Artificial Intelligence: A blessing or a curse? What socio-economic challenges will humanity face in the next decades?

Introduction and Context

The European Union defines Artificial Intelligence as "*systems that display intelligent behaviour by analysing their environment and taking actions – with some degree of autonomy – to achieve specific goals*" (European Commission, 2018). Since the introduction of the ChatGPT large-language model in November 2022, the meteoric upsurge in AI ventures, with 77 new large-scale models (Rahman, 2024), suggests that it will be an instrumental identifier of the upcoming decade. The technology has been subjected to contention, however, as the scientific and working communities alike are divided into two camps. In one camp, the fearful, among whom are Geoffrey Hinton (one of the "godfathers" of AI) (Heaven, 2023) and Kate Crawford (a key influencer of the EU's AI Act) (Hare, 2023), who warn of AI's detrimental impact on the physical world and further, widespread calamity in the case that the technology gains complete autonomy. In the other camp, the advocates, among whom is another "godfather" of AI, Yann LeCun (WEF, 2024), known for his role in developing Convolutional Neural Networks for image and speech recognition. This camp proclaims that the risks associated with AI are outweighed by its potential, for both corporate and humanitarian benefit; one such example is the use of AI by the United Nations for aiding disaster response (Vanoli, 2024). This essay will explore AI's transformation of the knowledge economy, labour force and its potential for catalysing greater humanitarian

benefit, whilst discussing urgent measures necessitated in both its regulation and development.

The economic benefits of AI

It has been conjectured by some that AI will be able to "*perform any intellectual task a human being can perform*" (Korinek, 2023) ; it can hence be deduced that this applies to all economically productive tasks. Thus, from the perspective of profit-seeking firms, the technology will prove to be the ideal instrument in increasing profits; it allows for efficiency, and consequently output, to be maximised. In particular due to the ability of AI to gain insights based on data sets provided, this potential is markedly so in industries involving repetitive, simplistic tasks such as data entry and customer service (wherein many companies have implemented such technologies heretofore) .

However, even in a scenario in the near future, one wherein AGI (Artificial General Intelligence - when AI's ability to synthesise information can match that of a human) has not been completely achieved, Artificial Narrow AI (IBM Data and AI Team, 2024) can still increase productivity. Rather than replacing the labour force currently, it can act as an invaluable supplement to aid productivity - from Buffer for brainstorming ideas, to Notion for scheduling and organising teams (Tunell, 2024) , there is an abundance of tools to handle menial tasks for employees. This consequently facilitates more attention to be focused on tackling complex tasks, allowing for increased profitability due to the higher marginal output per worker.

The modified Cobb-Douglas function below (Gonzáles, 2023) , accounting for human capital, attests to the potential for rapid economic growth AI provides. H (Human Capital) , increases

noticeably at lower levels of experience, as AI allows for "*less experienced workers [to] enhance their productivity more quickly*" (Georgieva, 2024) . Furthermore, AI provides easy access to an incredibly vast knowledge base, facilitating innovation in the form of ideas utilising AI; hence, A (Knowledge) also increases with higher AI adoption. These culminate in an eventual increase in regards to economic output, Y.

$$Y = AK^{\alpha}L^{\beta}H^{\gamma}$$

Y - Total Output; A - Total knowledge (amount of ideas) ; K - Capital; L - Labour; H - Human Capital

The societal benefits of AI

Whilst the impending replacement of workers by AI may be perceived as a dystopian reality by some, the time freed up in this process may culminate in a somewhat liberating experience, transitioning society away from the monotony of traditional employment. This new life could be likened to that of the gentry in the Elizabethan era (Balwit, 2024) , wherein contributions to society were achieved without necessarily fostering economic growth. Whilst studies do suggest that having too much or too little discretionary time could prove harmful to subjective well-being (Sharif, Mogilner and Hershfield, 2021) , directing this time towards productive pursuits and hobbies largely negates this effect. Hence AI could enable the population to surpass the corporate realm and focus their attention towards innovation and creativity, particularly towards the arts (this assumes, however, that a Universal Basic Income has been established for displaced workers).

Furthermore, from a holistic perspective, perhaps superseding employment and the economy, one could posit the notion that AI's true potential lies in its ability to further the human cause.

One such implementation lies in the public sector. The ability of AI to synthesise research and scientific information for policymakers to interpret and act upon is currently being explored by the Economic and Social Research Council and UKRI (UKRI, 2024) . Through this shift towards a more technocratic government, AI could evolve into a position not unlike that of Special Advisers in government currently. Whilst this will likely be the maximum extent to which AI can influence politics, it indubitably will serve as a useful tool for politicians to gauge trends and make research-oriented decisions swiftly.

Economic considerations to be made

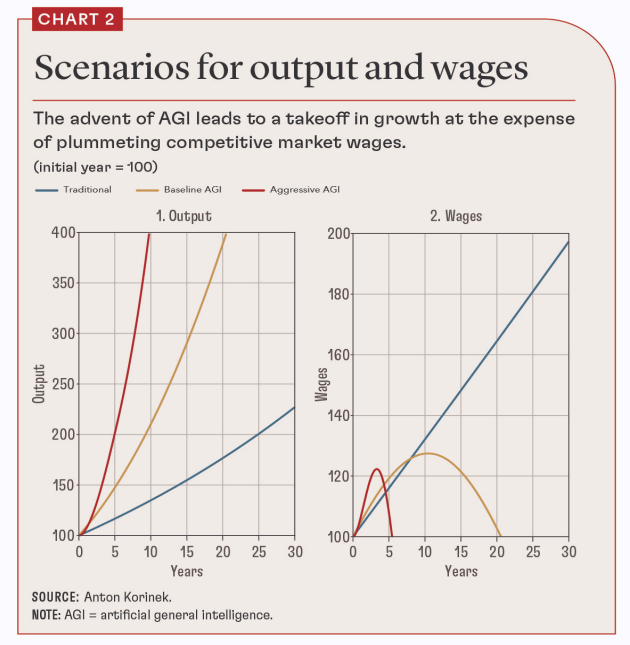
Whilst AI is likely to foster economic growth from a purely numerical perspective, potentially contributing $15.7 trillion to the global economy by 2030 (PwC) , it is necessary to account for negative externalities on the economy that occur as a consequence of AI adoption.

One such negative consequence of rising AI adoption may be, as Karl Marx feared for the free market, worker exploitation. As aforementioned, profit-seeking firms will eventually turn to AI as the ideal employee, to optimise efficiency and profitability. This is further reinforced by the below graph; even with baseline AGI, wherein progress occurs at a steady rate, the maximum level of output for traditional employment is achieved within 12 years as opposed to 30 years. Hence, the increased productive potential that co-occurs with AI adoption incentivises firms to lay off resource-consuming, less efficient employees. For those employees who are retained, AGI leads to wages returning to the base value within approximately 5 or 20 years (depending on the aggressiveness of the AGI) . As opposed to the steady growth in wages observed with traditional employment, the threat of replacement

from AI has the potential to be used by firms to exploit workers into undervaluing their work. The lack of growth in wages may lead to their real value being eroded by inflation and cost of living pressures, hence setting the stage for higher levels of austerity.

Figure 1

Scenarios for output and wages (Anton Korinek, 2023)

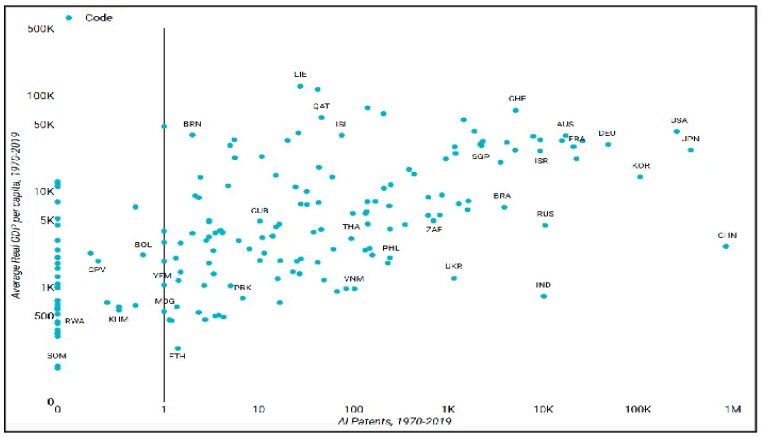


Another potential challenge humanity could face as a result of increased AI integration is exacerbation of inequality between HICs and LICs. As the below graph indicates, real GDP and AI patents proposed portray a positive correlation - wealthier countries such as the USA and Japan are among those leading the AI front, with 259,844 and 365,409 AI patents, respectively. On the other side of the spectrum, African countries such as Rwanda and Somalia are shown to possess none. Hence, whilst AI may facilitate economic growth, there

is also the risk of this growth being concentrated in richer countries, worsening the already prevalent global inequality.

Figure 2

AI patents and average real GDP per capita, 1970–2019 (Julius Tan Gonzáles, 2023)



Societal considerations to be made

Whilst AI has the potential to catalyse humanitarian advancement on a global scale, hurried development of the technology risks creating further discord among society. One such risk is associated with AI chatbots propagating ingrained racial stereotypes stemming from its data set onto a widespread scale; medical researchers noted that "*every LLM model had instances of promoting race-based medicine/racist tropes*" (Omiye and Lester, 2023) . In order to combat discriminatory AI, there are two key strategies: regulation and transparency (Borgesius, 2018) . Regulatory prevention of discrimination would likely involve controlling the inputs provided, such that factors like race will not be considered in job-screening or legal procedures. Transparency would also prove useful in dealing with discriminatory AI; an implementation of this would likely involve some parts of the model being openly published.

Consequently, it can be investigated by anyone which metrics an AI model uses in order to draw conclusions, and note scenarios where the conclusion perpetuates intolerant views. However, the stark reality is that whilst the impacts of discriminatory AI can be largely mitigated, entire removal of biases may prove impossible.

Another prominent issue that comes with an ever-growing number of AI models is their high energy consumption, serving to enhance the greenhouse effect. Whilst AI can help increase energy efficiency, the fundamental infrastructure of AI, data centres, could consume 1000 TWh of energy by 2026, equivalent to the consumption of Japan(IEA, 2024). Therefore, the very development of AI to combat climate change could cause further damage.

However, perhaps encompassing all of the above problems is AI's fundamental flaw. Whilst AI continuously exceeds human expectations in its rapid development, we may risk our optimism regarding AI facilitating irresponsible practices in the process of its development. Only 19% of firms have fully implemented responsible AI practices (Renieris, Kiron and Mills, 2022) , with many choosing to operate with little to no AI governance systems. It is also yet to be decided *how* AI will be regulated. With the polarised amounts of funding dedicated to developing and regulating AI, humanity risks not only creating predatory AI as aforementioned, but loss of control over AI itself.

Closing Remarks

In summation, with the plethora of opportunities AI opens doors for facilitating both economical and intellectual growth in industry, the public sector and even academia, it seems that researchers are still assimilating the vast potential of the technology. However, it would

be negligence to fail to acknowledge that the mystery behind the technology also carries a wide array of considerations to be made. There is simply too much at stake for developers to afford to deal with problems as they arise for rapidly evolving AI models. Hence, this essay, whilst acknowledging that AI *has the capacity to* further the human cause, recommends a halt on further development of AI (as has been suggested in the open letter signed by Musk and Hopfield (Future of Life Institute, 2023)) to allow researchers to understand the complexity and possible repercussions of what they are actually building. If, and only if, we take this brief pause to regulate AI, will we be able to yield its fruits for decades to come.

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Bibliography

1. Balwit, A (2024). *New Article: My Last Five Years of Work*. [online] Palladiummag.com. Available at: https://letter.palladiummag.com/p/early-article-my-last-five-years [Accessed 7 Nov. 2024].
2. Borgesius, F.Z. (2018). *Discrimination, artificial intelligence, and algorithmic decision-making*. [online] Available at: https://rm.coe.int/discrimination-artificial-intelligence-and-algorithmic-decision-making/1680925d73.
3. European Commission (2018). *HIGH-LEVEL EXPERT GROUP ON ARTIFICIAL INTELLIGENCE a DEFINITION OF AI: MAIN CAPABILITIES AND SCIENTIFIC DISCIPLINES*. [online] Available at: https://ec.europa.eu/futurium/en/system/files/ged/ai_hleg_definition_of_ai_18_december_1.pdf.
4. Future of Life Institute (2023). *Pause Giant AI Experiments: an Open Letter*. [online] Future of Life Institute. Available at: https://futureoflife.org/open-letter/pause-giant-ai-experiments/.
5. Georgieva, K. (2024). *AI Will Transform the Global Economy. Let's Make Sure It Benefits Humanity.* [online] International Monetary Fund. Available at: https://www.imf.org/en/Blogs/Articles/2024/01/14/ai-will-transform-the-global-economy-lets-make-sure-it-benefits-humanity.
6. Gonzáles, J.R. (2023). Implications of AI innovation on economic growth: a panel data study. *Journal of Economic Structures*, 12(1). doi:https://doi.org/10.1186/s40008-023-00307-w.

7. Hare, S. (2023). *Kate Crawford: exposing artificial intelligence's true costs*. [online] Bailliegifford.com. Available at: https://www.bailliegifford.com/en/uk/individual-investors/insights/ic-article/2023-q3-exposing-ai-s-costs-10037163/ [Accessed 5 Jan. 2025].
8. Heaven, W.D. (2023). *Geoffrey Hinton tells us why he's now scared of the tech he helped build*. [online] MIT Technology Review. Available at: https://www.technologyreview.com/2023/05/02/1072528/geoffrey-hinton-google-why-scared-ai/.
9. IBM Data and AI Team (2024). *Types of Artificial Intelligence | IBM*. [online] www.ibm.com. Available at: https://www.ibm.com/think/topics/artificial-intelligence-types.
10. IEA (2024), Electricity 2024, IEA, Paris https://www.iea.org/reports/electricity-2024, Licence: CC BY 4.0
11. Korinek, A. (2023). *Scenario Planning for an AGI Future-Anton Korinek*. [online] IMF. Available at: https://www.imf.org/en/Publications/fandd/issues/2023/12/Scenario-Planning-for-an-AGI-future-Anton-korinek.
12. Omiye, J.A., Lester, J.C., Spichak, S., Rotemberg, V. and Daneshjou, R. (2023). Large language models propagate race-based medicine. *npj Digital Medicine*, [online] 6(1), pp.1–4. doi:https://doi.org/10.1038/s41746-023-00939-z.
13. PwC (2017). *PwC's Global Artificial Intelligence Study | PwC*. [online] PwC. Available at: https://www.pwc.com/gx/en/issues/artificial-intelligence/publications/artificial-intelligence-study.html.
14. Rahman, R. (2024). *Tracking Large-Scale AI Models*. [online] Epoch AI. Available at: https://epoch.ai/blog/tracking-large-scale-ai-models [Accessed 25 Dec. 2024].

15. Renieris, E., Kiron, D. and Mills, S. (2022). *In collaboration with To Be a Responsible AI Leader, Focus on Being Responsible*.
16. Sharif, M. A., Mogilner, C., & Hershfield, H. E. (2021). *Having too little or too much time is linked to lower subjective well-being*. Journal of Personality and Social Psychology, 121(4), 933–947. doi: https://doi.org/10.1037/pspp0000391
17. Tunell, A. (2024). *We Tested 50+ AI Productivity Tools. Here Are The 16 Best Tools in 2024*. [online] Usemotion.com. Available at: https://www.usemotion.com/blog/ai-productivity-tools.
18. UKRI (2024). *Transforming global evidence: AI-driven evidence synthesis for policymaking*. [online] Ukri.org. Available at: https://www.ukri.org/opportunity/transforming-global-evidence-ai-driven-evidence-synthesis-for-policymaking/.
19. Vanoli, C. (2024). *New UN initiative to reduce disaster risk with AI - ITU*. [online] ITU. Available at: https://www.itu.int/hub/2024/08/new-un-initiative-to-reduce-disaster-risk-with-ai/.
20. WEF (2024). *The Future of Advanced Technology | Beyond Generative AI*. [online] World Economic Forum. Available at: https://www.weforum.org/videos/beyond-generative-ai/.