

THE ROLE OF PRUDENT ECONOMIC POLICIES IN THE AGE OF ARTIFICIAL INTELLIGENCE DIFFUSION

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Artificial intelligence (AI) is increasingly viewed as one of the most transformative technologies of the current era, with the potential to reshape productivity, employment, and the structure of the economy. However, despite this potential, economic research on AI's macroeconomic and labor-market effects remains relatively limited, while much of the analysis is gradually moving beyond universities toward private AI labs, central banks, and government institutions. This creates an important role for independent public research, and this note aims to help fill that research gap by assessing AI's economic implications, its risks and opportunities, and the role of prudent public policies.

The history of economic development has been shaped by long economic cycles known as Kondratiev waves, which last around 40–60 years. Each wave is driven by fundamental technological innovations that, while disrupting existing economic structures, also create new industries and transform labor markets (Table 1). Since AI is developing at an accelerating pace and has the potential to reshape existing economic structures, we may assume that it could mark the beginning of the sixth Kondratiev wave.

AI differs from previous waves in terms of both its speed and the depth of its impact, transforming not only sectors of the economy but also bringing profound changes to jobs of an intellectual and analytical nature. While earlier technological waves mainly transformed physical labor, AI expands the scope of automation into data processing, decision-making, and creative fields as well, having more systemic impact on the economy. These changes, however, are accompanied by structural challenges. As with previous waves, an initial rise in unemployment and a mismatch of skills are also expected before economies adapt to the new reality. In this context, it is necessary to examine how AI affects employment, in which sectors it complements human labor, and where it replaces it.

Table 1. Economic cycles formed during different stages of historical development.

Wave	Period	Key Technologies	Economic Impact
First	1780-1830	Steam engine, heat engine, mechanized textiles, early factories	Urbanization, mass production, industrial growth
Second	1830-1880	Railways, steel, mechanized agriculture	Expansion of transport, growth in international trade
Third	1880-1930	Electricity, internal combustion engine, chemical industry	Large-scale industrial production, modernization of cities
Fourth	1930-1970	Oil, automobiles, mass production through assembly lines	Development of the consumer economy, industrial boom
Fifth	1970-2015/2020	Computers, the internet, information technologies	Transition to a knowledge-based economy, automation of jobs
Sixth	2015/2020 onward	Artificial intelligence, robotics, biotechnology, quantum computing	Automation-driven economy, transformation of labor markets

The impact of artificial intelligence on employment

According to a study conducted by the International Monetary Fund (IMF), the impact of AI on the labor market differs across countries, as the structure of jobs, the level of economic development, and technological readiness vary (Figure 1).

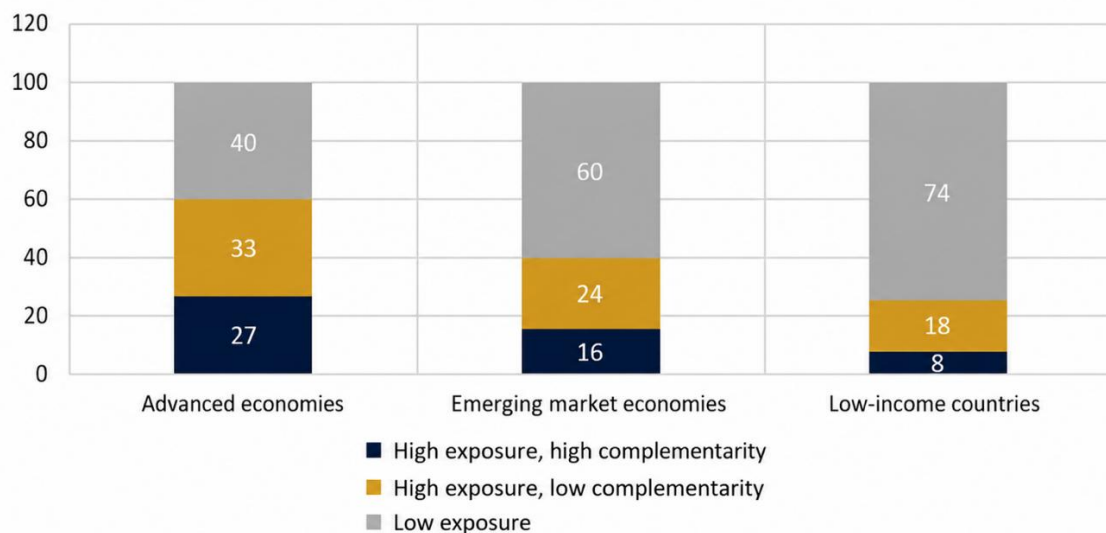
About 60% of jobs in **advanced economies** are highly exposed to AI. Of this, 27 percentage points benefit from AI's strong complementarity potential, while 33 percentage points face high risks of automation. These countries can quickly benefit from productivity gains, but they also need to manage the risks of job losses.

About 40% of jobs in **emerging market economies** are highly exposed to AI, but the level of complementarity between AI and labor is lower. AI can improve productivity, but investments in skills development and digital infrastructure are necessary to ensure sustainable long-term growth.

Only 26% of jobs in **low-income countries** are highly exposed to AI, as those economies are primarily dependent on agriculture and informal employment.

The impact of AI on job displacement and labor transformation depends on whether it substitutes or complements work functions. High-exposure sectors, particularly professions involving cognitive work, may benefit from AI's complementary effect, as technology integration enhances productivity and decision-making quality. At the same time, jobs with low complementarity, where AI's substitution effect dominates, face higher automation risks. This implies the need for workforce retraining, acquisition of new skills, and creation of new occupations, so that AI's impact supports economic growth rather than leading to higher unemployment.

Figure 1. Employment shares by AI exposure and complementarity



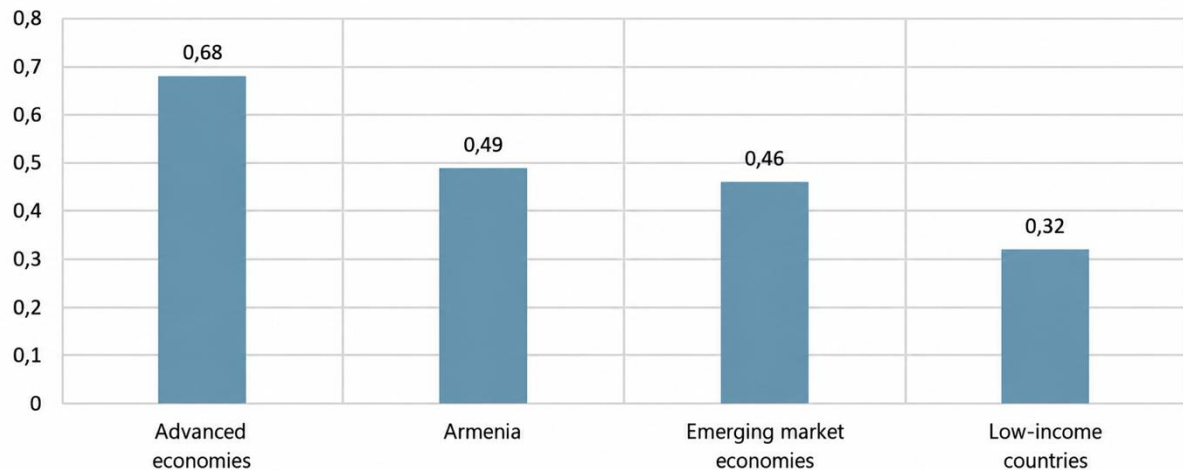
Source: Cazzaniga, Mauro, Ms Florence Jaumotte, Longji Li, Mr Giovanni Melina, Augustus J. Panton, Carlo Pizzinelli, Emma J. Rockall, and Ms Marina Mendes Tavares. *Gen-AI: Artificial intelligence and the future of work*. International Monetary Fund, 2024.

AI readiness

The successful integration of artificial intelligence into the economy depends on a country's level of readiness, which includes digital infrastructure, workforce skills, innovation capacity, and the regulatory framework (Figure 2). Advanced economies are best prepared to benefit from AI opportunities due to their advanced technological ecosystems, skilled labor forces, and strong regulatory frameworks. Meanwhile, emerging market and low-income countries face structural challenges, such as underdeveloped digital infrastructure, a

lack of digital skills and literacy, weak institutional support for innovation, and the absence of an adequate regulatory framework.

Figure 2. AI readiness index by country group



Source: International Monetary Fund,

https://www.imf.org/external/datamapper/AI_PI@AIPI/ADVEC/EME/LIC

For Armenia, as an emerging market economy, closing these gaps is important for effectively using the economic potential of AI. Future economic growth and sustainable development will depend on measures aimed at adopting AI technologies, improving workforce qualifications, and expanding innovation capacity.

The economic impacts of AI

There is an active debate around the effectiveness of the use of artificial intelligence, within which two main approaches have emerged. The IMF emphasizes AI's potential to increase total productivity, especially for economies that invest in the development of AI infrastructure and ensure complementarity between AI and labor. According to this approach, AI can generate broad economic benefits if it is accompanied by appropriate policies.

In contrast to this view, Daron Acemoglu warns about the risks of excessive automation, cautioning that AI may lead to what he calls “so-so automation.” This refers to a situation in which AI replaces jobs without delivering significant productivity gains.¹ He advocates for a

¹ This cautionary view is challenged by Tyler Cowen of George Mason university, who argues that Acemoglu's estimates may be modest because they largely assume that AI automates existing tasks, while giving less weight to the possibility that AI creates entirely new tasks, products, and sectors.

human-centered approach to AI, where AI serves to enhance workers' skills rather than replace them. In his view, targeted policies are needed to prevent excessive automation and to encourage the development of AI technologies that support the creation of new jobs and sectors.

This debate highlights that the successful integration of AI into the economy depends not only on technological readiness, but also on well-designed policy.

Scenario-based discussion of AI's impact: the case of Armenia

There is a high degree of uncertainty about what impact AI will have on economies and to what extent it will affect gross domestic product (GDP) growth. Although frontier measurement efforts suggest rapid growth in AI-related output², its macroeconomic impact remains difficult to observe in standard indicators, contributing to divided views among academic economists and AI researchers³. This makes scenario-based analysis especially important for policymakers. In this context, three scenarios can be considered that illustrate how AI may shape economic developments in the coming decades.⁴ These scenarios are presented using the case of Armenia to show the possible ways in which AI could be integrated into the economy. The estimates of AI's impact on GDP are conditional and serve more as a guide than as precise forecasts. Nevertheless, these scenarios help policymakers assess policy trade-offs and strategic choices related to AI adoption.

Scenario 1. Temporary economic growth with limited AI diffusion

The literature presents various estimates regarding the possible scale of AI's economic impact. The IMF's analysis balances these different estimates, indicating that in advanced economies AI could generate 10–16% economic growth over the next 10 years. As a starting point for constructing this scenario, the scenario analysis assumes that, as a result of AI's impact, GDP in advanced economies will increase by 15% over the coming decade.

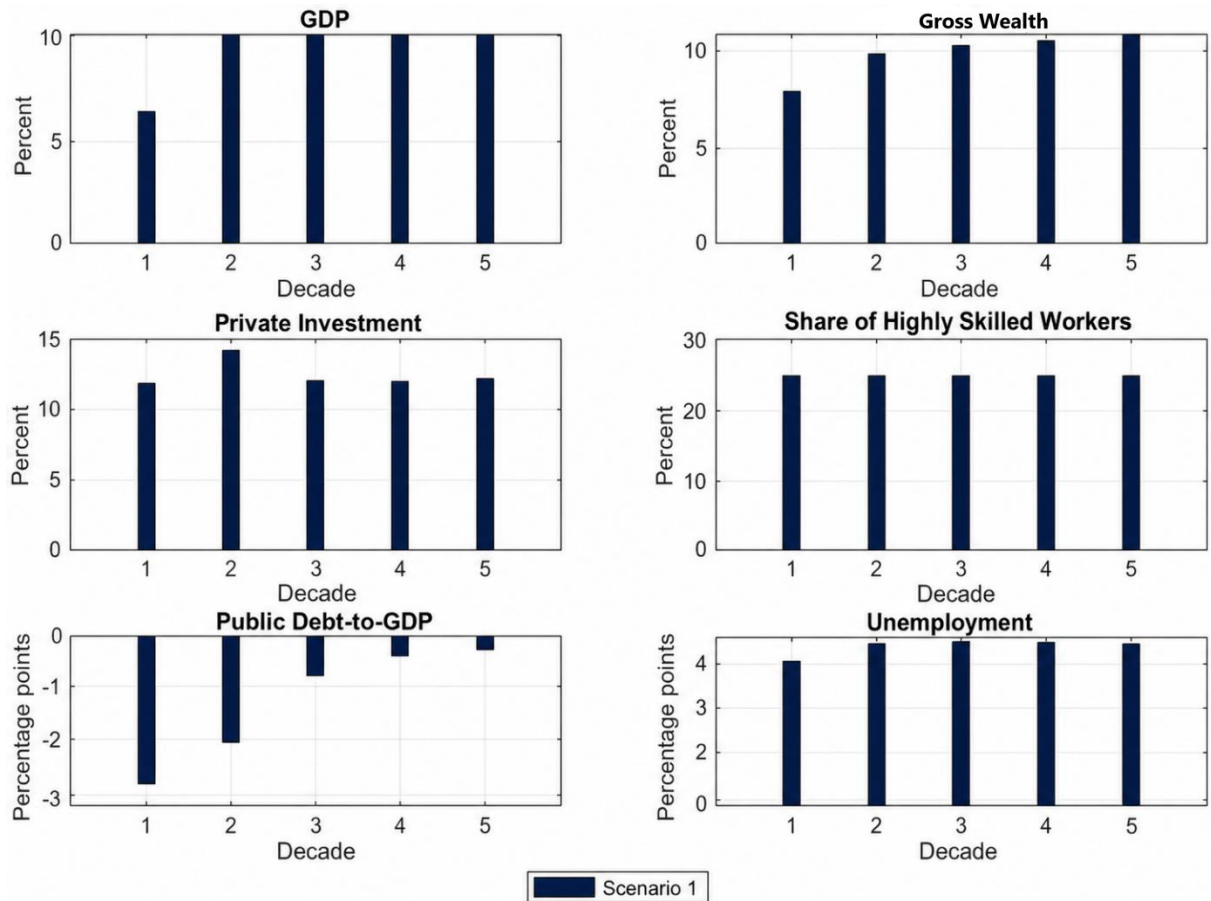
² Korinek and McKelvey (2026) develop an “AI GDP” measure for the United States and estimate that quality-adjusted AI output grew by more than 2,000 percent per year in both 2024 and 2025, suggesting that frontier measurement work is underway but still captures a narrow and fast-moving part of the AI economy.

³ Even if AI progresses rapidly by 2030, reaching or exceeding the capabilities of highly skilled humans, academic economists remain relatively cautious: the median estimate for U.S. GDP growth in 2050 is 3.5%, compared with 5.3% among AI researchers.

⁴ Scenarios were constructed using a modified version of the GIMF model framework at the Central Bank of Armenia. The original version of the model was developed by the IMF and presented in Kumhof, Michael, Douglas Laxton, Dirk Muir, and Susanna Mursula, “The Global Integrated Monetary and Fiscal Model (GIMF),” IMF Working Paper, 2007.

In this scenario, Armenia adopts AI, but without comprehensive government policies, mainly following external developments and adapting to technological changes. AI is widely adopted in advanced economies, while Armenia integrates innovations only partially, without deep economic transformation.

Figure 3. Macroeconomic effects of limited AI diffusion in Armenia: temporary high economic growth is followed by social polarization and rising unemployment



Note: The charts presented show changes in economic indicators compared with a scenario in which AI has no impact; in other words, they estimate the cumulative economic effects of AI. The period is presented as a decade-average indicator. For example, in the first decade, GDP is on average 6.5% higher than in the scenario that would have materialized without AI diffusion. However, in the third, fourth, and fifth decades, no additional growth is recorded, as the growth rate returns to its pre-AI adoption level.

Source: Author's estimates

Figure 3 presents the results. In the short term, AI's impact on the economy may be positive, leading to a GDP level that is 6.5% higher in the first decade. However, since the country's level of readiness remains limited, productivity growth slows later on, and economic growth rates return to their previous level. Within the labor market, highly skilled workers benefit, as AI increases their work efficiency, while low-skilled workers face higher unemployment risks, since in some sectors AI fully replaces human labor. As a result, no significant changes

occur in the structure of the labor force, and the share of highly skilled workers remains at 25%. The government does not implement active structural policies, which leads to a decline in the public debt-to-GDP ratio.

This scenario resembles Italy's experience during the IT revolution. Although Italy adopted new technologies in the 1990s, long-term economic growth remained limited due to a lack of coordinated investment and workforce retraining.

Scenario 1 shows that AI adoption can bring short-term economic gains; however, without comprehensive government policy and targeted investment, it does not become a driver of long-term economic growth. As a result, unemployment rises, especially among low-skilled workers, while the opportunities for economic growth remain unrealized.

Scenario 2: Sustainable growth through the targeted policies for AI diffusion

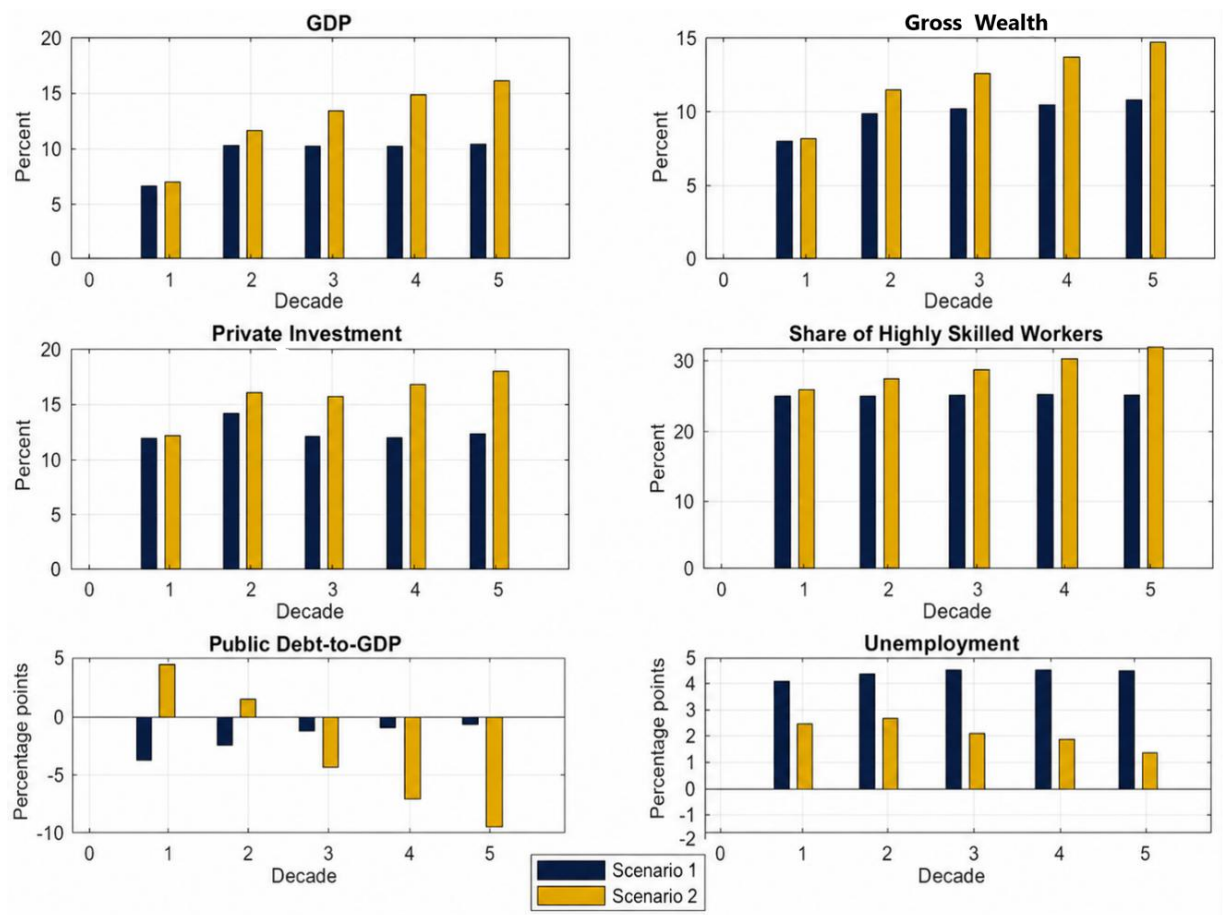
This scenario assumes that the Government of Armenia makes targeted investments in AI infrastructure, the education system, and workforce retraining. The main emphasis is placed on promoting AI research, developing innovation, and improving the country's level of AI readiness.

To implement this policy, public investment in the first decade should amount to around 0.7–0.8% of GDP per year. This would make it possible to build the necessary infrastructure and improve the AI readiness of Armenia's economy. Investments would be directed toward the construction of data processing centers, the creation of powerful computing infrastructure for AI, the establishment of educational centers for developing AI-compatible skills, as well as the development of cybersecurity and regulatory frameworks to make the use of AI safer and more effective.

The government will also continue to further improve the level of AI readiness by making additional investments, which in the second decade will amount to 3% of GDP or an annual average of 0.3%. Figure 4 compares the projected outcomes under Scenario 2 with those under Scenario 1. It shows that targeted investments to improve AI readiness generate larger and more persistent gains in output, wealth, private investment, and skills, while gradually reducing public debt and limiting the increase in unemployment.



Figure 4. A more supportive and inclusive policy for AI diffusion ensures more sustainable economic growth, contributing to a reduction in public debt and unemployment.



Note: The charts presented show changes in economic indicators compared with a scenario in which AI has no impact; in other words, they estimate the cumulative economic effects of AI. The period is presented as decade-average indicators.

Source: Author's estimates

Under these conditions, the impact of AI is bigger: In the first decade, economic growth reaches about 7.2%; however, contrary to the first scenario it continues to increase, raising annual GDP by around 0.15 percentage points over the next 50 years.

The public debt-to-GDP ratio initially rises, as the government increases investment in infrastructure, education, and innovation. However, in the long run, the debt burden declines as economic growth accelerates.

In the labor market, retraining programs help unemployment rise less than in Scenario 1, while the adaptability of the workforce increases significantly. The share of highly skilled workers increases from 25% to 32%, as the education system and retraining programs help

workers acquire new skills. Nevertheless, even in this scenario, jobs requiring low qualifications are replaced by AI, contributing to higher unemployment, which is only partially offset by the increase in highly skilled specialists and jobs.

This approach resembles Ireland's transformation of the IT sector, where the state promoted education reforms, attracted international IT companies, and created a technological environment that supported high long-term economic growth and its continuity.

This scenario shows that, through coordinated policies, it is possible to secure not only the short-term benefits of AI, but also its long-term economic impact by boosting productivity, reducing unemployment, and improving financial stability.

Scenario 3. AI-driven economic transformation

Under the third scenario, Armenia not only makes targeted investments in AI infrastructure, education, and workforce retraining, as in the second scenario, but also establishes a “labor restructuring agency.” The purpose of this agency is to retrain the unemployed and align their skills with newly emerging sectors in order to prevent an increase in unemployment over the medium and long term.

This “agency,” using the capabilities of AI, retrains low- and medium-skilled workers through automated learning methods so that they can work in newly developing industries. Here, AI is used not only as a technology that replaces and complements jobs, but also as a tool for workforce management and retraining, capable of tracking labor market requirements and optimizing retraining programs.

Figure 5 presents the results. Under this scenario, GDP increases by about 8.7% in the first decade, exceeding the gains observed under the second scenario. Over the longer-term horizon, the pace of economic growth rises by up to 0.3 percentage points, again surpassing the 0.15 percentage point increase recorded under the second scenario. This stronger growth performance is driven by the emergence of new industries and the systematic retraining of low-skilled workers.

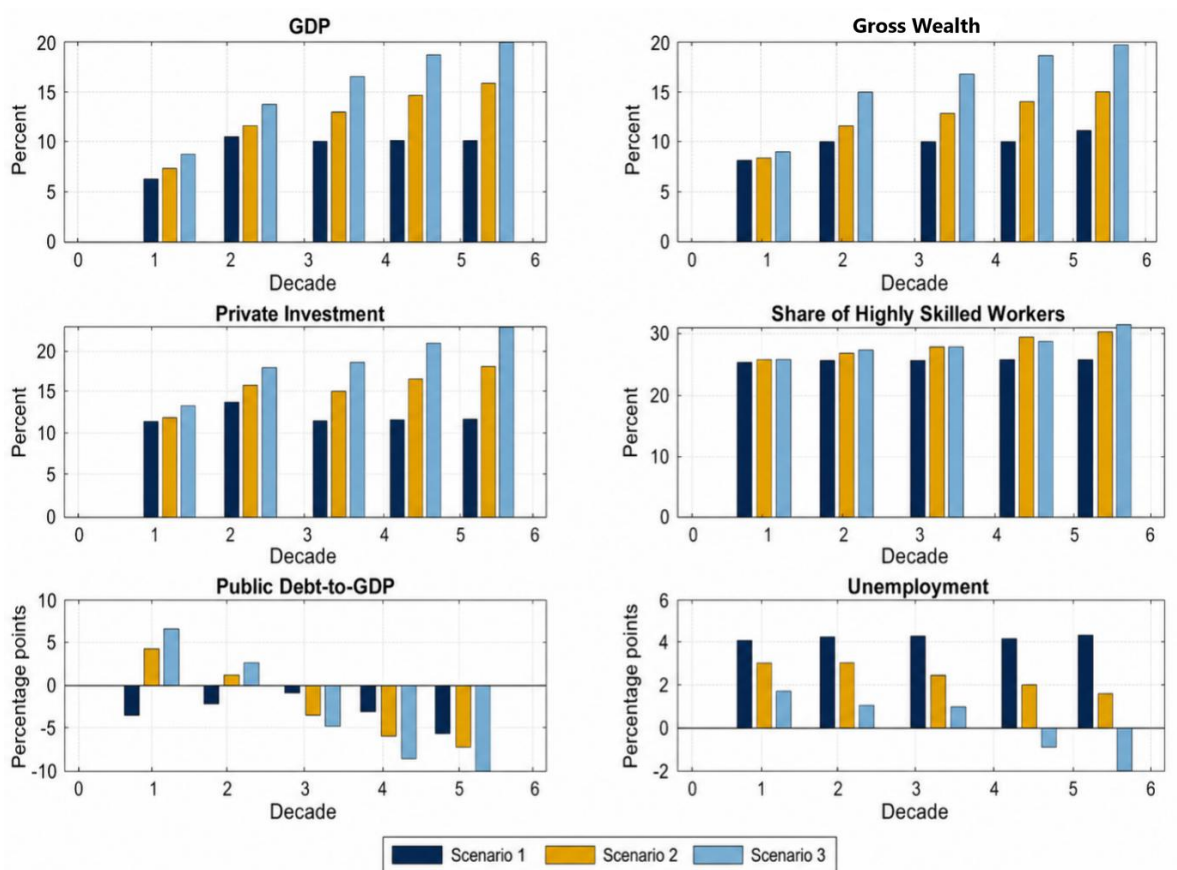
As in the second scenario, the share of highly skilled workers increases from 25% to 32%. The key difference is that low- and medium-skilled workers, who could otherwise face a higher risk of unemployment, are retrained to work in newly emerging sectors. In the initial stage, the increase in unemployment is more limited than under the first and second scenarios, as the “labor restructuring agency” rapidly retrains displaced workers. Over the

long term, the unemployment rate declines as newly created labor markets absorb the retrained workforce.

In the initial stage, public and private investment is higher than under the second scenario, as financing is required not only for infrastructure and education, but also for the establishment and operation of the “labor restructuring agency.”

This scenario illustrates that AI can not only substitute for and complement labor, but also become a tool for its development and transformation, provided that comprehensive policies are implemented, including active retraining programs and new approaches to labor market management.

Figure 5. The policy of AI integration driven by economic transformation has the strongest and most lasting impact in terms of ensuring high economic growth and reducing unemployment.



Note: The charts presented show changes in economic indicators compared with a scenario in which AI has no impact; in other words, they estimate the cumulative economic effects of AI. The period is presented as decade-average indicators.

Source: Author's estimates

The evidence presented in this paper, together with international experience, supports a central conclusion: AI is not simply another technological tool, but a powerful driver of fundamental transformation in the economic structure. It differs from previous technological waves in that its impact is not limited only to the automation of physical labor, but also extends to analytical work, decision-making, data processing, and creative tasks, making its economic impact broader and more systemic. However, the potential benefits of AI are not realized automatically and are largely determined by the strategic role of the state. They depend on whether AI primarily complements human labor or replaces it, as well as on the country's level of readiness in terms of digital infrastructure, human capital, innovation capacity, and the regulatory framework. The scenario analysis for Armenia shows that limited AI diffusion can generate only temporary economic benefits, while in the longer term it may lead to social polarization and a slowdown in economic growth. A more active and targeted policy approach, which treats AI as a tool for strengthening human capital, can turn it into a source of sustainable long-term growth. The strongest outcome is achieved when investments in AI are combined with targeted structural reforms, modernization of the education system, and active workforce retraining policies that allow low- and medium-skilled workers to adapt to the new economic and technological reality. Therefore, AI can contribute to increasing Armenia's productivity, global competitiveness, and economic modernization when it is accompanied by comprehensive, human-centered policies that reduce unemployment risks, improve skills, and ensure that technological progress supports inclusive and sustainable economic growth.

