Machine Intelligence and Human Judgment

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AI COULD REVERSE THE WIDENING INEQUALITY DRIVEN BY TECHNOLOGY, OR AGGRAVATE IT

Imagine an island that is home to millions of geniuses. They're experts in everything that can be done on a computer. They never stop working. And they happily do it all for only modest wages. Now imagine the profound questions that would arise when they are integrated into the global economy.

How would their integration reshape markets, wages, and the distribution of power? The geniuses could spur abundant prosperity—or profound instability—depending at least in part on the choices the rest of us make.

In a new age of prosperity, productivity and economic growth could soar and social welfare flourish. The uniquely intelligent workforce could revolutionize industries from health care to education to technology. Office tasks could be handled with flawless efficiency, freeing people to pursue more meaningful endeavors. The cost of many services would drop, raising living standards.

What would an age of instability look like? With geniuses performing tasks at a fraction of the cost, knowledge workers and professionals could face mass unemployment. Eroded wages and job security could reverberate across industries, collapsing the middle class and deepening inequality. A few corporations or nations monopolizing access to the geniuses could monopolize wealth and power in unprecedented ways, marginalizing smaller businesses and weaker economies. This could stifle innovation and fuel global tensions.

Human creativity and individuality could lose value as geniuses dominate intellectual and practical contributions. Societies may grapple with existential questions of purpose and identity in a world where many are no longer essential, leading to widespread unrest. The geniuses could roil economies, tear apart social cohesion, and plunge the world into disparity.

This island of geniuses is worth thinking about because a growing number of experts believe that we may be on the cusp of such a technological leap. In 2023, for example, Geoffrey Hinton, who was awarded a Nobel Prize for his pioneering work on AI, said that the technology might surpass human intelligence within 5 to 20 years. Some other experts think it could happen sooner.

Skill bias

Whether AI that eclipses human intelligence leads to more prosperity or more instability will likely depend on how it affects inequality. Since the computer revolution in the 1960s, many economists, including the Nobel laureate Daron Acemoglu, have argued that technological advances may exacerbate income inequality by increasing demand for highly skilled and experienced workers while reducing demand for low-skilled labor, a phenomenon known as "skill bias." Two recent studies shed light on how skill bias applies to the AI revolution.

One study, by Aidan Toner-Rodgers at the Massachusetts Institute of Technology, shows that higher-skilled workers do indeed benefit disproportionately from AI. His examination of how scientists use AI to achieve breakthroughs finds that the output of the top decile was 81 percent higher than without AI. There was little change to the output of lower-skilled scientists. These findings suggest that AI can *increase* income inequality.

But the other study, in which Stanford University's Erik Brynjolfsson and colleagues examine data on call center employees, shows that *lower-skilled* workers benefit disproportionately from AI. There was minimal impact on the productivity of experienced and highly skilled workers, but novice and

low-skilled workers saw a 34 percent improvement. Specifically, the authors found that AI tools increased productivity (as measured by the number of problems resolved per hour) by 14 percent on average. AI could boost productivity for lower-skilled workers, for example, by predicting how their higher-skilled counterparts would complete tasks. In this setting, AI *reduced* income inequality.

Judgment role

Why does AI disproportionately aid lower-skilled workers in one study and higher-skilled workers in another? What's the difference between call center employees and scientists? We think it relates to judgment, a key ingredient of decision-making, and prediction. The role of each is central in decision theory, a branch of applied probability theory that assigns probabilities to various outcomes (prediction) and values to their consequences (judgment).

Toner-Rodgers attributes the disparity to differences in judgment when he assesses AI-generated predictions. "Improvements in machine prediction," he writes, "make human judgment and decision-making more valuable." Higher-skilled scientists use their superior judgment to identify promising AI suggestions while others waste significant resources investigating false leads.

The stakes were high in this setting because mistakes resulted in expensive laboratory testing. This concentrated rewards among highly skilled scientists and amplified income disparity.

In Brynjolfsson's study of call center agents, by contrast, the key differentiation between high- and low-skilled workers was the ability to predict the best response to a customer. AI was as good as high-skilled agents at such prediction. The judgment involved in estimating the relative cost of different types of mistakes mattered less because this type of judgment was less scarce and the stakes were lower.

As AI prediction advances, the distribution of judgment will increasingly determine the distribution of wealth and power. Where the difference between high- and low-skilled workers is based on the prediction part of the job, AI will disproportionately benefit lower-skilled workers because AI prediction will substitute for human prediction. This will reduce productivity differences and hence income disparity between workers in this industry and, over time, will drive up wages in low-paying places, even if skills are also lower. Back-office and call center wages, for example, may increase in India relative to the US.

But where judgment defines the difference between high- and low-skilled workers, AI will disproportionately benefit those with higher skills. This will widen productivity differences and income dis-

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parity between workers in these industries. Labor could shift to places with higher wages that were previously less attractive because the return on higher-skilled workers did not justify the expense. More innovation could move to the US because a greater share of top students attend US universities, and US-based scientists lead in scientific breakthroughs, prizes, publications, and patents.

AI is advancing rapidly, but things like management practices, infrastructure, education, regulations, and customer demand change slowly, which will likely limit the short-term impact of discovering that island of geniuses. In the longer term, however, the impact on the global economy will be significant. Economic stability will hinge on how we manage the transition.

Wealth and power

The geographic distribution of high-stakes, judgment-intensive tasks will alter the distribution of income and power. Regions with more skilled workers, stronger research institutions, and advanced technological infrastructure will likely capture a disproportionate share of economic benefits.

In industries where judgment is highly valuable—such as scientific research, medical diagnostics, and strategic planning—AI will amplify expert productivity. It will increase these workers' earning potential and reinforce the dominance of innovation hubs. But industries such as customer service, where predictive ability differentiates workers, may experience a shift in jobs toward lower-wage regions, which will reduce income disparity.

If AI's impact on high-value, judgment-intensive tasks outweighs its equalizing impact on low-stakes, prediction-intensive tasks, global economic inequality will deepen. The result could be even greater concentration of wealth and influence in a few select cities or countries that attract top talent.

High-income regions with strong AI ecosystems, including parts of the United States, Europe, and Asia, may experience greater return on human capital with the requisite judgment skills. Other regions risk being left behind. The long-term consequences could include growing disparity in technological leadership, research funding, and geopolitical influence. Moreover, more sophisticated AI may redefine which forms of judgment remain scarce, further shifting the balance of power, depending on which regions adapt their workforce to emerging needs.

Policymakers can help in three important ways.

To sharpen judgment, policymakers could expand access to high-quality education and training that emphasizes complex decision-making skills, ensuring that more people in different regions develop the judgment needed to complement AI.

Policymakers could promote global talent mobility and knowledge exchange, ensuring that the judgment necessary for the best use of AI is distributed more broadly across economies rather than confined to a few dominant regions.

Finally, policymakers could create incentives to spread the ability to generate valuable AI predictions beyond traditional power centers through funding, infrastructure, and AI adoption incentives. This would shape the distribution of AI's benefits and foster more balanced economic growth in the long run.

Measures like these will help manage the transition and maximize AI's benefits while mitigating its risks. Computer scientists raced ahead to develop the technology, which continues to advance at a rapid pace. Now economists must catch up. The profession must guide policymakers with research on how best to manage the AI transition. This will increase the chances of policy steering the world toward a future of global stability and prosperity—not the alternative. **F&D**

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