Analysis of Development of Housing Prices and Wages in the Czech Republic

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1 Introduction

This text analyses the development of housing affordability in the Czech Republic from 2006 to 2024, focusing on the relationship between prices of houses and apartments and average wages across regions. The topic is central both for individual households and for policymakers, given its influence on living standards, economic stability, and regional development. The matter is now frequently discussed in the public, especially with the upcoming parliamentary elections in the Czech Republic. All major political parties in these elections have housing affordability mentioned in their program [3, 8, 9, 11, 13]. Using public datasets, a regionally and temporally disaggregated affordability index is constructed, examining how it has changed through crisis and recovery periods and across different types of housing. It is also assessed whether affordability patterns in family houses and apartments mirror or offset each other within regions.

2 Data & Methods

The analysis uses publicly available data from 2006 until 2024 [5, 6]. The period was chosen to be the longest possible while keeping the methodology behind the data constant. Data on average full-time wages and housing prices were obtained, specifically on apartments and family houses, separately. The data is transformed so that the year 2006 has a value of 100 for every variable and every region and develops in time accordingly. Therefore, the development of housing prices to wages in the specified period is investigated.

The affordability of housing α is measured using a ratio of increase in prices of a given type of housing to increase in wages. Showing it in an equation:

$$\alpha_{H/A,t} = \left(\frac{\pi_{H/A,t}}{\omega_t} \right),$$

where α is the affordability index, π refers to the price index of houses or apartments (specified by the subscript H or A for either category, respectively), ω represents the same index, only for wages, and t is the year.

It is important to note that the transformation of the data implicitly makes housing and wages equal in the base year 2006. The real ratio for the year was probably not 1. α therefore measures only the development of affordability of housing relative to 2006.

3 Results

During the period 2006-2024, housing affordability in the Czech Republic exhibited a generally cyclical pattern, punctuated by two major shocks: the 2008 financial crisis and the Covid-19 pandemic of 2020–2022. For much of the 2010s, affordability remained relatively stable or gradually declined, as increases in housing prices were largely matched by wage growth, except in periods of economic crisis when affordability worsened sharply. It is important to note that, due to the normalization of all indices to a base value of 100 in 2006, an affordability ratio $\alpha < 1$ indicates greater affordability than the previous year, but does not ensure that prices have returned to precrisis levels. Thus, even after crisis periods, housing may remain persistently less affordable if price decreases do not fully offset earlier increases.

3.1 Crisis Periods: 2008 and 2020 Shocks

The first spike is visible mainly in Figure 1 and occurs during the Great Recession [1]. The global financial crisis of 2008, triggered by turmoil in mortgage markets worldwide, reached the Czech Republic and had an immediate impact on property prices and housing affordability. During this period, apartment prices rose faster than wages by as much as 50% in some regions ($\bar{\alpha}_{A,2008} = 1.3527$). While the prices of houses also rose faster than average wages, the spike is not as pronounced with $\bar{\alpha}_{H,2008} = 1.0881$.

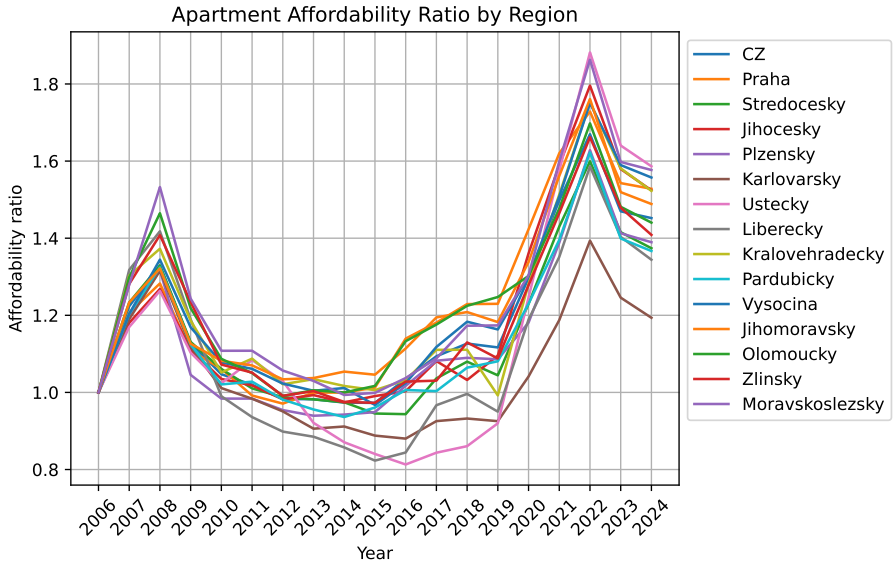

Figure 1: Apartment Affordability

Demand for housing contracted substantially as credit conditions tightened due to a collapse in mortgage lending and increased financial uncertainty. Many potential buyers faced difficulty obtaining financing amid stricter bank lending standards, which contributed to a slowdown in sales and construction activity [7, 4].

In between the spikes, the economy cools down and the affordability ratio remains relatively stable. During this period, roughly from 2010 to 2019, housing prices and wages experienced more gradual and steady movements with less volatility compared to crisis periods [7].

House prices slowly recovered from their post-crisis lows, supported by low interest rates and improving economic conditions, while construction activity and housing supply remained constrained in many regions. The affordability ratio α hovered around 1.0 for apartments, indicating housing price growth closely matched wage growth, and dipped below 1.0 for houses, suggesting houses became relatively more affordable during this phase.

This stability period was marked by a return to moderate growth conditions, low mortgage interest rates, and improving consumer confidence, but structural supply shortages and high demand, especially in urban centers, already started to put upward pressure on prices towards the end of the decade. The mainly steady but constrained market contrasts clearly with the sharp spikes observed during the 2008 and COVID-19 crises [12].

The second spike is clearly visible in both figures. It occurred during another global crisis, during the COVID–19 pandemic. During this period (2020–2022), housing prices in the Czech Republic surged much more rapidly than wages, sharply worsening affordability. The effect is even more profound than in 2008. Apartment prices rose an average of $\bar{\alpha}_{A,2022} = 1.6929$ across regions, reaching more than 80% increase compared to wages in some regions. Housing was less extreme, however, still worse than in 2008 with $\bar{\alpha}_{H,2022} = 1.3788$.

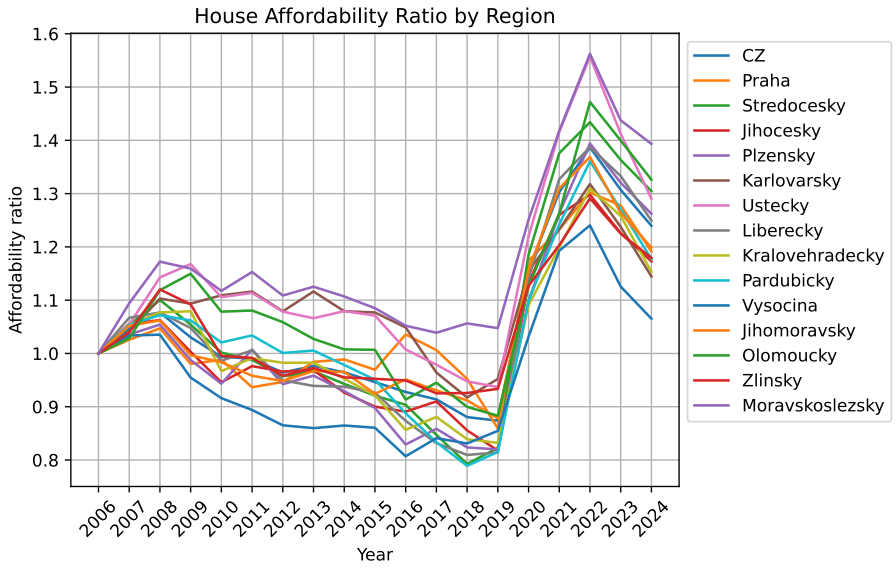

Figure 2: House Affordability

This could be due to several factors. As a precaution against further spread of the disease, lockdowns were issued which caused disruption of construction and labour shortage, implying a shock in the supply [10]. The demand, on the other hand, stayed strong, particularly because of low interest rates and changing household preferences [2]. In addition, the pandemic highlighted existing structural issues, including limited rental market alternatives and slow response of new construction in high–demanded areas [10]. It seems the effect is disappearing in the recent two years.

3.2 Volatility and Stability Across Regions

Table 1: Top and Bottom Regions per Measure and Housing Type

Type	Measure	Top Region	Top Value	Bottom Region	Bottom Value
apartment	mean	Moravskoslezsky	1.2506	Karlovarsky	1.0526
apartment	max	Ustecky	1.8818	Karlovarsky	1.3936
apartment	min	Jihomoravsky	1.0000	Ustecky	0.8131
apartment	std	Ustecky	0.3076	Karlovarsky	0.1537
apartment	diff	Ustecky	1.0687	Karlovarsky	0.5134
house	mean	Moravskoslezsky	1.1779	Vysocina	0.9618
house	max	Moravskoslezsky	1.5623	Vysocina	1.2405
house	min	Moravskoslezsky	1.0000	Pardubicky	0.7890
house	std	Stredocesky	0.1878	Karlovarsky	0.0974
house	diff	Stredocesky	0.6414	Zlinsky	0.3660

Table 1 shows statistical summary of housing affordability. Perhaps surprisingly, the region with the least affordable housing is not Prague. On average, the prices of both houses and

apartments rose the fastest compared to wages in Moravskoslezský region ($\bar{\alpha}_{H,Morvskoslezsky} = 1.1779, \bar{\alpha}_{A,Moravskoslezsky} = 1.2506$). The prices rose the slowest in Karlovarský region with $\bar{\alpha}_{A,Karlovarsky} = 1.0526$ for apartments and in Vysočina with $\bar{\alpha}_{H,Vysocina} = 0.9618$ for houses, meaning actual decrease in house prices, relative to 2006.

The highest volatility of α for apartments and overall is in Ústecký region with $\sigma_{A,Ustecky} = 0.3076$. The highest standard deviation for houses is then in Středočeský region ($\sigma_{A,Stredocesky} = 0.1878$). Karlovarský region possesses the most stable affordability ratio across housing types in the period studied period ($\sigma_{A,Karlovarsky} = 0.1537$, $\sigma_{H,Karlovarsky} = 0.0974$).

3.3 Relationship Analysis: Houses vs. Apartments

Some parts of the Figures 1, 2 could suggest that there is an inverse relationship between the affordability of apartments and houses among regions. Meaning that when there are comparably less affordable apartments in one region, the same region is likely to have comparably more affordable houses and vice versa. This relationship is not confirmed by the data. Figure 3 show a scatter plot of average $\bar{\alpha}$ between both housing types and no significant relationship is identified. The Pearson correlation coefficient is $\rho = 0.0132$, again arguing for no significant relationship.

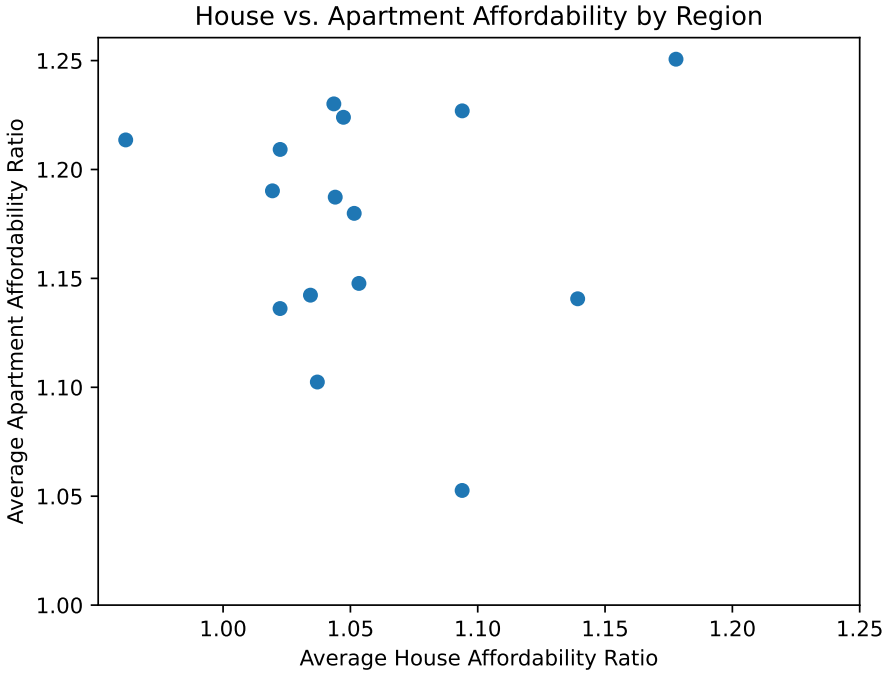

Figure 3: House Affordability

4 Conclusion

Housing affordability is one of the main topics of the upcoming parliamentary elections in the Czech Republic [3, 8, 9, 11, 13]. This text therefore analyses how the affordability of both apartments and houses in Czech regions has changed between 2006 and 2024. It is found the housing prices spike mainly in periods of crises—during the Great Recession and Covid-19 pandemic. While the former crisis affected mainly apartments with their prices rising by 35% more than average wages in 2008 (house prices rose by 9% in the same year), the latter crisis affected both housing types.

In 2022, the effect of Covid-19 peaked and prices of apartments and houses rose by 69% and 38% more than wages, respectively.

The data show that Moravskoslezský region performed the worst for both accommodation types. During the studied period, apartments increase on average by 25% and houses by 18%. On the other side of the scale are Karlovarský region for apartments with an average increase of 5% and Vysočina region for houses with a surprising average decrease of 4%. Karlovarský region has also the most stable prices-to-wage ratio across housing types. The most volatile ratio is in Ústecký region in terms of apartments and in Středočeský region in terms of houses. The inverse relationship between property type prices is investigated on the region level and no such relationship is found.

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