pareto improvement, the displacement of jobs by AI could potentially lead to a situation where some individuals are worse off, contradicting the principle of Pareto improvement. But from a different perspective, if the negative impacts of AI on the labor market are mitigated – for instance, through retraining programs or policies to promote the creation of new jobs – it may be possible to achieve

a Pareto improvement. Autor (2015) discusses the potential for job displacement by AI and the importance of policies to mitigate these effects.

While AI holds significant potential to facilitate UBI and promote social justice, it's crucial to be mindful of the potential challenges it poses. By implementing thoughtful strategies and regulations, we can harness the power of AI to contribute to the successful implementation of UBI, paving the way for a more equitable future. This aligns with the views of many scholars in the field, who emphasize the need for careful management and regulation of AI (Bostrom, 2014; Russell, 2019). This is further supported by the work of Mazur, who discusses the implications of automation on taxation and the economy, and argues for a reform of the tax system, moving away from a labor-focused system to one that can better accommodate the rise of automation (Mazur, 2018, p. 1, p. 26, p. 41, p. 47).

Whether AI would be the facilitator of inhibitor of UBI. The AI-driven UBI policies are crucial in addressing income inequalities and ensuring equitable access in the AI era. The potential of AI in shaping UBI policies can be understood through two different scenarios.

Firstly, AI can assist governments in conducting microsimulations on UBI, providing more accurate and relatively unbiased data. These microsimulations serve as a governance model that can run various scenarios in an efficient and cost-effective manner. By doing so, they save governments significant effort and resources that might otherwise be spent on ineffective UBI distribution and foundational research.

This approach is akin to the multidimensional evaluation framework proposed by Li et al. (2022), which was used to evaluate park equity in terms of accessibility, diversity, convenience, and satisfaction. Similarly, microsimulations powered by AI can evaluate UBI policies across multiple dimensions. For instance, the reach of the policy can be assessed through microsimulations to understand how many people would be effectively covered by the UBI program. This is particularly important in the context of

public health, where UBI can serve as an upstream measure to address socio-economic determinants of health (Johnson, 2021). Another dimension that can be explored through microsimulation is the diversity of the beneficiaries. AI can analyze demographic data to ensure that the UBI program is equitable, thereby preventing any discriminatory practices. This aligns with the notion that AI can generate new jobs and reskill existing ones, reducing the risk of employment loss (Przegalinska, 2021).

The satisfaction of the recipients can be gauged through AI-driven surveys and feedback mechanisms integrated into the microsimulation model. This can provide real-time data on how well the UBI program is meeting its objectives and whether it is leading to increased economic freedom and alternative income sources. As we discussed before, by leveraging AI and microsimulations in these ways, governments can create more effective and fair UBI policies that are responsive to the needs and aspirations of their citizens, while also being cost-effective and efficient.

Secondly, AI can analyze the effectiveness and justice of UBI policies in a more objective manner, largelly free from human biases. This is particularly important in ensuring that the UBI policies are not only effective but also fair and just. AI's ability to process and analyze large datasets can help in identifying any biases or inefficiencies in the UBI policies, thereby ensuring a more equitable distribution of UBI.

3.2 Impact on Social Justice

UBI as the form of social security mentioned before, has the potential to promote social justice by reducing income inequality and poverty, and promoting social mobility (Busemeyer & Sahm, 2021). It can provide a safety net for all individuals, regardless of their income or employment status (Busemeyer & Sahm, 2021). However, the implementation of UBI often faces challenges due to its high cost and the complexity of the required analysis and calculations (Colombino & Islam, 2022). It can be extremely challenging for UBI analysts to accurately determine the precise amount of cash transfer, not to mention ensuring distributive justice and procedural fairness in the distribution of UBI. The human factor plays a significant role in influencing how UBI is distributed. The total productivity of the whole

economy can be a significant factor when considering the implementation of UBI as the reason that the cost of living would be high as long as the outcome based on current productivity is not enough to support the consumption of everyone, especially the poor people.

The integration of AI into UBI systems can potentially address these challenges. AI can improve the efficiency and fairness of UBI distribution, thereby enhancing its contribution to social justice (Colombino & Islam, 2022). However, the use of AI also poses potential challenges, such as job displacement, increased work intensity and stress, and privacy concerns (Phillips & Cree, 2014).

The potential benefits and challenges of AI-driven UBI have been discussed in various studies. For instance, Colombino & Islam (2022) explored the adjustment of UBI income portfolio to technological change, highlighting the role of AI in this process. On the other hand, Korinek (2023) discussed the end of the age of labor, focusing on the impact of technological unemployment, work, and identity.

Regardless of whether AI is a facilitator or inhibitor for UBI, its emergence and evolution will bring about a significant change to human society. As we mentioned before, based on the inherent characteristics of AI and its potential, it will become a great force in achieving social justice. Further research is needed to fully understand these impacts and develop strategies to maximize the benefits and minimize the challenges of AI-driven UBI.

After discussing how social justice is influenced by UBI and AI, we will now delve deeper into the comparison between UBI and another important socio-economic policy - resource redistribution. Both of these are crucial tools for achieving social justice, but they have different advantages and disadvantages in addressing the challenges brought about by automation and AI. Therefore, understanding how these two operate under different governance systems will help us more comprehensively assess their potential in promoting social justice.

4. UBI vs. Resource Redistribution: A Comparative Analysis

As we mentioned before. In the rapidly evolving landscape of AI and automation, the concept of UBI has been frequently discussed as a potential solution to address the economic disparities and job losses that might arise. Another equally significant concept that requires attention is Resource Redistribution. While UBI focuses on providing a fixed income to all members of a society, Resource Redistribution delves deeper into the equitable allocation of resources, ensuring that every individual has access to basic necessities and opportunities.

Resource Redistribution is not a new concept; it has its roots in various economic and social theories that advocate for a more equitable distribution of wealth and resources. In the context of AI and automation, this becomes even more crucial. As machines take over tasks and potentially reduce the need for human labor in certain sectors, the wealth generated by these automated systems needs to be fairly distributed to ensure social stability and harmony (Moscou et al. 2016).

Below we can see the table of the Comparative Analysis of UBI and Resouce Redistribution:

Criteria	***Universal Basic Income***	***Resource Redistribution***
Definition	A guaranteed income given to all citizens unconditionally, without a means test or work requirement.	The reallocation of resources, often from the wealthy to the less affluent, to achieve a more equitable distribution.
Primary Motivation	Provide financial security to all, ensuring everyone has a basic level of income.	Wealth and resources derived from shared assets should benefit all members of society.
Method	Direct cash transfers to all citizens.	Progressive taxation and the use of funds to support social programs or direct transfers.

Response to Automation	Acts as a safety net against technological unemployment, allowing people to adapt to job losses.	Not directly linked to automation, but can help those displaced by ensuring they benefit from shared social assets.
Administrative Complexity	Potentially simpler as it could replace multiple means-tested benefits.	Might require complex tax structures and systems to ensure effective and fair redistribution.
Economic Impact	Can stimulate consumer spending and potentially reduce poverty.	Can reduce wealth inequality and fund public services, but might be seen as discouraging to wealth accumulation.

As discussed in before, there are three diffferent scenarios in the future if the AI keep its path of evolution with humans effort. The structure and the fundamental concept of the meaning of human life might change rapidly since the socio-economic transition. Thus, imagine and prepare for the possbile future is very imporant for the policy making and personal choice. At the same time, UBI and resource redistribution will have different impacts on socio-economic transition as well as social justice in these three different scenarios.

In an AI-driven society, UBI undoubtedly becomes the preferred policy tool due to its immediacy and transparency. However, the issue of resource redistribution will become more complex. In this case, how wealth is distributed will be a worthy topic of discussion. In an AI-driven society, UBI will inevitably play a crucial role. But when it comes to resource redistribution, the situation will be different. Under the possible new social order, whether wealth distribution should be based on newly generated capital from increased labor productivity or through redistributing existing capital after weighting becomes a question worth discussing. Similarly, this directly affects the decision-making process regarding UBI and resource redistribution.

Considering that absolute fairness and justice are difficult to achieve in the short term and social stratification is severe, there will always be imbalances in wealth distribution within society. For social justice purposes, if achieving resource redistribution requires indirectly "exploiting" the wealthy's wealth, would that also be unfair to them? This is a question worth discussing because although money directly represents wealth, the efforts made by wealthy individuals and risks they undertake are not taken into account when governments carry out resource redistribution; instead, simple calculations of wealth are made. This is due to insufficient information and channels about everyone's sources of wealth within society which result from human bureaucratic systems or social structures causing externalities.

If there could be an algorithm that enables policymakers (whether AI or humans) to make clear and fair judgments about the specific value of a person's wealth for further redistribution purposes, it would greatly reduce externalities - one potential significant role of AI as well. For example, AI can assess individual contributions to society by analyzing factors such as work performance records education background health conditions etc., thereby facilitating more accurate allocation of resources accordingly. Such an approach can not only reduce social inequality but also motivate individuals to work harder and study more diligently while promoting overall social development.

Furthermore, AI can assist governments in accurately assessing social needs and formulating more reasonable policies based on that. Such an approach can not only better meet social demands but also improve government efficiency and credibility. In conclusion, AI has enormous potential in wealth distribution and policy-making. We also need to be aware of the limitations of AI and overcome them in practical applications in the same time. For example, AI may be influenced by data biases leading to evaluation and decision-making deviations. Therefore, we need to continuously refine AI algorithms and data to ensure fairer and more accurate assessments and decisions.

After comparing the advantages and disadvantages of UBI and resource redistribution, let us now turn to a more future-oriented issue: how will these

two policy tools adapt if AI takes a dominant position in governance systems? AI not only has the potential to change our economic structure but also may have profound implications for how we achieve social justice.

Comparative Analysis of UBI and Resource Redistribution under Human Leadership and Governance

Under human leadership and governance, AI-driven UBI emerges as a more straightforward and effective tool for mitigating social inequality and poverty. It offers a direct financial safety net to citizens, reducing bureaucratic complexities. However, UBI alone is insufficient to eradicate these social issues entirely. Complementary policies, such as educational improvements and healthcare enhancements, are essential for a holistic approach.

On the other hand, Resource Redistribution (RRD) involves reallocating social resources, a process that can be complex and potentially controversial. While RRD can address social inequality and poverty more comprehensively, it often faces opposition due to its intricate nature. AI-driven UBI also presents challenges, especially in highly automated societies where job scarcity is a concern. Here, UBI's role extends beyond poverty alleviation to providing a safety net for those unable to compete with automation. Governments must calibrate UBI amounts carefully and oversee its implementation rigorously.

Moreover, the rise of AI could shift societal power structures, potentially concentrating resources and influence among specific groups. This could exacerbate social inequalities, necessitating stringent AI regulation to maintain fairness and prevent power imbalances.

In summary, both UBI and RRD have merits and drawbacks. UBI offers simplicity and direct impact but is not a panacea. RRD, although potentially more effective, is complex and can incite controversy. Policymakers must weigh these factors, considering the societal context, to craft balanced and effective policies.

Comparative Analysis of UBI and Resource Redistribution under AI Governance

Under AI governance, the comparison between UBI and resource redistribution becomes particularly important. Assuming that AI can fully understand the entire human population, including various habits, languages, customs, and religions in different countries and regions, and can provide detailed management and services accordingly. Under this premise, establishing an AI government through AI governance ensures equal rights and benefits for everyone. Everyone can participate in political discussions and ensure the implementation of new policies. However, we need to be aware of the limitations of AI, such as its potential inability to fully comprehend human emotions and moral values. Additionally, different models of AI governance, such as centralized authority or decentralized autonomy models may have varying impacts on the implementation of UBI and resource redistribution. The interaction between technology and society is also an important consideration; the development of AI will influence society while being influenced by it in return. International factors may also affect the implementation of AI governance and UBI within a globalized context. Lastly, we need to consider both short-term and long-term impacts separately while striking a balance during policy-making processes.

In this scenario, wealth is no longer a measure of a person's worth, but merely an important tool for various forms of communication in human society under AI governance. UBI will completely replace Resource Redistribution because in such a social system, the value and achievements between individuals are no longer determined by the amount of wealth they possess. Everyone's wealth should be almost equal, even if there are income disparities among certain professions, which will be compensated through UBI under AI governance. Therefore, Resource Redistribution pales in comparison to the significance of UBI. If humans can fully entrust the power of policy-making and implementation to AI, allowing AI to take care of humanity, then society will only retain pure and singular class relations, making it possible to achieve social justice.

While AI governance offers the promise of efficiency, objectivity, and real-time adaptability, it also introduces challenges related to transparency, trust, and ethical considerations. The dynamic interplay between AI's data-driven insights and the social values and ethics embedded in its design will shape the trajectory of policies in this age. Ensuring a balance between AI's efficiency and human values will be pivotal in realizing the true potential of AI governance.

Comparative Analysis of UBI and Resource Redistribution under Human-AI Co-governance

Human-AI co-governance is the most likely and promising scenario for the future compared to the previous two. AI, as a human creation that surpasses humans in memory and data retrieval, has always been regarded as a tool by human society due to its obvious limitations - namely, difficulty in understanding human language and society. This is why language assembly and conversion are necessary when creating computers because we cannot give straightforward instructions to artificial intelligence, nor can they understand direct human commands. However, since the emergence of GPT (Generative Pre-trained Transformer), humans have discovered that AI has the ability to understand human language and respond correctly. This advancement has been pivotal in various sectors, including education and online learning. According to Tan (2023), ChatGPT has fundamentally changed the way people connect with information, owing to its powerful language understanding capabilities. This is echoed by Alseddiqi et al. (2023), who highlight the transformative role of ChatGPT in Massive Open Online Courses (MOOCs), attributing its success to its proficiency in language understanding and response generation.

Furthermore, Lee (2023) provides a rigorous mathematical examination of GPT models, affirming their capabilities in language generation. These studies collectively suggest that GPT models like ChatGPT are not just tools but intelligent systems capable of understanding and responding to human language in a meaningful way. Therefore, it can be predicted that in the near future, AI will become even "smarter," assisting further development and production in human society. Moreover, AI can perform different tasks

based on various instructions, with satisfactory results in most cases. Thus, it can be predicted that in the near future, through our efforts, AI will become even "smarter" to assist further development and production in human society.

So how do humans deal with an artificial intelligence that is generally smarter than themselves? In my humble opinion, I believe that humans will integrate or cooperate with AI to the greatest extent possible. This will lead to qualitative changes in industrial automation for humans. Treating AI as a mere tool would not be feasible in this scenario. If humans want to maximize the capabilities of AI, it is inevitable for robots and AI to merge together. In such a situation, there will be greater challenges for the society created by humanoid robots powered by AI: How should robots be managed? Who owns them - entrepreneurs or creators? Or perhaps governments? How should errors during robot production or work processes be corrected and improved? Hence, managing robots with other robots instead of relying on humans would save more trouble because at least robots won't have biases or try their best to avoid biases.

In this case, UBI clearly also has significant advantages because automation will inevitably lead to a large number of job losses, which is an age-old topic. At the same time, whether more jobs can be created in such circumstances is uncertain. As for resource redistribution, the wealth gap may not be significantly different in this scenario. Besides, the concept of taxation and its applicability to "humans" or "machines" is a question worth discussing. Therefore, in this situation, there are not many points of comparison between UBI and resource redistribution because UBI will undoubtedly become ubiquitous in such a society with its nature of adaptability and aomprehensive oversight in this case. What needs to be considered is the source of funding for UBI under highly AI-automated conditions.

5. Implications and Future Directions

Overall, the emergence of AI seems to bring more benefits than drawbacks at this stage. UBI and resource redistribution play unique roles and have different impacts in various social and technological contexts. UBI may

serve as a measure both for the early stages social transformation, providing enough time for fundamental resource reallocation. UBI will ultimately be the primary means of achieving social wealth equality. It will perpetuate in human society once resource reallocation is achieved.

If we look back at history, we will find that many social changes were chaotic in their initial phases but ultimately propelled human society towards higher levels of development. This is precisely the benefit brought about by technological progress. However, we must not overlook the economic and social issues that technological progress may bring, such as increased unemployment rates and exacerbated social inequality. Therefore, it is crucial to thoroughly consider these economic and social impacts and formulate corresponding preventive or remedial strategies.

Social and Economic Implications

As we discussed before, the integration of UBI and AI has profound social implications. UBI, serving as a double sword as it can potentially help the society to get the pareto improvement but the AI-driven algorithms may raise ethical and moral concerns, such as bias and discrimination (Lamchek, 2023). As AI becomes more integrated into our daily lives, from customizing lifelong learning routes to determining economic policies, its social impact becomes more significant (Fedorov et al., 2023).

Policy Recommendations

1. **Address Ethical Concerns:** Policymakers should address ethical and moral concerns related to UBI and AI integration as the priority. Transparency and accountability in the governance of UBI and AI technologies are essential (Lamchek, 2023).

2. **Promote Social Justice:** Policymakers should consider the social implications of UBI and AI integration and develop policies that promote social justice and economic stability such as different taxes and changing the tax base from human to robots.

3. **Consider Long-Term Impacts:** The long-term effects of AI on human societies, including potential existential concerns, should be

addressed. Policymakers, technologists, and governments should work collaboratively to ensure that AI advancements benefit humanity as many people take AI like GPT4 as a concern but not a positive advancement(Patwardhan, 2023). And the sustainability should be also included into the consideration.

Future Direction

After proposing a series of policy recommendations for the integration of UBI and AI. What will happen in the future remain noticeable. As we have emphasized multiple times that both AI and UBI are constantly evolving fields that will have profound impacts on society and the economy in the coming decades. We also need to consider the challenges and opportunities that may arise from the long-term development of these technologies. Some possible future research directions need to be adressed to gain more comprehensive understandings of the potential of AI and UBI in terms of social justice and economic stability in the long-run.

Firstly, if Artificial General Intelligence (AGI) becomes a reality in the near future, then high levels of automation will inevitably follow. In such a scenario, the concept of "work" will undergo a fundamental transformation. Currently, most people work primarily to make a living or to improve their quality of life. However, if society can effectively compensate unemployed individuals and industries affected by AI automation through UBI and other policies, then "work" will transition from being a necessity for survival to a choice.

For instance. The combination of future industrial robots and AI can effectively solve the problem of small-scale, multi-batch flexible production. As long as the robot understands the drawings and analyzes their features, matching them with corresponding processes, it can complete tasks from different workpieces every day. In many heavy industries with heavy pollution, where workers are exposed to harmful substances for a long time or have jobs with a mandatory retirement age of 55, this integration plays a huge role in solving labor force loss/shortage in the industry(Drilling and mining industry). If chatGPT can replace boring work in white-collar jobs, then robots can replace humans in daily tasks such as shopping, cleaning,

and handling repetitive work. This will be a fundamental shift and represents a new form of freedom. With UBI and advanced AI automation, the operational and production costs of society will significantly decrease, allowing people to work for social enrichment rather than financial gain. This also accommodates those who prefer solitude, as UBI would meet their material needs.

Secondly, I believe that the ultimate outcome of AI accompanying human development will be positive, although concerns and dangers are always present during the development process. For example, compared to previous industrial revolutions, more jobs were created to alleviate unemployment. However, the development of AI is unlikely to create a large number of jobs, as its inherent capability is to genuinely "liberate" humans from tedious and repetitive work. How to handle the unemployed population is a significant challenge that society faces before fully achieving AI automation. When millions lose their jobs and the meaning of work, AI could be perceived as a threat. This is the most significant challenge that every government needs to consider carefully before implementing full-scale AI automation in society

Lastly, there are ethical issues to consider. How can we ensure that AI will not "awaken" or develop "self-consciousness"? If AI gains and understands human emotions, defining its role in social justice becomes a complex issue. Moreover, in a society highly integrated with AI, what will be the differences between humans when AI has access to global knowledge? Perhaps relationships between people will become much simpler, and society can discard some redundant and ineffective social systems, such as categorizing students through exams. In the future, everyone might genuinely do what they like, representing a potential Pareto improvement. Although this potential Pareto improvement may be achieved through the "exploitation" of AI robots, it will indeed enhance the utility of every individual in human society.

6. Conclusion

This paper has undertaken an extensive investigation into the relationships among Artificial Intelligence (AI), Universal Basic Income (UBI), and resource redistribution, all within the context of diverse governance models aimed at achieving social justice. My findings strongly indicate that UBI generally serves as a more direct and effective vehicle for the smooth and stable socio-economic transition. However, the path to its successful implementation is fraught with ethical and operational challenges that cannot be overlooked.

One significant ethical concern centers around AI's role in enhancing or potentially disrupting the efficacy of UBI. While AI could significantly increase the efficiency and fairness of income distribution, its integration brings a host of ethical dilemmas to the forefront. Can AI genuinely make better decisions than human beings in the realms of social welfare and justice? This is a question that not only demands immediate attention but also raises serious concerns about our readiness to hand over or to incorporate the decision rights of crucial policy to machine intelligence.

The different governance paradigms examined—human governance, AI governance, and a co-governance model—each offer unique sets of challenges and opportunities. A human-AI co-governance model, for instance, introduces multifaceted issues involving taxation, power structures, and the overarching theme of social equity. While an AI-led governance model may hold the promise of efficiency and flat-governance, it also poses questions about the ethical implications of AI in governance, thus requiring in-depth research and ethical scrutiny.

Within the framework of New Ordoliberalism in the era of AI, we must reconsider our policies and governance models. This paper takes a step in that direction by probing the rationality of UBI and the requisite policies for its successful implementation. How can social justice be achieved in the context of New Ordoliberalism when AI is an increasingly dominant force?[2]

[2] Based on the “New View” of Modern social contract research of collective (contract) decisions on ex ante fair rules from Renegotiation proofness, Strategy-proofness and Self-enforcing check.

The paper posits that renegotiation-proofness and strategy-proofness could become achievable goals, eliminating the incentive for deceit in a society where AI plays a pivotal role.

As we look toward the future, it becomes increasingly clear that AI's integration into our social and economic systems will be neither smooth nor straightforward. The ethical questions and societal challenges arising from this integration will require a multidisciplinary approach that combines technological advancement with ethical integrity and social justice. As we venture further into this complex yet promising landscape, the paper emphasizes that both AI and UBI are dynamic and evolving fields. As such, they will necessitate ongoing interdisciplinary research, constant policy updates, and adaptive governance models.

All in all, the transition to a society significantly influenced by AI presents both unprecedented opportunities for social betterment and a multitude of ethical challenges. These are not merely technical issues but deeply human concerns that require comprehensive, ethically-grounded research and policy-making. In my opinion. My exploration indicates at least that the balance between technological advancement and ethical governance will be pivotal in shaping a sustainable and equitable future.

Declaration of the thesis

I certify that the thesis at hand was made without unauthorized help and that I only used the tools denoted. All statements literally or logically taken from publications are marked as quotes.

Freiburg im Breisgau, 31.Oct.2023 Tong Wu

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