The impact of the housing affordability index on marriage rates in the Czech Republic

Jiří Máška[1], Lucie Tlachačová[2]

1 PANEUROPEAN University in Bratislava, Faculty of Economics, Tematínska 10, 851 05 Bratislava, Slovakia

2 Institute of Technology and Business in České Budějovice, Okružní 517/10, 370 01 České Budějovice, Czech Republic

Abstract

The long-term growth in real estate prices in the Czech Republic raises questions about the impact of reduced housing affordability on the stability of family life and marriage rates. The aim of this study was to conduct a detailed assessment of the characteristics and mutual influence of the housing affordability index (HAI) and marriage rates in the Czech Republic in the period 2008-2024. Data were collected through content analysis from the Czech Statistical Office and processed using Pearson's correlation coefficient and linear and multi-criteria regression, considering time lags. The correlation between the HAI and marriage rates was very weak positive (0.120), but for year-on-year changes in the HAI (ΔHAI) and marriage rates, it was weak to moderately strong positive (0.391). Linear regression for ΔIDB and marriage rate with a 1-year lag (lag=4) was statistically insignificant, but with a 6-month lag (lag=2), the growth in ΔIDB was statistically significantly associated with a subsequent increase in Δmarriage rate. The effect of the year-on-year change in the unemployment rate and average monthly gross wages, as control variables, was not statistically significant in the multi-criteria regression model. However, the limitations of the study lie in the lack of other key economic and social factors and in the use of average data values in the calculation of IDB.

Keywords: Housing affordability index, marriage rate, Czech Republic, correlation analysis, regression model

---

Introduction

The affordability of housing is currently a significant problem in all developed countries and is also an important factor in economic development at both the national and regional levels. There are major differences in lifestyle, quality of life, and type of property ownership between

countries around the world. Housing affordability in Czech regions is on average lower than in Polish regions, and by 2022, affordability will have declined compared to 2020 in both Czech and Polish regions (Slavata et al., 2024).

Housing affordability is therefore also an indicator of the standard of living in a region (Ivanitskiy, 2024), and the housing affordability index is used to identify trends, patterns, and proposals for policy measures to address problems. Large cities in particular are facing rising prices. Overall, housing affordability is deteriorating, with western federal states being the most affected (Balz, 2025). Housing affordability varies within cities. Distance from the city center and transportation are significant factors. Peripheral and middle neighborhoods are unaffordable and inaccessible, with indices of 55% and 48%. Suburban residents and people with lower incomes face a higher financial burden (Tareksproche & Baraki, 2024).

Most families with below-average incomes have low housing affordability (Duan & Duan, 2024). A widely used measure of housing affordability is the rule that households should not spend more than 30% of their income on housing. However, this normative threshold is an arbitrary guideline from the Great Depression and may no longer be relevant today (Ng et al., 2024).

The macroeconomic environment and government regulations have varying effects on housing affordability in cities. The most important factor is gross domestic product (Q. Wang et al., 2024). Although short-term imbalances in real estate prices always correct themselves in the long run (Lekhuleni & Ndlovu, 2023), restrictive land use regulations have a truly pervasive effect on real estate values and rents (Landis & Reina, 2021). Increased tourist inflows into a country also have a direct proportional impact on housing market prices, suggesting that tourism not only boosts economic vitality but also significantly affects housing affordability (Kim & Yang, 2024).

Achieving overall citizen satisfaction requires ensuring healthy and affordable housing (Bamgbade et al., 2022). Higher rent index values were associated with increased suicide rates among young and middle-aged adults compared to the older population, regardless of gender (Chen et al., 2024).

Nearly one in two adults aged 18–29 in 2024 lives with their parents, compared to only about one in four in 1960. This may be due to changing labor market conditions and the associated postponement of marriage and parenthood (Acolin et al., 2024). Marital readiness includes readiness for marriage (Melnikas et al., 2022), and the assessment of a partner's marital readiness is based on the partner's social compatibility and/or emotional attachment to the partner (Shams, 2025).

Negative attitudes toward marriage and childbearing in developed societies are caused by structural constraints, particularly the sharp rise in real estate prices. The positive effects of housing policy could thus contribute significantly to creating more positive attitudes towards

marriage, higher perceived housing affordability, and encourage people to start families (S. Wang et al., 2023).

The aim of this study is to provide a detailed assessment of the characteristics and mutual influence of the housing affordability index and marriage rates in the Czech Republic.

In connection with the objective of the work, the following research questions have been identified:

The housing affordability index tracks how difficult it is for individuals or households to purchase their own property over the long term. Its development can reveal trends in affordable housing in the Czech Republic.

RQ1: What is the development of the housing affordability index in the Czech Republic in the period from January 1, 2008, to December 31, 2024?

Marriage is an important demographic phenomenon that reflects the lifestyle, values, and economic situation of society. Monitoring the development of marriage rates over time can provide insight into how people's attitudes toward the institution of marriage are changing.

RQ2: How has the marriage rate in the Czech Republic developed between January 1, 2008, and December 31, 2024?

Life decisions such as getting married can be influenced by many factors, including the economic situation and the availability of housing. Examining the relationship between real estate price trends and marriage rates can help us better understand whether economic conditions play a role in family planning.

RQ3: Is there a relationship between the housing affordability index and marriage rates in the Czech Republic?

Literary research

Ianchuk et al. (2021) and their research comprehensively examine the impact of affordable housing on economic performance and the role of local government. Using correlation analysis and a dynamic panel regression model, they found that a 0.44% increase in GDP per capita causes a 1% increase in the share of homeowners with mortgages or loans after a two-year lag. Conversely, a 1% increase in the share of affordable housing at a reduced price causes an average decline in GDP per capita of 0.5% with a two-year delay, on the basis of which the authors recommend improving social housing financing policies. Land use and housing development policies, where municipalities have considerable power, are of fundamental importance in promoting housing affordability. Sutela (2024) used content analysis based on interviews with experts (N = 22) and policy documents to show how one municipality (Turku) differed from the other two. Turku had less administrative capacity and

greater volatility in its social rental housing targets compared to Helsinki and Tampere, suggesting a less active role in market management.

Fluctuations in real estate prices lead to considerable heterogeneity in purchase prices and have a major impact on household income after deducting housing costs. Households often mitigate these effects by changing their labor supply: men work more after paying a higher price for real estate at the time of purchase (Low & Sanchez-Marcos, 2024). Tourism also has negative effects on housing affordability. In Malta, a significant dynamic link and a direct proportional impact of increased inflows of foreign tourists on the escalation of the house price index (HPI) has been found. Based on a time series of data from 2005 to 2023, Kim & Yang (2024) examined the causal relationships between foreign tourist arrivals and key economic indicators such as the house price index (HPI), consumer price index (CPI), and real gross domestic product (RGDP). Through robust statistical analyses, significant dynamic relationships between tourist inflows and housing price escalation were identified. These findings show a direct, proportional impact of increased tourist inflows on housing market prices. The results are supported by a high correlation between tourism and housing prices, along with a significant correlation between tourism and other economic indicators. Another study by Sun et al. (2021), which quantified the correlation between external factors and transport performance indicators in Florida, found that factors with a high correlation with all performance indicators include, among others, the real estate price index, the rent price index, and the percentage of the population living in poverty. These macroeconomic relationships have also been studied elsewhere—for example, in Turkey, the relationship between the monthly consumer price index, the producer price index, and the real effective exchange rate was examined using time series methods and the Toda-Yamamoto causality test (Aytekin et al., 2023). Time-series forecasting is also widely applied in financial and commodity markets, where price dynamics show high volatility and non-linear patterns. Mol Raj et al. (2023) examined the price development of gold, silver, and platinum (2019–2023) and predicted the future development of selected metal pairs using the Nearest Neighbours method, highlighting platinum-based pairs as the most profitable investment combinations. Related evidence on precious metal price dynamics is provided by Janek et al. (2024), who analyzed gold and silver price development over 2015–2023 and assessed the impact of the COVID-19 period. Their results indicate similar price trends for both commodities and confirm a statistically significant relationship between past gold and silver prices using correlation analysis and Granger causality.

Housing affordability, wages, and unemployment affect internal migration. Correlation regression analysis in Lithuania showed that higher housing affordability and wages have a positive relationship with the number of migrants to cities, while the unemployment rate in the destination city has a negative relationship. First, the correlation between housing affordability, wages, unemployment (and changes therein), and internal migration indicators, and the impact of data lag is assessed. Subsequently, simple and multiple regression equations are compiled (Laurinavicius et al., 2021). In the context of spatial dynamics, Jang & Yi (2021) found a positive spatial correlation between local commuting accessibility and place of residence for all income groups, suggesting that all households are located in areas with good accessibility. In

addition, there is a spatial correlation between combined travel, housing, and socioeconomic vulnerability issues and the risk of death from COVID-19, exacerbating the potential consequences of social deprivation (Cao et al., 2023).

In addition to economic indices, behavioral indices are also used to analyze dynamic phenomena. In the context of early warning of the COVID-19 epidemic, Xie et al. (2022) examined the predictive usefulness of the Baidu search index and found, using Spearman's correlation, that the temporal distribution of search terms had a 2- to 3-day lead over reported cases (Spearman's correlation was greater than 0.81).

The decline in marriage rates in Chinese cities has attracted considerable attention. Song et al. (2024) conducted an analysis of panel data from 35 large and medium-sized Chinese cities (2004–2019). They found that growing income inequality is a key factor contributing to the decline in marriages. Moreover, the impact of income inequality shows significant spatial and temporal differences across urban areas. Factors such as internet penetration, urbanization, and housing prices are important channels through which income inequality affects marriage rates. The aim of this research was to reveal the macroeconomic correlation between income inequality and marital behavior. Marriage and divorce are processes that have undergone significant changes in Czechia and Slovakia over the last three decades (Sprocha, 2021).

In Azerbaijan, a study by Adilkhanova & Aliyev (2024) examined the impact of macroeconomic performance, i.e., indicators of economic growth, unemployment, and inflation, on marriage and divorce trends between 2000 and 2022 using the ARDL methodology. Their results confirmed the significant long-term impact of inflation and unemployment rates on divorce rates. While economic growth rates do not have a significant impact on divorce rates, the research shows a positive impact on marriages and a declining impact on divorces in the country. Higher inflation and unemployment rates push divorce rates up, with the unemployment rate having a particularly significant negative impact on the number of marriages in Azerbaijan.

Pouradeli et al. (2024) examined the impact of the COVID-19 pandemic using a Poisson regression model and an interrupted time series Poisson regression model. They found that before the pandemic, marriage and birth rates were declining, while divorce and mortality rates were rising, with only the trend in birth rates being statistically significant. The immediate effect of the pandemic was a significant decline in divorce rates, but there were insignificant effects on birth and marriage rates. Another study by Yang et al. (2023) focused on the relationship between marital events (marriage and divorce rates and pressure to marry) economic and social development on suicide rates and to reveal differences in these influences between urban and rural areas and between genders, using time series analysis methodology to analyze nationwide data (1987–2017). It was found that marriage and divorce rates have different significance for all four groups (urban/rural, gender).

Based on the aforementioned studies, content analysis will be used as a data collection method, followed by descriptive time series analysis for VO1 and VO2, and Pearson's correlation coefficient and multi-criteria regression for VO3.

Data and methods

Content analysis of the official website of the Czech Statistical Office (ČSÚ) will be used to collect data on the housing affordability index (IDB) and marriage rates in the Czech Republic. Data will be collected for individual quarters for the period from January 1, 2008, to December 31, 2024. The data is publicly available and therefore does not need to be included in the annexes.

The housing affordability index (HAI) will be calculated using the Price-to-Income Ratio formula (Litvinova & Danilova, 2021):

$$IDB = \frac{C \,.\, 65}{I \,.\, 3 \,.\, 12 \,.\, S}$$

where:

- *C* – average price per square meter of housing in the Czech Republic
- 65 – average apartment size (square meters)
- *I* – average monthly income per person (gross salary)
- *3* – number of household members
- *12* – number of months in a year
- *S* – saving ratio, ratio of savings in unit fraction

This formula can also be expressed in simplified form as:

$$IDB = \frac{Celkové\ náklady\ na\ bydlení}{Celkové\ roční\ úspory\ na\ bydlení} \tag{2}$$

The saving ratio will be taken from the study by Litvinova & Danilova (2021), i.e. 0.3, and the average apartment size will be set at 65 m², as the average apartment size in the Czech Republic ranges between 60 and 79 m² (ČSÚ, 2024). The resulting data will then be plotted on a scatter plot with a trend line for better visualization and described using descriptive statistics. The same will be done with the data obtained for the marriage rate in the Czech Republic for the given quarters.

Given that time series may show a strong trend (e.g., inflationary price growth) that would cause a false correlation, it is necessary to create a new series from year-on-year changes (dynamics). The year-on-year change in variables will therefore be calculated to show how the variable has changed compared to the same quarter of the previous year, according to the following calculation:

$$\Delta IDB = \frac{IDB_t}{IDB_{t-4}} \times 100 \tag{3}$$

$$\Delta marriageability = \frac{marriageability_t}{marriageability_{t-4}} \times 100 \quad (4)$$

Next, a correlation analysis will be performed using Pearson's correlation coefficient, which will help determine the degree of correlation between variable Y, the dependent variable in this case being the marriage rate, and variable X, the independent variable in this case being the housing affordability index. The degree of correlation will be assessed according to Evanson's (1996) handbook, and the general formula for calculating Pearson's correlation coefficient will be used:

$$r = \frac{cov(X,Y)}{\sigma_X . \sigma_Y} \quad (5)$$

where:

- r – Pearson's correlation coefficient
- X – independent variable
- Y – dependent variable
- σ – standard deviation

The intermediate step will be to calculate the covariance for the period from January 1, 2008, to December 31, 2024, using the formula:

$$cov(X,Y) = \frac{\sum(X - \bar{X})(Y - \bar{Y})}{n} \quad (6)$$

where:

$\bar{X}$ – arithmetic mean of variable X

$\bar{Y}$ – arithmetic mean of variable Y

n – number of data points in the statistical set

Subsequently, standard deviations will be calculated for each variable according to the formula:

$$\sigma_X = \sqrt{\frac{\sum(X - \bar{X})^2}{n}} \quad (7)$$

$$\sigma_Y = \sqrt{\frac{\sum(Y - \bar{Y})^2}{n}} \quad (8)$$

For a more accurate characterization of the relationship between IDB and mortality, the reaction time Δmortality to ΔIDB will be determined for various lags. First, the relationship between Δmarriage rate and ΔIDB with a lag of 1 year will be determined using linear regression (Hayes, 2025) in Microsoft Excel:

$$Y_t = \beta_0 + \beta_1 X_{t-4} + \varepsilon_t$$

where:

- β_0 – constant
- β_1 – regression coefficient
- X_{t-4} – one-year lag
- ε_t – random component

This relationship will then be determined for a shorter lag, specifically six months:

$$\Delta IDB = \frac{IDB_t}{IDB_{t-2}} \times 100 \tag{9}$$

$$\Delta marriageability = \frac{marriageability_t}{marriageability_{t-2}} \times 100 \tag{10}$$

Linear regression will again be calculated from this data, but for a six-month delay:

$$Y_t = \beta_0 + \beta_1 X_{t-2} + \varepsilon_t \tag{11}$$

Finally, a multi-criteria regression will be performed, including control variables to reflect any potential bias in the impact of IDB on marriage rates. These variables will be Δunemployment rates and Δaverage monthly gross wages collected quarterly in the same period, i.e., from January 1, 2009, to December 31, 2024. This data will also be obtained from the public database of the Czech Statistical Office and processed according to the equation (Hayes, 2025):

$$Y_t = \beta_0 + \beta_1 X_{1,t-2} + \beta_2 X_{2,t-2} + \beta_3 X_{3,t-2} + \varepsilon_t \tag{12}$$

where:

- $X_{1,t-2}$ – independent variable, ΔIDB
- $X_{2,t-2}$ – independent variable, Δunemployment rate
- $X_{3,t-2}$ – independent variable, Δaverage monthly gross wage

Finally, a multi-criteria regression will be performed, which will include control variables to reflect any distortion of the impact of IDB on marriage rates. These variables will be Δunemployment rate and Δaverage monthly gross wages collected quarterly in the same period, i.e., from January 1, 2009, to December 31, 2024. This data will also be obtained from the public database of the Czech Statistical Office and processed according to the equation (Hayes, 2025):

$$Y_t = \beta_0 + \beta_1 X_{1,t-2} + \beta_2 X_{2,t-2} + \beta_3 X_{3,t-2} + \varepsilon_t \tag{12}$$

where:

- $X_{1,t-2}$ – independent variable, ΔIDB
- $X_{2,t-2}$ – independent variable, Δunemployment rate
- $X_{3,t-2}$ – independent variable, Δaverage monthly gross wage

Results

Based on the aforementioned methods, the quarterly housing affordability index (IDB) was calculated for the period from January 1, 2008, to December 31, 2024. Descriptive statistics were used to understand the nature of the data obtained (see Table 1):

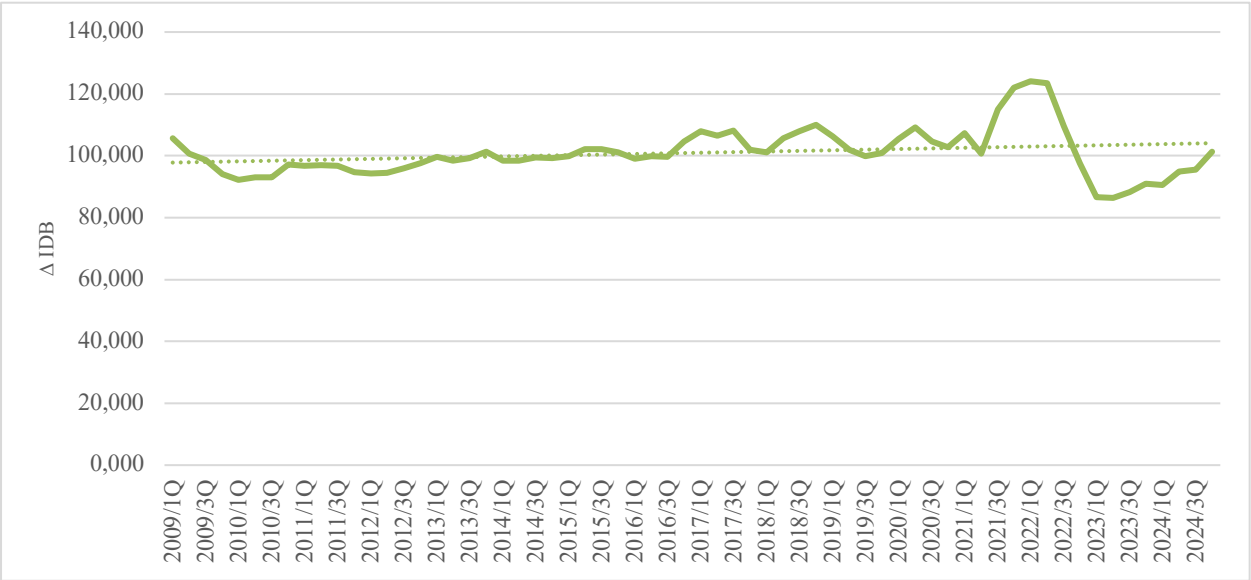
Table 1: Characteristics of IDB data

IDB	
Number	68
Medium value	5,631
Median	5,446
Standard deviation	0,789
minimum	4,563
maximum	8,042

Source: Own processing

The standard deviation is 7.602, which indicates relatively stable changes in IDB over time. The highest value of 124.089 was achieved in the first quarter of 2022. Conversely, ΔIDB reached its minimum in the second quarter of 2023, when IDB decreased from the previous year's value of 7.665 to 6.621 (see Chart 2).

Chart 1: Line graph showing the year-on-year change in IDB between 2008 and 2024



Source: Own processing

Furthermore, the marriage rate in the Czech Republic was determined, which can be characterized by Table 3:

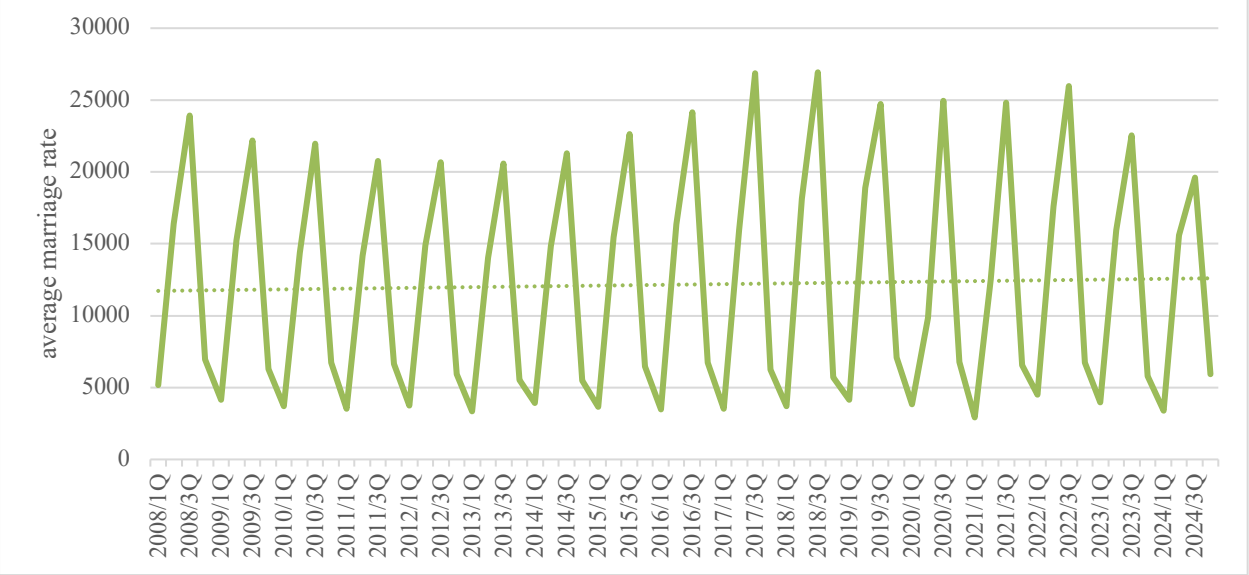
Table 3: Characteristics of the average quarterly marriage rate

Marriage	
Number	68
Medium value	12163,456
Median	8474
Standard deviation	7892,361
minimum	2924
maximum	26930

Source: Own processing

The average quarterly marriage rate for the entire period under review was 12,163.456 marriages. However, this average value is significantly higher than the median of 8,474. Such a large difference between the average and the median indicates an asymmetrical distribution of data, caused by regular and very high seasonal peaks in the summer months. The extreme dispersion of the data is also confirmed by the standard deviation, which is very high compared to the average, at 7,892.361. The overall range of the data is enormous, with the maximum being almost ten times higher than the minimum. The values found clearly confirm a strong seasonal cycle in the data, see Chart 3.

Chart 2: Line graph showing the development of marriage rates in the period 2008-2024



Source: Own processing

The highest value of 26,930 was achieved in the third quarter of 2018, and the lowest value of 2,924 in the first quarter of 2021.

Table 4 below shows the year-on-year change in marriage rates, which was again calculated for the period from January 1, 2009, to December 31, 2024:

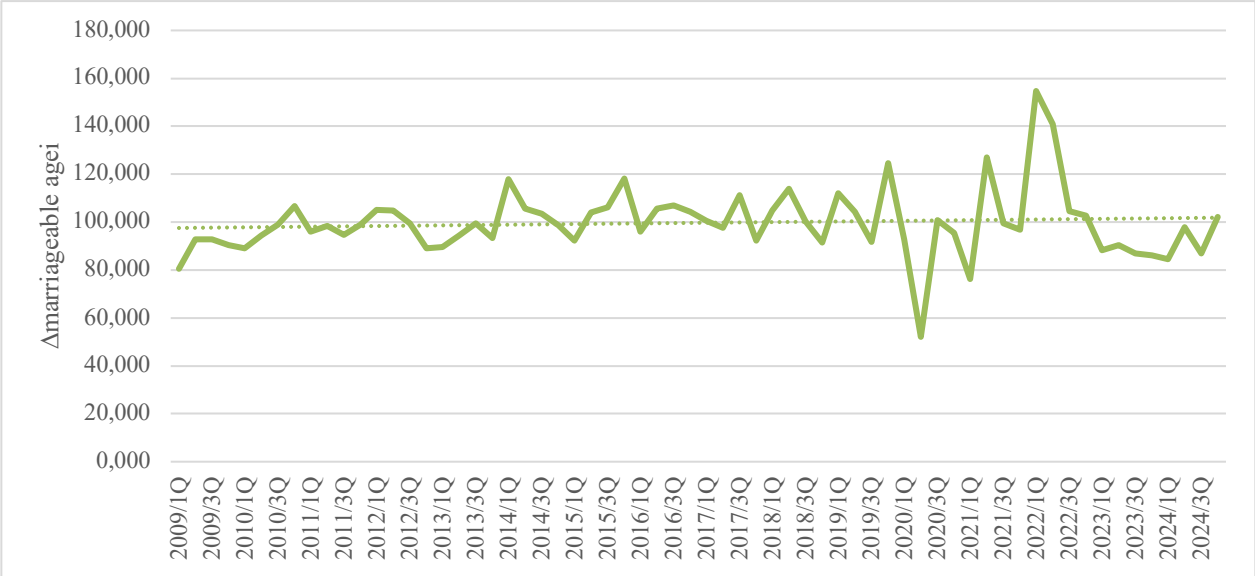
Table 4: Characteristics of the year-on-year change in marriage rates

Δ Marriage rates	
Number	64
Medium value	99,693
Median	98,838
Standard deviation	14,252
minimum	52,100
maximum	154,720

Source: Own processing

The average year-on-year change in marriage rates is almost zero, specifically 99.693. The key finding is the extreme volatility of the data, signaled by a high standard deviation of 14.252. This high deviation means that although the average change is minimal, the actual annual ups and downs are very large on average. The range of changes is enormous, ranging from a minimum decline of 52.1 in the second quarter of 2020 to a maximum increase of 154.72 in the first quarter of 2022. These two largest declines are also evident in Chart 4.

Chart 4: Line chart showing the development of year-on-year changes in mortality in the period 2009-2024



Source: Own processing

The following hypotheses were established to answer VO3:

H_0: There is no correlation between IDB and marriageability in the Czech Republic.

H_1: There is a correlation between IDB and marriageability in the Czech Republic.

First, Pearson's correlation coefficient was determined for the absolute values of IDB and marriage rate, i.e., covariance was first determined:

$$cov(X, Y) = 737{,}810$$

Next, the standard deviations of IDB (variable X) and marriage rate (Y) were calculated:

$$\sigma_X = 0{,}784$$

$$\sigma_Y = 7834{,}114$$

Thanks to these intermediate steps, Pearson's correlation coefficient was finally calculated:

$$r = 0{,}120$$

A very weak positive correlation was found, i.e., H0 was rejected. However, the p-value was 0.329, which is greater than the significance level α set at 0.05, so this relationship is statistically insignificant and rather purely random. For this reason, Pearson's correlation coefficient was also determined for year-on-year changes in IDB and marriage rates. The hypotheses remained the same. The covariance value was calculated:

$$cov(\Delta X, \Delta Y) = 41{,}746$$

Furthermore, the standard deviations of the year-on-year changes in IDB and marriage rate were calculated:

$$\sigma_{\Delta X} = 7{,}542$$

$$\sigma_{\Delta Y} = 14{,}140$$

Thanks to these intermediate steps, Pearson's correlation coefficient was finally calculated:

$$r = 0{,}391$$

A weak to moderately strong positive correlation was found between year-on-year changes in IDB and marriage rates in the Czech Republic, i.e., H0 was rejected. The p-value in this case was 0.001, which is less than the significance level α 0.05. This relationship is therefore statistically significant, unlike the previous result for the absolute values of IDB and marriage rate.

Linear regression was also used to verify the dynamic relationship over time, specifically for the transformed year-on-year data ΔIDB and Δsňatečnosti on a quarterly basis. This transformation served to eliminate seasonal effects and achieve stationarity of the time series, thereby avoiding the risk of spurious regression.

The process of determining the dynamic relationship involved testing three regression models. The key objective was to find the optimal time lag and isolate the pure effect of ΔIDB.

The first step involved regression between Δsňatečnosti and ΔIDB with a lag of 1 year (lag=4), see Table 5.

Table 5: Regression values between Δsňatečnosti and ΔIDB with a lag of 1 year

Indicator	Value	Statistical conclusion
Borders β_0	80,7673	Intersection
Coefficient IDB β_1	0,1938	Positive but weak
p-value	0,4328	Insignificant (p > 0,05)
R^2	0,0106	Extremely low explanatory power

Source: Own processing

$$Y_t = 80{,}7673 + 0{,}1938 * X_1$$

The relationship was not statistically confirmed. The selected annual lag was not adequate for capturing the dynamics of the relationship.

For this reason, a revision was made to a lag of six months (lag=2), which was considered a more realistic response time for households.

Table 6: Linear regression values for Δunemployment and ΔIDB with a six-month lag

Indicator	Value	Statistical conclusion
Borders β_0	25,6064	Intersection
Coefficient IDB β_1	0,7376	Positive but weak
p-value	0,0013	Insignificant (p > 0,05)
R^2	0,1448	explains 14.48% variability

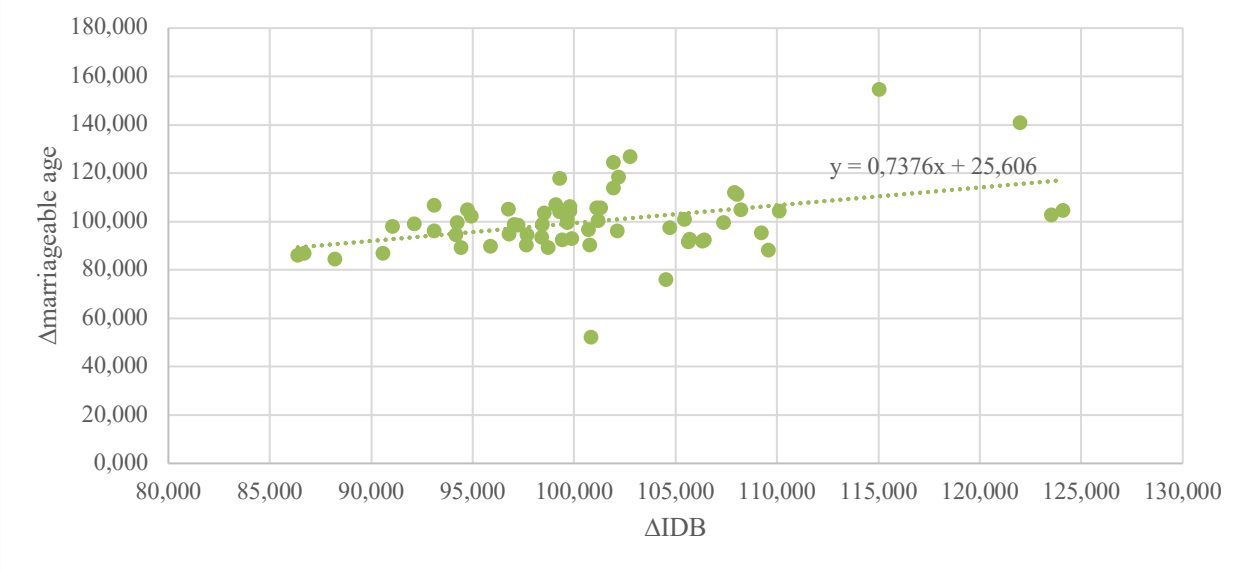
Source: Own processing

$$Y_t = 25{,}6064 + 0{,}7376 * X_1$$

It has been confirmed that ΔIDB has a statistically significant effect on Δmortality, with a six-month delay, see Table 6.

For better visualization of the data, a scatter plot showing linear regression for lag=2 was created:

Graph 5: Scatter plot of linear regression of Δmortality and ΔIDB with a six-month delay



Source: Own processing

The coefficient was again positive, which still contradicts the economic hypothesis, which expects a negative relationship. It was therefore necessary to check for bias by another variable.

To verify that the positive ΔIDB coefficient was not biased by the economic cycle, a multiple regression was performed including additional control variables (all with a six-month lag), see Table 7.

Table 7: Multiple regression

Variable	Coefficient (βx)	p-value	Direction detected	Statistical significance
ΔIDB (*t-2*)	0,6619	0,0056	Positive	yes (p < 0,05)
ΔUnemployment (t-*2*)	-0,0817	0,2676	Negative	no (p > 0,05)
ΔGross wages (t-*2*)	-0,4499	0,4951	Negative	no (p > 0,05)

Source: Own processing

$$Y_t = 88{,}3107 + 0{,}6619 * X_1 - 0{,}0817 * X_2 - 0{,}4499 * X_3$$

The β1 coefficient for ΔIDB remained statistically significant and positive (0.6619) even after controlling for the impact of year-on-year changes in unemployment and year-on-year changes in average gross wages. This means that the deterioration in housing affordability (growth in ΔIDB) is statistically associated with a subsequent increase in marriage rates with a six-month lag. The impact of Δunemployment and Δgross wages did not prove to be statistically significant in this model (p > 0.25), and their inclusion did not lead to a change in the sign of the ΔIDB coefficient. It can therefore be said that there is a direct proportionality here.

Discussion of results

The positive coefficient found for ΔIDB contradicts standard economic theories, which assume that marriages are postponed in response to increased financial barriers. This result suggests that the dynamics of marriage decisions are influenced either by another economic factor not included in the model, or that marriage rates in a given period are driven by cyclical effects, where a deterioration in IDB corresponds, for example, to speculative price increases, which paradoxically force couples to secure their finances more quickly.

RQ1: What is the development of the housing affordability index in the Czech Republic in the period from January 1, 2008, to December 31, 2024?

It was found that the quarterly housing affordability index (IDB) ranged from 4.563 (minimum in Q4 2012) to 8.042 (maximum in Q1 2022) between 2008 and 2024. The average IDB value was 5.631, which means that a three-member household needed an average of 5.631 years to save up for an apartment with an average area of 65 m2. The standard deviation of 0.789 indicates low volatility, i.e., relative stability of the IDB over time.

The results show that despite the relative stability of IDB values on average, there has been a significant deterioration in housing affordability since 2012, culminating in 2022. The growth of IDB, especially in recent years of the period under review, clearly reflects the growing financial burden on households wishing to purchase their own homes. An analysis of the year-on-year change in ΔIDB confirmed that the largest jump in IDB growth occurred in the first quarter of 2022 (124.089), while the subsequent decline in 2023 indicates a possible market correction.

It is clear that the growing unaffordability of housing has become a significant problem in the Czech Republic as well. The IDB maximum in 2022 could be influenced by a combination of factors such as high inflation (specifically 15.1% in 2022), increased interest rates, and speculative demand. The traditional rule that households should not spend more than 30% of their income on housing is becoming less and less realistic in the context of such a high IDB and is losing its relevance as a normative limit.

The trends identified are consistent with studies abroad. Balz (2025) pointed to the deteriorating affordability of housing in Germany, with the western federal states being particularly affected. Similarly, Slavata et al. (2024) found that affordability in Czech regions is lower than in Polish regions and even declined in both countries between 2020 and 2022. The macroeconomic environment, such as GDP, is cited as the most important factor influencing housing affordability (Wang et al., 2024), suggesting that IDB development in the Czech Republic was also driven by broader economic phenomena.

RQ2: What is the development of marriage rates in the Czech Republic in the period from January 1, 2008, to December 31, 2024?

The average quarterly marriage rate for the period 2008–2024 was 12,163.456 marriages. The data showed strong seasonality, as confirmed by the large difference between the average and the median (8,474) and the extremely high standard deviation of 7,892.361. The highest number of marriages occurred in the summer months (a maximum of 26,930 marriages in the third quarter of 2018), while the minimum was recorded in the first quarter of 2021 (2,924 marriages).

Strong seasonality and enormous data dispersion clearly confirm that marriage in Czechia is still strongly influenced by traditional customs and the calendar cycle. The extreme volatility of year-on-year changes in marriage rates, i.e., a standard deviation of 14.252, points to sensitivity to external shocks, such as the decline in the second quarter of 2020 (52.1) associated with the onset of the COVID-19 pandemic.

The data suggest that marriage is an important demographic phenomenon that reflects both lifestyle and values as well as the economic situation of society. Although the average year-on-year change in marriage is almost zero (99.693), large annual jumps and declines suggest that the timing of marriage is very flexible and subject to external influences.

The development of marriage rates in the Czech Republic, especially its transformation and flexibility, is in line with the findings of Sprochy (2021), who stated that marriage processes in Czechia and Slovakia have undergone significant changes in recent decades. The decline in marriage rates before the pandemic and their significant drop during it (minimum in 2021, 1st quarter) partly corresponds with the findings of Pouradeli et al. (2024) from Iran, where a downward trend in marriage rates was observed before the pandemic and the immediate decline in marriage rates had insignificant effects, although there was a statistically significant decline in divorce rates.

RQ3: Is there a relationship between the housing affordability index and marriage rates in the Czech Republic?

The original correlation analysis with absolute values of the IDB and marriage rates revealed a statistically insignificant, very weak positive correlation ($r = 0.120$). After transforming the data into year-on-year changes, i.e., ΔHAF and Δmarriage rate, which removed seasonal and trend biases, a statistically significant ($p = 0.001$) weak to moderate positive correlation ($r = 0.391$) was found. Subsequent multiple regression confirmed that the coefficient for ΔIDB remained statistically significant ($p = 0.0056$) and positive (0.6619) with a lag of six months (lag=2).

The positive coefficient found for ΔIDB contradicts the basic economic hypothesis, which assumes that a deterioration in economic conditions (growth in IDB) leads to the postponement of marriage and, consequently, the establishment of families. The result suggests that a deterioration in housing affordability is statistically associated with a subsequent increase in marriage rates with a six-month lag. This positive relationship can be explained by the fact that, in a period of expected and rapid growth in real estate prices, a deterioration in IDB can paradoxically act as a catalyst, forcing couples to secure their finances quickly and increase their chances of obtaining a mortgage. Marriage and the purchase of shared housing can be seen as steps that need to be taken quickly to avoid further price increases.

The finding that the influence of year-on-year changes in the unemployment rate and average monthly gross wages did not prove statistically significant in the model suggests that the dynamics of housing availability are a stronger and more isolated predictor of marriage dynamics in the Czech Republic, even in the context of the broader economic cycle.

This result conflicts with the literature, which usually assumes a negative impact. For example, Wang et al. (2023) argue that negative attitudes toward marriage are caused by structural constraints, particularly sharp increases in real estate prices, and that housing policy could help shape more positive attitudes toward marriage. Similarly, Song et al. (2024) found that housing prices are an important channel through which income inequality affects marriage rates, and in a negative sense. Ianchuk et al. (2021) emphasize the impact of affordable housing on economic performance and growth. The positive relationship found in this study thus appears to point to the specific dynamics of the Czech market, where

speculative behavior and the desire to secure housing before it becomes completely unaffordable prevail over the classic postponement of marriage due to financial burdens.

To clarify this conflict, it would be necessary to include other variables, such as mortgage interest rates and data on family savings.

Conclusion

The aim of the study was to provide a detailed assessment of the characteristics and mutual influence of the housing affordability index and marriage rates in the Czech Republic. The set objective was achieved through content analysis of data, primarily from the public database of the Czech Statistical Office (ČSÚ), for the period from January 1, 2008, to December 31, 2024. Furthermore, methods of descriptive time series analysis, Pearson's correlation coefficient, and linear and multi-criteria regression were used.

The descriptive analysis showed that the average IDB value in 2008–2024 was 5.631 years, which means that the average household needed more than five years to save up for an average apartment in the Czech Republic with an area of 65 m2. The IDB peaked (8.042) in the first quarter of 2022. The average quarterly marriage rate was 12,163.456 marriages, with the data showing extremely strong seasonality and high volatility. The lowest marriage rate (2,924) was recorded in the first quarter of 2021, probably due to the COVID-19 pandemic. A correlation coefficient (Pearson's coefficient) was calculated between IDB and marriage rates, which was 0.120 (very weak positive) for the absolute values of the variables and 0.391 (weak to moderately strong positive) for the year-on-year changes in the variables.

Furthermore, a regression analysis was performed, which confirmed a weak to moderately strong positive and statistically significant correlation between year-on-year changes in IDB and marriage rates. The main finding showed that a deterioration in housing affordability (growth in ΔIDB) is statistically significantly associated with a subsequent increase in marriage rates with a six-month lag (lag=2), but no statistically significant results were achieved with a one-year lag (lag=4). This positive relationship between the variables contradicts standard economic assumptions, but can be explained, for example, by a speculative effect, where rising prices force couples to accelerate marriage and home purchases. The influence of the year-on-year change in the unemployment rate and average monthly gross wages, as control variables to determine whether the relationship between IDB and marriage is merely distorted, did not prove to be statistically significant in the multi-criteria regression model.

The study provides empirical evidence of the existence of a dynamic relationship between the housing affordability index (more specifically, apartments) and marriage rates in the Czech Republic and identifies a key lag of six months, which proved to be adequate for capturing the dynamics of household decision-making. The contribution is particularly useful for housing policy makers and economists, as it highlights the link between economic and demographic phenomena.

The limitations of the study included the lack of other key economic and social factors, such as mortgage interest rates or data on private household savings, which could distort the resulting impact of IDB on marriage rates, and the use of average monthly gross wages to calculate the IDB, as net monthly earnings would certainly be more informative. At the same time, the average wage may be of little informative value in terms of significant declines in monthly earnings across society, and it would be appropriate to apply the methodology using, for example, the median, as the resulting IDB values may in fact look even worse, i.e., the IDB may actually be higher. These limiting aspects prevented a full clarification of causality and could serve as a guide for follow-up research.

References

Acolin, A., Lin, D., & Wachter, S. M. (2024). Why do young adults coreside with their parents? *Real Estate Economics*, *52*(1), 7–44. https://doi.org/10.1111/1540-6229.12467

Adilkhanova, M., & Aliyev, K. (2024). Macroeconomic Determinants of Marriage and Divorces in Azerbaijan. *Economics & Sociology*, *17*(4), 145–158. https://doi.org/10.14254/2071-789X.2024/17-4/8

Aytekin, I., Bayrakdar, S., & Aksoy, E. (2023). Investigation of the Long and Short-Term Relationship Between Exchange Rate and Inflation in Turkiye. *Journal of Economic Policy Researches-Iktisat Politikasi Arastirmalari Dergisi*, *10*(1), 87–112. https://doi.org/10.26650/JEPR1114402

Balz, F. F. (2025). Housing Affordability in Germany and its Dynamics. *Prague Economic Papers*, *34*(1), 78–97. https://doi.org/10.18267/j.pep.885

Bamgbade, J. A., Postnikova, O., & Matthew Wong, N. H. (2022). Performance index for public housing in East Malaysia. *Architectural Engineering and Design Management*, *18*(5), 652–670. https://doi.org/10.1080/17452007.2021.1956418

Cao, M., Yao, Q., Chen, B., Ling, Y., Hu, Y., & Xu, G. (2023). Development of a composite regional vulnerability index and its relationship with the impacts of the COVID-19 pandemic. *Computational Urban Science*, *3*(1), 1. https://doi.org/10.1007/s43762-023-00078-x

Český statistický úřad. *Byty v Česku mají nejčastěji tři místnosti a rozlohu od 60 do 79 metrů čtverečních*. Online. 2022. Dostupné z: https://csu.gov.cz/produkty/byty-v-cesku-maji-nejcasteji-tri-mistnosti-a-rozlohu-od-60-do-79-metru-ctverecnich. [cit. 2025-12-11].

Český statistický úřad. *Ceny nemovitostí*. Online. 2025. Dostupné z: https://csu.gov.cz/ceny-nemovitosti?pocet=10&start=0&podskupiny=014&razeni=-datumVydani. [cit. 2025-12-11].

Český statistický úřad. *Indexy spotřebitelských cen - inflace - prosinec 2022*. Online. 2023. Dostupné z: https://csu.gov.cz/rychle-informace/indexy-spotrebitelskych-cen-inflace-prosinec-2022. [cit. 2025-12-11].

Český statistický úřad. *Sňatky, rozvody*. Online. 2025. Dostupné z: https://csu.gov.cz/snatky-rozvody?pocet=10&start=0&podskupiny=135&razeni=-datumVydani. [cit. 2025-12-11].

Český statistický úřad. *Zaměstnanci a mzdy*. Online. 2025. Dostupné z: https://csu.gov.cz/zamestnanci-a-mzdy?pocet=10&start=0&1_pocet=10&1_start=0&skupiny=11&vlastnostiVystupu=15&pouzeVydane=true&razeni=-datumVydani&1_skupiny=11&1_vlastnostiVystupu=12&1_razeni=-datumVydani. [cit. 2025-12-11].

Duan, M., & Duan, Y. (2024). Housing affordability in the capital cities of three Northwestern China provinces. *International Journal of Housing Markets and Analysis*, *17*(5), 1308–1328. https://doi.org/10.1108/IJHMA-03-2023-0040

Hayes, Adam. *Multiple Linear Regression (MLR): Definition, Formula, and Example*. Online. 2025. Dostupné z: https://www.investopedia.com/terms/m/mlr.asp. [cit. 2025-12-10].

Chen, Y.-L., Li, D.-J., Chen, Y.-Y., & Yen, C.-F. (2024). The impact of housing-price-related indices on suicide rates in Taiwan. *International Journal of Social Psychiatry*, *70*(1), 40–47. https://doi.org/10.1177/00207640231194484

Ianchuk, S., Garafonova, O., Panimash, Y., & Pawliszczy, D. (2021). Marketing, Management and Financial Providing of Affordable Housing. *Marketing and Management of Innovations*, *2*, 213–230. https://doi.org/10.21272/mmi.2021.2-18

Ivanitskiy, V. V. (2024). Methodology for Measuring Housing Affordability. *Economy of Region*, *20*(3), 851–866. https://doi.org/10.17059/ekon.reg.2024-3-16

Janek, S., Kováčiková, N., & Kovač, V. (2024). PRICE DYNAMICS OF GOLD AND SILVER IN THE PERIOD 2015–2023. *AD ALTA Journal of Interdisciplinary Research, 13*(2), 155–160.

Jang, S., & Yi, C. (2021). Imbalance between local commuting accessibility and residential locations of households by income class in the Seoul Metropolitan Area. *Cities*, *109*, 103011. https://doi.org/10.1016/j.cities.2020.103011

Kim, Y. J., & Yang, H. J. (2024). Impacts of Tourism Activities on Housing Affordability: A case study of Malta Island. *2024 Ieee International Smart Cities Conference, Isc2*, P06133. https://doi.org/10.1109/ISC260477.2024.11004268

Landis, J., & Reina, V. J. (2021). Do Restrictive Land Use Regulations Make Housing More Expensive Everywhere? *Economic Development Quarterly*, *35*(4), 305–324. https://doi.org/10.1177/08912424211043500

Laurinavicius, A., Laurinavicius, A., & Laurinavicius, A. (2021). Impact of Housing Affordability and Other Socioeconomic Variables on Internal Migration in Lithuania. *International Journal of Strategic Property Management*, *25*(2), 102–114. https://doi.org/10.3846/ijspm.2020.13604

Lekhuleni, T. I., & Ndlovu, G. (2023). The dynamic effect of macroeconomic factors on housing prices: Evidence from South Africa. *PLoS ONE*, *18*(11), e0290552. https://doi.org/10.1371/journal.pone.0290552

Litvinova, E. V., & Danilova, V. A. (2021). Housing market: The concept. features, and role in the socio-economic development of the state. *Nexo Revista Cientifica*, *34*(1), 448–456. https://doi.org/10.5377/nexo.v34i01.11322

Low, H., & Sanchez-Marcos, V. (2024). Labour supply and the cost of house price booms and busts. *Labour Economics*, *90*, 102591. https://doi.org/10.1016/j.labeco.2024.102591

Melnikas, A. J., Saul, G., Pandey, N., Gueye, M., Mkandawire, J., Diarra, A., & Amin, S. (2022). A conceptual framework for understanding child marriage, marriage markets, and marriageability. *African Journal of Reproductive Health*, *26*(12), 78–87. https://doi.org/10.29063/ajrh2022/v26i12s.9

Mol Raj, R. K., Dlouhý, P., Kovač, V., & Turinská, L. (2023). Investing in Pairs of Precious Metals: Portfolio Theory Application. *Acta Montanistica Slovaca, 28*(4), 941–951. https://doi.org/10.46544/AMS.v28i4.12

Ng, J. W. J., Zelinsky, T., Forbes, C. S., & Looi, C. H. (2024). Measuring subjective housing affordability using a data-driven discrete information approach: A case study of Selangor, Malaysia. *Applied Economics Letters*, *31*(19), 1964–1968. https://doi.org/10.1080/13504851.2023.2208833

Pouradeli, S., Ahmadinia, H., & Rezaeian, M. (2024). Impact of COVID-19 pandemic on marriage, divorce, birth, and death in Kerman province, the ninth most populous province of Iran. *Scientific Reports*, *14*(1), 3980. https://doi.org/10.1038/s41598-024-54679-5

Shams, T. (2025). What Makes a Relationship Serious? Race, Religion, and Emotions in South Asian Muslim Immigrants' Romantic Meaning-Making. *Qualitative Sociology*, *48*(1), 1–24. https://doi.org/10.1007/s11133-024-09578-6

Slavata, D., Ardielli, E., & Maciejasz, M. (2024). Comparison of Housing Affordability in Czech and Polish Regions. *Review of Economic Perspectives*, *24*(1), 17–36. https://doi.org/10.2478/revecp-2024-0002

Song, Z., Cheng, Z., & Li, M. (2024). Does income inequality restrain marriage? A longitudinal study from the 35 large and medium-sized cities of China. *Cities*, *152*, 105200. https://doi.org/10.1016/j.cities.2024.105200

Sprocha, B. (2021). The Continuing Transformation of Nuptiality and Divorce in Czechia and Slovakia After 1989 in a Cohort Perspective. *Demografie*, *63*(2), 91–104.

Sun, Y., Choi, J., Nickdoost, N., Kirtonia, S., & VanDenBogaert, J. (2021). Evaluating Correlations of External Factors and Performance Measures of the Multimodal Transportation System in Florida. *Transportation Research Record*, *2675*(9), 1089–1105. https://doi.org/10.1177/03611981211006107

Sutela, E. (2024). The role of municipalities in promoting housing affordability: An analysis of three Finnish cities. *Urban Research & Practice*, *17*(3), 347–370. https://doi.org/10.1080/17535069.2023.2206793

Tareke, K. M., & Baraki, G. A. (2024). Affordability and accessibility of condominium housing in urban Ethiopia using a combined transportation and housing cost (CHT) index model: Implication for sustainable urban infrastructure, policy and development. *International Journal of Urban Sustainable Development*, *16*(1), 38–61. https://doi.org/10.1080/19463138.2024.2429393

Wang, Q., Lin, B., & Tan, C. (2024). A modified spatial house price to income ratio and housing affordability drivers study: Using the post-LASSO approach. *International Journal of Housing Markets and Analysis*, *17*(6), 1443–1460. https://doi.org/10.1108/IJHMA-12-2023-0169

Wang, S., Wang, Y., & Shen, Y. (2023). The Impact of Supportive Housing Policy Scenarios on Marriage and Fertility Intentions: A Vignette Survey Experimental Study in Shanghai, China. *Population Research and Policy Review*, *42*(6), 96. https://doi.org/10.1007/s11113-023-09844-5

Xie, Y., Zhou, W., Zhu, J., Ruan, Y., Wang, X., & Huang, T. (2022). Early Warning and Monitoring of Coronavirus Disease 2019 Using Baidu Search Index and Baidu Information Index in Guangxi, China. *Infectious Microbes & Diseases*, *4*(4), 168–174. https://doi.org/10.1097/IM9.0000000000000100

Yang, X., Liu, L., & Li, R. (2023). How marital events explain the suicide rate among Chinese. *PLoS ONE*, *18*(10), e0286961. https://doi.org/10.1371/journal.pone.0286961

Contact address of the author(s):

Ing. Jiří Máška, PANEUROPEAN University in Bratislava, Faculty of Economics, Tematínska 10, 851 05 Bratislava, Slovakia, email: maska@znalcivste.cz