

Sustainable housing construction and population growth in the EAEU: a comparative approach

Aidar Assylbayev^{1,}, Elmira Derbisheva¹, Kunduzkul Niiiazalieva¹, Turatbek Suranaev² and Elvira Husainova³*

¹Kyrgyz-Russian Slavic University named after the First President of the Russian Federation B.N. Yeltsin, Department of Construction, Bishkek, Kyrgyz Republic

²Kyrgyz-Russian Slavic University named after the First President of the Russian Federation B.N. Yeltsin, Department of Accounting and Audit, Bishkek, Kyrgyz Republic

³Russian-Kyrgyz Institute of Business Management Automation, International University of Innovative Technologies, Bishkek, Kyrgyz Republic

Abstract. This paper presents a comparative study that investigates the relationship between housing construction rates and demographic development in the Eurasian Economic Union (EAEU). The study aims to explore the housing issue as a significant factor influencing demographic processes within the context of the disparate economic development among EAEU member countries. Employing econometric analysis, the study demonstrates a strong correlation between the commissioning of housing facilities and the population dynamics from 2005 to 2022. The findings highlight the interdependence between demographic growth and housing volume, suggesting the potential for developing a unified strategy for demographic and housing policies across EAEU countries and the international association as a whole. It is argued that improving housing conditions can foster demographic development by mitigating housing risks. Conversely, inadequate housing provision negatively impacts population reproduction dynamics. In conclusion, the paper offers recommendations for formulating a unified strategy in housing and demographic policies within the EAEU, based on the principles of housing demography.

Keywords. housing demography, housing commissioning, population, correlation, housing, demography.

1 Introduction

In the current global economy, the pursuit of research aimed at enhancing the quality of life for populations, including within the Eurasian Economic Union (EAEU) economic system, is of significant scientific interest. The identification of the connections and

* Corresponding author: aidaras73@mail.ru

interdependencies between demographic development and housing issues among EAEU citizens holds great potential for establishing an effective unified strategy for demographic and housing development across member countries. Moreover, improving the housing conditions of EAEU citizens lays the foundation for fostering positive dynamics in demographic processes by mitigating factors that negatively impact population reproduction and migration.

This scientific interest is further underscored by the United Nations' adoption of the "Transforming Our World: the 2030 Agenda for Sustainable Development" resolution in 2015. This resolution encompasses 17 goals and 169 targets that focus on sustainable economic development, increased social cohesion, and environmental safety. Of particular significance is the eleventh goal, which centers on the development of environmentally friendly cities and housing settlements [1]. Within this context, the resolution addresses the need to tackle the challenges associated with expanding the number of new residential areas and recommends the creation of a unified strategy for housing and demographic policies. This strategy aims to remove barriers and maximize productivity through economic benefits and demographic opportunities.

The relevance of investigating the relationship between housing construction and population dynamics in the EAEU stems from the growing disparity in the pace of demographic development and housing construction. Such disproportionate development could potentially result in an unfair distribution of housing resources among different segments of the population and create barriers to equal access to decent housing. Given these circumstances, the significance of this research topic is indisputable, particularly considering the current era of global demographic mobility.

In light of these considerations, this study aims to comprehensively examine the connection between housing construction and demographic dynamics in the EAEU. By utilizing an econometric approach, this research seeks to uncover the interdependencies between these factors and develop a unified strategy for demographic and housing policies within the EAEU. The findings of this study hold significant implications for policymakers, providing insights into the formulation of effective measures to address housing challenges and foster sustainable demographic development within the EAEU.

The primary objectives of this research endeavor are as follows:

To examine and analyze the historical dynamics of housing construction within the EAEU since the establishment of the union. This analysis will provide insights into the trends and patterns of residential development over the union's existence.

To explore and analyze the demographic changes within the EAEU since its formation. By examining population dynamics, this study will shed light on the trends and variations in the size and composition of the population across the member countries.

To determine the presence of a correlation between the commissioning of housing and changes in the overall population within the EAEU. This examination will assess the extent to which housing construction influences population growth or decline.

To examine the temporal dynamics of housing commissioning rates and population growth within the EAEU. This analysis will provide a comprehensive understanding of the fluctuations and trends in both variables over time.

To investigate the resulting relationship between housing commissioning rates and population growth within the EAEU. By analyzing the data, this study aims to uncover any associations or patterns between these two factors.

To provide recommendations for a unified housing and demographic policy within the EAEU. Based on the findings and analysis, this research will offer practical suggestions to guide policymakers in formulating effective strategies to address housing challenges and promote sustainable demographic development within the union.

By addressing these objectives, this study aims to contribute to the existing body of knowledge on the interplay between housing construction and population dynamics in the EAEU. The findings and recommendations generated from this research will offer valuable insights to policymakers, researchers, and stakeholders involved in shaping housing and demographic policies in the region.

2 Methodology and Research Methods:

2.1 Methodology of the Study:

The methodology employed in this study draws on the projects of the Council of the Eurasian Economic Commission (EEC) that pertain to the functioning of a single market for services in the construction field and the macroeconomic situation in the member states of the Eurasian Economic Union, along with proposals for sustainable economic development [2][3]. The research methodology incorporates general methods of information systematization, analysis, and synthesis, as well as classification and information extraction methods. Furthermore, econometric analysis techniques are applied to examine statistical data concerning the Eurasian Economic Union [4].

2.2 Review of References:

Extensive attention has been given in global scientific practice to investigating the relationship between different aspects of the housing sector and specific demographic phenomena. Notable scholars whose work closely relates to our subject include Mulder C. H. (2006, 2009, 2012), Thomas J. Cooke (2009), Ten Hengel, B. (2012), Latten, J. (2012), and Yu Zhang [5-8]. Regarding the housing sector's development from the perspectives of demographic and legal policy, the research incorporates the works of Russian and Kazakhstani authors such as A.N. Asaula, A.M. Platonov, A.A. Blokhin, S.G. Sternik, S.V. Ryazantsev, Z.K. Ayupova, D.Yu. Kusainov, Y.A. Amireev, A.K. Daurenbekov, Zh.Y. Beisekova, among others [9-14]. Numerous researchers from Kyrgyzstan [15-18], who have examined the intersections of demography and housing issues, have argued that the housing factor in demographic development is often underestimated and holds potential for scientific exploration. These studies often utilize conceptual frameworks and correlation analysis methods for their methodological calculations [19-22]. As a result, this work builds upon a review-analytical approach, incorporating the research conducted by contemporary scholars from Europe, Kazakhstan, Kyrgyzstan, and Russia.

By incorporating these methodological approaches and building upon existing research, this study aims to contribute to the understanding of the relationship between housing construction and demographic dynamics within the Eurasian Economic Union. The utilization of various research methodologies and a comprehensive review of relevant literature ensures a rigorous analysis and provides valuable insights into the topic at hand.

Data Collection: The data for this study was collected from various reliable sources, including the Eurasian Economic Union statistics, governmental reports, academic publications, and research papers. These sources provide comprehensive and up-to-date information on housing construction and population dynamics in the EAEU member countries. The collected data spans the period from 2005 to 2022, allowing for a comprehensive analysis of long-term trends and patterns.

Data Analysis: The collected data was subjected to rigorous econometric analysis to uncover the relationship between housing construction and population dynamics in the EAEU. Econometric analysis involves the application of statistical techniques to estimate

and quantify the relationship between variables, taking into account potential confounding factors. The analysis included the use of regression models and correlation analysis to assess the strength and significance of the relationship between housing construction and population change. Advanced statistical software packages were utilized to perform these analyses and generate meaningful results.

Comparative Approach: The research adopts a comparative approach to examine the housing construction and demographic dynamics across the EAEU member countries. By comparing the trends and patterns in housing construction and population change among different countries, it becomes possible to identify commonalities, differences, and underlying factors that contribute to the observed variations. This comparative analysis provides a broader perspective on the relationship between housing and demographic development within the EAEU context.

Conceptual Framework: The study employs a conceptual framework that integrates theories and concepts from housing studies, demography, and economics. This framework helps to guide the analysis and interpretation of the data, ensuring a comprehensive understanding of the complex interactions between housing construction and population dynamics. By drawing on existing theories and concepts, the study aims to contribute to the theoretical knowledge in the field and provide practical implications for policymakers and stakeholders in the EAEU.

Limitations: It is important to acknowledge the limitations of the study. The analysis is based on secondary data obtained from various sources, which may have inherent limitations in terms of accuracy and completeness. Additionally, the study focuses on the EAEU member countries, and the findings may not be generalizable to other regions or economic unions. Despite these limitations, the study endeavors to provide valuable insights and recommendations for a unified housing and demographic policy within the EAEU context.

In conclusion, the methodology employed in this study combines quantitative analysis, comparative approaches, and a conceptual framework to examine the relationship between housing construction and population dynamics in the Eurasian Economic Union. By leveraging rigorous data analysis techniques and drawing on existing research, the study aims to contribute to the academic understanding of the topic and provide practical recommendations for policymakers.

3 Results

3.1 Assessment of the compliance of housing construction volumes with population dynamics in the EAEU

Research Background: Since its establishment in 2005, the Eurasian Economic Union (EAEU) has undertaken research initiatives aimed at enhancing the overall well-being and quality of life of its citizens. Within this context, considerable attention has been given to assessing the indicators of citizens' satisfaction regarding their living conditions, particularly concerning access to new housing and the improvement of housing services. Achieving satisfactory housing conditions, in accordance with global standards, necessitates a sufficient volume of new housing construction, with a benchmark of one square meter per capita. By meeting this construction volume, it can be argued that the quality of life of the population improves, with positive implications for housing-related issues. The EAEU member countries, recognizing the significance of housing in ensuring a high quality of life, have actively pursued robust investment policies aimed at mobilizing funds for construction activities.

International Housing Standards: In evaluating the adequacy of housing conditions, international housing standards serve as essential benchmarks. These standards emphasize the importance of meeting a minimum threshold of one square meter of new housing per capita to attain satisfactory living conditions. By adhering to these standards, countries can effectively address the housing needs of their populations, leading to enhanced living standards and improved well-being. The application of these international standards provides a basis for assessing the progress of the EAEU member countries in achieving optimal housing conditions and serves as a reference point for evaluating the impact of housing construction on the quality of life of the population.

Investment Policies in Housing Construction: Recognizing the critical role of housing in promoting a high standard of living, the EAEU member countries have adopted vigorous investment policies focused on generating the necessary financial resources for housing construction activities. These policies encompass various strategies aimed at mobilizing funds, such as attracting domestic and foreign investments, promoting public-private partnerships, and implementing targeted financing mechanisms. The pursuit of these investment policies underscores the commitment of the EAEU countries to addressing housing needs and improving the quality of housing services. By examining these investment policies, valuable insights can be gained into the priorities, strategies, and resources allocated to housing construction within the EAEU.

Dynamics of Housing Commissioning: To comprehend the trends and patterns in housing construction within the EAEU, an analysis of the dynamics of housing commissioning per citizen was conducted. By examining the data over time, it becomes possible to identify variations and fluctuations in housing commissioning levels both at the country level and within the EAEU as a whole. This analysis offers valuable insights into the progress made by individual countries in meeting housing demands and sheds light on any discrepancies or imbalances in housing development across the union. The findings contribute to a comprehensive understanding of the housing dynamics within the EAEU and provide a basis for formulating informed policies and strategies (Figure 1).

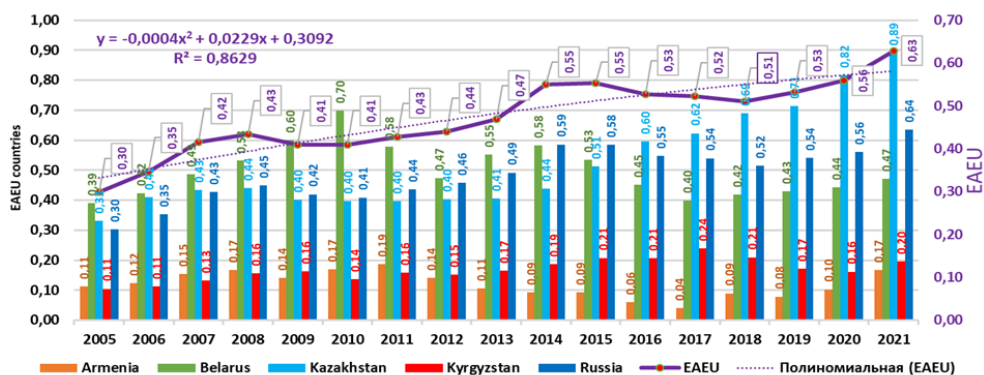


Fig. 1. Housing commissioning per person by country and across the EAEU (sq.m.).

Source: Prepared by the author based on data from the EAEU statistics [23].

Figure 1 presents a visual representation of the housing commissioning per citizen in both individual EAEU countries and the union as a whole. The figure provides a graphical depiction of the trends, variations, and relative positions of different countries in terms of housing commissioning. This visual representation facilitates the interpretation and comparison of data, enabling a comprehensive assessment of the housing situation within

the EAEU. By examining the figure, one can discern the variations in housing commissioning levels among the member countries and the collective progress made by the union over time.

In summary, the research conducted within the EAEU since 2005 has aimed to improve the quality of life for its citizens, with specific attention to housing-related indicators. The adherence to international housing standards, the implementation of robust investment policies, and the analysis of housing commissioning dynamics all contribute to understanding the relationship between housing construction and the overall well-being of the population. The visual representation provided in Figure 1 enhances the comprehension

The analysis presented in Figure 1 provides insights into the housing commissioning indicators per citizen across the Eurasian Economic Union (EAEU) countries. Kazakhstan demonstrates the highest indicator, reaching 0.89 m² per citizen in 2021. Following closely, Belarus achieved a substantial indicator of 0.70 m² in 2010. In Kyrgyzstan, the highest value of 0.24 m² per inhabitant was recorded in 2017. Conversely, Armenia exhibited the lowest indicator in the EAEU, amounting to 0.04 m² in the same year.

To further understand the trend of housing commissioning in the EAEU, a trend line function was applied to the data, resulting in the equation $y = -0.0004x^2 + 0.0229x + 0.3092$. The accuracy of this model is estimated at 86% ($R^2 = 0.8629$). Based on this trend line, it can be projected that the EAEU is more likely to fall short of achieving the international benchmark rather than reaching it in the coming years, assuming other conditions remain constant.

By examining the figure, it becomes evident which countries have made greater or lesser progress towards the world standard of one square meter of housing per capita at different points in time. Consequently, considering the analysis of the diagram and the expected forecast, it can be concluded that none of the EAEU countries have attained the international conditional indicator. As a result, the EAEU as a whole achieves only half of the world standard, with the maximum recorded value of 0.554 m² in 2015.

The boom in housing construction within the Eurasian Economic Union (EAEU) can be attributed to the increasing consumer demand and the pressing need for improved housing among numerous households. As previously discussed, this momentum is evidenced by real-world factors such as an aging population and rising life expectancy, notably in Russia, as well as robust population growth in countries like the Republic of Kazakhstan and the Kyrgyz Republic (see Figure 2).

Analyzing the dynamics of life expectancy in the participating countries reveals a consistent upward trend. In 2019, the highest life expectancy was observed in Armenia, reaching 76.5 years, while Kyrgyzstan reported the lowest at 71.47 years. The average life expectancy across the EAEU in 2019 was recorded at 73.79 years, representing an increase of 1.5 years compared to 2014 (72.19 years). Notably, Kyrgyzstan stands out due to its ability to maintain a growth rate in life expectancy despite a stable and high birth rate. According to EAEU statistics, the Kyrgyz Republic had the highest total fertility rate from 2014 to 2019, ranging from 24.8 (2014) to 27.7 (2019) per 1,000 inhabitants. Following in descending order are Kazakhstan, Armenia, Russia, and Belarus. Concurrently, the EAEU experienced a decline in the birth rate from 14.7 cases per 1,000 inhabitants in 2014 to 11.8 cases in 2019. The trend line for the EAEU demonstrates a positive linear relationship described by the equation $y = -0.1263x^2 + 1.137x + 70.93$, with a high confidence level exceeding 80% ($R^2 = 0.812$). Thus, assuming zero external conditions, it can be inferred that the positive trend in life expectancy across the EAEU will persist in the next forecast period.

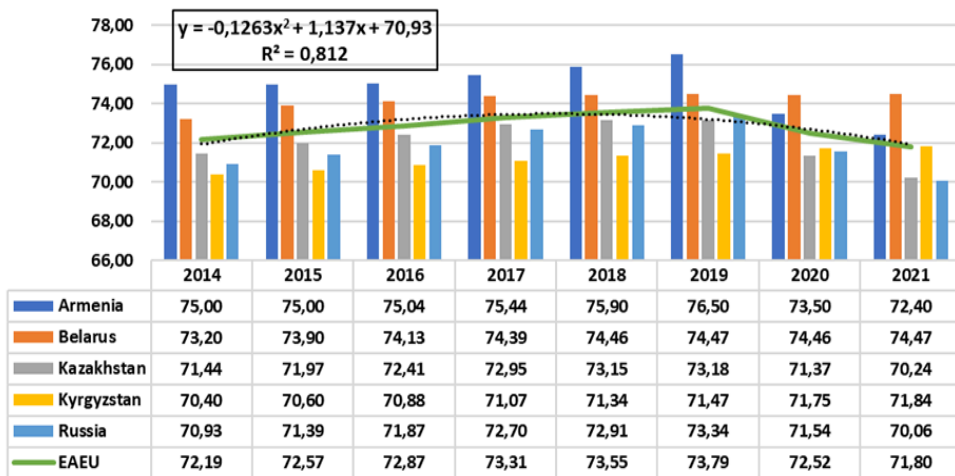


Fig. 2. Life expectancy at birth in the EAEU (number of years).

Source: Prepared by the author based on data from the EAEU statistics [23].

Upon closer examination, it becomes evident that the dynamics of housing commissioning per capita mirror the overall housing commissioning diagram. Therefore, for further calculations, we will focus on the total commissioning of new housing, which is influenced by various factors. The description function for this indicator is represented by $y = -0.1351x^2 + 5.2246x + 51.435$, demonstrating a strong correlation with more than 87% confidence ($R^2 = 0.8754$). Additionally, the high birth rates in individual EAEU countries and the increase in life expectancy at birth contribute to the overall population growth within the EAEU. Therefore, in future analyses, we will consider the indicator of population growth as a significant factor.

In light of this, Figure 3 presents a comprehensive overview of the entire EAEU, illustrating the dynamics of new housing commissioning in millions of square meters and the average annual population growth from 2005 to 2022. The data, sourced from EAEU statistics [23], are depicted using a polynomial model.

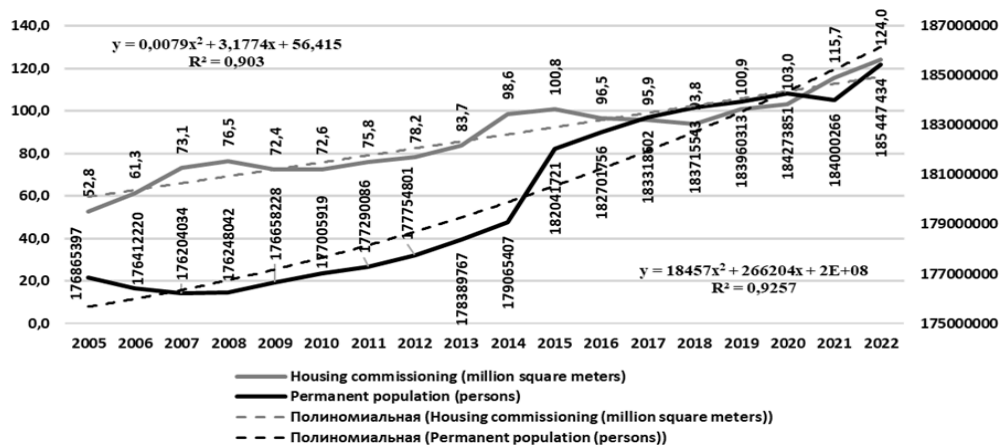


Fig. 3. Dynamics of housing commissioning and population growth in the whole of the EAEU.

Source: Prepared by the author based on data from the EAEU statistics [23].

The dynamics of housing commissioning follow a cyclical pattern, consistent with the general academic understanding of housing market development. The graph reveals two distinct growth periods: the first spanning from 2005 to 2008 and the second from 2013 to 2015. Conversely, two decline periods are also evident: the first occurring from 2009 to 2013, and the second observed from 2016 to 2019. Although the trend line for housing commissioning is characterized by a negative function $y = 0.0079x^2 + 3.1774x + 56.415$, exhibiting a 90% confidence level ($R^2 = 0.903$), there was a notable increase in housing commissioning in 2019 (99.1 million sq.m.) compared to 2018 (93.8 million sq.m.), representing a rise of 5 million square meters. Consequently, based on the trend line, a gradual growth in the dynamics of housing commissioning is anticipated for the forthcoming cyclical period.

Regarding population dynamics, a more stable and discernible trend of positive population growth emerges. Although growth rates may vary across different periods, the overall pattern indicates consistent demographic expansion [24]. Furthermore, with a high degree of confidence exceeding 92% ($R^2 = 0.9257$), the trend line is described by the function $y = 18457x^2 + 266204x + 2E + 08$, leading to the inference that the EAEU will experience a population increase in the nearest forecast period.

It is worth noting that the housing commissioning dynamics and population growth are interconnected, as evidenced by the similarity in their respective trend lines. As such, the projected sluggish growth in housing commissioning aligns with the anticipated population growth in the EAEU. These factors contribute to the ongoing efforts within the EAEU to address the housing needs of its growing population and improve the quality of life for its citizens.

3.2 Dynamic picture of changes in the rate of development and the rate of population growth in %

In order to comprehensively investigate the dynamic landscape of development rates and population growth, it is necessary to analyze the rates of housing commissioning and population growth differentially. The disparity between these rates provides insights into the pace at which the housing deficit is expanding across the EAEU as a whole. Figure 4 illustrates this relationship.

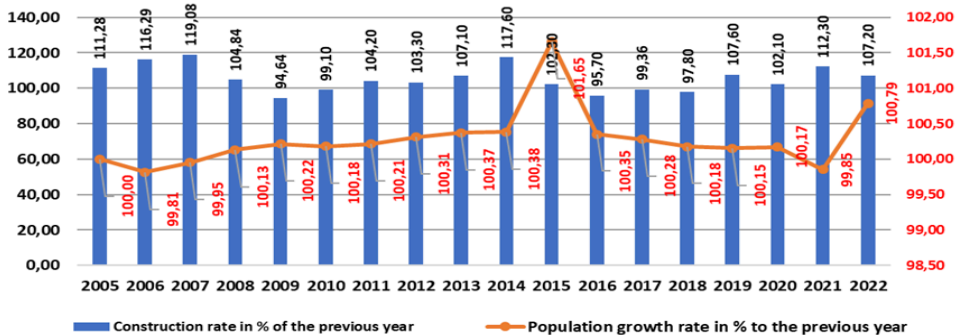


Fig. 4. Development rate and population growth rate in %.

Source: Prepared by the author based on data from the EAEU statistics [23].

Drawing upon the dynamic histogram depicting the development rate, we observe that, similar to the overall pattern of housing commissioning dynamics, it exhibits a cyclical nature characterized by periods of decline and growth. In 2020, there is a decline in the development rate compared to the previous year; however, in 2021, there is a significant

upswing in construction pace. Notably, in 2019 (97.8%) across the EAEU, the growth rate of construction increased by over 8% compared to 2018 (107.6%). This suggests an upcoming phase of growth in the volume of newly commissioned residential structures. Conversely, the population growth rate experienced a pronounced increase in 2015, reaching 101.7% compared to 2014. Additionally, there is a notable surge in 2022 relative to 2021, likely attributable to the conclusion of the pandemic. Overall, the EAEU exhibits a positive population growth rate; however, there are inherent risks of decline due to member countries with low demographic growth rates, particularly Russia and Belarus.

These findings highlight the intricate interplay between development rates, housing commissioning, and population growth within the EAEU. The cyclical nature of the development rate mirrors the housing commissioning dynamics, while the population growth rate exhibits its own distinctive trends. Understanding the interrelationships and potential risks associated with these variables is crucial for formulating effective policies and strategies to address the housing needs and sustain the population growth across the EAEU.

To gain deeper insights into the relationship between the growth rates of residential development and population, we examine the dynamics of their ratio, as depicted in Figure 5.

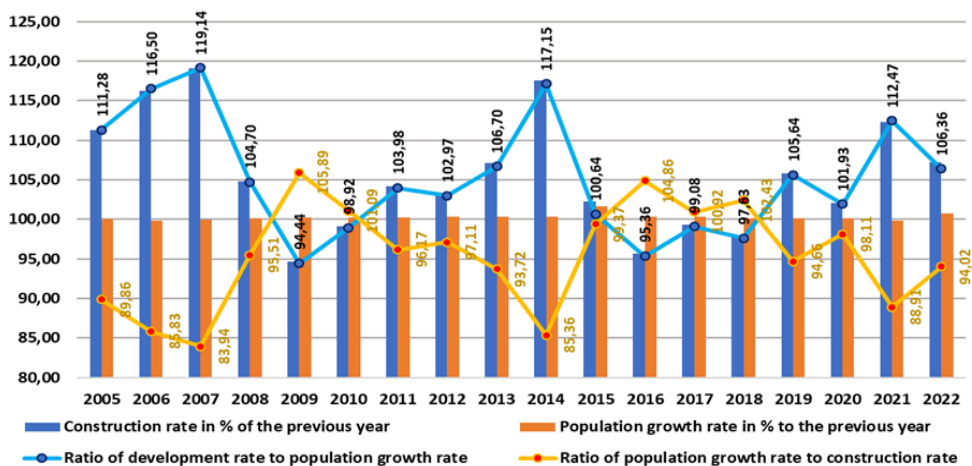


Fig. 5. The ratio of the rate of residential development to the rate of population growth and the rate of population growth to the rate of residential development.

Source: Prepared by the author based on data from the EAEU statistics [23].

Upon analyzing the ratio between the growth rate of residential development and population growth, as well as the reverse scenario, we observe that the dynamic graphs exhibit volatility and demonstrate abrupt shifts in their trajectories. Notably, the most substantial disparity between the two rates was observed during the periods from 2005 to 2007 and from 2013 to 2014. By closely examining the graph, we discern that in 2019, the growth rate of housing construction outpaced the rate of population growth. This observation signifies a positive factor in the overall advancement of the housing construction sector.

The fluctuating nature of the ratio between the growth rates of residential development and population growth highlights the intricacies inherent in the dynamics of these two variables. These fluctuations may be attributed to various factors, including changes in government policies, economic conditions, and demographic patterns within the EAEU.

Understanding the relationship between housing development and population growth is crucial for policymakers and stakeholders to effectively plan and allocate resources, ensuring the provision of adequate housing to support the evolving needs of the population across the EAEU.

4 Discussion

4.1 Assessment of the compliance of housing construction volumes with population dynamics in the EAEU

The analysis of Figure 1 reveals that the achievement of the international standard of one square meter of housing per citizen in the near future is a challenging goal for all EAEU countries, as well as for the union as a whole. This challenge is particularly evident for countries with high fertility rates and life expectancy, such as Kyrgyzstan and Kazakhstan. Nevertheless, the EAEU's policy of significantly increasing the volume of housing construction to meet the needs of a growing population is commendable and aligned with the overall objectives of the union.

The findings from Figure 2 support the hypothesis that the EAEU is experiencing a positive trend in both housing construction and population growth. This trend is underpinned by an increase in life expectancy at birth and a concerted effort to promote higher birth rates across the EAEU. The data suggests that Armenia and Belarus are witnessing positive dynamics in life expectancy growth, further reinforcing the link between population dynamics and housing construction.

To explore the potential interdependence between the dynamics of housing commissioning and population growth depicted in Figure 3, a correlation analysis was conducted using the Correl program. The results confirmed the existence of a strong correlation between these two factors, with a correlation coefficient of $\text{Correl} = 0.873$. The positive and direct correlation aligns with the established academic theory of supply and demand in the housing market. As the demand for housing increases, the supply in the market also rises. However, it is important to note that housing supply cannot instantly respond to increased demand, as its availability is primarily influenced by the pace of household formation and development. Consequently, housing is recognized as an inelastic commodity in the market, requiring strategic planning and long-term considerations to address the evolving demand.

These observations underscore the complex relationship between housing construction and population dynamics within the EAEU. Policymakers and stakeholders must carefully navigate these dynamics, considering demographic trends, economic conditions, and social factors, to ensure the provision of adequate housing and meet the evolving needs of the population across the union. Future research should delve deeper into the specific challenges faced by individual EAEU countries in achieving the international housing standard and identify effective strategies for balancing housing construction with population growth.

4.2 Dynamic picture of changes in the rate of development and the rate of population growth in %

A correlation analysis was conducted to examine the relationship between the rate of development and the rate of population growth in the EAEU, resulting in a correlation coefficient of $R = -0.285$. These findings indicate the absence of a significant connection between these factors, both at the individual country level and across the EAEU as a whole.

If each country were to achieve corresponding rates of development for these factors, a more pronounced correlation could be expected throughout the union.

It is important to note that the slower population growth rate has played a contributing role in the growing disparity between the rates of development for housing construction and population growth. As a result, the growth rate of housing commissioning has exhibited positive dynamics. In other words, the decrease in population growth has led to an upward trend in housing provision. However, this does not imply an increase in housing construction productivity or its active growth across the entire EAEU. The positive effect in housing supply has been driven by the slowdown in population growth. Such conditions are commonly observed in global practice due to aging populations and declining birth rates. Consequently, the living area per person increases, or the coefficient of living density per square meter of living space changes.

An analysis of the dynamic histogram depicting construction rates reveals a cyclical pattern similar to the overall dynamics of housing commissioning. Notably, there was a significant jump in the population growth rate in 2015, reaching 101.7% compared to 2014, indicating a noticeable increase in the EAEU population. However, there are potential risks of lower population growth rates, particularly in countries such as Russia and Belarus, which exhibit relatively low demographic growth rates.

Understanding the relationship between housing additions and population growth rates is crucial for anticipating future trends in population migration and urban development within the EAEU. The cyclical nature of housing construction suggests the possibility of future periods of growth and decline in housing additions, which can impact the affordability of housing for a growing population. Given the risks associated with lower population growth rates, especially in countries like Russia and Belarus, it becomes imperative to address the underlying factors contributing to such trends. This understanding can inform the development of policies and strategies aimed at stimulating population growth and ensuring a stable supply of housing for the expanding population.

In summary, the analysis of the dynamic histogram and the comparison of housing commissioning rates and population growth rates within the EAEU provide insights into the cyclical nature of housing construction and the potential risks associated with diminishing population growth. These findings underscore the importance of proactive measures to address demographic challenges and ensure sustainable and adequate housing supply across EAEU member countries.

5 Conclusion and recommendations

In conclusion, the modern economy of the EAEU faces numerous unresolved issues regarding the quality of housing conditions for its citizens. The provision of decent and affordable housing is closely intertwined with the specificities of various demographic phenomena. Through the example of the EAEU, this study has revealed a connection between the housing and demographic sectors of the economy, as they mutually satisfy objective needs and subjective requirements for housing possession. However, this relationship extends beyond mere mutual influence and demonstrates signs of interdependence and determinism, highlighting the complex and interdisciplinary nature of the relationship between these two branches of the national economy. Consequently, this study emphasizes the importance of establishing a separate field of study known as housing demography [25; 26].

To address these challenges, relevant intergovernmental agencies should formulate a unified housing and demographic strategy, taking into account the following recommendations:

- Monitoring the quantitative volume of housing construction by individual countries and segments of the population across the entire EAEU.
- Monitoring the qualitative composition of housing development to ensure compliance with uniform EAEU standards.
- Monitoring and renovating old or dilapidated housing facilities.
- Encouraging countries that are falling behind to prioritize the construction of housing for socially vulnerable segments of the population.
- Actively promoting public-private partnerships in housing construction.

This paper has provided methodological justifications and empirical evidence of the interdependence between housing factors and selective indicators of the demographic process. These findings clearly demonstrate the need for further exploration of the relationship between housing and demographic processes within the framework of housing demography as a distinct scientific field.

Furthermore, it is crucial for intergovernmental services within the EAEU to recognize the significance of developing a comprehensive housing and demographic strategy. This strategy should encompass a wide range of considerations and address the complex interactions between housing and demographic dynamics.

Monitoring the quantitative volume of housing construction is essential for assessing the progress made by individual countries and different segments of the population within the EAEU. By tracking these developments, policymakers can identify gaps and discrepancies, enabling them to take targeted actions to address housing shortages and disparities.

Equally important is monitoring the qualitative composition of housing development in accordance with uniform standards set by the EAEU. This ensures that housing construction meets established guidelines in terms of safety, comfort, and sustainability. Regular assessment of the quality of housing will contribute to the overall well-being and satisfaction of the population.

Another critical aspect is the renovation and revitalization of old or dilapidated housing facilities. This involves not only addressing structural issues but also improving the living conditions and amenities available to residents. By investing in the rehabilitation of existing housing stock, the EAEU can enhance the overall quality of life and promote sustainable urban development.

To promote social equity and inclusion, special attention should be given to stimulating countries that are lagging behind in providing housing for socially vulnerable segments of the population. This can involve targeted funding and incentives to encourage the construction of affordable housing units and supportive infrastructure in these regions. By addressing the needs of marginalized groups, the EAEU can foster social cohesion and reduce disparities in housing access.

Furthermore, the application of public-private partnerships (PPP) in housing construction should be actively pursued. PPPs can leverage the resources and expertise of both public and private sectors to accelerate housing development. By fostering collaboration between government entities, developers, and investors, the EAEU can overcome financial constraints and bureaucratic hurdles, leading to more efficient and effective housing projects.

In conclusion, this study has provided methodological justifications and empirical evidence that highlight the interdependence of housing factors and selective indicators of the demographic process. The establishment of housing demography as a separate scientific discipline is warranted, given the complexity and interconnectedness of housing and demographic dynamics. By adopting a unified housing and demographic strategy and implementing the aforementioned recommendations, the EAEU can effectively address

housing challenges, promote sustainable urban development, and ensure the well-being and satisfaction of its population.

References

1. Achieving the Sustainable Development Goals in the Region of the Eurasian Economic Union. Statistical abstract / Eurasian Economic Commission. – Moscow, 2019. – 95 pages.
2. Council of the Eurasian Economic Commission. (2015). On the draft decision of the Council of the Eurasian Economic Commission "On the draft decision of the Supreme Eurasian Economic Council "On ensuring the functioning of a single market for services in the field of construction." Retrieved from https://docs.eaeunion.org/docs/ru-ru/0127573/clco_22042015_36_doc.pdf
3. Council of the Eurasian Economic Commission. (n.d.). On the draft decision of the Council of the Eurasian Economic Commission "On the draft resolution of the Eurasian Intergovernmental Council 'On the macroeconomic situation in the Member States of the Eurasian Economic Union and proposals to ensure sustainable economic development'." Retrieved from <https://www.alt.ru/tamdoc/21r00008/>
4. The website of the Eurasian Economic Union. [Electronic resource] / Access mode: <http://www.eaeunion.org/#services>
5. Mulder C.H. (2006). Population and housing: A two-sided relationship. Demographic Research, 2006, vol. 15, pp. 401– 412. DOI: 10.4054/DemRes.2006.15.13
6. Mulder, Clara H., and Thomas J. Cooke. (2009). Family ties and residential locations, Population, Space and Place 15(4: Special Issue: Family Ties and Residential Locations): 299–304. doi:10.1002/psp.556
7. Mulder, C.H., Ten Hengel, B., Latten, J., and Das, M. (2012). Relative resources and moving from the joint home around divorce. Journal of Housing and the Built Environment 27(2): 153–168. doi:10.1007/s10901-011-9250-9.18.
8. Zhang, Y., Jin, H., Xiao, Y., & Gao, Y. "What are the Effects of Demographic Structures on Housing Consumption?: Evidence from 31 Provinces in China." Hindawi Mathematical Problems in Engineering, Volume 2020, Article ID 6974276, 14 pages. <https://doi.org/10.1155/2020/6974276>.
9. Interdependency Between Demographics and the Construction of Housing as a Pivotal Factor of Society's Sustainable Growth / A. N. Asaul, A. B. Assylbayev, K. N. Niiazalieva [et al.] // Proceedings of the Second Conference on Sustainable Development: Industrial Future of Territories (IFT 2021), Ekaterinburg, 24 сентября 2021 года / Editors: Yakov Silin. – Ekaterinburg: Atlantis Press, 2021. – P. 309-314. – DOI 10.2991/aebmr.k.211118.056. – EDN OLIKJC.
10. Asaul, A. N., Asaul, M. A., Levin, Yu. A., & Platonov, A. M. (2020). Energy supply of isolated territories in the context of attracting investments and developing the regional economy. Economics of the region, 16(3), 884-895. <https://doi.org/10.17059/ekon.reg.2020-3-16>
11. Blokhin A.A., Sternik S.G., Teleshev G.V. (2020). Institutional transformations in the sphere of housing construction in 2020 // Problems of Forecasting. 2021. No. 2 (185). pp. 43-55. DOI: 10.47711/0868-6351-185-43-55
12. Ryazantsev S.V (2021) Migrant workers as a resource for the demographic development of Russia and the Republic of Kazakhstan, Bulletin of the National Academy of Sciences of the Republic of Kazakhstan, ISSN 1991-3494 Volume 2, Number 390 (2021), 204–212. DOI: 10.32014/2021.2518-1467.71 (In Eng).

13. Ayupova Z.K., Kussainov D.U., Nagan W. (2019) Novelties in the Legal System as Motive Force of Legal Integration, News of the National Academy of Sciences of the Republic of Kazakhstan. Series of Social and Human Sciences, 1 (323): 102-106. DOI: 10.32014/2019.2224-5294.15 (In Eng).
14. Amireev Y.A., Daurenbekov A.K., Beisekova Z.Y. (2021). "Industrial Statistics" Collection of Reports. LLP "Zhania-Polygraph" Almaty, AESA, 2021
15. Kumskov, G. V. Transformation and formation of households as a consequence of solving the housing problem of the population / G. V. Kumskov, A. B. Assylbayev, K. N. Niiazalieva // Bulletin of the Tajik National University. Series of socio-economic and social sciences. - 2017. - No. 2/3. - S. 87-91. – EDN ZAXXRB.
16. Kocherbaeva, A. A. (2017). Eurasian economic integration: problems, realities and prospects for Kyrgyzstan / A. A. Kocherbaeva // Russia: trends and development prospects: Yearbook, Moscow, 01–30 December 2016 / Managing editor V.I. Gerasimov. - Moscow: Institute of Scientific Information on Social Sciences of the Russian Academy of Sciences, 2017. - P. 306-311.
17. Assylbayev AB, Safronchuk MV, Niiazalieva KN, Brovko NA (2023) Green transformation and the concept of energy efficiency in the housing sector. In: Lazareva EI, Murzin AD, Rivza BA, Ostrovskaya VN (eds) Innovative trends in international business and sustainable management. Springer, Singapore, pp 567–577. https://doi.org/10.1007/978-981-19-4005-7_61
18. Niiazalieva, K. N. Theoretical and methodological aspects of the formation of foster homes and families in Kyrgyzstan / K. N. Niiazalieva, A. B. Assylbayev // Bulletin of the Kyrgyz-Russian Slavic University. – 2015. – T. 15, No. 3. – S. 56-59. – EDN TRZQZH.
19. Organization of a Unified State Housing and Demographic Policy as a Condition for Sustainable Development of Cities and Settlements / A. B. Assylbayev, A. N. Asaul, K. N. Niiazalieva [et al.] // Proceedings of the Second Conference on Sustainable Development: Industrial Future of Territories (IFT 2021), Ekaterinburg, 24 сентября 2021 года / Editors: Yakov Silin. – Ekaterinburg: Atlantis Press, 2021. – P. 283-290. – DOI 10.2991/aebmr.k.211118.051. – EDN NPGEFE.
20. Assylbayev, K. B., A. B. Assylbayev, and K. N. Niyazaliva. "Diagnostics of unbalanced development of the regions of Kazakhstan and analysis of their convergence using convergence." Journal of Actual Problems of Economy 180.6 (2016): 231-245.
21. Problems of residential migration in the framework of the formation of “smart agglomeration” Aidar Asylbayev, Kunduzkul Niiazalieva, Natalia Brovko, Malik Borbugulov. E3S Web Conf. 311 07002 (2021), DOI: 10.1051/e3sconf/202131107002.
22. Urbanization of the population within the context of urban agglomeration development: a scientific perspective K.N. Niiazalieva, A.B. Assylbayev, A.S. Alymkulova, V.V. Ploskikh, K.B. Assylbayev E3S Web Conf. 403 01005 (2023) DOI: 10.1051/e3sconf/202340301005
23. Статистики ЕАЭС. Режим доступа: http://www.eurasiancommission.org/ru/act/integr_i_makroec/dep_stat/econstat/Pages/population.aspx.
24. Assylbayev, A. B. Development of residential areas in the conditions of influx of internal migrants to the cities of Kyrgyzstan / A. B. Assylbayev, K. N. Niiazalieva, G. V. Kumskov // Today and tomorrow of the Russian economy. – 2021. – No. 105–106. – S. 27-37. – DOI 10.26653/1993-4947-2021-105-106-03. – EDN JFLZXR.
25. Ploskikh, E.V. Influence of housing conditions on the health of the population, reproductive behavior and population in the Kyrgyz Republic / E.V. Ploskikh, K.N. Niiazalieva, A.B. Assylbayev // Bulletin of the Tajik National University. Series

- of socio-economic and social sciences. - 2017. - No. 2/10. - S. 28-37. – EDN YWRCEU.
26. Dynamics of development of urban housing stock and urban population
K.N. Niiazalieva, A.K. Kydykbaeva, E.U. Nazarbekova, A.B. Assylbayev,
Sh.A. Yessimova E3S Web Conf. 403 01001 (2023) DOI: 10.1051/e3sconf/
202340301001