



How to confidently use AI to create value



by **Beatriz Sanz Sáiz**

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Discover how GenAI could unlock exponential value, spark global economic growth and reboot productivity and GDP growth rates.

In brief

- GenAI may offers a solution to the global productivity slowdown. By reducing content production costs, it enhances efficiency and supports innovation.
 - The technology is estimated to add ~\$7 trillion to global GDP, equivalent to adding two G7 economies, within a few decades.
 - It's not just outputs, however, it could also lead to a higher generation of ideas, accelerating scientific and technological progress.
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Generative AI (GenAI) is arriving at an important moment in economic history. The years since the global financial crisis in 2008 are characterized by a steep and prolonged slowdown in productivity growth. In the decades leading up to the crisis, productivity growth averaged a little under 3% per year. In the years since, it has slowed to less than half that, around 1.3%. The slowdown is global in nature, but particularly pronounced in advanced economies. And while many explanations have been presented,

including long lags in reallocating labor across sectors, fiscal restraint and austerity policies, debt deleveraging, a stabilization in the pace of skill attainment, stalling in the length and complexity of global value chains, or finally simply mismeasurement, none are completely satisfactory, and the slowdown remains somewhat of a mystery.¹

Total factor productivity (TFP) simply quantifies the efficiency with which we convert inputs into products, goods, and services.² Growth in TFP is the primary long-run driver of per capita GDP growth, and thus also of improving living standards. Reversing its slowdown is therefore of paramount importance to enhancing political stability, social cohesion, and to achieving development goals including reducing poverty. But doing so has proven challenging in practice, with policymakers unable to support productivity growth back to pre-crisis levels.

And then along comes GenAI, a general-purpose technology that reduces the cost of producing all varieties of content including text, images, code, and data to essentially zero; the cost of crafting a text prompt. The broad array of cognitive skills exhibited by large-language models (LLMs) indicates a wide impact across industries, but perhaps concentrated in the information-intensive services sector where knowledge work dominates. Early empirical evidence of these tools suggests they not only improve the efficiency of knowledge workers, but importantly also support innovation. As such, they lay the foundation for accelerated TFP growth, which compounded over time portends exponential increases in GDP relative to a baseline scenario.

Machines of the mind

LLMs can perform a substantial number of tasks historically reserved for cognitive workers; described as “machines of the mind” by the Brookings Institute.³ For example, tools like Github Copilot enable software engineers to write code at 2x the pace. Similarly, one recent study from MIT estimates writing tasks can be achieved at 2x the pace as well. Such efficiency gains repeated across the economy create enormous economic value. LLMs’ broad applicability across sectors is notable, as recent research suggests 80% of the US workforce could be affected.⁴ Essentially, we can produce more output faster with the same or fewer inputs, thanks to this technology.

These gains however come with trade-offs. Workers may become over-reliant on generative tools, leading to some drawbacks. For instance, the diversity of outputs may decline, as the models homogenize the knowledge embedded in training data. Moreover, the average quality of outputs may decline, although this can be mitigated or even reversed with a robust expert-led human review process.

There is a simple heuristic economists use to estimate the increase in GDP from a productivity-enhancing technology called Hulten’s Theorem, which takes the percentage increase in productivity (say 20%) multiplied by the sector-share of output (say 20%), to come up with the extra growth created (4%).⁵ To illustrate, Goldman Sachs estimates GenAI will raise global GDP in level terms by 7% or ~\$7 trillion, an astounding figure for a single technology.⁶ This is roughly equivalent to adding two entire G7 economies, roughly Germany and

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the UK combined, to the level of world output over the next one or two decades.

Yet arguably the more important impact is that we can also produce more ideas. Cognitive workers invent new things; new products, new services and new techniques. These highly skilled workers engage in basic research to fuel scientific discovery, and in trial-and-error experimentation as business managers roll out innovations into commercial activities. Such fundamental research and development are costly and risky, requiring significant time investment by talented people, and the benefits of which are uncertain.

GenAI offers significant support to the R&D process. Firstly, in automating mundane tasks, workers have more free time to spend on higher-level cognitive tasks such as ideation and complex problem solving which these models are not yet sophisticated enough to tackle.⁷ Secondly, recent research from the NBER highlights generative models are useful research assistants, with skills capable of supporting background material gathering, coding, data analysis, and mathematical derivations.⁸ IBM also argued recently that GenAI tools enhance the R&D process and will help fuel scientific discovery.⁹ Finally, these models are useful design support tools, enabling creative outputs to be generated with tremendous speed, and helping iterate with new designs at very low marginal cost.¹⁰

In helping us create more ideas faster, technological progress will accelerate. If realized, this permanently boosts the rate of innovation and productivity. Faster innovation in perpetuity compounds exponentially over time to support extraordinary economic outcomes. According to Brookings Institute, the US economy is projected to roughly double in size after 20 years, assuming total factor productivity growth rises by 1 percentage point, to 2.5% per annum from ~1.5%

assumed in the Congressional Budget Office official long-term forecast.

Such exponential effects due to compounding is why the market for ideas plays such a critical role in long-run economic growth. Ideas generate positive spillovers, as anyone can reuse an idea for their own purposes.¹¹ As such, they exhibit increasing rather than diminishing returns.¹² This powerful boost to our potential economic growth helps explain why the technology has captured the minds of so many policymakers, entrepreneurs, business leaders, and the public at large. After an extended period of stagnating productivity, GenAI is a most welcome respite.

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Summary

By enhancing efficiency and encouraging innovation, GenAI offers the potential for exponential economic growth.

About this article



Beatriz Sanz Sáiz

EY Global Consulting Data and AI Leader

Game-changer, thought leader in analytics and customer centricity. Named a Top Talent Executive Under 40 by AMROP, IESE and Royal House. Mom, film lover, champion for women in tech and the workforce.

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