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DEMOGRAPHY AND COMPETITIVENESS IN HUNGARY

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ABSTRACT
In this study, We reviewed the economic impacts of demographic changes in Hungary, focusing on past trends and future challenges. We examined how the long-term development and stability of the Hungarian economy are influenced by changes in the structure and size of the population. Our analysis provided a historical overview of population trends from 1924 to 2024, taking into account the decline in fertility rates, the increase in life expectancy, and the effects of urbanization. We found that the aging population strains the labor market and public finances, while youth emigration worsens the situation. We highlighted how demographic shifts directly affect Hungary's economic growth potential, competitiveness, and social stability, particularly in terms of education, labor market efficiency, and innovation capacity. At the conclusion of the research, We proposed policy measures aimed at mitigating the negative impacts of demographic changes and promoting sustainable economic growth.

KEYWORDS
demographic changes, economic impact, population aging, migration, sustainable growth

INTRODUCTION

Over the past century, Hungary's population has undergone significant demographic changes that have profoundly impacted various sectors of the economy. The aging population, shifts in fertility rates, trends in urbanization, and migration have all contributed to the evolution of labor supply, the dynamics of consumer markets, and the increase in state social expenditures. Understanding these demographic processes is essential for economic policy decision-making, especially in a country like Hungary, where population trends significantly affect economic performance and social welfare. From the early 20th century to the present day, Hungary has experienced numerous historical events and social changes that have influenced demographic indicators. The demographic consequences of the First and Second World Wars, the birth control policies during the Ratkó era, the spread of contraception, and economic and political transformations have all impacted the population structure and the development of the fertility rate. The aim of this study is to comprehensively analyze the effects of demographic changes on the Hungarian economy during the period between 1924 and 2024. We place special emphasis on examining the impact of the fertility rate, average age, and population size on economic growth. In the course of the research, we have formulated two hypotheses:

H1: Economic growth influences demographic indicators in complex ways, and factors such as cultural and social dynamics significantly affect fertility and mortality rates.

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Therefore, GDP growth alone may not necessarily lead to positive changes in these demographic indicators.

H2: The impact of population decline, low fertility rates, and increasing average age on economic growth is moderated by technological advancement, the quality of human capital, and the economy's adaptability. These factors may offset the negative effects of demographic challenges on economic performance.

The study examines how demographic factors and economic indicators are related, using numerical data and statistical techniques from the Central Statistical Office (KSH). Using regression analysis, we aim to determine how demographic factors influence GDP trends and how economic growth impacts demographic measures. In the first part of the study, we review the historical background of demographic changes in Hungary and discuss the history of GDP implementation, including its limitations in measuring welfare and sustainability. Subsequently, we detail the research methodology, including data collection, statistical analysis methods, and the process of testing the hypotheses. In the results section, we present the findings of the analyses, evaluate the verifiability of the hypotheses, and discuss the economic impacts of demographic changes. Finally, in the conclusions, we summarize the main findings of the research and make recommendations for economic policy decision-makers to address demographic challenges. This study contributes to a deeper understanding of the relationship between demographic processes and economic growth, highlighting that demographic changes have a complex impact on the economy. The research results may be useful for decision-makers in developing long-term economic and social strategies, with particular attention to harmonizing population policy and economic policy.

LITERATURE REVIEW

Over the past century, Hungary's population has undergone numerous significant changes. These changes have included population aging, fluctuations in fertility rates, as well as trends in urbanization and migration. These changes have significantly affected various aspects of the economy, including labor supply, consumer markets, and state social expenditures. In Hungary, the evolution of the fertility rate over the last century has been influenced by numerous historical events and social changes. Examining events in chronological order helps us understand how these factors influenced birth rates and population composition (Monostori, Őri, & Spéder, 2015; Hablicsek, 2000).

During the First World War, the number of births in Hungary decreased dramatically. A large proportion of men were fighting on the front lines, which significantly reduced the possibility of starting families. This demographic downturn resulted in a "generational gap," as fewer women reached childbearing age in the 1920s and 1930s. This long-term effect influenced population growth and the fertility rate, as there were fewer potential mothers in society (Galántai, 1981; Romsics, 2005).

The 1920s industrialization and urbanization led to smaller families as higher living costs and changing women's roles delayed childbearing (Katus, 1970; Frey, 2001). The Second World War led to the legalization of abortion in 1945, largely due to the social and health issues from wartime assaults, though its significance is often overlooked. (David, 1999; Juhász, 2006). In the early 1950s, the large cohort born in the late 1920s reached childbearing age. This group is known as the "Ratkó generation," named after Anna Ratkó, the Minister of Welfare. During this period, the state implemented strict birth control measures: abortion was banned, and childbirth was strongly encouraged. As a result, there was a temporary increase in birth rates, but long-term trends were not reversed, and the fertility rate continued to decline by the end of

the decade (Kamarás, 1999; Pongrácz & Molnár, 2003).

The 1960s marked the beginning of widespread use of contraceptive devices in Hungary, such as intrauterine devices (IUDs). By the 1970s, accessible contraception led to a further decline in fertility rates (Johnson, 1994; Spéder, 2006). Simultaneously, social norms and values underwent significant transformations. Due to industrialization and urbanization, women increasingly entered the labor market. The importance of work and career grew, leading to delayed childbearing and the formation of smaller families. The traditional large family model was replaced by the nuclear family, and personal self-realization came to the forefront. Similar demographic patterns were observed in other Eastern European countries, such as the Soviet Union and East Germany. In these countries, industrialization, increased female labor force participation, and access to contraception also led to declines in fertility rates. The change in social norms was an international phenomenon that influenced family size and decisions regarding childbearing (Frejka & Gietel-Basten, 2016; Sobotka, 2003).

Demographic changes continue to play a crucial role in the performance of national economies, raising particularly important economic policy issues for Hungary. The theory of demographic transition highlights how changes in birth and death rates, along with associated social and economic factors, influence population growth patterns in Hungary. These changes have a direct impact on the labor market and the potential for economic growth, as urbanization and rising education levels promote the modernization of economic activities and improvements in labor productivity (Cook & Repetto, 1982). Furthermore, human capital, as a strategic resource, plays a central role in economic performance, where the quality of education and training directly affects economic outcomes (Bairoliya & Miller, 2021). For Hungary, the high-level education of younger generations is crucial to compensate for the labor shortages caused by an aging population and the slowdown in economic growth.

The macroeconomic impacts of demographic changes are significantly substantial. An aging population burdens the state budget, particularly in pensions and healthcare (Miles, 1997). Research further strengthens this, indicating that while aging in Hungary may be more moderate than in Western Europe, it will have significant long-term economic effects, including slowing economic growth and changing consumption patterns (Hudák et al., 2015). International migration, which also plays a decisive role in demographic dynamics, has a significant impact on the Hungarian economy by influencing the labor market and consumption patterns. Although migration has not been a determining factor in economic development, it has still had a substantial effect on certain industries and regions, necessitating the development of a long-term migration strategy (Majoros, 2009). Demographic trends, especially changes in the young and working-age population, have significant impacts on education, labor market efficiency, and innovation capacity, which directly influence Hungary's competitiveness and economic stability (Obhodaš & Jaganjac, 2019).

Introduction of GDP in Hungary

Gross Domestic Product (GDP) is a widely used indicator that measures the total value of goods and services produced by a country during a specific period (Samuelson & Nordhaus, 2010). Although GDP is an important tool for evaluating economic performance, it does not fully reflect social welfare or sustainability (Stiglitz, Sen, & Fitoussi, 2009). In this chapter, we review GDP's limitations in measuring welfare and sustainability, and its historical development and introduction in Hungary. GDP was originally created to measure economic performance, not as an indicator of welfare or sustainability (Kuznets, 1934). Therefore, if we use GDP to assess social progress or environmental sustainability, we may arrive at misleading

conclusions (van den Bergh, 2009). Recognizing that GDP is merely a quantitative measure of economic activity and doesn't provide a complete picture of society is important. GDP emerged in the 1930s during the global economic crisis, necessitating an indicator to comprehensively measure a country's economic performance (Coyle, 2014). Simon Kuznets, a Russian-born American economist, developed GDP's foundations to assess the economic crisis's impacts and inform policy decisions (Kuznets, 1934; Fioramonti, 2013). The Industrial Revolution increased production and trade, complicating economies and creating a need to measure economic performance (Maddison, 2001). However, GDP became widely accepted as an official indicator only in the mid-20th century (Coyle, 2014). At the 1944 Bretton Woods Conference, countries agreed to use GDP to measure economic performance, giving it international recognition (Bordo & Eichengreen, 1993). This enabled international economic comparisons and cooperation to stabilize the global economy (Horsefield, 1969).

In Hungary, the official use of GDP began in the late 1960s and 1970s (Berend, 2009). During the socialist era, however, economic performance was measured using indicators like industrial and agricultural production values, aligning with the centrally planned economy where Western GDP calculations weren't fully applicable (Kornai, 1992). Following the early 1990s political transition, Hungary adopted a market economy, necessitating the full implementation of GDP as an official indicator (Berend, 2009). This was part of adapting the country's economic and statistical systems to EU and international standards (OECD, 1995). Using GDP allowed Hungary to evaluate its economic performance internationally. This was vital for economic integration, enabling investors and partners to assess Hungary's economy using familiar indicators (World Bank, 2000). The adoption of GDP facilitated international economic relations and Hungary's integration into the global economy (Berend, 2009).

Economic impacts

Since the early 20th century, Hungary's population growth rates have undergone significant fluctuations. The post-World War II baby boom period (1946–1964) witnessed notable population growth, which began to slow from the 1980s onward. The decline in fertility rates led to a gradual decrease in population, and the limited effectiveness of state interventions posed significant challenges to population policy in Hungary. The government's efforts to counteract demographic decline faced obstacles due to complex social and economic factors (Bíró et al., 2020).

Migration and settlement patterns have had a decisive influence on the demographic structure. In pursuit of better economic opportunities and quality of life, significant emigration began in the 1990s and 2000s, primarily among young and skilled workers. These migration trends had serious economic and social impacts, particularly on the labor market and social support systems, further exacerbating demographic changes in Hungary (Behr et al., 2002). The significant increase in aging indices and the decrease in the proportion of the working-age population present additional demographic challenges for Hungary. This situation has serious economic and social consequences, especially concerning the pension system and healthcare provision. Its impact on the labor market also raises significant economic challenges, making effective management essential to ensure sustainable economic growth (Valsta, 2015).

According to data from the Central Statistical Office (KSH), the highest proportion of the working-age population was in 1975. In that year, the estimated working-age population reached 62% relative to the total population. During the period around 1975, several important social and economic factors influenced Hungary, which could have indirectly or directly affected the high proportion of the working-age population. It is important to understand that

these factors were interconnected, reinforcing each other, and collectively shaping the social structure and demographic characteristics of the time. Economic growth and state investments increased the number of jobs; the baby boom generation entered the labor market as adults; political stability and economic prosperity encouraged families to have more children; and state labor market programs assisted young people in entering the workforce.

The economic impacts of population aging can be partially offset through technological development and innovation. In recent years, Hungary has shown significant progress in various areas of technological innovation, which may have contributed to increasing productivity and maintaining economic growth. Digitalization, automation, and investments in research and development are all areas that can compensate for demographic pressure on the labor market in the long term. For example, Industry 4.0 solutions, artificial intelligence, and the rapid growth of the fintech sector indicate that Hungary is capable of leveraging technological advancements to promote economic growth.

Recent studies have challenged traditional economic theories that suggest population decline and an aging society inherently impede economic growth (Bloom, Canning, & Fink, 2010). Instead, contemporary research emphasizes the role of technological advancement, innovation, and the quality of human capital in mitigating the negative effects of demographic challenges (Acemoglu & Restrepo, 2018). Acemoglu and Restrepo (2018) argue that automation and technological progress can compensate for a shrinking workforce by enhancing productivity. Their research demonstrates that countries investing in automation technologies are less adversely affected by demographic shifts. Similarly, Börsch-Supan, Härtl, and Ludwig (2015) highlight that the experience and expertise of older workers can be leveraged to maintain economic performance, especially when combined with policies promoting active aging and lifelong learning. In the context of Hungary, Gál and Vargha (2019) suggest that appropriate economic policies and investments in human capital can sustain economic growth despite demographic headwinds. They emphasize the importance of education, training, and healthcare reforms to enhance the productivity of the workforce, including older age groups. The OECD (2019) notes that digital transformation and automation can increase productivity even as the age structure of the workforce changes. The integration of older workers into the labor market and the promotion of active aging strategies are crucial for maintaining economic vitality (European Commission, 2020). These perspectives indicate that the relationship between demographic changes and economic growth is more complex than previously thought, with factors like technological innovation and economic adaptability playing significant roles.

RESEARCH METHODOLOGY

This study examined the impacts of demographic changes on the Hungarian economy between 1924 and 2024. Data collection was based on demographic and economic data from the Central Statistical Office (KSH), upon which we analyzed temporal trends and relationships. We formulated two hypotheses:

H1: Economic growth influences demographic indicators in complex ways, and factors such as cultural and social dynamics significantly affect fertility and mortality rates. Therefore, GDP growth alone may not necessarily lead to positive changes in these demographic indicators.

H2: The impact of population decline, low fertility rates, and increasing average age on economic growth is moderated by technological advancement, the quality of human capital, and the economy's adaptability. These factors may offset the negative effects of demographic challenges on economic performance.

We employed a quantitative methodology, relying on statistical analyses to objectively uncover the relationships between variables and their impact on economic growth, as well as to test the formulated hypotheses. Initially, we conducted descriptive statistical analysis, during which we examined the temporal development of the fertility rate and mortality rate, and then compared these with changes in GDP. Using graphs and tables, we investigated the possible relationships between demographic indicators and economic performance to gain a preliminary understanding of the trends and correlations. To test the first hypothesis, we applied simple linear regression analysis. In this model, we considered GDP growth as the independent variable and the demographic indicators (fertility rate, mortality rate) as dependent variables. Our aim was to determine to what extent GDP growth influences demographic indicators, thereby confirming or refuting the first hypothesis. For the examination of the second hypothesis, we conducted multiple regression analysis. In this model, we used GDP as the dependent variable, while population size, average age, and fertility rate were used as independent variables. With this approach, we aimed to investigate to what extent population decline, low fertility rates, and increasing average age reduce the pace of economic growth, thus testing the second hypothesis. During data processing and analysis, we utilized statistical software such as SPSS and Excel. In the course of the regression analyses, we checked the fulfillment of the statistical assumptions of the models, such as the existence of a linear relationship between variables, normal distribution of residuals, and homoscedasticity. The results were presented in tables and graphs to facilitate data interpretation and enhance the transparency of the findings.

Throughout the research, we accounted for certain assumptions and limitations. We assumed that a linear relationship exists between the examined variables, which allowed the application of linear regression models. However, the models did not take into account other factors influencing GDP and demographic indicators, such as technological development, migration, the international economic environment, or political changes, which may limit the generalizability of the results. The quality and availability of data could also have influenced the accuracy and reliability of the findings.

RESULTS

Relationship between Fertility Rate and GDP

The fertility rate has shown a significant decline over recent decades, particularly starting from the 1980s. However, analyses indicate that GDP continued to grow despite the fertility rate stabilizing at a low level. This suggests that the economy was able to rely on other factors, such as technological development and increased productivity, contradicting Valsta's (2015) claim that a declining fertility rate necessarily hampers economic growth. If the decrease in the fertility rate had indeed had a significant negative impact on the labor market, it should have manifested in changes in the proportion of the working-age population and unemployment rates. Examining the relationship between changes in mortality rates and GDP growth did not reveal a direct, clear impact. Based on the data, the stabilization of the mortality rate and the increasing proportion of older age groups did not result in a slowdown of GDP growth, which questions Miles' (1997) assertion that an aging population places an increasing burden on the state budget, especially regarding pension and healthcare expenditures, potentially restraining economic growth in the long term. We can assume that if the aging population had indeed increased state expenditures, particularly in pensions and healthcare, this would have manifested in some form as a slowdown in GDP growth, as these expenditures could reduce

the resources available for state investments and other economic incentives. The graph illustrating the development of mortality rates and their impact on GDP also shows that economic growth remained sustainable despite the mortality rate not decreasing significantly.

Regression results

During the analysis, we used a simple linear regression model where GDP (dependent variable) varies as a function of average age (independent variable). The R-squared value is 0.985, indicating that changes in average age explain GDP changes very well. This value suggests that in the model, changes in average age explain 98.5% of the variability in GDP. The F-statistic value is 197.0, with a corresponding p-value of 0.000783. This means that the model is significant, and average age has a significant effect on GDP. The constant value is -1017.5, meaning that if the average age were zero (which is not possible in reality), the expected GDP value would be negative. The coefficient for average age is 30.0862, indicating that each additional year in average age increases GDP by approximately 30.09 units (based on the model). The results of the regression analysis suggest that the increase in average age is closely associated with GDP growth. This confirms the earlier finding that economic growth can be sustained even in an aging society, and that increasing average age positively influences GDP. This result contradicts Hudák et al.'s (2015) assertion that aging can have significant negative effects on the economy in the long term.

Table 1: Results of Linear Regression Analysis

Analysis	Value
Model	Linear regression (GDP as a function of changes in average age)
R-squared	0.985
F-statistic	197
p-value	0.000783
Constant	-1017.5
Average Age Coefficient	30.0862

Source: Own compilation based on KSH statistical data

Our findings align with the perspectives of Acemoglu and Restrepo (2018), who suggest that technological innovation can mitigate the adverse effects of demographic changes. The lack of a significant negative impact of population decline on GDP in our study may indicate that Hungary's investments in technology and automation have bolstered productivity despite a shrinking workforce.

Moreover, the positive, albeit not statistically significant, relationship between increasing average age and GDP suggests that older workers contribute to economic activity, potentially through accumulated experience and skills (Börsch-Supan et al., 2015). This supports the notion that active aging policies and lifelong learning initiatives can enhance the productivity of an aging workforce (European Commission, 2020). The absence of a significant relationship between GDP growth and fertility or mortality rates implies that economic prosperity alone does not directly influence these demographic indicators in Hungary. Cultural, social, and policy-related factors may play more decisive roles, as suggested by Spéder and Kapitány (2014), who highlight the complexities of fertility intentions and realizations in post-communist societies.

These interpretations underscore the importance of considering a multifaceted approach

when analyzing the interplay between demographics and the economy, incorporating technological, cultural, and policy dimensions.

Results of multiple regression

The question is whether the increase in average age can offset the negative effects of population decline. This depends on the extent to which the older age group contributes to economic performance. If the older age group possesses higher productivity and remains active in the labor market for longer, this can partially or fully compensate for population decline. In the multiple regression analysis, we examined the combined effect of population size and average age (independent variables) on GDP (dependent variable). The results of the analysis are as follows: The R-squared value is 0.997, indicating that the model explains GDP changes very well. According to the results, population size and average age together explain 99.7% of the variability in GDP. The F-statistic value is 309.9, with a corresponding p-value of 0.00322. This suggests that the model is significant, meaning that population and average age together have a significant effect on GDP. The constant value is 1125.14. This value gives the estimated GDP when average age and population size decrease to zero (although this is not possible in reality). The coefficient for average age is 11.43, indicating that each additional year in average age increases GDP by 11.43 units (based on the model). However, its p-value is 0.244, meaning it is not statistically significant. The coefficient for population is -0.1443, indicating that a decrease in population of 1,000 people reduces GDP by 0.1443 units. Its p-value is 0.114, which also indicates that it is not statistically significant.

Table 2: Results of multiple regression analysis

Variable	Coefficient	Standard Error	t-value	p-value
Constant	1125.14	52.48	21.44	0.0001
Average Age	11.43	8.52	1.34	0.244
Population	-0.1443	0.0738	-1.95	0.114

Source: Own compilation based on KSH statistical data

Although population decline has a negative effect on GDP, the effect is not significant, which may indicate that other factors, such as technological development or economic restructuring, may offset this impact. Average age has a positive impact on GDP, but this effect is not statistically significant. This may suggest that while the older age group can contribute to economic growth, other factors also play a significant role. Average age alone is a very strong explanatory factor for changes in GDP, but when examined alongside other factors, its effect is less significant.

Demographic changes, especially an aging population and declining fertility rates, pose serious challenges for the labor market. Labor shortages, resulting from a decline in the young, working-age population, can directly reduce economic productivity and impair the country's competitiveness. The emigration of young people further exacerbates this situation, particularly among skilled labor, adversely affecting the country's innovation capacity and potential for economic growth (Bairoliya & Miller, 2021).

An aging population has a significant impact on the consumer market, directly influencing the country's competitiveness. The different consumption habits of older generations—for example, increased demand for health and social services—can create new opportunities for the economy if utilized appropriately. Moreover, the development of health and social services can contribute to economic growth and create new competitive advantages

for Hungary (Hudák et al., 2015).

International outlook

Analyzing Hungary's demographic changes and competitiveness is incomplete without placing the results in an international context. Western European countries, such as Germany and France, face similar demographic challenges to Hungary, including an aging population and labor market issues. However, these countries invest significant resources in innovation, education, and migration policies to offset the negative impacts of demographic changes. For example, Germany implements a comprehensive migration policy that allows the immigration of skilled labor, thereby enhancing its economic competitiveness (Valsta, 2015).

The Scandinavian countries, like Sweden and Norway, have also successfully adapted to demographic changes, particularly an aging population. These nations place great emphasis on human capital development, high-quality education, and welfare policies that maintain labor productivity and innovation capacity. Sweden ensured sustainability through pension system reforms while maintaining its economic growth rate (Valsta, 2015).

Similar to Hungary, other Eastern European countries such as Poland and the Czech Republic are grappling with youth emigration and labor market challenges. Poland employs an active migration policy to attract back emigrated youth and has launched development programs in rural areas to reduce regional inequalities and increase the competitiveness of local economies (Tóth & Valkovics, 1998).

Some Asian countries, like Japan which has one of the oldest populations globally—are attempting to address the labor market and economic challenges arising from aging through innovative solutions. In Japan, robotics and automation play a significant role in alleviating labor shortages, helping to maintain productivity and global competitiveness (Hudák et al., 2015).

Hungary's demographic situation is similar to that of many other countries, but international examples demonstrate that demographic challenges can be successfully managed with appropriate policy measures and strategic investments. By learning from international experiences, Hungary can develop its migration policy, pension system, and human capital to maintain and enhance its competitiveness in the global market.

CONCLUSION

In our research, we examined two hypotheses: H1 stated that economic growth influences demographic indicators in complex ways, and factors such as cultural and social dynamics significantly affect fertility and mortality rates. Therefore, GDP growth alone may not necessarily lead to positive changes in these demographic indicators. H2 posited that the impact of population decline, low fertility rates, and increasing average age on economic growth is moderated by technological advancement, the quality of human capital, and the economy's adaptability. These factors may offset the negative effects of demographic challenges on economic performance. The empirical results clearly indicate that while population decline and low fertility rates may negatively impact economic growth, these effects can be mitigated by technological innovation and improvements in the quality of human capital. The regression analysis showed that the increase in average age is strongly correlated with GDP growth, suggesting that the productivity and experience of older workers can provide an economic advantage if properly leveraged.

Regarding the second hypothesis, our results offered a novel perspective on the relationship between demographic and economic factors. Our multiple regression analysis

revealed that although population decline has a negative impact on GDP, this effect was not statistically significant ($p = 0.114$). The increase in average age showed a positive effect on the economy, but this was also not significant ($p = 0.244$). This indicates that the Hungarian economy has been able to adapt to demographic challenges, offsetting population decline and aging with other factors such as technological development and increased productivity. These findings are novel and contradict traditional economic theories that suggest population decline and aging necessarily slow down economic growth. Our research highlights that in Hungary, economic growth has been sustainable despite demographic challenges. This raises the possibility that the drivers of economic growth are changing, and that the quality of human capital, technological innovation, and the structural transformation of the economy play a more critical role than the sheer size of the population.

For the Hungarian economy, this means that responses to demographic challenges cannot be limited to policies aimed at increasing population numbers. Instead, the focus may shift toward developing human capital, integrating older age groups into the labor market, and promoting technological innovation. The experience and expertise of older workers can be valuable to the economy if utilized appropriately. Additionally, technological advancement and automation enable productivity growth with less labor, which can counterbalance the negative effects of population decline.

LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

While our research arrived at important conclusions, we acknowledge limitations that may affect the generalizability of our results. Firstly, we primarily used national-level data and did not account for regional differences within Hungary. Significant disparities may exist in economic and demographic indicators between urban and rural areas, which warrant further investigation. Furthermore, we did not analyze certain external factors such as the international economic environment, detailed effects of migration, or the direct impact of political decisions. These factors can significantly influence economic and demographic indicators, and including them in future research could provide a more accurate picture.

In future studies, it would be valuable to examine more deeply the role of human capital quality in economic growth. Specifically, exploring how the standard of education, the efficiency of training systems, and lifelong learning affect productivity and innovation capacity in an aging society would be insightful. Additionally, analyzing the labor market impacts of technological development and automation is crucial for developing responses to demographic challenges. A more detailed examination of migration including the economic and social effects of immigration and emigration can contribute to a deeper understanding of demographic trends. Special attention should be given to encouraging the return of Hungarians living abroad and integrating them into the domestic labor market, as well as exploring opportunities for attracting international labor. Finally, adopting an interdisciplinary approach that combines insights from economics, sociology, demography, and technology studies can enrich the research. This would provide a more comprehensive understanding of complex demographic and economic processes and help develop more effective strategies for future challenges.

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