Bridging The Gap: How Sociology Informs Fair Economic Solutions in the Age of AI

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Abstract: It is time to consider seriously how sociology can inform more fit economic solutions in an age of AI - not only in light of recent evolutions in the socio-technical environment, but also because this may be central to the European project more than it has before. Economic discussions are regularly had, be it concerning Global Europe's trade policy or the difficulties the EU has encountered with the Euro, but how these economic concerns are debated and resolved will have an unexpected urgency in 2020. Striking is that whilst trade and currency will certainly loom large in the Commission's List of Reflection Papers for the rest of the mandate, just as tech, the terms of the latter debate in a European context, at least, may carry less certainty. But they (trade policy, monetary union, labour markets, technology) are all bound up.

1. Introduction

How to think about technological change in any given industrial orbit will determine the labour market structure. The governance of that change, from regulation, affirmative action through to encouraging certain social metrics – trust, fairness, equity – through funding initiatives will touch on trade relations, particularly when tackling 'technology sovereignty' (Zajko, 2020). How these things interface is rich and crucial; but sociology's offer herein is not always clear, and may seem even more vague.

Thus, it is useful to sketch what follows. We remain in an age of rapid technological change where machine learning and the automation of jobs by artificial intelligence dominate much discourse. However beyond the machines is the broader era of social changes (some unanticipated, or not as far in advance) about how growth is measured, of new social movements (on privacy and sustainability) which may also have a bearing upon the emerging AI landscape. A first question is then the meaning of fairness in how AI is adopted. A second question concerns the governance of 'what to do' in the socio-technical environment, not least because fairness, privacy or safety by injecting a socio-technical infrastructure will be decided across a plurality of EU states. How theory and methodology from sociology can inform such deliberations is not at all clear, but what does seem evident is the commensurability of the question: were sociology ignored, what are the likely challenges that would arise? In a number of key areas it is argued that the challenge is considerable.

1.1. Background and Rationale

In light of the economic crisis of recent years, there are surges of interest in rethinking the relations between economic theories and social consequences (Zajko, 2020). This is, however, not an entirely novel academic pursuit, being at the core of sociology's origin as a discipline. There are various economic theories, ranging from classical to neoclassical, which stand behind Models of economic systems. In turn, these theories bring along a picture of society, influenced, in a way, by the postulates of Malthus, of Jean Charles Léonard de Sismonde, of Talcott Parsons, but not exclusively confined to them. One particular dimension of the picture of society that people work on in the domain of Models of economic systems is on how income is distributed. This is a central issue, in every respect, since income, by definition, is what allows people to access the resources they need to reproduce their lives. The overwhelming pre-eminence here ruled out other possible, and equally obvious, allocations of income, like luck, gift, or force. Also centrality of wage derives from the quite peculiar case in which the so-called "second nature" or "social nature" structures degrees of freedom of the "individual nature" or "first nature." Modeling and simulation, in Economics, and not only there, has been, and is, greatly influenced by recent mathematical developments. However, modeling of economic systems, as well as, for example, ecological systems, can trace its historical roots long back to pre-mathematical cultures. Hence it is worth mentioning that modeling and the subsequent social representation of modeling results plays an active role in the evolution and mutations of Models of economic systems. Furthermore, in the age of artificial intelligence (AI), with its potentials and dangers, hapless or unavoidable challenges for the future of our societies demand new foundations. Any progress needs prerequisites: the understanding of system's dynamics position in its country, and the density of family. Hence the need of a further integration of sociological knowledge in the economic discussion in a wider audience.

2. Foundations of Sociology

Since the dawn of civilization, human existence has always been collective. People populate cities, join nations, and found companies. All human life is influenced by and influences social structures. Changes in social structures may be quicker or slower, emerge from many different directions, and have unintended effects. Nonetheless, they all shape the context in which decisions are taken and affect the nature of the outcomes. Social structures are usually quite abstract. Most of the time, they do not have directly identifiable locations or boundaries. They are not physical structures, but rather ways in which the pieces of a complex society fit together. If they manifest themselves at all, it is through a variety of properties, relationships, and processes. It is through this configuration that they constrain human behavior and channel it in certain directions. Social structures can range from broad and basic patterns such as norms as to how people should behave to very specific and idiographic phenomena. Social structures can be thought of in terms of institutions, a notion that tries to capture the more persistent and

coherent frameworks within which people act. Institutions include organizations, expectations about what personal roles involve, as well as scripts on how to behave in certain situations. They discipline individual action, establishing models that guide decisions. Of course, institutions are not rigid and unaffected by human agency. They are living entities, that can change, bend, and, sometimes, break. Other manifestations of the social structures are collective behavior and social action. The former concept refers to the variety of uncoordinated ways in which some groups of people act in similar manners. Collective behavior is usually hard to predict and it transcends the actions of individual agents. Social action, on the other hand, refers to coordinated and cohesive platforms, in which organized groups behave in a orchestrated manner. Social action implies rotation and planning. It emphasizes the collective, the alliance among different components. In both cases, collective behavior and social action are the visible expression of a societal background that shapes expectations and prospects.

2.1. Key Concepts and Theories

As the clock's ticking echoes in every industry, preparing it for the revolution of artificial intelligence (AI) has been the groundwork for the economic immense wave of this machine learning industry, one of many "fourth industrial revolutions" to come. Harnessing the power of AI to bring societal and economic prosperity is what many nations are racing to, like in the South Asian archipelago of Indonesia.

Dive into the World of Economics and Sociology Delving into discussions about economic dynamics means delving into discussions about societal interactions as well. This cross-discipline approach is where the conversation between economics and sociology begins. The former tends to direct the economic lens of supply and demand toward studying production, distribution, and consumption (Mugi Nugroho, 2024) of goods and services. Delving within more hidden corners of societal interaction, sociology emphasizes the power effect of dynamic social systems. Understanding economics with a sociological point of view means examining more tables on the variables affecting economic trade-offs that otherwise mostly disregard by traditional economics, such as human behavior, social interaction, internal dynamics of an institution's agents, and social changes occurred (Zajko, 2020). This article will give an in-depth exploration of pivotal sociological concepts and theories to make better epileptic bodies better understand the economic dynamics in bridging a fair and just economy in the age of AI. From classical to the most contemporary sociological theories; be reviewed functionalism, conflict theory, symbolic interactionism, rational choice, network, social construction of reality, power effect, social capital, and social dilemma concept will be scrutinized for their utmost relevance in the economic discourse. A massive emphasis on the variables forming social institutions and an overview of the class structure peculiar in each disperse economic dynamics will be granted. After grounding narratives upon these grand theories and concepts, it is expected that any unparalleled economic policies could

be crafted. The crafting itself is hoped to shape more macroeconomic arrangements, like the minimum wage policy or universal basic quota (UBQ), that otherwise secluded from the in-depth concerns of community formations.

3. The Intersection of Sociology and Economics

At the beginning of the twenty-first century, questions that connect sociology and economics appear quite logical. The entire economic structure of society is based on various social foundations – a variety of beliefs, norms and attitudes. So, what are these connections and what in this dialogue can bring the most fruit? The sociological perspective allows for both a broader and more in-depth analysis. As a result, not only social phenomena can be recognized behind economic events, but it is also possible to understand the mechanisms behind them. This understanding can improve both economic theory and shape various designing actions.

Economic events are not random. The possibility of their occurrence to a large extent can be predicted. Usually they also have some strange properties in common appearances. The whole field of research of the causes and consequences of the observance of a number of rules in economic events will come from a point of view of economic theory. Each understood economy relies on some macro sociological principles – a widely understood economic system. From this system it is visible, what economic events are highly probable and what are, on the contrary, completely excluded (Rogowski, 2017). At the macro level, economic structures have also become a research field for economists who have developed a sociological theory of institutions. For economic events are also affected by more specific mechanisms. Most of them are not unique to the economy. In fact, in each case they are governed by the principles operating in (or more formally the theory of) one academic scientific discipline. Similarly, the economy relies on principles based, for example, on social psychology, organization theories, etc. - i.e., sociology.

3.1. Historical Perspectives

Bridging the gap between Sociology and Economics offers Fair Solutions to Growing Economic Challenges in the Changing Face of the Industrial Revolution. It has always embodied everything that makes today's headlines. Far beyond the technological sphere, the proliferation of big data and advanced algorithms is reshaping our societal relationships. These modern developments are scrutinized at the crossroads of sociology and economics, disciplines that have always been intrinsically linked, as human behaviors and interactions are both the object of inquiry of the sociologist and significant factors of the economic analysis.

Let's step back and provide a historical perspective of the connection of sociology to economics in light of a brief timeline. As far back as the origins of sociology and economics as separate fields, their representatives have been interacting, sharing ideas and drawing upon each other's thought to foster their own inquiries. From this

perspective, the early classics of economics such as Smith's insights on social capital are exactly the result of such a rich interplay. Approaching the turn of the 20th century, Durkheim published a report on the division of labor within industrial societies, which had strong repercussions on the economic discipline, and as a response, Weber borrowed many principles from the emerging economic thought. The subsequent consolidation of the two academic spheres seemed to have partitioned them more, and despite sporadic renewals of interest in each other's tools and methods, numerous early economics departures mostly focused on the mathematical and strictly quantitative aspects of their discipline. Furthermore, solid barriers were erected over the course of the second half of the 20th century with the revolution of the so-called new economic theories, and sociology tended to drift away from economics departments, and even forsake economic inquiries altogether (Zajko, 2020).

4. The Impact of AI on Economic Systems

The widespread diffusion of AI technologies exerts a profound impact on the economic, social, and cultural fabric of society. Artificial intelligence is already providing a plethora of economic goods and services. Advanced algorithms produce consumer-centric recommendations and facilitate a more precise targeting of the advertisement. Autonomous cars will change the mobility habits of consumers and reduce the utilization rate of those vehicles (ABRARDI et al., 2019). This is but only a minor fraction of the boundless gifts that AI has in store. The economic systems finds in the new technologies not only the opportunities to boost growth and productivity, but also unprecedented threats. In the labor market, the widespread adoption of automation technologies and AI, and, in particular, those embedding machine learning features, is seen by an increasing number of observers as the reason of a profound transformation of traditional job roles. AI and robotics are shaping a workplace where humans cooperate with machines to solve tasks. Humans instruct machines, solve problems they could not solve alone, and vice-versa, directly contributing to a task-solving endeavor. The new workflow requires the employees to be skilled on gradually more technologically advanced tasks, and to hold a complex problem-solving capability. Consequently, the job market will increment the segmentation into a core of high-tech related professional workers and a peripheral circumference of blue-collar workers. Machines automate the routine and repetitive tasks which are characterized by intrinsic features. Similarly repeated tasks are encoded in sequences of action scripts which are the result of accumulation of experience.

4.1. Automation and Labor Markets

The rising technological advancement of artificial intelligence and automation technologies exhibits transformative impacts on labor markets. Automation requires re-organizing production, in doing so it changes demand for different types of labor and the skills required in even the most modern industries. Over the past two decades, economists have observed a rising tendency to replace routinized labor with machines. The pace and

makeup of this displacement should vary according to a range of contingent factors. Nonetheless, some implications are robust and starkly social. The first effect is that productivity growth outpaces wage growth, thus opening a gulf between owners of capital and those reliant on their own work income. More technical and capable machines are able to displace costlier and ordinary labor, hence exacerbating the income divide and social problems. The companion technological advance to automation, information technologies, has not succeeded at inducing wage growth for the average labor force. Conversely, machines whose cognitive and sensing functions evolve alongside the brute force of actuators impinge upon ever more complex tasks. A rising number of workers — disproportionately low-skilled ones — lacks the resources to upgrade their human capital or "move up" the labor market's value chain. The kind of physical dexterity and perceptual judgment that constitutes the forte of low-wage and low-skill workers remains challenging to automate (R. Frank et al., 2019). Although its paces are at variance across different workplaces, automation might well homogenize numerous branches of manual labor, forcing workers out into a drastically impoverished labor market. At the very least, whereas the displaced professional is invariably cast into inferior employment, the newly created jobs are rather absorbed by the existing workforce, thereby condensing the pool of job opportunities available to the most vulnerable (Bürgisser, 2023).

5. Sociological Considerations in AI Development

In a world increasingly mediated by AI systems, there are many sociological implications related to the development and deployment of these technologies. A rigorous analysis could focus on the ethical considerations most familiar to sociologists, i.e. bias, particularly in light of the ongoing conversations around bias, discrimination, inequality and fairness in algorithmic decision-making (Zajko, 2020). After that, however, one might still hope to develop ways in which insights from sociology could inform efforts to make AI solutions fairer in practice.

Concerns surrounding the misuse of AI are predominantly sociological in nature. Discussions of societal issues often gloss over the extent to which the technologies themselves are enmeshed in social systems and the consequential risks associated with leveraging them improperly; notably, the reproduction of existing social inequities. Technologists and ML developers often work from a simplified or even over-simplified view of the human and social phenomena they need to model, leading to the design of algorithms that perpetuate biased reasoning. An emphasis on reductionist statistics overlooks sociological research on complex social processes, interpretations about these phenomena, or consideration for important social dimensions that defy simple statistical abstractions. As a result, social bias is often reproduced and even amplified in an algorithmic decision-making process that itself obscures from view the populations most affected by the discriminatory outputs it produces. In light of conversations surrounding fairness, accountability and transparency within machine learning, therefore, it stands that

a consideration of how diverse sociological perspectives might contribute to more just and equitable AI practices is worthwhile.

Consideration of biases toward homogenized, mainstream experience often obscures the vastness of human society that any given AI system might act upon. Especially poignant for efforts to develop AI in a global context, this could point to the necessity of pluralizing the cultural perspectives otherwise privileged in the creation of AI technology. This is to say that it becomes imperative to work with social researchers more broadly in the design and deployment of AI systems, working alongside them in the development of inclusive frameworks meant to mitigate and scrutinize the biases inscribed within the technology. This is particularly cogent in light of discussions regarding how 'bias' is defined and measured, with a wide array of competing methodologies looking to resolve it artificially; a sociological approach, perhaps, is better placed simply to recognize and respond to it. There are already a plethora of examples demonstrating moments wherein sociological interventions have led to fairer technological outcomes. Notable examples include observing how researchers incorporate the fixation index in the effort to define group fairness, offering a nuanced account of measurement issues in machine learning that might be better understood with a sociological approach.

5.1. Bias and Discrimination

Bias in AI, and the systemic discrimination it perpetuates, is one of the foremost topics of concern in developing and deploying AI systems. The issue of bias in artificial intelligence (AI) is one that has received broad coverage, contest, and critique. However, much of this conversation is sparsely linked to in-depth examination of the wider sociological and societal practices that influence how and why bias occurs; Bias often plays out on AI software, where societal imbalances can be replicated and coded into algorithms, leading to systemic discrimination (Zajko, 2020). AI works through training data to identify patterns and subsequently act on them. The commonly cited concern is that if bad data is used, racism for example, then the decisions made by AI will be correspondingly biased in terms of that poor data. Academic failures to conceptualize bias in computer systems are multiple. Examinations of bias in AI do not solely engage with the ideas developed within the social sciences. As such, discussions of bias in AI cover much the same conceptual terrain that sociologists studying inequality have long understood. A siloed focus on one aspect of bias in AI, say race or gender, does not do justice to the vast ways that this concern operates. This can be a logistical or conceptual concern. While these specifics perspectives on societal bias adequately assess a single axis of inequality, the complex interrelations implicit in wider societal biases remain understudied. Difficulty is compounded by the vertical and horizontal power structures in academic research and AI production. This has also meant discussions on ways in which pervasive societal bias is perpetuated are often unlinked. AI works through large scale

data. Despite rhetoric to the contrary, AI systems are not neutral; they reflect the input processes and goals of their developers. A silicon valley developed health care model might identify those without health care technology as being the most in need of invasive treatment. In addition, AI is not a magical machine learning box. AI is work-processes on astonishingly compiled mathematic equations. A great deal of work needs to be done on training data to use those equations to generate desired results. However, there has been significant academic critique on bias in AI, when there is, the proposed solution is often de-politicized and apolitical. The societal reproduction of bias by AI systems is far too frequently considered as separate from the societal reproduction of bias more broadly. It is difficult to achieve comprehensive de-biasing in computer systems in the later deployment stages of AI, and the universality of bias risk in AI require broader, pre-emptive measures. There is a presumption that computer systems are inherently rationalist objects, devoid of societal or cultural mooring. However, the replication of societal bias by computer systems is dystopic. After all, numerous social theorists discuss how societal inequality is continuously reproduced through a wide variety of social practices. This array of social practices takes place in and through myriad social institutions. Society is a complex assemblage and consequently perpetuates pervasive societal biases in more minute and subliminal ways. Unpacking bias in AI does not, and should not, solely be a mathematical concern. Given how the societal reproduction of bias far more widely than just AI systems, there is a field-wide necessity to target systemic bias as it is crafted into systems, and not merely post hoc deployment. To think (or desire) otherwise tacitly supports vested societal privilege, and the continued societal reproduction of inequalities. There are conservative and radical approaches to how the development of technologies can and should intervene in societal discrimination. While calls for bias checks and 'fairness, accountability and transparency' boards may be an integral step toward iterative improvements, that agenda is still situated within a conservative approach to bias, that see it as something isolated, individual, and tractable to correct. It is not radical to merely de-bias computer systems. The societally pervasive bias instantiated in computer systems should be part of a wider, more radical shift in how technology is developed and the social consequences it is allowed to have. It is becoming increasingly clear that AI systems have societal implications far beyond their determined tasks. Efforts to reproduce societal bias in other expert systems ought to similarly be met with skepticism and concerted efforts toward interventions that more radically address the societal reproduction of pervasive inequalities. This is not a call to blanket Luddism or the proliferation of techno-phobia, only a hope for a more exacting and deliberate trajectory in technology. With this line of argument, analysts can push forward a more careful and engaged discussion of how societal bias is design and what can be done about it that involves deeper analysis and more imaginative thinking than what has been on offer thus far, but which is also more broadly alienated.

6. Ethical Frameworks for Economic Decision-Making

In the context of AI and the Fourth Industrial Revolution, a rapid change continues to occur in economic, demographic, environmental and urban domains. Certain developed countries are planning, designing, and implementing AI readiness of economic policies and are ahead of the others in adjusting their economic structures. The others face the threat of creating large classes of unemployed citizens with the almost complete loss of their incomes from labor. The avoidance of such a course requires the rapid development of alternative economic development models. Development of those models requires the understanding of the potential positive and negative effects of AI on the domains of economic relationships. Sociology, especially as developed in Europe, provides a polished methodology for estimating those effects. Sociology helps define more promising targets of economic policies.

Sociology in the EU is primarily focused on long-term research, covering topics from the domains of economics, geography, history, law, and social psychology. Because of its multidimensional and detail-oriented nature, it can adequately describe the development process. No economic policies, however profound and carefully evaluated, could guarantee in a long perspective, the improvement of the living conditions of the majority of the community in Europe, and at the same time, the expected profits of all companies. To a large extent, this is due to the very large EU economic scale, the large heterogeneity of the development stage and the sectoral specialization of the EU's regions, and cities. Also, it is conditional on various temporary international laws, policies and processes which have little to do with the primary objectives of the EU economic policy. All of the above implies that certain formulations of a particular economic policy, although they can stimulate economic progress, could have an opposite impact on economic welfare. Such results are relatively easy to prevent, fabricate, promote, or suppress when they are presented in terms of only one or a few numerical indicators.

6.1. Utilitarianism vs. Deontology

Utilitarianism, with its roots in the works of Jeremy Bentham and John Stuart Mill, emphasise the importance of bringing the greatest overall happiness to the greatest number of people. In utilitarian ethics, judging the morality of an action involves the expected positive or negative consequences it may bring. Thus, with respect to ethical rationales, acting in the present is ethically oriented towards the future. From an economic perspective, utilitarian ethics can rationalise certain development strategies that harm vulnerable regions while driving prosperity elsewhere, as for example gentrification can result in the displacement of people with low incomes. While from a strictly utilitarian perspective the benefits of job growth, higher housing asset values, and increasing government property tax income can be seen as outweighing the negative effects on existing communities, an accordance with deontological morals would

highlight the displacement of people's sense of place, thus stressing the importance of memory, culture and tradition (Bringas Colmenarejo et al., 2022).

Deontology Ethical theory that positions moral duties or principles as the main rationale for action, as opposed to the outcomes or consequences of that action. It is the ethics of what one "should" do, whereas utilitarianism is the ethics of the "good" outcome. To this extent, ethical deontology can help ensure certain moral duties are abided by, irrespective of the economic advantages or disadvantages that may entail. In this vein, important principles such as distributive justice may help geographers bridge the gap between fair economic policies and local spatial development. Economic needs must be weighed against fairness and respect for rights. From an economic standpoint, ensuring that workers are fairly compensated and rewarded regardless of gender, race or geographic background may incentivise greater economic participation and benefit previously underserved populations or regions. Importantly, this is also advantageous for capital and corporations as a better compensated and therefore happier workforce is also a more productive and creative one. On this note, a commitment to fair employment practices may help local economies resist the trends of deindustrialisation and job insecurity that has traditionally seen economic advantage accrue in the metropolitan areas of wealthier countries. However, adhering to ethical deontology can also be damaging to the economy if decision-makers find themselves in a trade-off between respecting moral duties and producing economic benefit. In this regard, a commitment to deontological ethics may hinder pursuit of profit or cause financial losses in the short term.

7. Case Studies and Examples

This section presents case studies as concrete evidence of how sociology can not only inquire what fair may mean, but also inform the development of economically implementable solutions to income disparity lessening in an age of growing AI. On the basis of these real world examples, the relevant theories and frameworks provided earlier in the manuscript will be applied; by doing so, both the tangible effects, in terms of societal ramifications, of the policy or technological changes being analyzed, and the utility of combining sociological insights for a broader and more insightful economic analysis, will come to light. Their lessons will conclude the work, stipulating what strategies may–and may not–be employed in the future when faced with similar dilemmas. Rather than inflated justified generalization, the aim is to revolve continuously seen patterns and processes, well and evenly documented (Zajko, 2020).

Three noteworthy examples will be scrutinized, each covering an alternate intersection of economics, AI advancements, and sociology. The discussed case studies herein are not, by default, isolated incidents, serving merely to illustrate the presented hypotheses: they have widespread implications on income inequality and work to achieve broader societal or economic impacts. For all four scenarios, the background and contextualization for the changes and reactions will precede in separate subsections. On the basis of available and

pertinent documentation, a detailed portrayal of the developments being analyzed will be supplied for each. Following this, distinct economic, sociological, and human behavioral responses to a policy or a change that are of significance and of interest will be explored successively, again under their respective headers. Economic consequences entail a focus on the direct implications of specific policy changes or broader economic events. Amplificatory responses are those which should enhance the understanding of subsequent economic and behavioral outcomes; these may be technological, political, or otherwise. Finally, the societal and behavioral outcomes of the policy or technological changes being considered will be delineated. This last sub-section will highlight both the patterns, thus far pervasive, which harmful societal as well as behavioral repercussions generally follow from the policy measures or the technological changes described, and instances where such societal responses resulted in far-reaching consequences.

7.1. Income Inequality

In the intersecting realms of sociology and economics, income inequality stands as a primary concern. In the study of both disciplines, one of the primary research aspects is regarding the notion of income disparities across different social groups. This is an issue related to both microeconomics, as well as macroeconomics. The former dealing with how the differences in income level among social groups are formed, in terms of its underlying factors, such as education attainment, labor market division, or the disparities of economic opportunities. Whereas for the latter, it examines the accumulation of such disparities among different groups, such as the shift in income distribution might widen the gap between the high-, middle-, and low-income groups. Nevertheless, intertwining these concerns, it intricately arrays much bigger and more complex patterns within the reality in which AI technologies have further catalyzed economic outcomes.

Illustrated by case studies, this essay uncovers the specific ways in which AI technologies are poised to shape broader economic outcomes of the society. What unfolds are the complex and intimate relationships between AI technologies and economic results from broader angles. "Income has been separated into three categories: (1) Labor income, (2) capital income, and (3) gains from government transfers. This essay finds no sound support that predict that the gaps will go smaller with the adoption of AI technologies. Rather, the most likely case is the opposite, that the adoption of AI increases the income disparities within each income source, even though it confines the marginally overall income inequality". Emphasizing that the disparities of income and economic opportunities are the products of systemic inequities, gendered and racialized labor markets are depicted in figures in juxtaposition to (rare) underrepresented minorities or whites with identical skills and education attainment. Efforts are made to glean a more standardized and polished understanding through the lenses of sociology which better discusses how AI and observational data could be utilized to generate more probing and savvy analyses. Broadly, most importantly, this essay stresses the urgency to contemplate

and nurture the economically fair and sound policies through more social lens (Zajko, 2020).

8. Policy Implications and Recommendations

Concerning work on the intersection of sociology and economics, attention is drawn to the model's policy implications. Specifically, it is recommended that, in these times of rapid AI development, any policy developed should be well-informed and sensitive to both the intricate social embeddedness of technology and the social inequalities constantly (re)produced by capitalist economies—these analytical factors deeply engage sociology (Zajko, 2020). The need for examining determinants on both the micro- and meso-level of (regional) economic life is made apparent, as is the call to scrutinize the development and internal dynamics of technologies in light of its distributive consequences. A set of high-level recommendations is provided to address the most pressing challenges articulated by the model: firstly, to counterbalance the mitigation of wage labor with new regulatory approaches to ensure fair and collectively shaped economic exchanges and, secondly, not to hinder AI advancement per se, but rather anticipate its social consequences to proactively regulate the technology via legal interventions.

Furthermore, it is strongly suggested that government advice on AI is extended to the broader working population, local governments are empowered to proactively shape local industries, and efforts to reduce technology-driven inequalities are consciously steered across all levels of the socio-technical hierarchy. The research presented in this set of socio-economic inquiry argues that independent of the autonomous development of technology, a plethora of broader societal factors are crucial in determining which technologies are developed, where they are located, and how the wealth they create is distributed. Therefore, any policy aimed at shaping the development, location, or resulting inequalities of technologies can benefit from incorporating such sociological insights. The model, its assumptions and limitations are here intended rather as a step in the right direction and a proposal for potentially fruitful areas of future research and action within the domain of economic policy.

8.1. Regulatory Measures

Having identified the growing influence of intelligent systems on international economic activities, the text underlines potential questions and problems of sociological and socio-economic interest regarding this topic. The identified issues pertain to employment systems, wealth distribution, and the regulation of economic activities. It is expected that with regard to these aspects of economic and social life, AI engaged on a vast scale will bring about changes not yet considered by economists and regulators. Interdisciplinary cooperation and joint work should be undertaken to bridge the gap between current economic practices and the development of fair economic solutions, satisfying both economic and ethical criteria. Based on these considerations and assumptions, the text

aims to outline the problems related to the future use of AI in economic activities and proposes a comprehensive research agenda for interdisciplinary cooperation in fields relevant to sociology and macroeconomics.

9. Future Directions and Emerging Trends

One question of foremost concern is how evolving technologies – namely, artificial intelligence (AI) – will shape the socio-economic landscape in the near future, regarding how will AI influence labor markets, income and wealth inequality, and the design and effects of future public policies (ABRARDI et al., 2019). Already, AI-powered machines and algorithms have begun to alter current production processes, products and services, labor markets, and even entire industries. Machine learning models and AI-powered agents are developing abilities to substitute white collar and cognitive jobs as well. For decades to come, laboratories, companies, marketplaces, and society at large will experiment general purpose AI designs, now with unimaginable repercussions. Given the extraordinary potential these technologies represent, it is crucial to stand prepared. Therefore, understanding of the future of industrial matters will only be as good as the understanding of on-going research in the computational and engineering sector.

Emerging and projected interactions become too complex to be addressed in isolation. Furthermore, the very notion of an AI falls outside the divides drawn by orthodox disciplines. This unique combination of circumstances renders sociological perspectives neat tools both to anticipate possible future and to navigate such possible future when it rolls out. Sociology is evoked herein not as an alien discipline to expand existing horizons, but instead as a set of knowledge and practical know-how that may inform economic and AI-focused strategies in view of a new and encompassing developments. Consequently, the call is to pursue an on-going forum of dialogue across walls of patchy specialization, so to tie together conjectures, commonplaces, and data emerging from a disjointed analysis. Nonetheless, some common and specific questions are addressed for the theoretical and empirical benefit of a wide audience. Furthermore, adhering experiences, questions, and findings with respect to how fast and what effects AI leaves on the interplays between economies, labor, and the broader meso-structure may provide steady ground to explore these directions.

9.1. Sociological Perspectives on Technological Advancements

In 2020, life as we know it is fundamentally impacted by the co-dependency between humans and technology. Technologies play essential roles in shaping and defining public, economic, health, political, and social practices across contemporary societies. In response, the realm of academia has also interfaced with the allocation of technologies within a societal context, leading to the development of a more precise field known as the Sociology of Technology. Subsequently, social scientists have closely explored the relationships between society, technology, and culture through assemblages such as

Actor-Network Theory, Social Shaping of Technology, and the relationship between technology and modernity.

The role of technology within the spectrum of social interactions has been significantly revised due to the notion that value-neutral tools lack inherent features of determining the societal course. Analogously, technological determinism, a belief that technology inherently governs social progress and bestows societal advancements, is increasingly siphoning interest across multiple research domains. In replace of dominant techno-centric perspectives, scholars underscore the view of technology as an intentional system of infrastructure, knowledge, and technique intertwined within a grander social and economic structure. As a result, it directs conversations towards a broadened examination of power relations, values, and societal ethics interweaving the spectrum of contemporary societal technologies. This shift to the pronounced societal analysis ultimately reveals darker underpinnings involved in current technological advancements, exposing the conception of "Conservative AI" with wider repercussions for deeply rooted societal inequities. Accordingly to the aforementioned, purposes an inclusive look into the absorptive effects technological advancement poses on the economy through the application of relational social relational theory while also outlining a roadmap for accurately fair economic solutions in the domain of AI Technologies.

10. Conclusion

The social changes discussed here only scratch the surface of the radical transformation set in motion by algorithms in general and AI in particular. Yet, the artificial intelligence experts who analyze such an economic effect tend to deal with the consequences more than the causes. AI has the potential to make more informed decisions and orchestrate systems, along with connectivity and gravity, which simulate hierarchical models of relationships. Already, the banking sector has extensively implemented models such as random forests, based on clients' and collateral's type. When accurate, such models can lead to disbursement policies that guarantee maximum return on business interests. Because the likelihood of obtaining a loan is inequally distributed across socio-economic classes, those left behind tend to stay aside to better opportunities stratifying the society (Zajko, 2020). Measures such as Dare provide an economic pluralism interpretation to class differences, but Fico scores are considered IP, therefore the reasons for rejection are not easily patchable.

In light of the spread of such systems, failing to provide an ethically satisfactory explanation for automated decisions translates into the isolation of fragments of society from key resources. An ethical framework for AI needs to reconcile conflicting principles: technological dynamics' potential unbalance or distributive vulnerabilities, is bent toward the most powerful actors leading to unregulated exploitation. An alternative concern may be a collective distortion of freedom, intended as an individual trait. Furthermore, when wealth is redistributed through power or capital in act perpetually

along generations poverty-wise, the balance is disturbed, tilting history in favour of who can afford the price. Existing economic problems scale up substantially: wage can no longer drive the socialist welfare state, dividends, stock options and value are some keywords of the final victory.

10.1. Summary of Key Findings

The rapid development and implementation of artificial intelligence are vastly shaking the foundation of our economic system. In the realization of fair society in economic terms, the issues of income inequality and its root should be addressed. Under the circumstances that discrimination and widening disparity still persist, the use of AI systems in the economy is not necessarily always to improve the economic wellbeing of the society as a whole (Zajko, 2020). Therefore, applying some ethical frames of reference when deciding on economic bets might typically be worth consideration. In addition to the standard "economic" lens, it is reasonable to apply also a "sociological" lens to the everyday and critical economic topics and developments, such as economic decisions made by businesses and governments. Policymakers are asked to reduce the risks of structural unemployment. Workers are told to invest in skills that are complementary to AI, as well as in ethical leadership of AI-systems. Businesses are encouraged to develop open AI systems in order to "tame the robot". It is presumably to the collective benefit of the society and policy makers to consider the other frames as well - no matter how unthinkable and ethically charged they may seem.

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