

238. THE HIGH COST OF AUTOMATION: ASSESSING THE NEGATIVE EXTERNALITIES OF AI INTEGRATION

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Negative economic externalities associated with rapid artificial intelligence integration are examined in this paper. Labor market disruption, wealth concentration, and the widening global digital divide are analyzed. Special attention is given to the productivity paradox and the rise of capital-intensive dominant market companies that stifle market competition.

The term “Artificial Intelligence” (AI) was officially defined seven decades ago at the 1956 Dartmouth Conference. For several decades, this technology functioned discreetly within the infrastructure of daily activities, serving as a rudimentary assistant for tasks such as spam filtration and GPS navigation. However, in the current economic landscape, AI has moved to the center of the industrial and financial sectors. Transitioning beyond mere convenience, AI is now utilized for complex tasks including software development, market analysis, and the replacement of human labor. Consequently, AI is fundamentally altering the established rules of the global economy and traditional labor market structures. The shift from rule-based algorithms to probabilistic deep learning allows for the automation of non-routine cognitive tasks that were previously deemed immune to technological disruption.

While technological progress is often celebrated, the associated economic costs are frequently overlooked. This analysis explores the economic hidden costs of AI integration, focusing specifically on job displacement and the escalation of economic inequality. A significant negative externality is the unprecedented velocity of technological change. Historically, the workforce had several years to adjust to new technologies. Currently, AI capabilities evolve within months. This creates a systemic skills gap where a significant portion of the population faces job loss without the necessary time or resources to acquire the complex skills required for an AI-driven economy. Furthermore, the requirement for continuous professional retraining creates significant psychological pressure on the workforce, which impacts general social stability.

Based on the research of Acemoglu, it must be recognized that not all automation represents beneficial progress. The global economy is currently trapped in a cycle of excessive automation, where corporations utilize AI merely to substitute labor through “so-so technologies”. These tools are sufficiently efficient to replace a human worker but are not advanced enough to significantly increase overall economic productivity. This results in the productivity paradox, where massive investments in AI occur without a corresponding surge in GDP growth [1]. Furthermore, excessive automation leads to a significant decline in the labor share of national income, as financial gains are increasingly diverted from workers to the owners of technological capital. Furthermore, the increasing reliance on automated systems introduces new forms of systemic risk that are not effectively captured by traditional economic metrics.

Furthermore, as highlighted in economic impact studies, AI is fundamentally shifting the balance between labor and capital. Being a capital-intensive technology, AI leads to a dangerous concentration of market power among a few dominant market companies that can afford massive datasets and expensive computing infrastructure. This winner-takes-all dynamic stifles competition, increases barriers to entry for small businesses, and weakens the competitive nature of global markets [2]. In such a monopolistic environment, the lack of competition often leads to a decline in long-term innovation and consumer choice. Proprietary datasets act as a significant entry barrier, protecting dominant firms from competitive pressure. Additionally, the Oxford Handbook of AI Governance identifies the widening Global Digital Divide as a critical externality. Developing nations risk becoming “data colonies”, providing raw data to tech giants while paying significant fees to utilize the resulting technology [3]. Moreover, the absence of local digital infrastructure prevents these nations from establishing independent technological frameworks and increases reliance on foreign providers.

In conclusion, while the allure of AI-driven efficiency is substantial, the unintended costs of its integration must not be ignored. The negative externalities – ranging from the displacement of cognitive labor to the erosion of market competition and global equity – suggest that the current trajectory is unsustainable. Technology is inevitable, but its direction is subject to policy and governance. A transition away from excessive automation toward human-complementary AI that enhances human capability is necessary to ensure long-term stability. If AI is not regulated with human welfare as a primary metric, the risk of creating an economy that is highly intelligent yet economically and socially fractured remains significant.

References:

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