9 Economic Implications of GenAI for Strategic Decision Making

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Initiatives: Digital Future

> GenAI's economic impact promises to be as diverse as its potential. Technology innovation leaders should use this research to evaluate nine economic implications of GenAI and stimulate an enterprisewide conversation to maximize business outcomes of GenAI use while minimizing negative impacts.

Overview

Impacts

- Generative AI (GenAI) will boost labor productivity, potentially amplifying global GDP while exacerbating economic inequality.

- GenAI will revolutionize business models by introducing machine customers, revealing ways to break financial constraints and enhancing economic forecasting via large language models (LLMs).

- GenAI will increase opportunities to improve customer experience through greater personalization based on more transparency of personas and segments.

Recommendations

Technology innovation and IT leaders looking to prepare for the digital future must:

- Adopt a "tapestry" mindset to conduct strategic planning for GenAI, accounting for both the short-term economic impact, including market disruption and targeted, high-impact productivity improvements, and the longer-term impacts on business outcomes.

- Drive labor productivity by using GenAI to augment existing automation technologies, particularly where work patterns can be structured around similar activities or defined by data.

- Prioritize automating routine, repetitive tasks through GenAI to optimize efficiency while focusing human creativity on adding unique, personalized and creative elements that consumers are willing to pay a premium for in products and services.

- Perform a trial run of GenAI in a particular market or region and use continuous monitoring, real-world results and employee input to inform decision making on how to expand further across the organization.

Introduction

As technology innovation and IT leaders develop a more complete perspective on GenAI, they must consider the technological, political, economical, social/cultural, trust/ethics, regulatory/legal and environmental (TPESTRE) impacts, which will paint a more holistic picture and enhance their strategic decision making. Gartner refers to this approach as Tapestry (see Complexity, Chaos and Confidence: A Tapestry of Trends Across Brave New Worlds).

This note identifies nine possible economic implications of GenAI:

- Labor productivity

- GDP acceleration

- Tradecraft renaissance

- Economic inequality

- Business model shift

- Economic forecasting

- Creative destruction

- Market risks

- Economic transparency

These nine implications are not intended to be a complete or exhaustive list but rather to encourage discussion and demonstrate that GenAI is more than a collection of separate technologies and individual applications. GenAI is a technology that merges with other technologies to produce a combined effect. It is perhaps the most significant, intangible asset that will likely have the largest and longest-running impact on our economy for the foreseeable future.

To fully utilize the potential of GenAI while overcoming its challenges, leaders must comprehend its impacts and take proactive measures. This note offers insights to assist technology innovation and IT leaders in deciding whether and how GenAI can play a crucial role in their long-term digital future.

Impacts and Recommendations

Table 1: 9 Economic Implications of GenAI

(Enlarged table in Appendix)

Impact Area	Potential Benefits and Risks
Labor Productivity	AI can help discover patterns in any dataset, and GenAI can use these patterns to generate new content (e.g., text, images, code or even tactics and strategies), provided there is enough data for AI training available. This means GenAI can move from traditional automation of repeatable or standard tasks to the augmentation of more complex types of work. Immediate impacts will drive productivity increases, but the impact might lead to worker displacement.
GDP Acceleration	In the short term, GenAI will drive immediate productivity gains. Displaced workers may suffer, but some will exploit the technology to create new work, such as training the new models used to automate the previous work, while others may be more creative and drive innovations. The net is not just productivity improvements but potentially overall, widespread GDP growth akin to a new revolution. Where energy from coal changed the agricultural economy and launched the Industrial Revolution, so too could GenAI change the industrial economy and formalize a real recognizable digital revolution.
Tradecraft Renaissance	AI technology enables the creation of digital products en masse without additional investment of human capital. As the cost of digital production decreases, the perceived value may also decrease, driving a resurgence in value placed on things created, or work completed, by human hands. However, tradecraft-heavy industries could lag as humans re-skill to meet these market demands.
Economic Inequality	All industries and firms will be pushed to exploit GenAI for productivity improvements, resulting in potential swaths of the workforce falling behind others economically as their skill sets are no longer valued as highly as before. Accessibility to GenAI for higher education and reskilling could also play a vital role in ensuring the benefits of GenAI accrue across society.
Business Model Shift	GenAI impacts all four dimensions of a business model; value proposition, customer segments, financing and capabilities. Each dimension can be enhanced, or completely transformed, by GenAI use cases. The risk for organizations will be in pursuing business model changes without a well-defined transformation journey.
Economic Forecasting	GenAI has the potential to make economic models a historical artifact. The ability to run hundreds of millions of economic outcome scenarios in real time will prove to be the most comprehensive way to construct accurate models. However, a drawback might be that the processing of real-time data, while accurate in short-term predictions, might not account for long-term, foundational shifts in markets. This is why different models are used for short- and long-term forecasting. Theoretically, one could try creating a unified model, but even with GenAI, that may be overly complex.
Creative Destruction	GenAI supports human creativity, speeding up the idea generation and experimentation process and making creative tools accessible to everyone. However, this could result in extreme personalization, leading to fragmented shared experiences and the spread of misinformation, cultural fragmentation and societal polarization. This extreme personalization may require plagiarism of existing creations, which is destructive in its own right. Also, a more siloed society and mistrust hinder trade, innovation and the free movement of goods.
Market Risks	GenAI algorithms without proper guardrails can trade without emotions; they lack the ability to consider contextual factors, market interconnections and human sentiments such as trust and fear, which may result in sudden market crashes and extreme volatility. However, market risks can be mitigated by using GenAI, provided we also mitigate other risks, such as by having guard rails, human-in-the-loop and other fail-safes. Lastly, over-regulation could well stymie much innovation as public sector agencies struggle to understand the impact of GenAI.
Economic Transparency	Economic transparency refers to the desire for the democratization of analysis of and insight from market, financial and governmental information to drive investment and policy decisions by nonsubject matter experts. GenAI can democratize understanding of government policies and market data by providing easy-to-understand insights, while it will more likely have a negative impact on privacy.

Source: Gartner (October 2023)

Labor Productivity

Labor productivity is probably the first and current focus for how GenAI impacts us all economically. Developers are using GenAI to create code at speed; marketers are developing marketing and campaign programs at speed; and enterprises will be able to discover insights from their enterprise data.

The key point is that many work practices in many industries will be able to discover insights, that they would not have ordinarily sought, much faster than with other methods. These are all examples of how GenAI is augmenting labor to, in some cases, dramatically improve labor productivity.

> As long as there is enough data either from internal or external sources of sufficient quality to explain the work, GenAI might find valuable patterns in that data to help redesign work to augment or automate that activity.

Work automation is well known to be a useful augmentation capability for a business when work can be simplified to its basic, repeatable steps. But with GenAI, that level of augmentation can be extended to more kinds of work that are not just repeatable or standard, but more complex. Even if there is sufficient data of acceptable quality, humans will still be needed to validate and possibly correct the outcome or suggestions from GenAI. While there will be ample opportunities for automation and augmentation of work currently done by humans, there will also be growth of new roles and work tasks.

GDP Acceleration

Productivity growth has been low to poor in advanced nations for the last 30 years. [1,2,3] Even the high levels of productivity that emerged after World War 2 petered out; though the computing era helped with a recovery for a time. The infamous Productivity Paradox [4] remains clear, even if the economics cannot agree on what the real cause is or how to measure it.

Low productivity growth means that for an economy to grow (i.e., increase its GDP), it has to work harder with the inputs. History shows us that this is a battle with an end; it is called the law of diminishing returns. As such, it is rising productivity growth that created growth and improved standards of living.

While the information and technology industry has seen the benefits of increased productivity, say from usage of cloud, most other industries that use IT have not seen similar improvements in productivity. GenAI is unique here because every industry has work that can be automated, so it could/should impact almost every industry. And the timing of such an opportunity could not be better.

Economies world wide are starting to suffer from long-term demographic trends that have gone into reverse. Many developed nations will see declining populations and declining working populations, see Death of Demographic Dynamism in Complexity, Chaos and Confidence: A Tapestry of Trends Across Brave New Worlds. If GenAI proves to be so useful for many, it could drive the kind of productivity growth needed to offset the reduction in economic growth resulting from democratic decline.

> GenAI, due to its applicability to any amount of work that is well instrumented, means it could be one of a new breed to help change the economics of productivity.

Where automation and augmentation scales, GenAI could be perceived as the single largest technology to finally answer to the Productivity Paradox that has eluded us since the 1950s: sustained and break-out productivity growth.

Tradecraft Renaissance

The marginal cost (i.e., the additional cost to produce an additional unit) of producing digital products, services and content has the opportunity to plummet as GenAI technology allows for creation en masse without additional investment of human capital. As the cost of production decreases, the perceived value may also decrease. [5]

> Regardless of industry, what are considered frontline capabilities today could become a focal point of investment for organizations' value streams in the future, especially as a point of differentiation, as AI drives down the value of digital products and services.

This economic reality could then drive a resurgence in value placed on things created, or work completed, by human hands. Certain jobs, which previously were not given economic attention may see perceived value soar, and industries dependent on artisanal work could become increasingly competitive. [6] To stay ahead of other organizations regarding frontline capabilities, see Offer Frontline Workers More Flexibility to Boost Performance and Retention.

Economic Inequality

The reverse of the tradecraft renaissance is that some workers will suffer as they are left further beyond those that do well with GenAI.

When China joined the WTO (World Trade Organization) in 2001, [7] the "workshop of the world" dramatically and at a stroke kept global wages low at just the same time as trade and production increased. China joining the WTO [7] helped fund the U.S. debt burden [8] that powered the global economy for 20 years or so. The downside was that American workers were, 20 years later, left in the lurch as their industries shifted offshore and government agencies didn't foresee how a more efficient global trade system should be balanced with training. We all see the results now with re-shoring and the general pullback away from global trade.

It is not that GenAI directly creates inequality. It is in the nature of work and how wealth accrues to capital or labor that creates differences or unequal distribution. GenAI seems to be a very efficient tool of choice if rapid innovation and automation are to be realized — creating more opportunities for uneven distribution of income.

Government agencies, as well as the private industry, will be motivated, perhaps for different reasons, to monitor and respond to this challenge with different responses. The speed of adoption of GenAI and the speed to value may overwhelm the public sector, which is trying to fund social safety nets and retraining. However, private industry will continuously look for opportunities to leverage a retrained workforce. They aim to exploit GenAI for an even greater return on capital.

> **For some workers who cannot exploit GenAI, their work opportunities may decline as industries are nudged to use GenAI to drive significant productivity improvements. The outcome is a portion of workers falling behind others economically.**

GenAI will impact work, and workforces, and therefore many economies differently. It promises to have greater, long-term impacts than when China joined the WTO and changed global wages.

Business Model Shift

GenAI could impact four components of a typical business model:

- Value proposition

- Customer segments

- Financials

- Business capabilities

GenAI has the potential to transform any organization's business model across each of these four components. Some examples include reaching new machine customers (machine customers include virtual personal assistants, smart appliances, connected cars and factory equipment enabled by the Internet of Things [IoT]) demographics (see Quick Answer: The Impact of Machine Customers on Customer Management Business Process Services) or augmenting differentiating capabilities to remain competitive.

However, far more data will be required than historically possible or necessary for GenAI to impact business models. Historically, data has been expensive in terms of time and human effort to gather, and use cases of data are limited as a result.

But in a world of GenAI, business model success will become dependent on an organization's ability to obtain more granular data on its clients, which when combined with the large language model's (LLM's) access to general global data, can create powerful insights that give market advantage to its owners. However, the ability to process data to drive business model change will be made more costly as noise increases from poor data quality (such as those data injected or proliferated from biased sources).

A GenAI-driven shift in business models will potentially have microeconomic implications on firms and their pricing strategies, along with how they interact with ecosystem partners or their customers.

> **Business model success in a world of GenAI will become dependent on an organization's ability to obtain and process data and apply it where it makes sense while managing the risks.**

As organizations formulate business models inclusive of GenAI-enabled capabilities, the concept of autonomous business will likely become more of a reality. One of the main components of autonomous business is a programmable economy, where monetary and financing mechanisms see increased speed and atomicity of data. For more on autonomous business, see What Comes After Digital Business? Exploring the Era of Autonomous Business.

Yet another angle that could emerge is the value of data, over analysis, as GenAI puts a greater focus on data as a source of value. In China, for example, new regulations will be a reality early in 2024 when data can recorded on an organization's balance sheet (see Quick Answer: How Will Putting Data on the Balance Sheet Affect the Enterprise?).

Economic Forecasting

Traditional economic forecasting relies roughly on the statistical aggregation of determined variables with assigned weights and a certain error term due to uncertainties and dynamics. Correlation and predictive power rests on statistical testing of large historical data. The high costs of data collection, which involves human and human plus computing efforts, made specialist knowledge by professionals (such as econometricians and economists) a necessity. Professionals are needed to select and test relevant variables across time series and to control for error. Inputs into models, while based on economic theory, is an art, rather than science.

However, with the large model capabilities of AI, economic models no longer need to be constrained by these selection factors. Theoretically, a GenAI interface would allow nonprofessionals to query interfaces and ask the model to run hundreds of millions of economic outcome scenarios in real time against historical data to determine the predictive and correlative power of such economic variables.

In other words, bootstrapping (i.e., using random sampling), which was an inefficient and onerous process pre-AI, may very well become as efficient and the most comprehensive way to construct accurate models. This is similar to how Stockfish or Deep Blue beat Chess grandmasters by playing out each move to its potential outcome millions of times. With the humanlike interface of GenAI, nonprofessionals will not need vast professional knowledge to select relevant economic variables. In fact, nonprofressionals may well discover economic drivers that are more predictive than professionals simply by asking GenAI to cycle through millions of scenarios. The limiting factor will be the computational power of digital computers, rather than knowledge of the users, something that could dramatically scale with the advant of quantum computing.

> Theoretically, GenAI could run hundreds of millions of economic outcome scenarios in real time against historical data to determine the predictive and correlative power of such economic variables. In reality, access to powerful enough GenAI and computing power will be a limiting factor.

Economists and other statistical experts will still have a place in economic forecasting; after all, someone is needed to interpret model outputs for the public. Of course, data at scale does not solve the garbage-in-garbage-out issue. But assuming that the move toward increasing data gathering continuing on the micro and macro level, one can reasonably be assured that more data and AI will help to improve economic modeling.

Creative Destruction

Creative destruction refers to an economic principle explaining how the introduction of novel technologies and advancements reduces or eradicates established industries, products or methods. This continuous progression, propelled by innovation, has the potential to drive economic improvement and enhance quality of life.

> There is a potential outcome in which algorithmic competition dominates the market, leading to a lack of artistic diversity and reduced incentives for human creators and more reliance on GenAI. This will result in an extreme re-allocation of assets, leading to disruptions, job losses and adjustments in various sectors.

In today's world, businesses are turning to AI technology to boost their workforce's efficiency and performance in various industries, such as healthcare, customer service and logistics. When a disruptive technology such as GenAI enters the market, it can lead to a tremendous amount changes in traditional industries and the need to redirect resources, including capital, labor and expertise, toward the development and growth of the new technology-driven sectors. This reallocation of assets is a fundamental aspect of creative destruction, as resources move from less productive areas to areas with higher growth potential.

Market Risks

Market risks from GenAI could be grouped into three main categories:

- Oversimplification

- Over-regulation versus under-regulation

- Proper due diligence

Oversimplification

The integration of GenAI technology in many sectors, such as the financial industry, especially in algorithmic trading, comes with significant risks for the economy. The 2010 flash crash resulted from factors like over-automated trading and market interdependencies, not just AI itself. GenAI can handle more complexity and market connections than humans, and it can enhance contextual awareness. To mitigate market risks, it's important to implement safeguards, including human oversight, rather than fully automated trading systems.

The introduction of GenAI must be handled with care to avoid unsettling investors and causing financial turmoil. The potential for biases within AI systems is another concern. AI bias goes beyond gender and race and includes data and algorithmic biases that can be compounded. Since humans developed AI, the inherent biases of its creators may reflect on the technology.

> Although GenAI algorithms can improve decision-making for stakeholders, it is crucial for organizations to understand the workings of their algorithms and the underlying decision-making processes.

Over-Regulation Versus Under-Regulation

Governments everywhere are rushing to set regulations for many aspects of AI. China has set some with more to follow. The EU is in the process of setting some, and as with GDPR, it is quite likely that many other regions will follow. Even before the ink is dry, organizations and private firms are worried that the continued pressure to regulate will drive innovation out. The result is that organizations may be unwilling to take on the costs and risks of using GenAI and AI in general if those costs and risks keep escalating and growing in complexity. Lastly, since the technology is complex, public sector agencies continue to seek to regulate areas that may not even be suitable for the kind of regulation contemplated. [9]

There is also concerns on the under-regulation side, even some tech companies are asking governments to come up with strong regulations. A lack of regulation in the field of GenAI is likely to cause a public backlash. It may lead to the development of AI that only benefits the profitability of large tech firms, while possibly violating the rights of citizens and not contributing to the public good. Many people have lost faith in the free market's ability to timely correct such misuse of technology.

Therefore, governments must take responsibility and regulate tech to protect their citizens. Misuse and public backlash against AI may actually lead to less investment and less innovation. Clear regulation, on the other hand, creates an economic environment where innovation can flourish with clarity about what is allowed and not allowed.

Proper Due Diligence

The homogeneity of the AI research community, characterized by gender, race and socioeconomic disparities, further contributes to biases in AI systems. This lack of diversity can result in AI failing to understand certain accents or dialects and inadvertently perpetuating biases that endanger historically underrepresented groups. To mitigate these risks, developers and businesses must exercise greater diligence in preventing the replication of harmful biases and prejudices in AI systems, recognizing the potential impact on broader world issues and diverse populations.

Economic Transparency

Economic transparency refers to the desire for democratization of analysis of and insight from market, financial and governmental information to drive investment and policy decisions by nonsubject matter experts. The use of GenAI and its advances in natural language processing have fueled increased activity in this space. Attempts by organizations, like USAFacts and the Atlanta Federal Reserve's GDPNow, to use the EU Transparency principle to increase transparency around government data are already unfolding and could easily be supported by GenAI.

In the short term, organizations may see increased opportunities from GenAI, like allowing nontechnical professionals to query and derive insights from large datasets on customer behaviors that would have required in-house data scientists before. However, access to necessary GenAI technologies that make acquisition and analysis of large data possible could be cost-prohibitive for some organizations.

> **GenAI can enhance economic transparency by automating data analysis and providing real-time insights, reducing human bias and errors in financial reporting. Its predictive capabilities can help identify trends and anomalies, promoting more informed decision-making in the business and financial sectors.**

Evidence

[1] Contributions to Labor Productivity Growth Private Nonfarm Business Sector, U.S. Bureau of Labor Statistics.

[2] The Secular Slowdown in European Productivity, The Economist Group.

[3] Solving the European Productivity Puzzle, Intereconomics.

[4] Productivity Paradox, Wikipedia.

[5] Pricing and the Psychology of Consumption, Harvard Business Review.

[6] The Twenty Largest Blue-Collar Occupations, The U.S. Office of Personnel Management (OPM).

[7] China and the WTO, World Trade Organization.

[8] Chinese Savings Helped Inflate American Bubble, The New York Times.

[9] AI Law Draws Pushback From Big Brands in Europe, The Wall Street Journal.

Recommended by the Authors

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Quick Answer: Which Macroeconomic Trends Will Impact My Business Model Transformation?

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