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## Apartment Rental Market in Border Cities of Poland and Ukraine

**Abstract:** This article is a contribution to the research that addresses the levels of apartment rental costs in Poland and Ukraine. The city of Rzeszów in Poland and Lviv in Ukraine – voivodeship capital cities that are located about 100 km from the Polish-Ukrainian border – were selected for the analysis. The purpose of the research is to compare the rental costs of apartments and to determine the correlation between the average rental rate and location of an apartment in the city as well as its floor, area, and residential standard. The experimental part of the article presents research results based on analyzing more than 300 apartment rental offers in the Rzeszów and Lviv housing market at the turn of 2022–2023. The possibility of renting an apartment results from the financial capacity of potential tenants, which is unavailable to people with low incomes; hence, the study also analyzed market rental rates in the context of the minimum wage in Poland and Ukraine in 2022.

**Keywords:** private rented markets, East Europe housing, migration, housing policy, rental costs

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## 1. Introduction

In the current Polish law, rental is defined by the provisions of the civil code and the act on the protection of tenants' rights, housing resources of municipalities, and on amendments to the civil code. Under a rental agreement, a landlord hands over a property to a tenant for a definite or indefinite period, while the tenant undertakes to pay an agreed fee (rent). The rent that is provided by the tenant to the landlord may take the form of money or other contributions as agreed to by the parties. The landlord and tenant represent the parties to the rental agreement, which can be both natural and legal people as well as organizational units [1, 2]. Under the rental agreement, the tenant has the right to use things but is not entitled to introduce wear and tear to the rented property or collect benefits on it [1].

Currently, the Polish real estate market regulations define four types of rental agreements [3]:

- 1) traditional rental,
- 2) occasional rental,
- 3) institutional rental excluding option of acquisition of ownership,
- 4) institutional rental leading to acquisition of ownership.

In Ukraine, the only available option is an occasional rental; i.e., a rental based on which the owner (a natural person or a legal entity) provides the right to the disposition of the property to the tenant of the apartment. It is not required to sign a written agreement for an obligation to arise. The agreement is not registered with the tax office, and the owner does not pay income tax on the income earned from renting the apartment.

In Poland, any income that is received by a landlord is taxed. Personal income tax is regulated in the Personal Income Tax Act [4] and amounts to 18% (32% in the case of a yearly income that exceeds PLN 120,000) or in the form of a lump sum, which is 8.5% per year (this is 12.5% if the yearly rental income exceeds PLN 100,000). Occasional rental is implemented under the Act of June 21, 2001, on the protection of the tenants' rights, the housing resources of the municipalities, and on the amendments to the civil code (Journal of Laws of 2022, Items 172) [5]. Signing the agreement in writing is required under pain of nullity. It is also required to attach certain necessary elements to the agreement, such as, i.a., a statement by the tenant in the form of a notarial deed on the submission to execution and an indication of the premises where the tenant will be able to live in the event of such an execution [6].

The primary cost of renting an apartment is the rent. In addition to this, the costs that are incurred by the tenant are the expenses that are related to using the premises. Such fees include administrative rent, utilities (e.g., electricity, gas), digital media (e.g., TV or Internet contracts), etc.

The possibility of renting an apartment results from the financial capacity of potential tenants; unfortunately, this is often unavailable to people with low

incomes [7]. It is a highly complex process, and the behavior of the participants in the rental market is influenced by, i.a., economic crises, declining household credit-worthiness, migration processes, or increased uncertainty on the labor market [8, 9].

Military conflicts often generate refugee crises that affect the regions to which people flee and the spillover effects on other countries' housing markets [10]. There is not enough research on this issue. Long-term studies have been conducted by such authors as Saiz [11], Besley [12], Akbari and Aydede [13], Alhawarin et al. [14], and Balkan et al. [15]. The last two articles discussed the problem of the influx of Syrian refugees to Jordan and Turkey.

The war in Ukraine affects internal and external migration and has an impact on changes in the surrounding countries' rental markets. Short-term studies about the consequences of war in Ukraine were conducted by Trojanek and Głuszak [10]. A large inflow of refugees into the Russian Empire turned a lingering housing shortage into a full-fledged housing crisis in the summer of 1915 (during WW I) [16]. Under such conditions, the Russian rental housing market (which had previously known virtually no restrictive regulations) responded with rapid rent increases, thus exacerbating the overall inflation problem.

The purpose of the study is to compare the rental costs of apartments in the cities of Rzeszów (Poland) and Lviv (Ukraine) in order to determine the correlation between the average rental rate and the location of the apartment in each city, its floor, the area of the apartment, and the residential standard. The study also addresses market rental rates in the context of the minimum and average 2022 wages in Poland and Ukraine as well as the economic situation of the residents analyzed through the lens of their abilities to rent apartments regarding their monthly wages.

## 2. Research Methodology

The experimental part of the article presents the research results of a study that was based on analyzing more than 300 apartment rental offers in the Rzeszów and Lviv housing markets at the turn of 2022–2023 (Fig. 1). Being focused on offers of apartments for rent, the analysis allowed us to create a database and collecting information from the analyzed cities.

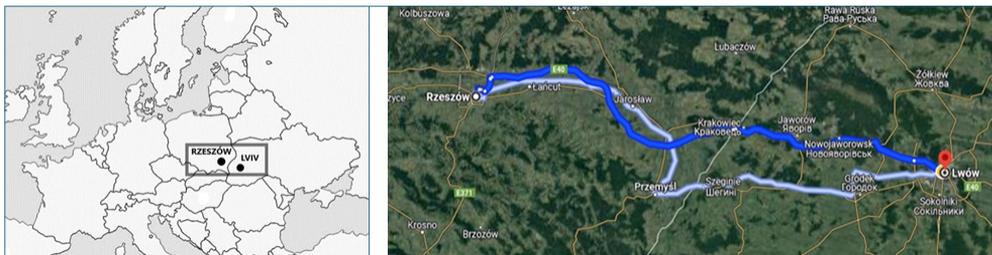


Fig. 1. Locations of Rzeszów in Poland and Lviv in Ukraine

The data referred to each property location, including its district and street, number of rooms, area of the premises, offer price and market rental rate, floor location (including the number of floors in the building), type of heating, allocation of a balcony, terrace, or garden, type and year of building construction, and property standard. The developed database covered observations that were made between November 2022 and the end of February 2023.

Two border cities were chosen as the area of the conducted analyses: Rzeszów (in Poland), and Lviv (in Ukraine). These cities are separated by a distance of approx. 170 km by car: the distance from Rzeszów to the Polish-Ukrainian border is about 100 km; from Lviv, the distance to this border is about 70 km. The cities have similar administrative characters and cover similar areas (Lviv – 149 km<sup>2</sup>; Rzeszów – 129 km<sup>2</sup>). In terms of the numbers of residents, Lviv has a much larger population (approx. 758,300), while Rzeszów has approx. 197,568 residents [17]. According to the data from the Union of Polish Metropolises, there were significantly more people in the capital of the Sub-Carpathian region (Rzeszów) on April 1, 2022 [18]. Based on the geotrapping method (which combines information from mobile devices with information on Social Security [PESEL] numbers), it was established that about 105,000 Ukrainians lived in Rzeszów at the time; this allowed us to determine its number of residents to be approx. 301,422.

Lviv is the seventh-most-populous city in Ukraine. It is located in the western part of Ukraine on the border of eastern Roztocze. It is an important administrative center of the Lviv district and region. Lviv is a recognized industrial center as well as an aviation hub, with a well-developed system of railways and highways. Lviv is also an economic and academic center. State universities include Lviv Polytechnic National University, Stepan Gzhytskyi National University of Veterinary Medicine and Biotechnologies of Lviv, and the Lviv National Agrarian University.

The city of Rzeszów is located in the southeastern part of Poland in Podkarpackie Voivodeship. In Rzeszów, there are seats of local and voivodeship authorities as well as governmental and judicial institutions. Academic, economic, cultural, and recreational centers work in the city (being the heart of the southeastern part of Poland). The aviation industry, IT, construction, and the chemical sector are strong here. A distinctive feature of Rzeszów is also Rzeszów-Jasionka International Airport, which serves passenger and cargo flights. Important transportation routes intersect in Rzeszów, including the A4 highway and the E-30 railroad trunk line (providing east-west connections). Rzeszów is made up of 33 residential housing estates [19].

During the course of the research, the following research questions were formulated:

- What portion of the minimum wage and average wage do Poles and Ukrainians have to pay for renting a two-room apartment?
- How different are the market rental rates for apartments in the analyzed cities?
- Are the rental preferences of Rzeszów and Lviv residents the same?

The analyses compared the behavior of both the Rzeszów and Lviv markets. Any tendencies and differences that occurred on the residential rental markets as well as the actors that have influenced the rental rates of apartments were highlighted. In order to answer the problem questions, the lowest wage was adopted – the lowest national wage in Poland (also referred to as the minimum wage or minimum remuneration); this is the minimum wage that is set by the state for work of a certain duration. The amount of the national minimum wage in 2022 was established in the Regulation of the Council of Ministers of September 15, 2021, on the amount of the minimum remuneration for work and the amount of the minimum hourly rate in 2022 [20]. According to this, the minimum monthly wage for full-time work in Poland was set at PLN 3010 gross (USD 741.38) as of January 1, 2022 (PLN 2363.56 net; USD 582.16 net).

In 2022, the minimum monthly wage in Ukraine was UAH 6500; i.e., approx. PLN 913 (USD 225). As of December 2021, average earnings in Ukraine amounted to UAH 17,453 per month (PLN 2450; USD 603.45) [21]. Hence, the already low wages that were earned by Ukrainians declined in the subsequent months due to the collapse of the supply chains and Russia's aggression against Ukraine. In December 2022, the average monthly wage in Poland was calculated to be PLN 7329 gross (USD 1665), or PLN 5362 net (USD 1218); during the entire year of 2022, the average monthly wage amounted to PLN 6653 gross/PLN 4865 net (USD 1512/USD 1105, respectively).

The calculations were performed using IBM SPSS Statistics 28.0. In order to determine whether the residents of Rzeszów and Lviv differed in their housing preferences, an analysis was conducted using the Mann–Whitney U test for the quantitative data and a chi-square ( $\chi^2$ ) test of independence for the nominal data. The Mann–Whitney U test analysis was also used to compare the costs of the respective monthly rent amounts and the unit prices per 1 m<sup>2</sup> between the cities. To compare the three groups in terms of quantitative data, a Kruskal–Wallis H test analysis was conducted. The Dunn test (which generalizes the Bonferroni adjustment procedure) was used as a post hoc test. A Spearman's rank correlation coefficient analysis was carried out to determine the relationship between the ordinal and quantitative variables ( $\alpha = 0.05$  was adopted as the significance level).

### 3. Research Results

#### 3.1. Rent Amounts for Apartments vs. Minimum and Average Wages in Poland and Ukraine

Based on an analysis of the collected data, the average costs of renting a one-room apartment (a studio apartment), a two-room apartment, and a bigger apartment (three-room or larger) were determined. This cost was referred to a minimum wage in U.S. dollars (USD) (Poland: USD 582.16; Ukraine: USD 225.00) and an average

wage in U.S. dollars (Poland: USD 1105; Ukraine: USD 603). The analysis showed that, in Poland, the cost of renting a one-room apartment amounted to 58.48% of the minimum wage and 30.81% of the average wage (as determined based on apartment rental offers). The cost of renting a two-room apartment was 72.30% of the minimum wage and 38.09% of the average wage, and the cost of renting a three-room or larger apartment amounted to nearly the entire minimum wage (95.65%) and half of the average wage.

In the case of the Lviv data, the costs of renting a one-room, a two-room, and a larger apartment exceeded the amount of the minimum wage by 53.64, 87.42, and up to 202.30 percentage points (pp), respectively. In terms of an average wage, the cost of renting a one-room apartment accounted for 57.33% of the average wage, and a two-room apartment – 69.93% of the average wage. The cost of renting a three-room or larger apartment exceeded the average wage by 12.8 pp (Table 1).

**Table 1.** Average rental rate broken down by numbers of rooms and minimum and average wages in Poland and Ukraine

Country	Charakteristics of rental costs	One-room apartment	Two-room apartment	Three-room apartment or larger
Rzeszów (Poland)	Cost (average) [USD]	340.43	420.88	556.85
	Percentage of minimum wage [%]	58.48	72.30	95.65
	Percentage of average wage [%]	30.81	38.09	50.39
Lviv (Ukraine)	Cost (average) [USD]	345.70	421.69	680.17
	Percentage of minimum wage [%]	153.64	187.42	302.30
	Percentage of average wage [%]	57.33	69.93	112.80

### 3.2. Characteristic Apartment Rental Offers in Cities of Rzeszów and Lviv

The conducted analysis showed a significant correlation between the market rental rate and the city as well as among the type of building, its location, its residential standard, and the number of rooms. There were also significant differences between the cities in terms of the apartment’s floor, its usable area, and its building’s year of construction. Tables 2 and 3 present a comparison of the available apartment rental offers in Rzeszów and Lviv.

Most rent studies employ some measures of physical characteristics; these usually include square footage or a proxy (such as the number of bedrooms) as well as age [22].

Having analyzed the “type of building” characteristic, it was found that the offers of apartments for rent in Lviv included apartments in tenement houses more often than the offers in Rzeszów did (26.8 vs. 3.2%, respectively) and included modern apartments less often (58.8 vs. 78.4%, respectively). In both groups, the apartments in prefab-concrete apartment blocks were quite strongly represented

(approx. 15–20% of all offers). In terms of the “location” characteristic, the offers of apartments for rent in the city center of Rzeszów were more frequent in the database than in the central part of Lviv (40.4 vs. 24.7%, respectively); on the other hand, the authors came across apartment rental offers in Rzeszów’s inner city zone less often than in Lviv’s (39.6 vs. 60.8%, respectively). Apartments on the outskirts of each city accounted for 20 and 14.5%, respectively.

One-room apartments were offered for rent more frequently in Lviv than in Rzeszów (44.3 vs. 11.2%, respectively), while larger ones were offered less often (12.4 vs. 40.8%, respectively). In both cities, two-room apartments accounted for large portions – approx. 40–50% of the available offers.

The analysis showed that the apartments that were offered in Lviv were typically located on the upper floors of buildings, usually had larger usable floor spaces, and were situated in significantly older buildings than the offered apartments in Rzeszów.

**Table 2.** Comparison of apartment rental offers in cities of Lviv and Rzeszów in terms of market characteristics: type of development, location, residential standard, and number of rooms

Characteristics	Lviv (Ukraine)		Rzeszów (Poland)		$\chi^2$	<i>p</i>	<i>V</i>
	<i>n</i>	[%]	<i>n</i>	[%]			
Type of building							
Tenement house	26 <sup>a</sup>	26.8	8 <sup>b</sup>	3.2	44.07	<0.001	0.36
Prefab-concrete	14 <sup>a</sup>	14.4	46 <sup>a</sup>	18.4			
Modern	57 <sup>a</sup>	58.8	196 <sup>b</sup>	78.4			
Location							
City center	24 <sup>a</sup>	24.7	101 <sup>b</sup>	40.4	12.84	0.002	0.19
Inner city	59 <sup>a</sup>	60.8	99 <sup>b</sup>	39.6			
Outskirts	14 <sup>a</sup>	14.4	50 <sup>a</sup>	20.0			
Residential standard							
High	94 <sup>a</sup>	96.9	110 <sup>b</sup>	44.0	81.00	<0.001	0.48
Average	3 <sup>a</sup>	3.1	75 <sup>b</sup>	30.0			
Low	0 <sup>a</sup>	0	65 <sup>b</sup>	26.0			
Number of rooms							
One room	43 <sup>a</sup>	44.3	28 <sup>b</sup>	11.2	55.01	<0.001	0.40
Two rooms	42 <sup>a</sup>	43.3	120 <sup>a</sup>	48.0			
Three rooms or more	12 <sup>a</sup>	12.4	102 <sup>b</sup>	40.8			

$\chi^2$  – chi-squared; *p* – level of significance; *V* – coefficient of variation. Values in columns not sharing a letter index within row differ at  $p < 0.05$  (Bonferroni adjustment).

**Table 3.** Comparison of apartment rental offers in cities of Lviv and Rzeszów in terms of market characteristics: floor, usable area, and year of construction

Characteristics	Lviv (Ukraine) (n = 97)			Rzeszów (Poland) (n = 250)			Z	p	r
	average rank	Me	IQR	average rank	Me	IQR			
Floor	194.92	3.00	4.00	165.88	3.00	5.00	-2.44	0.015	0.13
Usable area	192.85	50.00	22.50	166.69	49.00	18.00	-2.18	0.029	0.12
Year of construction	107.48	1984.00	61.00	199.22	2,017.00	16.00	-7.69	<0.001	0.41

Me – median; IQR – interquartile range; p – level of significance; Z – normal distribution, r – correlation coefficient.

### 3.3. Market Rental Rates for Apartments in Analyzed Cities

The table below presents the results of a comparative data analysis for Lviv and Rzeszów regarding the monthly rent amounts of the apartments and the rent rates per 1 m<sup>2</sup>. The analysis confirmed that the average monthly rent and rent rate per 1 m<sup>2</sup> were significantly higher for the Rzeszów data than for the Lviv data.

A detailed analysis that was broken down by the number of rooms in an apartment showed significant differences in the rent rates per 1 m<sup>2</sup>. The rates were significantly higher for the apartments in Rzeszów than in the cases of the apartments in Lviv. The differences in terms of the monthly rent amounts between the compared cities were not recorded (Table 4).

**Table 4.** Comparison of monthly rent and rent rate per 1 m<sup>2</sup> of apartments in Lviv and Rzeszów

Characteristics	Lviv			Rzeszów			Z	p	r
	average rank	Me	IQR	average rank	Me	IQR			
Rent per month [USD]	138.34	360.00	209.00	187.84	440.00	163.00	-4.13	<0.001	0.22
Unit price per 1 m <sup>2</sup> [USD]	115.40	6.98	2.99	196.74	9.31	3.73	-6.78	<0.001	0.36
One-room apartment									
Rent per month [USD]	34.42	320.00	180.00	38.43	343.50	90.00	-0.80	0.423	0.09
Unit price per 1 m <sup>2</sup> [USD]	26.95	8.00	3.28	49.89	11.29	4.13	-4.58	<0.001	0.54

**Table 4.** cont.

Two-room apartment									
Rent per month [USD]	76.76	397.50	262.50	83.16	397.00	135.50	-0.76	0.447	0.06
Unit price per 1 m <sup>2</sup> [USD]	45.12	6.33	2.29	94.23	9.26	3.42	-5.84	<0.001	0.46
Three-room apartment and larger									
Rent per month [USD]	49.42	425.00	569.25	58.45	500.00	193.75	-0.90	0.370	0.08
Unit price per 1 m <sup>2</sup> [USD]	32.71	5.71	3.76	60.42	8.78	3.68	-2.75	0.006	0.26

Me – median; IQR – interquartile range;  $p$  – level of significance;  $Z$  – normal distribution,  $r$  – correlation coefficient.

### 3.4. Determining Impact of Selected Market Characteristics on Market Rental Rates

Analyses that addressed the impact of market characteristics on the offered rent rates were conducted separately for the cities under study. In Lviv, the analysis showed significant differences in the monthly rent and the unit price per 1 m<sup>2</sup> related to apartment location. A post hoc analysis showed that the monthly rent of an apartment that was located in the central part of the city was significantly higher than that of an inner city zone apartment ( $p < 0.001$ ) and an apartment in the outskirts ( $p = 0.015$ ). The unit price per 1 m<sup>2</sup> was significantly higher for apartments in the central part than for those that were located in the city center ( $p = 0.001$ ). These findings are presented in Table 5.

**Table 5.** Comparison of monthly rent and unit price per 1 m<sup>2</sup> of apartments in Lviv depending on location

Characteristics	City center ( $n = 101$ )		Inner city ( $n = 99$ )		Outskirts ( $n = 50$ )		$H$	$p$	$\eta^2$
	Me	IQR	Me	IQR	Me	IQR			
Rent per month [USD]	442.50	290.00	300.00	220.00	345.00	117.50	16.62	<0.001	0.18
Unit price per 1 m <sup>2</sup> [USD]	8.27	4.87	6.27	2.81	7.13	4.15	13.96	<0.001	0.18

Me – median; IQR – interquartile range;  $H$  – Kruskal–Wallis H test;  $p$  – level of significance;  $\eta^2$  – effect size – a quantitative measure of the strength of a phenomenon.

As a result of a further analysis, it was found that the monthly rent amounts in Lviv for apartments in prefab-concrete buildings were significantly lower than for apartments in tenement houses ( $p = 0.048$ ) and modern apartments ( $p < 0.001$ ). The unit price per 1 m<sup>2</sup> of apartments that were located in prefab-concrete buildings was significantly lower than it was for modern apartments ( $p = 0.009$ ) and tenement houses ( $p = 0.037$ ). There were no differences among the other building types ( $p > 0.05$ ). These findings are presented in Table 6.

**Table 6.** Comparison of monthly rent and unit price per 1 m<sup>2</sup> of apartments in Lviv depending on type of building

Characteristics	Tenement house ( <i>n</i> = 26)		Prefab-concrete ( <i>n</i> = 46)		Modern ( <i>n</i> = 196)		<i>H</i>	<i>p</i>	$\eta^2$
	Me	IQR	Me	IQR	Me	IQR			
Rent per month [USD]	335.00	226.75	250.00	105.00	400.00	207.50	16.95	<0.001	0.07
Unit price per 1 m <sup>2</sup> [USD]	7.64	4.18	5.95	1.66	7.61	3.31	9.14	0.010	0.08

Me – median; IQR – interquartile range; *H* – Kruskal–Wallis H test; *p* – level of significance;  $\eta^2$  – effect size – a quantitative measure of the strength of a phenomenon.

The analysis that covered the Lviv apartment market also showed positive correlations among an apartment’s floor (weak correlation), its year of construction (moderate correlation) and the amount of monthly rent (unit price per 1 m<sup>2</sup>). This means that, the higher the building floor and the younger the building, the higher the monthly rent was, and the younger the building, the higher the unit price per 1 m<sup>2</sup> was of the apartment. No correlation between the building floor and the unit price per 1 m<sup>2</sup> was recorded. Apartment rent amounts consistently decreased with building age (defined as the age of an apartment structure in years) at a nearly constant rate [22].

The analysis for Rzeszów showed no statistically significant differences in the monthly rent and unit price per 1 m<sup>2</sup> that resulted from the apartment location in the city center, inner city zone, or the outskirts. However, the monthly rent amounts for apartments in prefab-concrete buildings were significantly lower than for the apartments in tenement houses ( $p = 0.007$ ) and modern apartments ( $p < 0.001$ ); this was similar to Lviv. The rent rate per 1 m<sup>2</sup> for apartments that were located in modern buildings was significantly higher than in the case of apartments that were located in prefab-concrete buildings ( $p < 0.001$ ). No differences could be observed among the other building types ( $p > 0.05$ ). This means that, the higher the floor of the building and the younger the building, the higher the amount of the monthly rent and the unit price per 1 m<sup>2</sup> of the apartment. These findings are presented in Table 7.

**Table 7.** Spearman's rank correlation coefficient between monthly rent and unit price per 1 m<sup>2</sup> vs. floor and year of construction for apartments in Rzeszów

Characteristics	Rent per month [USD]		Unit price per 1 m <sup>2</sup> [USD]	
	$r_s$	$p$	$r_s$	$p$
Floor	0.21	<0.001	0.26	<0.001
Year of construction	0.33	<0.001	0.50	<0.001

$r_s$  – Spearman's rang correlation;  $p$  – level of significance.

#### 4. Discussion

An analysis of the residential rental markets in the cities of Rzeszów and Lviv allowed us to solve the research problem; i.e., determining the possibility of renting an apartment on the free market based on the lowest and average wages (national minimum wage) in Poland and Ukraine as well as determining the differences in the market rental rates for apartments in the analyzed cities or determining the preferences of tenants regarding the residential dwellings in Rzeszów and Lviv.

As a result of the conducted analyses, it was established that people who work in Poland are able to rent an apartment on the open market by paying a monthly rent from their remuneration from work. A person who works in Poland can rent a two-room apartment for 72.30% of their minimum wage and 38.09% of their average wage. The cost of renting a three-room or larger apartment is already a significant burden on an employee's budget, amounting to almost their entire remuneration from work, but it is still possible to rent an apartment for a monthly wage. When analyzing the possibility of covering apartment rental costs in Lviv, the situation of the tenants is completely different. An apartment rental cost exceeds the minimum wage amount in Ukraine by 53.64 pp (in the case of a studio apartment) and up to an average of 202.30 pp for a three-room or larger apartment. As related to the average wages, it is possible to pay rent for one- and two-room apartments, but it is not enough to cover the rent for a three-room and larger apartment; this rent is 12.8 pp higher than the average salary. According to [23], war conflicts decrease housing affordability, shift housing patterns, and encourage informal settlements. The war in Ukraine has affected internal and external migration and has had an impact on changes in the rental market [24]. The situation on the long-term rental market stabilized during the first half of 2023 as compared to the end of the previous six months [25].

According to Gilbert [26], too many governments believe that the answers to their housing problems lie in promoting home ownership; however, this strategy has failed to solve housing problems anywhere in the world, and rental housing is

an essential supplement to home ownership. Variations in the demand for rental housing are strongly related to the size, age distribution, and growth rate by age group of the population. Apartment demand is directly related to the population and the number of people in the 18-to-35 age group [22].

When answering the next question concerning the differences in the market rental rates for apartments in the analyzed cities, it can be stated that the rent rate was significantly higher for apartments in Rzeszów as compared to those in Lviv. However, the apartments in Rzeszów were smaller; hence, the rent rates were higher. In turn, there were practically no significant differences in the offer prices for renting premises when considering the price of renting an entire apartment. Despite the significant differences in the levels of earnings in Poland and Ukraine, apartment rental prices (rent for entire premises) were comparable. This is certainly a consequence of the current political situation, the existing risks, and the recognition of Lviv's location in Ukraine as being relatively safe.

The research has shown that the preferences of Rzeszów and Lviv residents for renting dwellings are slightly different. It was found that, in Lviv, the monthly rent for an apartment that was located in the central part of the city was significantly higher than for the apartments in the inner city zone or outskirts. In Rzeszów, no statistically significant differences were recorded in the amount of monthly rent and the unit price per 1 m<sup>2</sup> in relation to the apartment location in the city center, inner city zone, or outskirts. The notion that rent amounts vary across space depending on proximity to specific nodes is very old. Validating the idea that proximity to an economic focal point (such as a city center or university campus) positively affects apartment rent amounts is central to a number of empirical studies [27, 28].

The analysis of the monthly rent level in Lviv for apartments in prefab-concrete buildings proved it to be significantly lower as compared to apartments in tenement houses or modern ones. Similar conclusions can be drawn based on the data analysis that referred to the offer prices for renting premises in Rzeszów, where renting an apartment that is located in a prefab-concrete building was significantly cheaper.

The analysis of the residential rental markets in Lviv and Rzeszów has shown that, the higher the building floor and the younger the building, the higher the monthly rent and the higher the unit price per 1 m<sup>2</sup> of an apartment.

## 5. Conclusions

The analyses that addressed apartment rental offers in the cities located in the borderland of Poland and Ukraine allowed us to formulate the following conclusions:

1. The tenants of apartments in Rzeszów pay proportionally lower rent amounts in relation to the minimum and average wages in Poland as compared to the tenants of apartments in Lviv in relation to their minimum and average wages. It was established that tenants in Lviv who earned an

average wage in Ukraine were not able to cover the full monthly rent for even the smallest apartment (one-room). Paying rent by those who earn the minimum wage in Ukraine is all the more impossible.

2. The tenants of apartments in Lviv pay lower rent rates per 1 m<sup>2</sup> of an apartment, but they are usually larger; this means that the costs of renting entire apartments are similar in Lviv and Rzeszów.
3. Taking into account the current political situation in Ukraine as well as the much lower average and minimum wages as compared to those in Poland, it should be concluded that covering rental costs in Lviv is a huge burden for tenants. This may also encourage Ukrainians to travel abroad (e.g., to Rzeszów), where the minimum and average wages are approx. 38% and 54% higher than in Ukraine while the rent for a two-room apartment is comparable.

### Author Contributions

Maria Hełdak: conceptualization, methodology, software, validation, formal analysis, investigation, resources, data curation, writing – original draft preparation, writing – review and editing, visualization, supervision, project administration, funding acquisition.

Lesia Kucher: software, validation, formal analysis, investigation, resources, data curation, writing – original draft preparation, writing – review and editing.

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