

AI and the Transformation of the Economy

“The bourgeoisie, during its rule of scarce one hundred years, has created more massive and more colossal productive forces than have all preceding generations together. Subjection of Nature’s forces to man, machinery, application of chemistry to industry and agriculture, steam navigation, railways, electric telegraphs, clearing of whole continents for cultivation, canalisation of rivers, whole populations conjured out of the ground – what earlier century had even a presentiment that such productive forces slumbered in the lap of social labour?”¹.

This quote is from Karl Marx and Friedrich Engels in the famous Communist Manifesto, and beyond the consideration of whether Marxism was right, we cannot deny that the technological progress caused by science has been considerable. Computers, cellphones, electric cars, atomic bombs, and so on, define modern life. But Artificial Intelligence seems to be different; it mixes cognition with machines, and therefore, its potential to transform the economy could be significant at a rate never seen before.

This essay argues that AI will be adopted at a faster pace than past GPTs (like electricity or computers) and that its economic effects will be more transformative, not only by raising productivity, but by reshaping economic coordination itself.

The Utopia of Economists

Lord Keynes once wrote about the possibility that we could become so wealthy that we could start to worry about things other than money². Perhaps the most famous philosopher and economist associated with this posture is, again, Karl Marx.

¹ Marx, Karl, and Friedrich Engels. *Manifesto of the Communist Party*. Translated by Samuel Moore in cooperation with Friedrich Engels. Moscow: Progress Publishers, 1969, 17, Marxists Internet Archive, <https://www.marxists.org/archive/marx/works/1848/communist-manifesto/>

² John Maynard Keynes, *Economic Possibilities for Our Grandchildren*, in *Essays in Persuasion* (New York: W. W. Norton & Co., 1963), 358–373.

Marx³ believed that technical and scientific progress could replace human work and tend the cost of production to zero (elimination of scarcity). Engels⁴ and Marx thought that it could only happen under socialism, because capitalism suffers from the tendency of the rate of profit to fall. However, modern Marxists, such as Fernandez Liria, have demonstrated that this is false and that capitalism could continue unless workers intervene.

Therefore, if capitalism can fully develop productive forces, a strong question arises: what if the technological progress that Marx announced were AI?

AI and GPT

A General-Purpose Technology (GPT), following Lipsey and Carlaw⁵, has the following characteristics

- Is generic, a form of organization, a product, or a process that evolves but is recognizable
- Has enhancing potential.
- Has a great range and variety of uses (it can affect an economy, and it can be used in many ways)
- Has spillovers: it can create new opportunities and affect other technologies.

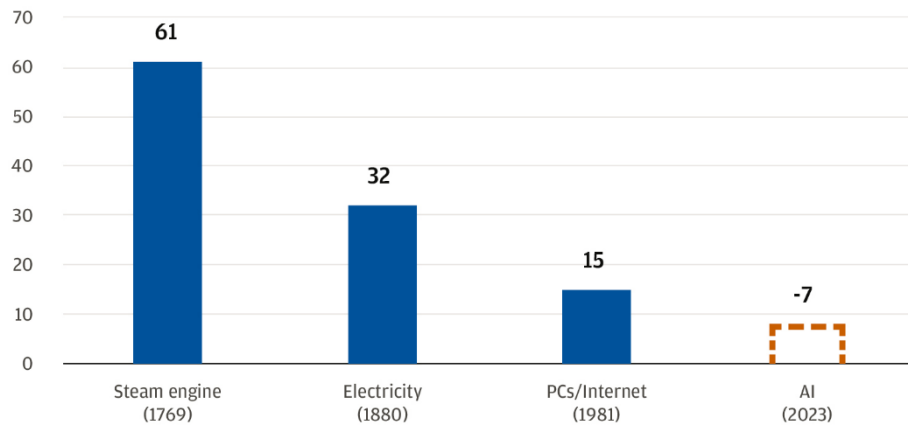
Some examples used by the authors are the automobile, railroad, electricity, and the American system of manufactures.

³ Karl Marx, *Outlines of the Critique of Political Economy: Rough Draft of 1857–1858*, in *Karl Marx and Friedrich Engels Collected Works*, vol. 28 (Moscow: Progress Publishers, 1986), 90.

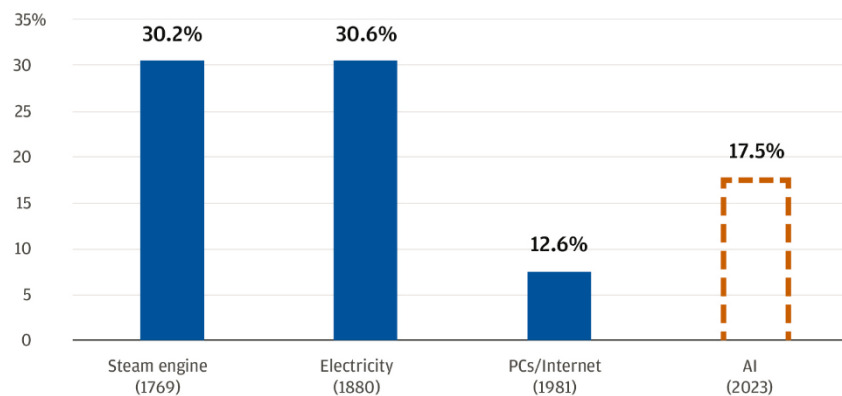
⁴ Friedrich Engels, *Socialism: Utopian and Scientific*, in *Karl Marx and Friedrich Engels Collected Works*, vol. 24 (Moscow: Progress Publishers, 1989), 316-318.

⁵ Richard G. Lipsey, Kenneth I. Carlaw, and Clifford T. Bekar, *Economic Transformations: General Purpose Technologies and Long-Term Economic Growth* (Oxford: Oxford University Press, 2005), 93-99.

Joe Seydl and Johnathan Linden⁶ analyze the past GPTs and their impact compared to the potential of AI. The time that it has taken GPTs to impact productivity has been reduced every time:



The authors estimate that, while the internet took 15 years to impact productivity, AI could do it in seven years.



Likewise, they estimate that the impact on productivity would be greater than the internet (fostering it by 17.5%) and that automation would replace and create many jobs.

⁶ Joe Seydl and Jonathan Linden, “How AI Can Boost Productivity and Jump Start Growth,” *J.P. Morgan Private Bank*, July 16, 2024, <https://privatebank.jpmorgan.com/nam/en/insights/markets-and-investing/ideas-and-insights/how-ai-can-boost-productivity-and-jump-start-growth>.

As Acemoglu thinks that a good part of automation would be counterbalanced by the creation of new tasks in which labor has a comparative advantage.⁷

But AI could not only replace repetitive jobs. Leopold Aschenbrenner, in his famous essay *Situational Alertness*, discusses the possibility of AGI (Artificial General Intelligence) and Superintelligence. The former refers to AI being equal to human intelligence, and the latter to AI surpassing human potential. He says that AGI could be available by 2027: “AGI is no longer a distant fantasy. Sling up simple deep learning techniques has just worked, the models just want to learn, and we’re about to do another 100,000x+ by the end of 2027. It won’t be long before they’re smarter than us.”⁸

While GPTs only complement the economy, giving new tools to enterprises to create products, AI is different; if AI can be an AGI, it is not impossible to think that it could even manage the economy.

The Economic Calculation Issue

In 1920, Ludwig von Mises published a paper⁹ where he argued that in socialism, there would be no rational prices for the means of production, and therefore, making planning inefficient. Hayek expanded this argument¹⁰ with the problem of knowledge, stating that the state can’t get access to the dispersed knowledge of society.

⁷ ¹ Daron Acemoglu and Pascual Restrepo, “Automation and New Tasks: How Technology Displaces and Reinstates Labor,” *Journal of Economic Perspectives* 33, no. 2 (Spring 2019): 3–30, <https://doi.org/10.1257/jep.33.2.3..>

⁸ Leopold Aschenbrenner, “I. From GPT-4 to AGI: Counting the OOMs,” in *Situational Awareness: The Decade Ahead*, situational-awareness.ai, accessed September 1, 2025, <https://situational-awareness.ai/from-gpt-4-to-agi/>.

⁹ Ludwig von Mises, *Economic Calculation in the Socialist Commonwealth*, trans. S. Adler (Auburn, AL: Ludwig von Mises Institute, 1990; repr., 2012).

¹⁰ F. A. Hayek, “The Use of Knowledge in Society,” *The American Economic Review* 35, no. 4 (1945): 519–30, <http://www.jstor.org/stable/1809376>.

Cockshott, Cottrell¹¹, and Nieto¹² have challenged this vision, arguing that with TICs (Technologies, Internet, and Communications), the problem of planning is soluble. With AI, they think, planning is more feasible than ever

Moreno Casas, Espinosa, and Wang¹³ have mainly argued that the problem of self-reference is critical, i.e., the impossibility of a system to know everything about itself. However, we need to comment that an AI wouldn't need to know everything about the economic system, as humans do not either. If AI is at least as intelligent as a gifted human, it would only need to replicate itself to know as much as a human does about every contextual information.

Rallo¹⁴, responding, has argued that, firstly, the models of machine learning need to be trained with correct information, and that consumers could have incentives to reveal incorrect information. Secondly, AI would lack deep data of consumers; it can see if the demand is lower or higher, but not why consumers lowered their demand, which is essential to make optimal decisions. And finally, AI is trained with previous cases, but the situations in the economy are frequently new, contextual, and need creativity to be solved.

Nevertheless, the first argument is valid if it is the state that is programming the AI, but not if it is a private enterprise constrained by competition. The latter would have the incentive to make adequate tests and provide feedback to the AI to work efficiently,

¹¹ Paul Cockshott and Allin Cottrell, *Towards a New Socialism* (1993).

¹² Maxi Nieto, "Información, mercado y cálculo económico: una crítica a la escuela austriaca," in *Ciber-comunismo: planificación económica, computadoras y democracia*, ed. Paul Cockshott and Maxi Nieto (Madrid: Editorial Trotta, 2017), 231–66.

¹³ Vicente Moreno-Casas, Victor I. Espinosa, and William Hongsong Wang, "The Political Economy of Complexity: The Case of Cyber-Communism," *Journal of Economic Behavior & Organization* (2022), <https://doi.org/10.1016/j.jebo.2022.10.012>.

¹⁴ Juan Ramón Rallo, *Anti-Marx: crítica a la economía política marxista*, 3rd ed., vol. II (Barcelona: Deusto, 2024), 356–57.

and to manage consumers' preferences. Also, in a market, consumers have the incentive to reveal their information correctly, providing correct data to AI.

The second argument of deep data is, again, correct while we are talking of a state-trained AI, but not to a private one. An AI powered by quantum computers, if it is not sure about the reason for the demand, could think of many different solutions and try everyone all, as the market does. In the market, sellers compete to see who did the best interpretation of consumers; there is no reason to think that AI couldn't test every alternative and receive the results.

And finally, if AI gets to be as described by Aschenbrenner, it could create solutions to problems faster than brilliant humans, so combined with its freedom to try different options, it is not impossible to think that it could adapt to new situations efficiently.

Therefore, AI could hypothetically solve economic calculation problems, but not by centralization; it requires the market to achieve that point. The Schumpeterian creative destruction applies here; capitalism can engender a powerful innovation (AI), but it may destroy a great part of what we have today, creating a new form of economy.

The Utopia of Economists May Come True

If AI gets AGI or Superintelligence, and if, and only if, a democratic and liberal institutional framework supports it, it has the potential to reduce to its minimum the human labour.

As Huang and Rust describe¹⁵, AI could replace jobs progressively and make them almost zero-cost. We can say the same to the economy, AI only needs to be gradually

¹⁵ Ming-Hui Huang and Roland T. Rust, "Artificial Intelligence in Service," *Journal of Service Research* (2018): 155–72.

introduced into private enterprises to force competence to integrate them more and more, incentivized to reduce costs. If that happens, entrepreneurs wouldn't be necessary (because of the economic calculation), and therefore products could have a price near to zero, people getting access to them whenever they require. The scarcity of reproducible goods would be over, as Marx predicted, but, as we mentioned, and as Rallo¹⁶ does too, it would be caused by capitalism and not by socialism. Jobs wouldn't be necessary because reproducible commodities would be free, so unemployment wouldn't be an economic problem.

Brynjolfsson and McAfee¹⁷ argue that the replacement could lead to inequality, due to the concentration of capital, but Brennan¹⁸ refutes this point, because competence and concentration make innovations cheaper to consumers in the long term.

This is, obviously, a simplified view, because it would depend on whether we give AI the faculty to make decisions and manage risks. This problem is beyond the purpose of this essay, but it is an interesting discussion.

Conclusion

Past GPTs have increased productivity, affected jobs, and been adopted by the market faster every time. But we have examined that AI could not only increase productivity, but also change it completely, with the potential to replace human functions and solve the economic calculation problem in a time never seen before.

Nevertheless, this widely depends on how AI is managed, as Aschenbrenner asserts, an AGI controlled by a totalitarian government could cause deeply undesirable

¹⁶ Rallo, *Anti-Marx*, 1149-50.

¹⁷ Erik Brynjolfsson and Andrew McAfee, *The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies* (New York: W. W. Norton & Company, 2014)

¹⁸ Jason Brennan, *Why It's OK to Want to Be Rich* (New York: Routledge, 2021), 170–71.

results. And also, the institutional framework plays an important role. We have only drawn a possibility that, not so many years ago, would sound totally impossible

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