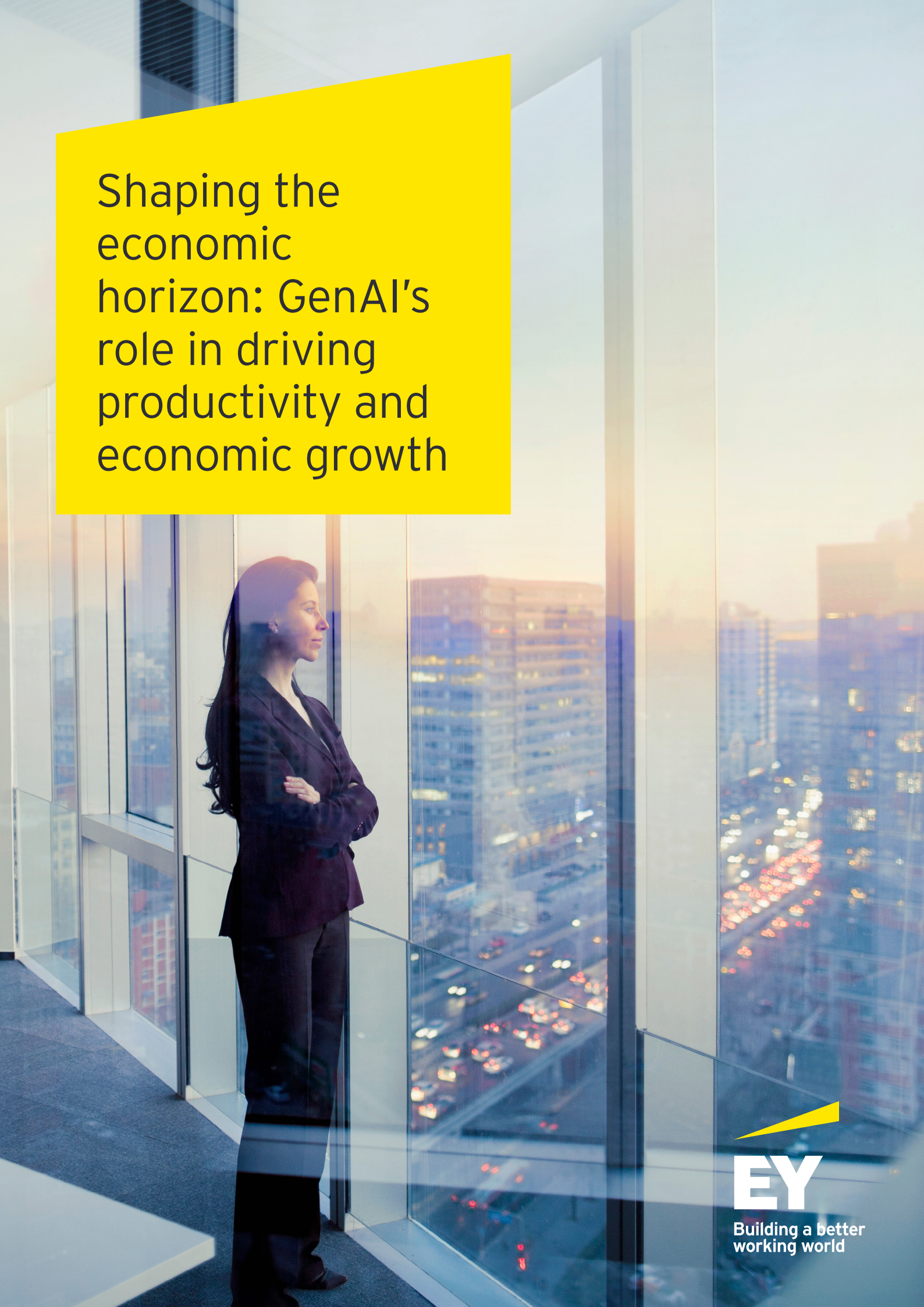
Shaping the economic horizon: GenAI's role in driving productivity and economic growth



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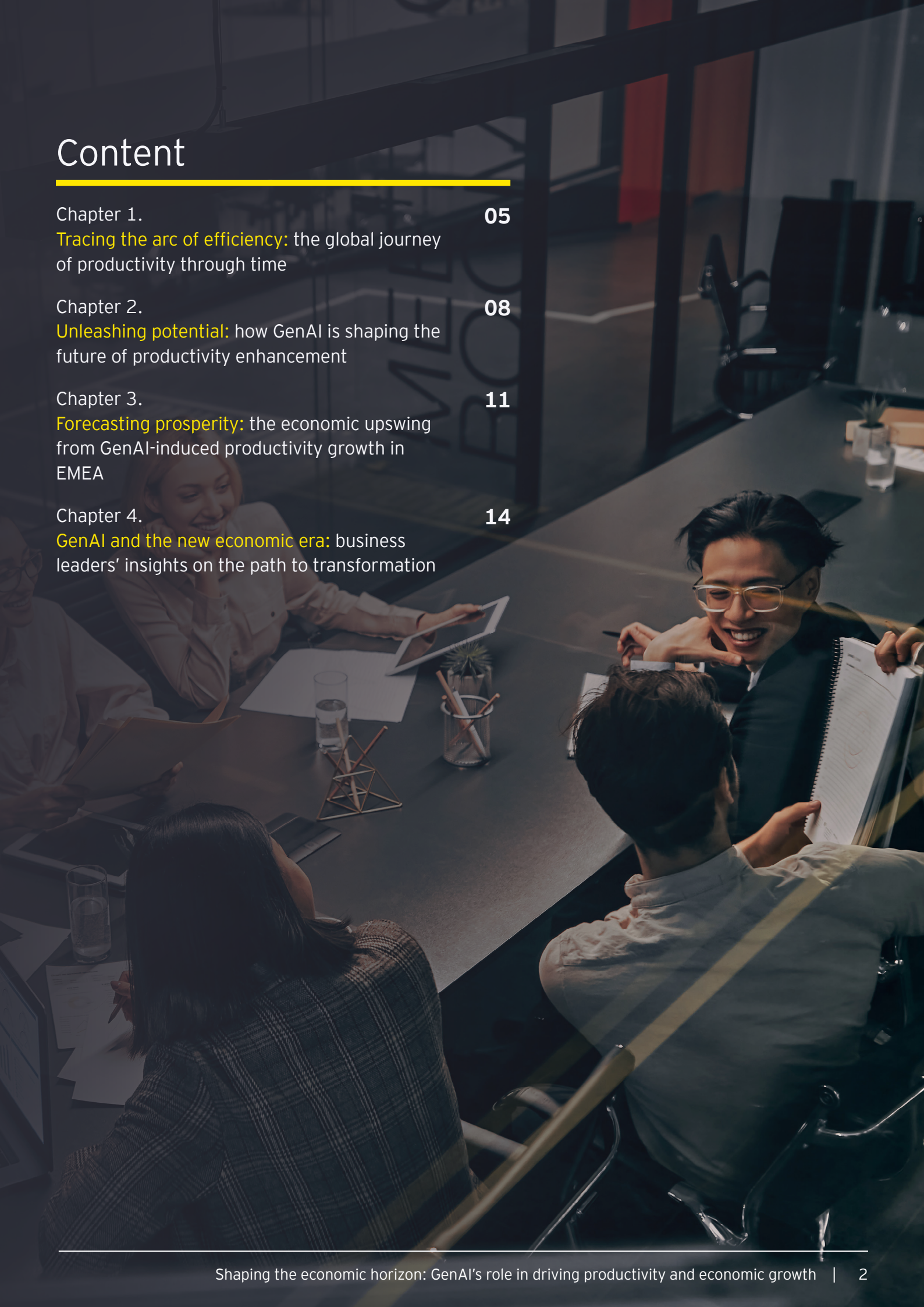

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Dive into the evolving landscape of generative AI (GenAI) and its influence on productivity patterns across Europe, the Middle East, and Africa. Our objective is to assess the degree to which GenAI will enhance productivity and the subsequent economic benefits that may arise.

In brief:

- GenAI has emerged as a catalyst for forthcoming productivity enhancement.
- Projected Total Factor Productivity (TFP) improvements will align with regional differences in AI's capacity for task automation and augmentation.
- We anticipate that TFP gains from GenAI, in conjunction with a boost in investment, will accelerate economic growth.

Building upon previous EY studies into GenAI's impact on productivity in the USA as well as the effects of GenAI on labor markets and investment across Europe, the Middle East, and Africa (EMEA), we now assess the anticipated productivity gains from GenAI across EMEA in the forthcoming decade. We begin with a brief description of historical trends in productivity development. Next, we explore GenAI's potential to enhance productivity. Our projections for Total Factor Productivity (TFP) growth account for the degree of AI integration, as referenced in our earlier article, and the economic landscapes of five regions: Western Europe, Southern Europe, Central and Eastern Europe (CEE), the Middle East and North Africa (MENA), and Sub-Saharan Africa.[1] Subsequently, we examine how this increase in productivity, combined with the upsurge in investment discussed in our previous article, will affect economic growth.

1 Western Europe includes Germany, France, the UK, Ireland, Switzerland, Austria, Benelux, and Nordic countries. Southern Europe covers Portugal, Spain, Italy, Cyprus, Malta, and Greece. Central and Eastern Europe includes Baltic countries, Poland, Czechia, Slovakia, Hungary, Romania, Bulgaria, Albania, and the countries of the former Yugoslavia. The Middle East and North Africa covers Gulf Cooperation Council countries, Iraq, Lebanon, Egypt, Tunisia, Algeria, and Morocco. Sub-Saharan Africa includes most remaining African countries.

Key findings:

- **GenAI is on track to enhance productivity.** GenAI offers the promise of boosting productivity through both cost reductions and the generation of new products. Looking ahead to the next 10 years, we expect GenAI primarily to improve operational efficiency, with innovation and the creation of new products becoming increasingly important to the longer-term outlook.
- **The degree of impact will be region-specific.** Mid-term TFP gains will depend on the share of wages in total income (labor income share) and the likelihood of AI automation. Our projections, described in Chapter 2, indicate varied increases in TFP due to GenAI across different regions over the next decade:
  - Western Europe could experience a TFP increase of 0.9%–1.8%.
  - Southern Europe might see a rise of 0.6%–1.2%.
  - We project that the MENA region will have 0.4%–0.8% growth.
  - Central and Eastern Europe could witness a 0.3%–0.7% increase.
  - We expect Sub-Saharan Africa to have more modest growth, with TFP gains of 0.05%–0.1%.
- **We expect the adoption of GenAI to drive a significant increase in productivity and investment, leading to higher GDP growth rates. However, the extent of this growth will vary by region,** as detailed in Chapter 3:
  - In Western Europe, proactive AI adoption strategies could result in a GDP increase of 1.8% to 3.7% by 2033. This boost is equivalent to one or two years of additional growth over the next decade, translating to US$290–US$610 billion in monetary gains.[2]
  - Conversely, in Sub-Saharan Africa, where AI adoption is advancing more gradually, anticipated GDP growth is more modest, with estimates ranging from 0.2% to 0.4%.

2 In terms of 2015 US dollars.

Chapter 1

Tracing the arc of efficiency: the global journey of productivity through time

Economic crossroads: CEE's rise and MENA's struggle in productivity metrics.

Productivity serves as a barometer of economic efficiency, indicating the degree to which inputs in the economy are effectively converted into outputs such as goods and services. It is the key source of economic growth in the long run, ultimately determining the prosperity or decline of nations.

At its most fundamental level, productivity is assessed through labor productivity, calculated as GDP per worker. However, the quantity of physical capital employed in production, including machinery, buildings, and infrastructure, influences this metric, as does human capital, often represented by educational level. TFP strips out the impact of these components, capturing the growth in productivity that arises from technological innovation and efficiency enhancements such as new management practices or refinements in production processes. In this article, we focus on the evolution of TFP.

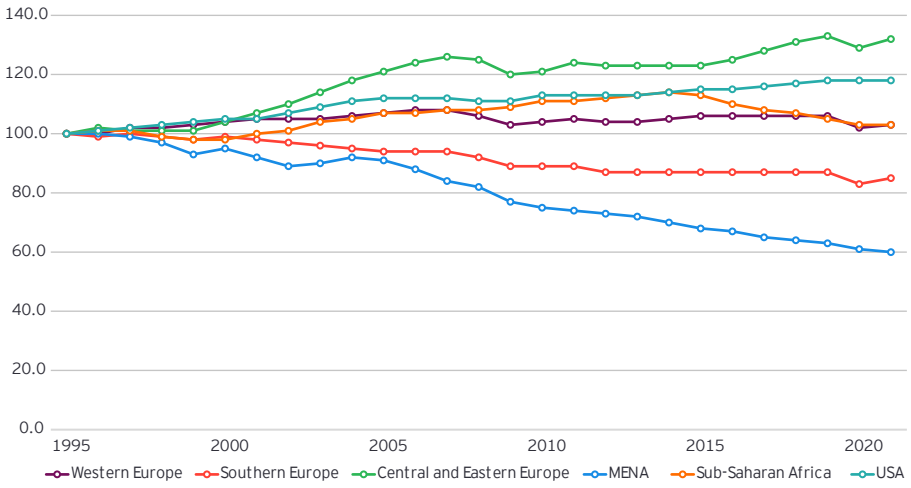
Over the last 30 years, Central and Eastern Europe experienced the most pronounced TFP growth among the EMEA regions (see Figure 1), maintaining robust performance even in the face of a deceleration following the global financial crisis. This region's robust performance can be partially attributed to the convergence process. Contributing factors include the transition to a market economy and EU accession for many countries in the region, which spurred technology adoption and integration into European and global supply chains.

Unfortunately, CEE stands out at the only region in EMEA which has experienced substantial productivity improvements. In Western Europe, productivity has stagnated over the past two decades, lagging further behind the USA. While Sub-Saharan Africa showed some progress between 2000 and 2014, many of these gains have been pared back over the last decade. Advances in TFP in this region are hindered by weak social and economic institutions, political instability, and challenges related to health and education.

Southern Europe has experienced a TFP decrease since 2000, particularly before and during the global financial and sovereign debt crises. The pre-crisis economic boom, spurred by falling interest rates after joining the eurozone, led to a reallocation of resources towards the construction and real estate sectors. These sectors are typically associated with lower productivity levels, which contributed to the overall reduction in TFP. The economic downturn during the crisis further intensified the decline in TFP resulting from capital underutilization.

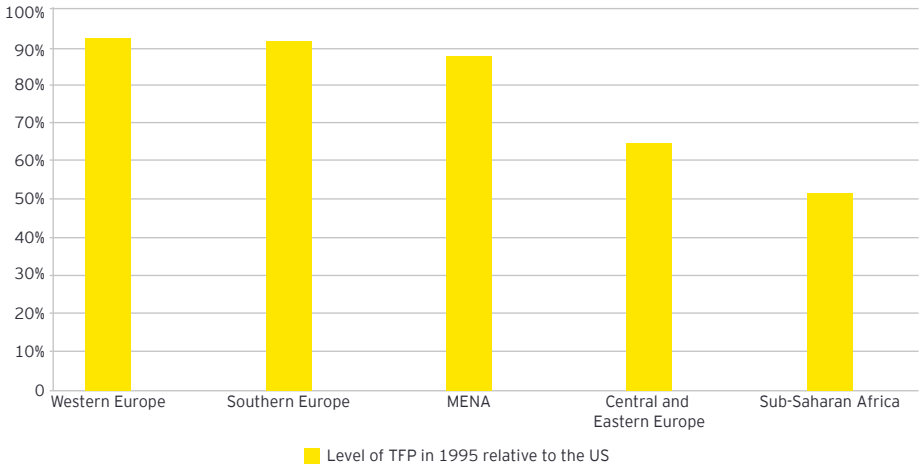
MENA has witnessed an even starker TFP decline over the past 30 years. However, this decline is largely a statistical artefact related to the region's oil production. Since oil is highly profitable and natural resources are not counted as a production input in TFP calculations, oil-dominated economies often show inflated productivity levels. Ironically, as some MENA countries rapidly diversify their economies and grow their non-oil sectors, the relative size of the oil industry shrinks, leading to what appears to be a decrease in TFP. This occurs even if these new sectors are maintaining or improving their productivity. Additionally, the region has faced challenges such as political instability and the impact of armed conflicts in the Middle East, which have further constrained TFP growth.

Figure 1: Evolution of TFP in the analyzed regions during the period 1995–2023 (1995=100).



Source: Penn World Table, Total Economy Database, IMF WEO, EY EAT

Figure 2: Level of TFP in 1995 relative to the USA



Source: Penn World Table, IMF WEO, EY EAT

In the context of subdued or even negative TFP growth in many regions over the last two decades, GenAI offers the hope of productivity growth revival. In the subsequent chapter, we explore how advancements in GenAI could influence TFP in the EMEA area over the coming decade.

Chapter 2

Unleashing potential: how GenAI is shaping the future of productivity enhancement

From cost-saving to creation: tracing AI's influence on productivity gains.

GenAI has the potential to be a transformative technology, driving growth through enhanced productivity and innovative products throughout various industries. AI technologies can stimulate economic efficiency in two crucial ways:

1. **Operational efficiency enhancement:** By replacing human labor for some tasks, AI can significantly speed up or improve the quality of processes, reducing operational costs per unit of production. For instance, Brynjolfsson et al. demonstrate that AI conversational tools can enhance customer support efficiency by 14%, with a 34% improvement for less skilled workers. Moreover, research by Noy and Zhang shows that ChatGPT enables professionals to complete tasks 40% faster, with improved quality. Furthermore, AI can enhance firm efficiency by refining forecasting and optimizing operations. For example, banks currently utilize AI to predict loan defaults, and firms employ AI for inventory management.
2. **Innovation and new product creation:** AI is not just about doing things faster; it facilitates the creation of groundbreaking products and the emergence of new markets. For example, the integration of AI into drug discovery has notably speeded up advancements in the pharmaceutical sector. Babina et al. show that AI significantly contributes to company growth through product innovation, with firms investing in AI experiencing increased employment, sales, and market value.

Despite these advancements, the past decade's modest aggregate productivity growth (see Figure 1) raises questions about the immediate impact of AI. The rollout of previous technological innovations, such as ICT, has demonstrated that adapting the economy to new production capabilities necessitates preparation and time, resulting in delayed visibility of productivity changes at the macro level.

For example, Ajay Agrawal notes that firms initially prioritize operational efficiency when adopting new technologies, which does not translate into significant macro-level changes. The subsequent phase of productivity enhancement, driven by innovation and the launch of new products, takes longer to materialize as it is typically pursued by newly established companies.

Moreover, Brynjolfsson and colleagues suggest that productivity gains from general purpose technologies, such as AI, initially might not be fully reflected in official statistics. This underestimation occurs because these technologies often need investment in capital and labor to create supporting intangible assets, such as knowledge and organizational practices, which are not directly measured. As a result, the increase in output they enable is not always captured in traditional productivity metrics.

The approach

Within the upcoming decade, we expect that GenAI will play a significant role in driving TFP growth, primarily through the enhancement of operational efficiency. Although innovation led by GenAI is anticipated to contribute to productivity gains, we foresee that its impact will become more pronounced at a later stage. To project TFP improvements, we integrate our previous article's estimates of the proportion of tasks susceptible to automation by GenAI in EMEA with the average cost savings for tasks executed by AI.

Drawing from Acemoglu's recent study for the USA, we assume a uniform 27% reduction in labor costs for tasks that can be automated or augmented by AI across all regions. However, it is important to note that labor is only one element of production costs, which also include capital goods such as factories and machines. The relative contributions of labor and capital to production costs vary widely across different sectors and countries. Moreover, some sectors are more likely to adopt AI automation than others. To estimate the overall cost savings from AI-enhanced tasks, we consider several factors: the wage component of production costs, the degree to which each sector is exposed to AI, and the significance of each sector within the region.

Looking 10 years ahead

Our recent labor market analysis indicates that GenAI has the potential to automate roughly 5% of tasks in Western Europe over the next decade. This figure falls to 4% in Southern Europe, 3% in the MENA region, 2% in Central and Eastern Europe, and only 0.5% in Sub-Saharan Africa. We assume that GenAI is poised to offer a uniform labor cost reduction of 27% for tasks it automates across these regions. However, the impact on overall cost reductions and productivity enhancements from GenAI will vary, as labor costs constitute different proportions of total costs in each region. For instance, Western Europe, with its relatively high labor costs as a share of national income, stands to gain more from the productivity boost provided by AI.

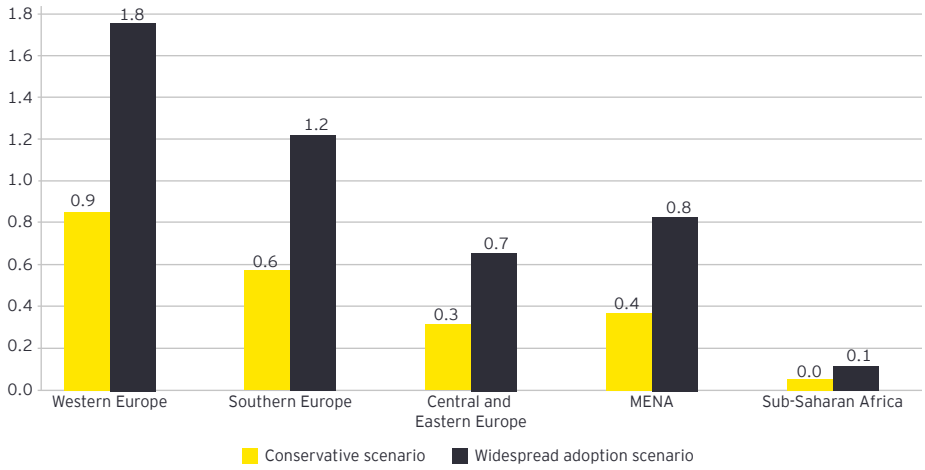
In summary, to estimate the TFP gains over the next decade, we multiply the proportion of tasks that AI could potentially automate by the anticipated 27% savings in labor costs for these automated tasks and the aggregated labor

income share specific to each region. This approach yields our conservative estimates of TFP gains over the next decade, which are 0.9% for Western Europe, 0.6% for Southern Europe, 0.4% for MENA, 0.3% for Central and Eastern Europe, and 0.05% for Sub-Saharan Africa.

Building on our article on AI and investment, we also explore a scenario involving widespread AI adoption. In this scenario, we anticipate a faster and broader adoption of AI, which could lead to productivity gains that are approximately twice as high as our conservative estimates (see Figure 3).

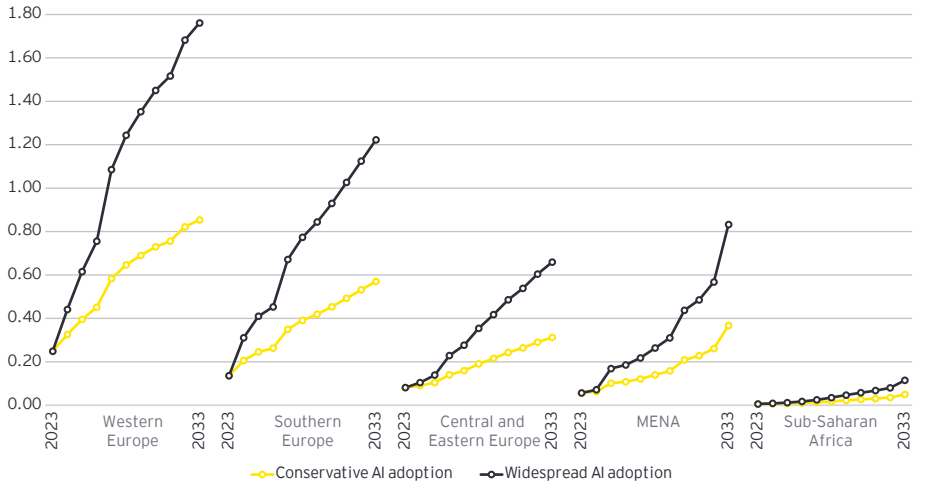
The estimates presented above reflect TFP gains in 10 years. We assume that the transition paths to these values, as illustrated in Figure 4, will resemble the investment trends described in our previous article, which were based on the rate of internet adoption during the ICT revolution. Therefore, in Western and Southern Europe, the surge in TFP will be more pronounced in the first part of the analyzed period, when AI implementation is expected to proceed more rapidly. In contrast, in the MENA region, initial gains are limited, with the process accelerating in the latter half of the next decade.

Figure 3: TFP gains due to GenAI by 2033 in EMEA regions.



Source: EY EAT.

Figure 4: Productivity gains due to GenAI over the next decade



Source: EY EAT.

Chapter 3

Forecasting prosperity: the economic upswing from GenAI-induced productivity growth in EMEA

Among the EMEA regions, Western Europe is poised to lead in GenAI adoption, which is expected to drive corresponding investment, productivity, and GDP gains.

In this chapter, we combine the insights from our previous article, which examines the impact of GenAI on investment, with our findings on the AI-driven boost to TFP. Our goal is to deduce the projected impact of GenAI on GDP over the forthcoming decade.

Investment and TFP represent two sides of the same coin, and thus the effects of GenAI on these variables cannot be directly aggregated to determine its overall impact on GDP. Investment pertains to the demand side of the economy, while TFP is a crucial driver of its productive capacity, i.e., the supply side. That said, demand and supply are intrinsically linked, with any imbalances between them typically diminishing over time.

On the one hand, an uptick in investment gradually bolsters the stock of capital — machinery and infrastructure which, together with TFP, determine the economy's productive capacity. On the other hand, an increase in productivity raises profits and wages, which enables firms and workers to spend more on investment and consumption, thus contributing to demand.

The approach

To appropriately account for these complex interrelationships, we simulate the effects of increased ICT investment and TFP on the economy using our amended version of the Oxford Global Economic Model. As in our previous article, we assume that the increase in ICT investment will fully translate into an additional investment stream, without any crowding out effects.

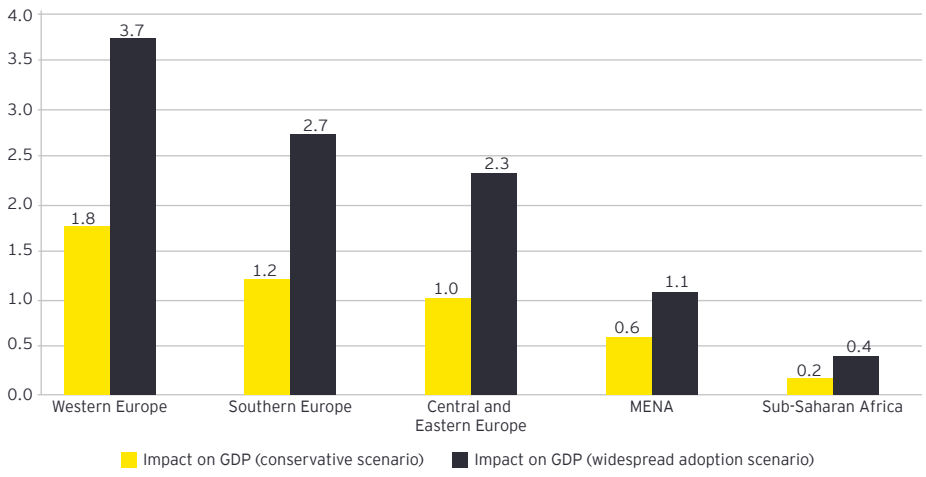
GDP gains

Our analysis indicates that Western Europe is poised to lead in GDP growth driven by GenAI. By 2033, we project an increase in GDP by 1.8% to 3.7%, depending on the pace of GenAI adoption — whether it follows a conservative or widespread path. This boost is equivalent to an extra one or two years of growth within the next decade, amounting to a significant economic benefit of US$260 to US$610 billion in 2033 alone. Meanwhile, other regions are expected to experience more modest rises in GDP due to their limited scope for AI adoption. Our estimates for these regions vary, with Southern Europe potentially seeing a GDP increase of 1.2% to 2.7%, while Sub-Saharan Africa may witness growth of just 0.2% to 0.4%.

We expect that across most regions, the rise in GDP will be closely aligned with the combined effects of the projected direct increases in TFP and investment. However, Central and Eastern Europe presents a unique case. As a region with a strong export focus, CEE is set to gain an additional boost from the increased external demand coming from Western Europe. This external dynamic is anticipated to contribute to a 1.0% rise in CEE's GDP, outpacing the 0.6% combined direct growth in TFP and investment.

The story of AI's economic influence does not stop here. In our next article, we will delve deeper into its relative effects on demand and supply to uncover GenAI's impact on inflation and interest rates.

Figure 5: Impact of AI on GDP in 2033



Source: EY EAT.

Caveats

Even though our analysis covers many channels of AI's impact on the economy, there are several factors that we do not account for, and which may influence the relative impact of GenAI across regions.

First, we assume that AI-related investment in ICT will (1) not displace other forms of investment and (2) will be separate from investment induced by an increase in TFP. However, it is likely that ICT investments induced by AI and those prompted by rising TFP will partially overlap. At the same time, ICT investment may substitute for other types of investment to some degree. Both phenomena would result in a weaker impact of AI on GDP.

Second, we suggest that productivity gains attributed to AI will arise solely from reductions in labor costs due to task automation. However, AI may also expedite the development of entirely new products more rapidly than we anticipate, thereby delivering extra impetus to GDP growth. Furthermore, lower-income countries may also benefit from easier transfer of technology and production processes, not necessarily directly related to AI, as productivity growth in advanced economies accelerates. As a result, regions such as CEE could experience more robust GDP gains as they continue to close the gap with the developed countries.

Given these opposing dynamics—one potentially reducing and the other likely enhancing our estimates—the net effect on GDP is challenging to predict.

Finally, while GenAI is a general-purpose technology with applications spanning a wide array of economic activities, it is evident that some sectors are more receptive to AI-facilitated productivity enhancements. These sector-specific differences will influence international competitiveness, potentially favoring or disadvantaging certain regions. We will delve deeper into this aspect in the fifth article of our series, which is dedicated to exploring the nuances of international competitiveness.

Chapter 4

GenAI and the new economic era: business leaders' insights on the path to transformation

Practical steps for business leaders include: (1) leveraging GenAI for operational efficiency, (2) fostering innovation for long-term growth, and (3) anticipating the macroeconomic effects of GenAI investments.

Considering the transformative impact of GenAI on productivity and economic growth in EMEA, business leaders should consider the following insights for strategic planning:

1. **Operational Efficiency through GenAI:** GenAI is pivotal in boosting delivery efficiency and improving customer satisfaction with products and services. To maintain a competitive advantage, businesses must prioritize process improvements as a core value. This strategy extends beyond the mere adoption of GenAI technologies; it requires cultivation of an organizational culture that embraces continuous innovation and utilizes AI to distinguish itself from competitors.
2. **Innovation as a long-term growth driver:** The integration of GenAI is essential for the development of new, innovative products and services that can propel businesses ahead of their competition. As a result, it can be a source of a long-term growth for a company.
3. **Macroeconomic considerations:** Understand the broader economic implications of GenAI, including impact on investment, productivity, labor market and price pressures across various regions. Businesses should monitor these macroeconomic trends to make informed decisions about investment timing and location, market expansion, and resource allocation.

Summary

In this study, we have explored the economic impact of GenAI across the EMEA area, with a particular focus on productivity and GDP growth. We predict that Western Europe will benefit most from AI, leading to a GDP increase of up to 3.7% by 2033, while Sub-Saharan Africa may see much more modest gains. The disparities in economic impact across regions, driven by diverse macroeconomic conditions, underscore the need for tailored approaches to AI integration and investment to fully capitalize on the opportunities presented by GenAI.

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